

User's Guide

AMM-1525M/1510M/525M SCSI Audio Host Adapters and Sound Cards

AMM-1525M/1510M/525M User's Guide
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▼▼▼▼ **AMM-1525M/1510M/525M**
SCSI Audio Host Adapters and Sound Cards

User's Guide



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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 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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▼▼▼▼ Preface

Inside This Document

This document provides complete instructions on how to install and use the Adaptec AMM™ -1525M, AMM-1510M, and AMM-525M SCSI Audio Host Adapters and Sound Cards in your computer.

Chapter 1 Introduction

provides general information about and lists the features of the AMM-1525M/1510M/525M.

Chapter 2 Installation

has the information needed to install the host adapter, SCSI devices, IDE devices, Audio devices, and Adaptec software.

Chapter 3 IDE Configuration

describes how to configure your IDE devices for use with your AMM-1525M/525M host adapter and computer.

Appendix A Troubleshooting

has information to assist you in troubleshooting problems that may occur during installation and operation.

Conventions

The following typographic conventions are used in this document.

bold

Used for keystrokes (... press the **Enter** key ...), and screen selection fields (... select **Advanced Configuration Options** ...)

Helvetica

Used for operator entry that must be typed exactly as shown (... device=c:\scsi\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 you or your system. This document 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 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.

Use caution when handling any electrical equipment. Advisories in this document can only cover the procedures contained here, and not all situations may have been addressed. Adaptec does not claim to have included every condition or situation that might require a Caution or Warning. You must refer to the documentation for your computer peripheral equipment when you are installing equipment or changing its configuration.



▼▼▼▼ 1 Introduction

About This Chapter

Read this chapter to find out

- An overview of the AMM-1525M/1510M/525M
- The minimum system requirements needed to install the AMM-1525M/1510M/525M
- The features of the AMM-1525M/1510M/525M
- General information on using the AMM-1525M/1510M/525M

▼▼▼▼ 1

Overview

This document provides information on how to install and configure the Adaptec AMM-1525M, AMM-1510M, and AMM-525M SCSI Audio Host Adapters and Sound Cards.

Each adapter provides superior audio performance for your multimedia devices. Through the input and output jacks, a variety of audio equipment can be connected.

In addition, the AMM-1525M allows you to connect up to seven internal SCSI devices, and up to two IDE devices (IDE hard disk and/or ATAPI CD-ROM drive); the AMM-1510M allows you to connect up to seven internal SCSI devices; and the AMM-525M allows you to connect up to two IDE devices.

Collectively, all three boards are referred to in this document as the AMM-1525M/1510M/525M; the two adapters that provide *full* SCSI host adapter functionality are referred to as the AMM-1525M/1510M; and the two adapters that provide IDE support are referred to as the AMM-1525M/525M.

System Requirements

The following minimum requirements are needed to install the AMM-1525M/1510M/525M:

- An 80386SX 25 megahertz (MHz) computer or higher
- An available 16-bit expansion bus slot

The following are additional requirements needed to run the Windows version of the Adaptec Installation Manager:

- Microsoft Windows 3.1x
- 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

Features

SCSI Features

Configuration Flexibility

- One internal 50-pin SCSI connector for connecting standard 8-bit internal SCSI devices
- Provides easy installation and use with Adaptec Installation Manager software

Multiple Device and Applications Support

- Supports up to seven individually configured SCSI devices, simultaneously
- 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
- 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

- Disconnect/Reconnect
- Fully multitasking/multithreading
- Parity checking

IDE Features

- Provides one internal 40-pin IDE connector for IDE devices such as standard IDE hard disk and ATAPI CD-ROM drives
- Supports up to two IDE devices
- Supports *primary* or *secondary* IDE port address
- Provides ATAPI CD-ROM device driver through Adaptec Installation Manager

Audio Features

- Digital audio recording and playback with compression
- Audio FM and wavetable synthesis
- Musical Instrument Digital Interface (MIDI) recording and playback
- Roland MPU-401 compatible MIDI port
- Joystick game port interface
- CD, Line, and Microphone inputs
- Line outputs
- Speaker outputs
- 16-bit quality sound/stereo
- Windows Sound System compatibility
- Sound Blaster compatibility
- 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

The AMM-1525M/1510M/525M kit is shipped with the Adaptec Installation Manager software utility. The Installation Manager allows you to easily run and install all of the Adaptec Software needed to provide your host adapter with audio and SCSI capabilities. Refer to *Running the Adaptec Installation Manager* on page 2-24 and the *Installation Manager User's Guide* for more information.

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 host adapter: either internal SCSI or IDE devices.

Type of Connector on Host Adapter	Type of Cable	Type of Connector on Cable
Internal SCSI	50-pin SCSI ribbon cable	Unshrouded 50-pin header, compatible with unshielded Alternative 2 connector.
IDE	40-pin IDE ribbon cable	Unshrouded 40-pin header connector

Product Specifications

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 on page ii.

