

# PREFACE

Thank you for purchasing the 486MIS system board. This document gives an aid to the configuration and installation of this system board.

The information in this document is subject to change without notice.

This document contains information protected by copyright. All rights are reserved. No part of this document may be used or reproduced in any forms or by any means, or stored in a database or retrieval system, without prior written permission.

## TRADEMARKS

Intel is a registered trademark of Intel Corporation.

IBM is a registered trademark of International Business Machines Corporation.

Microsoft is a registered trademark of Microsoft Corporation.

VESA is a registered trademark of Video Electronics Standard Association.

All other trademarks used in this manual are the property of their respective owners.

# TABLE OF CONTENTS

CHAPTER 1: INTRODUCTION	4
CHAPTER 2: JUMPERS & CONNECTORS	6
SYSTEM BOARD JUMPERS	6
CPU External Clock Jumpers	8
CPU Type Jumpers	8
Cache Size Jumpers	9
VESA Local Bus Jumper	9
Clear Password Jumper	10
Display Type Jumper	10
FLASH BIOS Jumper	11
SCSI Port Jumper Block W1	11
IDE Port Jumpers	12
Parallel Port Jumper	12
SYSTEM BOARD CONNECTORS	13
Power Supply Connectors	13
Keyboard Connector	14
Power LED and Keyboard Lock Connector	14
Speaker Connector	15
Reset Connector	15
Turbo Switch Connector	16
Turbo LED Connector	16
Parallel Port Connector	17
Serial Port 1 & 2 Connectors	17
Floppy Interface Connector	18
IDE Interface Connector	19
Harddisk Activity LED Connector	19
SCSI Interface Connector	20
CHAPTER 3: HARDWARE INSTALLATION	21
THE DRAM SIMMs	21
Installing DRAM SIMMs	22
INSTALLING A VL-BUS CARD	23
EQUIPMENT REQUIRED	24
SCSI / IDE SETUP	25
SCSI ID Setup	25
SCSI Device Termination	25
SCSI Default Setting	25
SCSI/IDE Dual Operation	25
CHAPTER 4: BIOS SETUP	27
ENTERING SETUP	27
STANDARD CMOS SETUP	29
ADVANCED CMOS SETUP	30
AUTO CONFIGURATION - BIOS DEFAULTS	33
AUTO CONFIGURATION - POWER-ON DEFAULTS	33
CHANGE PASSWORD	34

AUTO DETECT HARD DISK	35
HARD DISK UTILITY	35
WRITE TO CMOS AND EXIT	35
DO NOT WRITE TO CMOS AND EXIT	35
CHAPTER 5: DOS/WINDOWS DRIVERS	36
DOS/WINDOWS DRIVERS QUICK INSTALLATION	36
ASPI2DOS ASPI MANAGER	37
aspi2dos Command Line Options	37
DOS/WINDOWS DRIVERS FORMATTING UTILITIES	41
Low-Level Formatting with scsifmt	41
Partitioning & High-Level Formatting with afdisk	42
Viewing Device Information with showscsi	44
Playing Audio CDs with cdplayer	46
CHAPTER 6: OS/2 v2.1 DRIVERS	49
INSTALLATION	49
COMMAND LINE USAGE	50
CHAPTER 7: NOVELL NETWARE 3.1X, 4.0X	51
INSTALLATION	51
APPENDIX A: KEYBOARD SPEED SWITCH	54
APPENDIX B: AMI BIOS HARD DISK TYPE	55
APPENDIX C: MEMORY MAPPING	56
APPENDIX D: AT I/O ADDRESS MAP	57
APPENDIX E: INTERRUPT ASSIGNMENTS	59
APPENDIX F: SPECIFICATION	60

---

# CHAPTER 1: INTRODUCTION

---

The 486MIS system board adds to our 486 product line high integration and cost effective solution without compromising performance and quality. With top speed at 50MHz and integrated 64K/128K/256K Write-Back cache, the 486MIS dramatically boosts system throughput for even the most demanding applications. The 486MIS offers features and functionality exceeding any other system board in its class, including:

## **CPU:**

- Intel i486DX, i486DX2, i486SX, i487SX, P24T, and Overdrives.