Physical Dimensions

Length: 9.85-inches
Width: 0.44-inches
Height: 4.50-inches

Power Requirements

+5.0 +/- 0.25 Volts at 2.0 Amps maximum

Temperature Requirements

Operating: 0°C (32°F) to 55°C (131°F)
Storage: -40°C (-40°F) to 75°C (167°F)



▼▼▼▼ 2 Installation

About This Chapter

Read this chapter to find out

- An overview of installing your host adapter and peripheral devices
- The layout of the host adapter
- The default settings of the host adapter
- Jumper settings and how to change them
- Instructions for installing the host adapter, SCSI devices, IDE devices, and audio equipment
- Instructions for installing the Adaptec software necessary for SCSI and audio operation

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Installation Overview

This chapter guides you through installing your host adapter and peripheral devices. An overview of the installation steps is listed below. The steps should be performed in the order they appear. See the referenced section for installation details:

- 1 Setting switches and jumpers on the host adapter—see *Setting Jumpers* on page 2-6.
- 2 Installing the host adapter in the computer—see *Installing the Host Adapter* on page 2-8.
- 3 Connecting SCSI cables and SCSI peripheral devices—see *Connecting SCSI Devices (AMM-1525M/1510M Only)* on page 2-10.
- 4 Terminating the SCSI bus—see *Terminating the SCSI Bus* on page 2-14.
- 5 Setting SCSI IDs—see *Setting SCSI IDs* on page 2-15.
- 6 Connecting IDE devices—see *Connecting IDE Devices (AMM-1525M/525M Only)* on page 2-16.
- 7 Installing Adaptec software—see *Running the Adaptec Installation Manager* on page 2-24.
- 8 Configuring the computer to use IDE devices—see Chapter 3, *IDE Configuration*.

Host Adapter Layout

Figure 2-1 shows the major components on the AMM-1525M/1510M/525M.

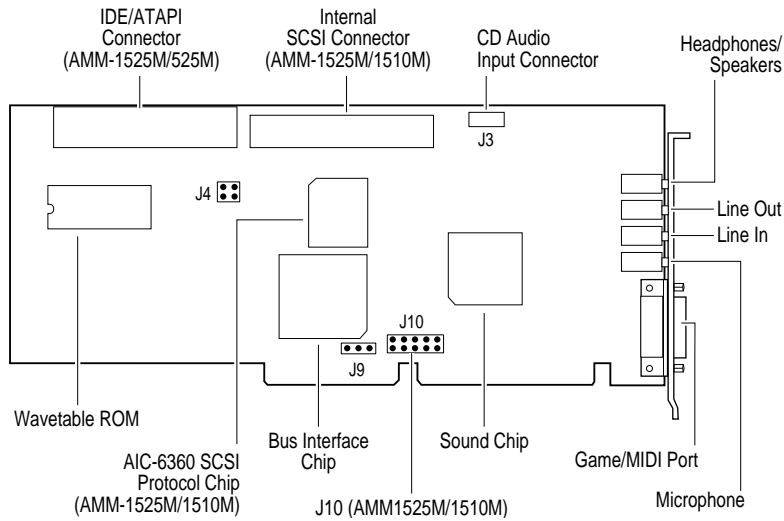


Figure 2-1. AMM-1525M/1510M/525M Layout

Default Settings

Your host adapter is already configured for the majority of computers. The table below lists the default settings.

Description	Default Setting	Configured By
AMM-1525M/1510M/525M:		
Sound Chip Base Address	220h	J9
AMM-1525M/525M:		
IDE Port Address	Secondary (170h - 177h)	J4
IDE Port Enable	Enabled	J4
AMM-1525M/1510M:		
Interrupt Channel (IRQ)	11	J10
I/O Port Address	340h - 35Eh	J10
Host Adapter Termination	Enabled ¹	-
Host Adapter SCSI ID	7	<i>aspi2dos.sys</i> ²

¹ Host adapter termination is always enabled and cannot be changed.

² Setting configured through the *aspi2dos.sys* command line; see *The aspi2dos.sys ASPI Manager* in your *Adaptec EZ-SCSI User's Guide*.



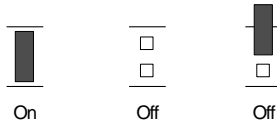
Note: Always refer to the documentation provided with your system for instructions on adding and configuring adapter boards.

Setting Jumpers

In most cases, you do not need to change any of the default jumper settings; however, if you need to change any of them, do it before installing your host adapter.

Installing and Removing Jumper Connectors

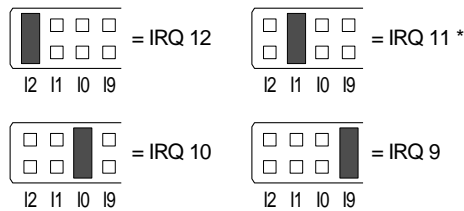
Configuring a jumper setting on the AMM-1525M/1510M/525M involves installing or removing a small plastic jumper connector on the pins of the jumper blocks. Installing a jumper (On) means to install a small plastic jumper connector so that it covers both pins of the jumper pin pair. Removing the jumper connector or having it cover only one pin is the same as having no jumper installed (Off).



Interrupt Channel (IRQ) (AMM-1525M/1510M Only)

Pin pairs I2, I1, I0, and I9 on jumper block J10 allow you to configure the IRQ for the host adapter.

Each AMM-1525M/1510M and expansion board installed in your computer must be assigned a unique IRQ. The available settings are



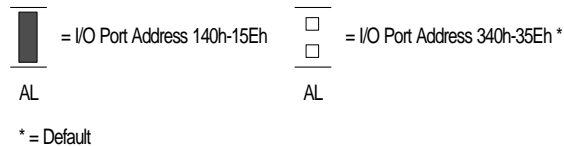
* = Default



Note: IRQ 9 is not recommended with Windows 3.x.

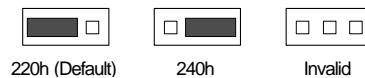
I/O Port Address (AMM-1525M/1510M Only)

Pin pair PRI on jumper block J10 configures the I/O port address range of the host adapter. Each AMM-1525M/1510M and expansion board installed in your system must be assigned a unique I/O Port Address range. The available settings are



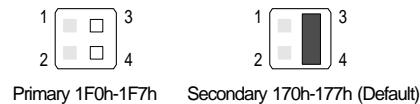
Sound Chip Base Address

Jumper block J9 configures the sound chip base address. The available settings are



IDE Port Address (AMM-1525M/525M Only)

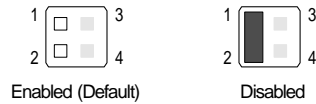
Pins 3 and 4 of jumper block J4 configures the IDE port address. The available settings are



A *primary* and *secondary* IDE port address is available for your AMM-1525M/525M. If you are using an existing IDE controller (the IDE controller may be on a separate option card or on the computer motherboard; see the computer documentation), and wish to also use the IDE controller on your AMM-1525M/525M, select the *secondary* IDE port address. If you are using only the IDE controller on your AMM-1525M/525M, select the *primary* IDE port address.

IDE Port Enable (AMM-1525M/525M Only)

Jumper block J4 enables or disables the IDE port address. The available settings are



If you are using the IDE controller on the host adapter, leave this setting enabled. If you are not using the IDE controller on the host adapter, disable this setting.

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-1525M/1510M/525M.



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-1525M/1510M/525M in your computer, follow these steps:

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

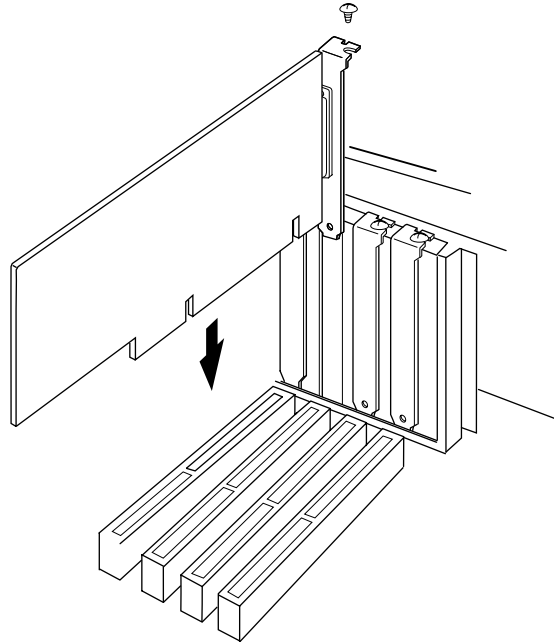


Figure 2-3. Installing the Host Adapter

Connecting SCSI Devices (AMM-1525M/1510M Only)

This section details connecting SCSI devices. For connecting IDE devices, see *Connecting IDE Devices (AMM-1525M/525M Only)* on page 2-16.

Always use high-quality SCSI cables to connect the host adapter to devices on the SCSI bus. Poor-quality cables can cause data corruption, parity errors, and other problems. High-quality cabling is especially critical if you use Fast SCSI data transfer rates.

Adaptec sells high-quality internal SCSI-2 cables. If your reseller does not stock these cables, call Adaptec directly at the number listed in the front of this document.

The AMM-1525M/1510M has a single SCSI connector for connecting up to seven internal SCSI devices.



Caution: Only *single-ended* internal SCSI devices are supported by the AMM-1525M/1510M. *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 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 included in your kit has connectors at each end and an additional connector 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.

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.



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

To connect internal SCSI devices, follow these steps:

- 1 Connect the connector at 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, a delta symbol (▲), or a "1" on the connector.

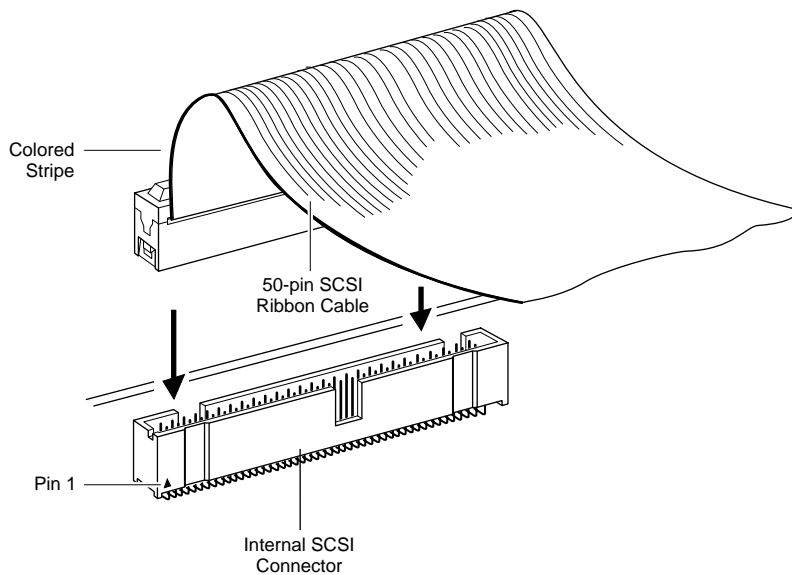


Figure 2-4. 50-pin SCSI Ribbon Cable to Host Adapter

- 2 Connect the connector at the other end of the 50-pin SCSI ribbon cable to the SCSI connector on the internal SCSI device.