## **Cache Memory:**

- Supports 64K/128K/256K/512K cache memory.

## **Main Memory:**

- Supports 512Kx36, 1Mx36, 2Mx36, 4Mx36, and 8Mx36 72-pin SIMM modules.
- Up to 64 MBytes on-board memory.

## **Slots:**

- Two 32-bit VESA Local Bus (VL-Bus) slots.
- Six 16-bit ISA bus slots.

## **On-Board Battery:**

- Use Dallas compatible DS1287 Real-Time-Clock and Battery with over 10 years of operation in the absence of power.

## **SCSI Port:**

- 32-bit VL-Bus interface with 128-byte data buffer to increase performance.
- Compatible with Adaptec 1510/1520/1522 SCSI-2 adapters.

- Supports Processor Programmed I/O.
- Multitasking ASPI manager for DOS.
- On-board BIOS supports boot capability, and up to two hard disk drives under DOS without a software driver.
- Supports wide range of both synchronous and asynchronous devices: disk, Tape, CD-ROM, WORM, DAT, and other SCSI peripherals.

### **IDE Port:**

- Turbo/Normal selections for fast or slow IDE hard drives.
- Plug and play, replaces any non-intelligent IDE controller without reformatting the disk drives.
- Software drivers are not required for all operating systems.

### **Floppy Disk Controller:**

- Fully IBM register set compatible.
- Supports up to two 3.5-inch or 5.25-inch floppy disk drives.
- Supports 360KB / 720KB / 1.2MB / 1.44MB densities.
- Floppy Disk Controller can be disabled.

### **Peripherals:**

- Supports two Serial ports and one Parallel port.

# CHAPTER 2: JUMPERS & CONNECTORS

---



**When working with the 486MIS, it is extremely important that you avoid static electricity. Always ground yourself by wearing a wrist or ankle strap.**

Figures 1 on the next page shows the component layout of the 486MIS system board with locations of the system board jumpers and connectors. Note that most jumpers and connectors on the system board are labeled with proper names with pin 1 marked as '1'. To avoid damaging the board and to have proper operation caution should be taken when connecting these components.

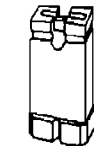
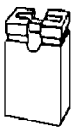
## SYSTEM BOARD JUMPERS

Jumpers are used to select between various operating modes. A jumper switch consists of two, three, or four gold pins projecting from the system board. Placing the plastic jumper cap over two pins connects those pins and makes a particular selection. Using the cap to cover two pins in this way is referred to as shorting those pins. If the cap is not placed on any pins at all, this is referred to as leaving the pins open.

**Note:** When you open a jumper, leave the plastic jumper cap attached to one of the pins so you don't lose it.

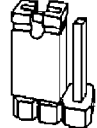


**OPEN**



**SHORTED**

**2-pin jumper**



**PINS 1-2  
SHORTED**

**3-pin jumper**

FIGURE

## CPU External Clock Jumpers

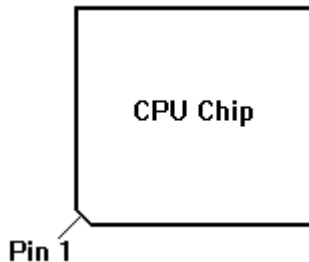
If you are installing an i486DX, or i486SX the internal CPU clock speed is the same as the external CPU clock speed. This is different for i486DX2 CPU where the external speed is one-half of the internal speed. For example, a 486DX2-66 has an external clock speed of 33MHz.