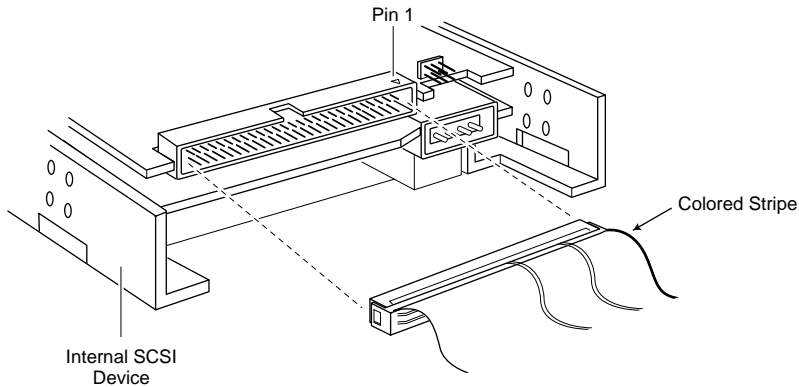


Figure 2-5. 50-pin SCSI Ribbon Cable to Internal SCSI Device

- 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.

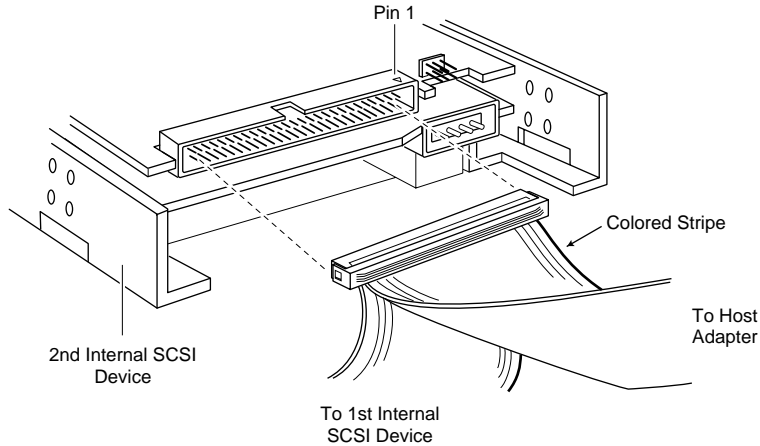


Figure 2-6. Connecting a Second Internal SCSI Device

Terminating the SCSI Bus

To reduce signal reflections on the SCSI bus, the first and last physical SCSI devices (including the host adapter) 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.

- 1 Identify which two SCSI devices form the physical endpoints of your SCSI bus, then terminate these devices.
- 2 Remove or disable termination on all other SCSI devices installed between the ends of the SCSI bus.
 - Some SCSI devices use a jumper or a switch located close to their SCSI connector(s) to control termination. On other SCSI devices, you must physically remove or install terminator resistor module(s). Refer to the device's documentation to determine how to enable or disable termination on your particular SCSI device.
 - Since only internal SCSI devices can be connected, the AMM-1525M/1510M is always situated at the end of the SCSI bus; SCSI termination on the adapter is always enabled and cannot be changed.

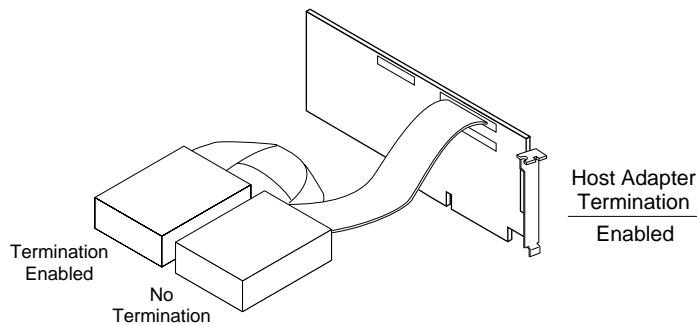


Figure 2-7. Termination With Internal Devices Only

Setting SCSI IDs

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 SCSI IDs, 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 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.

Changing the SCSI ID setting for the host adapter is software selectable only and is done through the *aspi2dos.sys* command line. See *The aspi2dos.sys ASPI Manager* in your *EZ-SCSI User's Guide* for instructions.

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 on other SCSI devices.

Connecting IDE Devices (AMM-1525M/525M Only)

IDE devices (standard IDE hard disk drives and/or ATAPI CD-ROM drives) are connected to the host adapter by a 40-pin IDE ribbon cable with a 40-pin header connector. The host adapter has a single IDE connector for cabling up to two IDE devices. See Chapter 3, *IDE Configuration* for configuring IDE devices.

The 40-pin IDE ribbon cable included in your kit has connectors at each end. One end of the cable is attached to the 40-pin IDE connector on the host adapter, and the other end is attached to an IDE device.

To connect a second IDE device, obtain a 40-pin IDE ribbon cable with a middle connector.



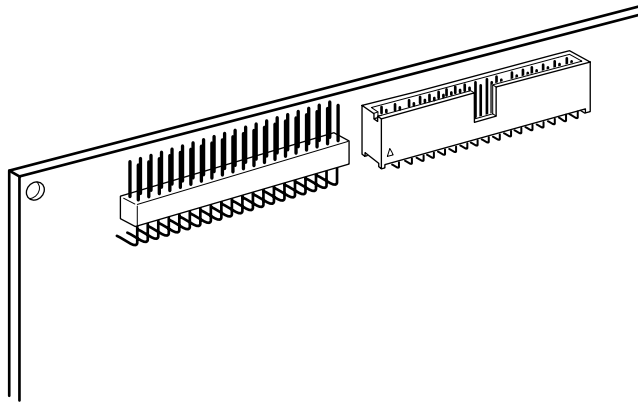
Note: If you are using the AMM-1525M/525M as the only IDE controller in your computer, you must disable any existing IDE controller in the computer; see your computer's documentation.

To connect IDE devices to the AMM-1525M/525M, follow these steps:

- 1 Set the first IDE device as the master device and the second (if any) as the slave device. See your IDE device documentation for details.
- 2 Attach the connector at one end of the 40-pin IDE ribbon cable to the AMM-1525M/525M IDE connector. Make sure to align pin 1 of the cable with pin 1 of the connectors on the host adapter and IDE device.



Note: On IDE ribbon cables, pin 1 is usually marked with a contrasting color on one edge of the cable; a small arrow, a delta symbol (Δ), or a "1" usually marks pin 1 on the IDE connector.



- 3 Attach the connector at the other end of the cable to the connector on the first IDE device; maintain pin-1 orientation.

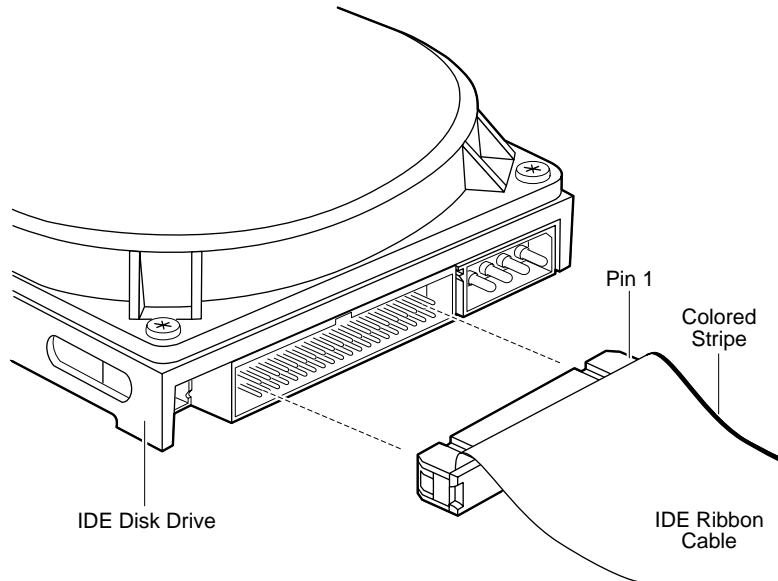


Figure 2-9. Connecting the IDE Ribbon Cable to the First IDE Drive

- 4 To connect a second IDE device, plug the middle connector of the cable to the connector on the second IDE device; maintain pin-1 orientation.

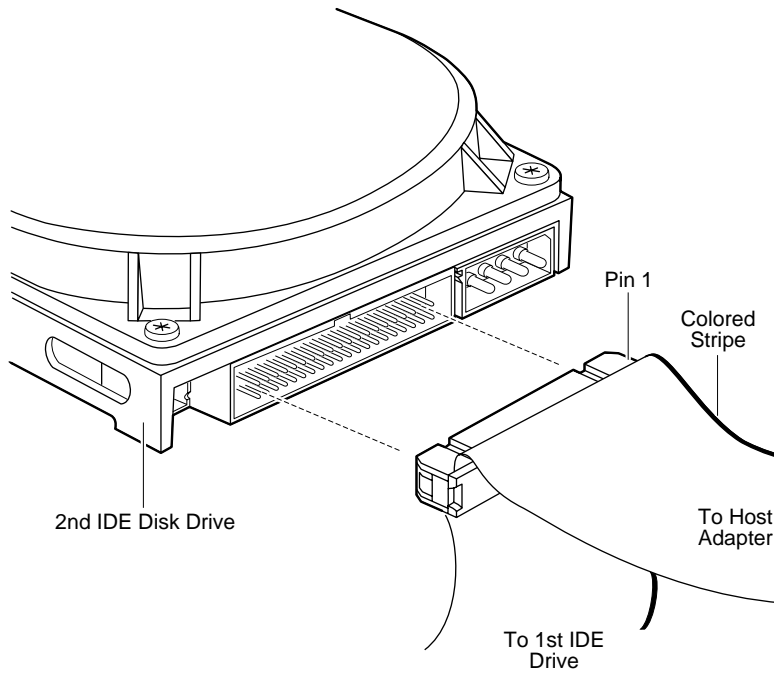


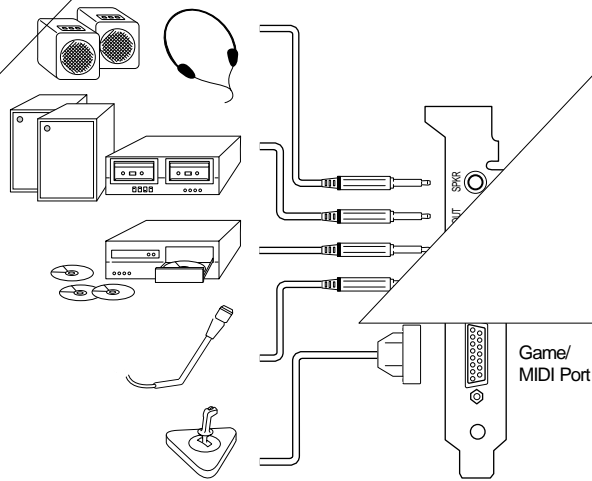
Figure 2-10. Connecting a Second IDE Drive