<b>CPU External Clock Speed</b>	<b>JP3</b>	<b>JP4</b>	<b>JP5</b>	<b>ID3</b>
20MHz	OPEN	SHORT	SHORT	1-2
25MHz	SHORT	OPEN	SHORT	1-2
33MHz	SHORT	SHORT	OPEN	1-2
40MHz	OPEN	OPEN	SHORT	2-3
50MHz	OPEN	SHORT	OPEN	2-3

## CPU Type Jumpers

<b>CPU Type</b>	<b>JP1</b>	<b>JP2</b>	<b>JP18</b>
486DX, 486DX2	1-2	1-2, 3-4	1-2
487SX, ODP486SX	2-3	1-2, 3-4	1-2
486SX	OPEN	2-3	1-2
Cyrix 486DLC	OPEN	2-3	2-3

Care should be taken when installing the CPU into the Pin Grid Array (PGA) socket on the system board. Make certain that pin 1 of the CPU chip is correctly aligned with pin 1 of CPU socket. The location of pin 1 on the CPU is denoted by a small notch.





## Cache Size Jumpers

The system board supports 64KB/ 128KB/ 256KB/ 512KB of cache memory.

### Cache Size Jumper Selection

Cache Size	JP7	JP8	JP9	JP10	JP11	JP12	JP13	JP14	JP15
64KB	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	<b>2-3</b>
128KB	1-2	1-2	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	1-2	1-2	1-2	1-2
256KB	<b>2-3</b>	1-2	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	1-2	<b>2-3</b>
512KB	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	<b>2-3</b>	1-2	<b>2-3</b>	<b>2-3</b>	1-2

### Cache Size and SRAM Locations

Cache Size	Tag RAM U15	Data Bank 0 U20,U21, U22,U23	Data Bank 1 U24, U25, U26, U27
64KB	8Kx8	8Kx8	8Kx8
128KB	32Kx8	32Kx8	None
256KB	32Kx8	32Kx8	32Kx8
512KB	32Kx8	128Kx8	None

## VESA Local Bus Jumper

Jumper ID2 allows any VL-Bus adapter to identify the speed of the system board.

High Speed Write	ID2
System board runs zero wait state write transfer. Some VL-Bus adapters may not be able to run this mode.	1-2
System board runs one wait state write transfer. All VL-Bus adapters can operate in this mode.	2-3 (Default)

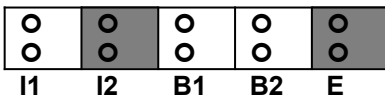
## Clear Password Jumper

Jumper JP32 is used to clear the system password if user were to forget it.

Function	JP32
Normal Password Operation	OPEN (Default)
BIOS performs infinite loop test and clears system password	SHORT

Follow these steps to clear system password:

1. Turn power OFF.
2. Open the system cover and gain access to jumper JP32 and W1.
3. Short jumper JP32 and disable SCSI BIOS through jumper block W1 as shown below:



4. Turn power ON.
5. Wait for the system to finish one self-test loop, then turn power OFF again.
6. Open jumper JP32 and re-enable SCSI BIOS through W1.
7. Replace and secure the system cover.
8. Turn power ON, password data should be cleared.

## Display Type Jumper

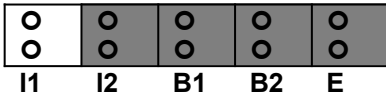
Display Type	JP16
Video display is VGA, EGA, or Monochrome.	OPEN (Default)
Video display is CGA.	SHORT

## FLASH BIOS Jumper

FLASH BIOS Control	JP28
Disable FLASH (optional) programming. This is normal operation.	1-2 (Default)
Enable FLASH BIOS programming. Contents of system board BIOS can be re-programmed.	2-3

### SCSI Port Jumper Block W1

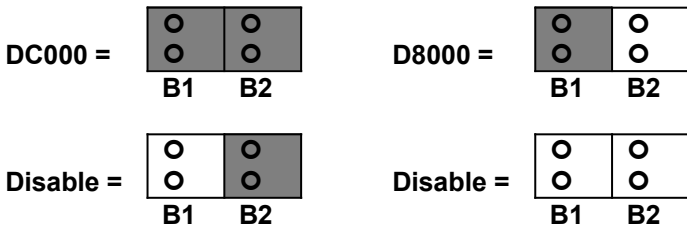
Default setting of jumper block W1 is shown below with shading areas represent jumper caps:



**I1, I2:** Use these two pin pairs to select interrupt channel. To boot from DOS, IRQ11 must be selected.



**B1, B2:** Use these two pin pairs to select SCSI BIOS segment location. Recommended default address is DC000.



**E:** Use this pin pairs to disable or enable SCSI port.



## **IDE Port Jumpers**

<b>IDE Enable/Disable</b>	<b>JP17</b>
Enable on-board VL-Bus IDE port.	OPEN (Default)
Disable on-board VL-Bus IDE port.	SHORT

<b>IDE Recovery Time</b>	<b>JP29</b>	<b>JP30</b>
300-nanosecond (Default)	SHORT	SHORT (Default)
240-nanosecond	OPEN	SHORT
180-nanosecond	SHORT	OPEN
120-nanosecond	OPEN	OPEN

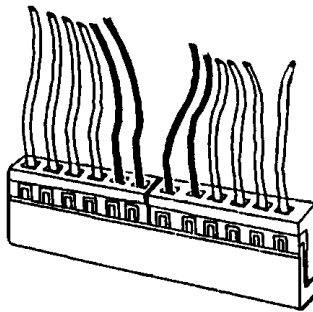
## **Parallel Port Jumper**

<b>Parallel Port</b>	<b>JP22</b>
Select interrupt line IRQ7 for Parallel port.	1-2 (Default)
Select interrupt line IRQ5 for Parallel port.	2-3

# SYSTEM BOARD CONNECTORS

## Power Supply Connectors

The two Power Supply connectors are 6-pin AT standard power connectors. Most power supplies have two six-wire connectors, two of the wires on each connector are black. Align the two six-wire connectors so that the two black wires on each connector are in the middle as shown below.



Pin	Connector PS2	Connector PS1
1	Power Good	Ground
2	+5 VDC	Ground
3	+12 VDC	-5 VDC
4	-12 VDC	+5 VDC
5	Ground	+5 VDC
6	Ground	+5 VDC

## **Keyboard Connector**

The keyboard connector is a 5-pin, circular-type DIN socket. It is used to connect the system board keyboard interface to any standard AT-compatible keyboard (84 or 101 -key type keyboards). The pin assignments are listed below:

<b>Pin</b>	<b>Description</b>
1	Keyboard Clock Signal
2	Keyboard Data Signal
3	Not Used
4	Ground
5	+5V Fused VDC

## **Power LED and Keyboard Lock Connector**

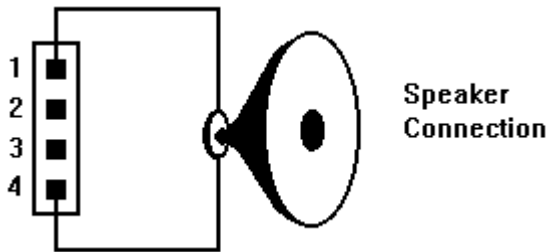
The Power LED and Keyboard Lock connector (KLOCK) is 5-pin keyed BERG strip. It is used to connect +5 VDC power to the power indicator LED at the front panel and connect security keyboard lock to the keyboard controller. This allows you to switch off the keyboard and so provide limited security against casual intruders. The pin assignments are indicated below:

<b>Pin</b>	<b>Description</b>
1	LED Power
2	Key (No Connection)
3	Ground
4	Keyboard Lock
5	Ground

## **Speaker Connector**

The Speaker connector (SPKR) is a 4-pin keyed BERG strip. It is used to connect an external 2-inch, 8-ohm speaker to the system board to provide sound capability. The pin assignments are defined below:

<b>Pin</b>	<b>Description</b>
1	Speaker Data Out
2	Key (No Connection)
3	Ground
4	+5 VDC



## **Reset Connector**

The system RESET connector (RESET) is a 2-pin BERG strip. It is used to connect the push button reset switch located on the front panel to the system board. System reset can be done by shorting pin 1 to pin 2 with the same effect as turning the power off and then on again.