AMM-1525M/1510M/525M

Connectir

You can c
1510M
spe

jacks on the AMM-1525M/1510M/525M
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-1525M/1510M/525M.



Audio Input/Output Jacks

Speaker (SPKR) Jack

The SPKR jack allows you to connect headphones or external speakers (powered or nonpowered speakers).

Line-out (OUT) Jack

The OUT jack allows you to connect audio equipment for audio output from the AMM-1525M/1510M/525M. Typical equipment includes stereo receivers, amplifiers, amplified speaker systems, and

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tape decks. Use an RCA-to-stereo miniphone cable to plug your equipment into the OUT jack.

Line-in (IN) Jack

The IN jack allows you to connect audio equipment for audio input to the AMM-1525M/1510M/525M. 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.

Microphone (MIC) Jack

The MIC jack allows you to connect any standard microphone with a miniphone plug.

Game/MIDI Port

The Game/MIDI port on the AMM-1525M/1510M/525M is identical to that on a standard PC game control adapter or game port.

The Game/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-1525M/1510M/525M for MIDI recording, you must first obtain a MIDI adapter and MIDI software from your local dealer. The MIDI adapter plugs into the Game/MIDI port. Typically the MIDI adapter also includes a separate joystick port that allows you to have both MIDI and game capabilities at the same time. For more information on MIDI recording, refer to the documentation that accompanies your MIDI adapter and software.

Using Audio with Internal CD-ROM Drives

To use the audio capabilities of an internal CD-ROM drive with your AMM-1525M/1510M/525M, a separate audio cable must be purchased to connect the line-level output (Audio Out) connector on the drive to the CD Audio input connector (J3) on the AMM-1525M/1510M/525M.

The CD Audio input connector is Creative Labs[®] Sound Blaster[®] compatible. See your dealer or call TTS MultiMedia Systems at (800) 887-4968 for the appropriate cable. Most dealers supply cables that have a Sound Blaster compatible connector at one end; simply match the other end with your CD-ROM drive. To establish the audio connection follow these steps:

- 1 Connect the Sound Blaster compatible connector on the cable to the CD Audio input connector on the AMM-1525M/1510M/525M.
- 2 Connect the CD-ROM connector (that is compatible with your CD-ROM manufacturer) on the cable to the line-level output connector on the CD-ROM drive.

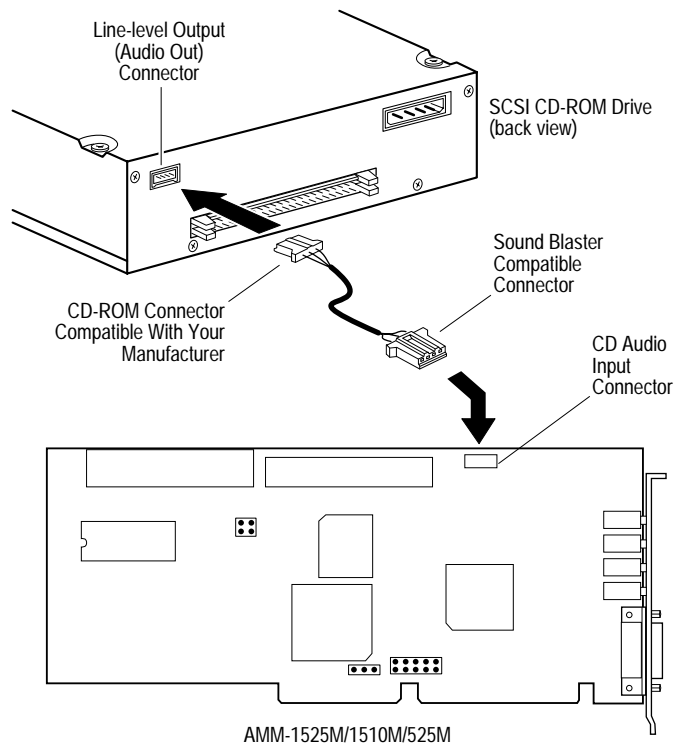


Figure 2-12. Connecting the CD-ROM Audio Cable

To have a customized cable made, pinouts for connector J3 on the AMM-1525M/1510M/525M are as follows:

Pin	Signal Name
1	Ground
2	Right
3	Ground
4	Left

Using Audio with External CD-ROM Drives

To use the audio capabilities of an external CD-ROM drive with your AMM-1525M/1510M/525M, use the appropriate cable recommended by your drive manufacturer and connect it to the line-in (IN) jack located on the bracket of your AMM-1525M/1510M/525M.