<b>Pin</b>	<b>Description</b>
1	Reset Input
2	Ground

## **Turbo Switch Connector**

The Turbo switch (TURBO) is a 2-pin BERG strip. It is used to connect the front panel 2-position push switch to the system board speed switching circuitry. In Turbo speed, the cache memory is enabled and full speed of 32-bit memory transfer is utilized. In non-turbo speed, the cache memory is disabled. In both speeds, the ISA expansion bus timing compatibility is still preserved.

<b>Pin</b>	<b>Description</b>
1	Turbo Speed
2	Ground

Notes:

- System runs at Turbo speed when pins 1 and 2 are shorted.
- System runs at Slow speed when pins 1 and 2 are open.

## **Turbo LED Connector**

The Turbo LED connector, marked as 'TB/LED', is a 2-pin BERG strip. It is used to connect a CPU operating frequency indicator LED from the front panel to the system board. The pin assignments are indicated below:

<b>Pin</b>	<b>Description</b>
1	LED Cathode
2	LED Anode



## **Parallel Port Connector**

The on-board parallel port connector (PARALL) is a 2x13-pin male header connector. The pin assignment is shown below:

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
1	-STROBE	14	-AUTO FEED XT
2	Data Bit 0	15	-ERROR
3	Data Bit 1	16	-INIT
4	Data Bit 2	17	-SLCT IN
5	Data Bit 3	18	Ground
6	Data Bit 4	19	Ground
7	Data Bit 5	20	Ground
8	Data Bit 6	21	Ground
9	Data Bit 7	22	Ground
10	-ACK	23	Ground
11	-BUSY	24	Ground
12	PE	25	Ground
13	SLCT	26	No Connection

## **Serial Port 1 & 2 Connectors**

The serial port 1 and 2 connectors are the 2x5-pin male headers COM1 and COM2. Users should use a flex cable with a 9 or 25 -pin male D-subminiature receptacle at one end and a 2x5-pin female header at the other end to provide RS-232 serial interface. The pin assignment for COM1/COM2 is defined below:

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
1	Carrier Detect (RLSD)	6	Receive Data (RXD)
2	Transmit Data (TXD)	7	Data Terminal Ready (DTR)
3	Signal Ground	8	Data Set Ready (DSR)
4	Request To Send (RTS)	9	Clear To Send (CTS)
5	Ring Indicator (RI)	10	No Connection

## **Floppy Interface Connector**

The on-board Floppy Interface connector (FLOPPY) is a 2x17-pin male header. This interface supports two 5.25" or 3.5" floppy drives in any combination and also can be disabled if no floppy drives are present on the system.

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
2	RPM	1	Ground
4	No Connection	3	Ground
6	No Connection	5	Ground
8	Index	7	Ground
10	Motor 1	9	Ground
12	Drive 2	11	Ground
14	Drive 1	13	Ground
16	Motor 2	15	Ground
18	Direction	17	Ground
20	Step	19	Ground
22	Write Data	21	Ground
24	Write Enable	23	Ground
26	Track0	25	Ground
28	Write Protect	27	Ground
30	Read Data	29	Ground
32	Head Select	31	Ground
34	Disk Change	33	Ground

## **IDE Interface Connector**

The on-board IDE Interface connector (IDE) is a 2x20-pin male header. This interface supports up to two IDE hard disk drives on the system. This interface can also be disabled in the event that no hard drive is present or a separate hard drive controller is installed on the system.