Note: *Do not* connect an external cable from the CD-ROM headphone jack located on the front panel of the CD-ROM drive to the line-in (IN) connector on the AMM-1525M/1510M/525M; this will result in poor quality audio output.

Adaptec DeMucker

Adaptec DeMucker software helps to avoid conflicts that may occur with your Adaptec host adapter. The DeMucker identifies lines in your system configuration files for sound cards currently and previously installed in your computer. Once identified, references to these lines can easily be commented out from your system configuration files so that they will not conflict with the operation of your host adapter.

Adaptec EZ-SCSI

Adaptec EZ-SCSI software makes SCSI driver installation a simple task. Adaptec EZ-SCSI is a menu-driven software package that installs SCSI device drivers and other programs to provide SCSI capabilities for your Adaptec host adapter. Refer to the *EZ-SCSI User's Guide* for more information.

Install ATAPI CD-ROM Driver

The Install ATAPI CD-ROM Driver option allows you to install either the Adaptec ATAPI CD-ROM device driver (*adatapi.sys*) or a third party ATAPI CD-ROM device driver. To install a third party driver, you will need the disk that came with your CD-ROM drive.

Adaptec EZ-Audio

Adaptec EZ-Audio software upgrades your host adapter to have both Windows and DOS audio capabilities; it automatically installs and configures the audio drivers needed to provide special sound effects, music, and MIDI instrument support. Support for a standard joystick can also be enabled for Windows and DOS game programs.

Microsoft Windows Sound System

Microsoft Windows Sound System (WSS) is a business and entertainment program that works with the AMM-1525M/1510M/525M. It features Object Linking and Embedding (OLE) that allows you to incorporate sound objects in presentation documents. CD quality audio can be played back and controlled and an unlimited number of voice commands can be programmed to control your computer.





3

IDE Configuration

About This Chapter

Read this chapter to find out

- How to configure your IDE devices with your host adapter
- How to configure your computer's CMOS setup to recognize standard IDE hard disk drives

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▼▼▼▼ 3

IDE Overview

IDE is an interface scheme used to transport data in most computers. It has different specifications and requirements than SCSI. Keep these points in mind when you install and configure IDE devices in your computer:

- For each IDE hard disk drive installed in your computer, drive type and parameters must be specified in the computer's CMOS setup. ATAPI CD-ROM drives are not specified in the computer's CMOS setup.
- If your computer has only IDE hard disk drives, or both IDE drives and SCSI drives, it always boots from the IDE drive designated as drive C.
- IDE hard disk drives larger than 528 MBytes may require a disk partitioning utility for use under DOS. The utility is usually available from the drive manufacturer or the dealer.
- If your computer has an ATAPI CD-ROM drive, be sure the ATAPI CD-ROM driver (*adapapi.sys*) is installed by running the Adaptec Installation Manager.

Multiple IDE Controllers

Up to four IDE devices can be installed in your computer by utilizing two IDE controllers. Keep these points in mind when installing two IDE controllers:

- One IDE controller must be designated as the *primary* and the other as the *secondary*. Typically, most IDE controllers can be designated as the *primary* only; however, the AMM-1525M/525M can be designated as either the *primary* or *secondary*. See *IDE Port Address (AMM-1525M/525M Only)* on page 2-7.
- Typically, the CMOS setup of most computers can configure only two IDE hard disk drives connected to the *primary*; however, some of the newer computers can configure up to four IDE hard disk drives connected to both the *primary* and *secondary*. See your computer's documentation.

- For each IDE controller, the first IDE device must be configured as the master device, and the second (if any) as the slave device. See your IDE device documentation for details.

Configuring the Computer's CMOS Setup

Use the computer's CMOS setup to recognize each IDE hard disk drive installed:

- 1 Enter the CMOS setup for your computer. See your computer documentation for details.
- 2 Specify drive type information (cylinders, heads, etc.) as required for your computer. See your computer and IDE drive documentation for details.



Note: When installing or removing IDE hard disk drives, be sure to run the CMOS setup to update your configuration.



▼▼▼▼ **A** Troubleshooting

About This Appendix

Read this appendix 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

▼▼▼▼ A

SCSI Problems and Solutions

The AMM-1525M/1510M 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 sections 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.

Troubleshooting Checklist

If problems occur, check these items first:

- Be sure all cables are properly connected. Check both power and SCSI interface cables. See *Connecting SCSI Devices (AMM-1525M/1510M Only)* on page 2-10.

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. See *Installing the Host Adapter* on page 2-8.
- Check SCSI bus termination. The devices at the ends of the bus must be terminated. See *Terminating the SCSI Bus* on page 2-14.
- Be sure the SCSI devices and host adapter are each set to a unique SCSI ID (0-7). See *Setting SCSI IDs* on page 2-15.
- If you have installed more than one host adapter make sure that each is set to a separate I/O port address and IRQ channel. See *Setting Jumpers* on page 2-6.

- Be sure that SCSI parity is consistently enabled or disabled on all devices on the SCSI bus. See *The aspi2dos.sys ASPI Manager* in your *Adaptec EZ-SCSI User's Guide* for information on setting SCSI parity on the host adapter.

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

Operating Problems

The system will not boot after initial installation of your host adapter.

- If both SCSI and non-SCSI hard disk drives are installed, then the non-SCSI drive is always the boot device. Since the AMM-1525M/1510M does not support booting from a SCSI drive, you must always have a bootable IDE drive or bootable SCSI subsystem installed in your computer.
- If both the host adapter and SCSI drive LED always remain on, then 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 2-11.
- If you see the message Host Adapter Not Found At Port 340h, check the I/O port address jumper setting. See *I/O Port Address (AMM-1525M/1510M Only)* on page 2-7.

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

- Make sure the SCSI drive (*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.
- If your system is running under DOS, make sure the disk has an active DOS partition.

I installed my host adapter at IRQ 12, and it does not work properly. What is wrong?

Another device such as a mouse may be using IRQ 12. Change adapter's IRQ to the default value (IRQ 11) or to another value that is not being used by another board in the computer. See *Interrupt Channel (IRQ) (AMM-1525M/1510M Only)* on page 2-6.

One of the SCSI devices on my system does not allow termination to be disabled. How can I attach it to the SCSI bus?

Attach this device at the end of the SCSI bus so you do not need to disable termination on it. If this is not possible, contact the device's manufacturer about possible work-arounds.

aspi2dos.sys Error Messages

This section lists error messages associated with the *aspi2dos.sys* ASPI manager. For more information, see *The aspi2dos.sys ASPI Manager* in your *Adaptec EZ-SCSI User's Guide*.

Failed to initialize Host Adapter at I/O Port xxxh

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

This section lists error messages associated with the *aspidisk.sys* device driver. For more information, see *The aspidisk Device Driver* in your *Adaptec EZ-SCSI User's Guide*.

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.

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. Make sure the correct path is specified in the *config.sys* file. For example, if the drivers are located in a subdirectory called *c:\scsi*, then you need the following line in your *config.sys* file:

```
device=c:\scsi\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. Reinstall Adaptec EZ-SCSI. Check cables and jumpers. Check for I/O port address and IRQ channel conflicts.

Failed scanning for SCSI devices.

The driver failed when scanning the SCSI bus for SCSI devices. Be sure that the SCSI device's jumpers for SCSI ID 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.

IDE Problems and Solutions

I connected two IDE drives to the AMM-1525M/525M and the system only sees one.

The first IDE drive must be set up as the master drive and the second (if any) as the slave drive. The master drive must be assigned drive *C* in the CMOS setup. See your drive's documentation.

Some IDE drives may not be compatible with each other in a specific configuration. If you install and configure your computer according to *Connecting IDE Devices (AMM-1525M/525M Only)* on page 2-16 and Chapter 3, *IDE Configuration*, and you still cannot access the IDE drives, try the following options:

- Change the master IDE drive to the slave, and the slave IDE drive to the master. See your drive's and computer's documentation for details. Be sure to correctly configure the drives in your computer's CMOS setup.
- If the previous step did not work, disconnect one drive at a time from the IDE ribbon cable. When either drive works correctly by itself, this probably indicates that the drives are incompatible with each other. Contact the drive manufacturer for more information.

Audio Problems and Solutions

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-1525M/1510M/525M, 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 (J3) on the host adapter. Refer to *Using Audio with Internal CD-ROM Drives* on page 2-21.



▼▼▼▼ Glossary

A

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-1525M/1510M/525M

The Adaptec SCSI Audio Host Adapters and Sound Cards.

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

B

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.

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.

C

CD-ROM

Compact Disc Read Only Memory. A high-capacity disc medium for storing data files and software programs. Like the audio CDs used in consumer CD players, the data on CD-ROM discs cannot be changed once it

is encoded. A single CD-ROM can hold 600 MBytes or more of data.

CD-ROM Drive

A disk device used to retrieve data and software programs from CD-ROMs (compact discs) for use on computer systems. Some CD-ROM drives are installed internally in the computer case, others are used as external devices. Most CD-ROM drives can also play audio CDs.

Central Processing Unit

See CPU

CPU

Central Processing Unit. The microprocessor chip that provides the actual computational power of a computer. The 386 and 486 are widely used types of CPUs.

D

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

E

EEPROM

Electrically-Erasable Programmable 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.

External SCSI Device

A SCSI device such as a hard disk drive or tape drive installed outside the computer case. External SCSI devices are connected to the SCSI bus with round cables that have layered twisted pair assemblies with electrical shielding.

EZ-Audio

See Adaptec EZ-Audio

EZ-SCSI

See Adaptec EZ-SCSI

F

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.

G

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.)

H

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.

I

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.

Internal SCSI Device

A SCSI device such as a hard disk drive or a CD-ROM drive installed inside a computer case. Internal SCSI devices are connected to the SCSI bus with a flat ribbon cable.

Interrupt Request Channel

See IRQ

IRQ

Interrupt Request Channel. An electrical channel through which a hardware device can send a message to get the immediate attention of the computer's CPU.

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.

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

L
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

M
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-1525M/1510M/525M and all other Adaptec host adapters fully support multithreaded I/O.

P

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-1525M/1510M/525M uses this method of data transfer.

R

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.

S

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.

SCSI

Small Computer Systems Interface. A bus interface standard that defines physical and electri-

cal characteristics for hardware devices. SCSI provides a standard interface that enables many different kinds of devices, such as disk drives, magnet-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-1525M/1510M. Differential devices may be damaged if you connect them and the AMM-1525M/1510M 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.

T

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.

W

Word

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

Z

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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