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
2	Ground	1	IDE Reset/
4	Data 8	3	Data 7
6	Data 9	5	Data 6
8	Data 10	7	Data 5
10	Data 11	9	Data 4
12	Data 12	11	Data 3
14	Data 13	13	Data 2
16	Data 14	15	Data 1
18	Data 15	17	Data 0
20	No Connection	19	Ground
22	Ground	21	No Connection
24	Ground	23	I/O Write/
26	Ground	25	I/O Read/
28	ALE	27	No Connection
30	Ground	29	No Connection
32	IOCS16/	31	IDE IRQ 14
34	No Connection	33	Address A1
36	Address A2	35	Address A0
38	IDE Chip Select 1/	37	IDE Chip Select 0/
40	Ground	39	IDE Active/

## **Harddisk Activity LED Connector**

The hard disk activity LED connector (HDLED) is a 4-pin keyed BERG strip. It is used to connect to front panel hard disk LED.

<b>Pin</b>	<b>Description</b>
1	LED Anode (+)
2	LED Cathode (-)
3	LED Cathode (-)
4	LED Anode (+)

## **SCSI Interface Connector**

The on-board SCSI Interface connector (SCSI) is a 2x25-pin male header. This interface can be disabled in the event that no hard drive is present or a separate hard drive controller is installed on the system.

<b>Pin</b>	<b>Description</b>	<b>Pin</b>	<b>Description</b>
2	Data 0	1	Ground
4	Data 1	3	Ground
6	Data 2	5	Ground
8	Data 3	7	Ground
10	Data 4	9	Ground
12	Data 5	11	Ground
14	Data 6	13	Ground
16	Data 7	15	Ground
18	CDP#	17	Ground
20	Ground	19	Ground
22	Ground	21	Ground
24	Ground	23	Ground
26	SCSI Termination Current	25	No Connection
28	Ground	27	Ground
30	Ground	29	Ground
32	ATN#	31	Ground
34	Ground	33	Ground
36	BUSY#	35	Ground
38	ACK#	37	Ground
40	RST#	39	Ground
42	MSG#	41	Ground
44	SEL#	43	Ground
46	C/D#	45	Ground
48	REQ#	47	Ground
50	I/O#	49	No Connection

# CHAPTER 3: HARDWARE INSTALLATION

---

## THE DRAM SIMMs

The on-board DRAM memory subsystem has three module mounting sockets which are divided into "banks" of one socket each. They support 512Kx36, 1Mx36, 2Mx36, 4Mx36, and 8Mx36 DRAM SIMMs. These banks are labeled SIMM1, SIMM2, and SIMM3. DRAM speed must be 80ns, 70ns, or 60ns. You can configure the memory of the 486MIS in a variety of ways. The chart below shows the possible combinations.

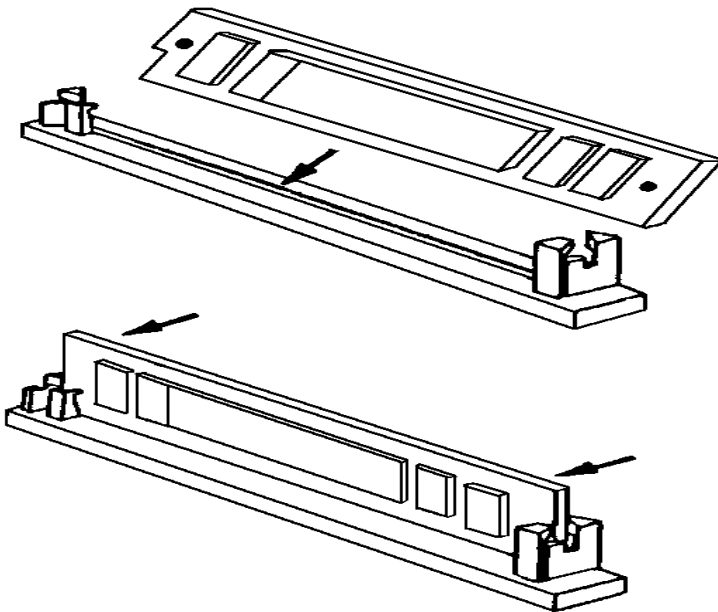
<b>Total Memory</b>	<b>SIMM1</b>	<b>SIMM2</b>	<b>SIMM3</b>
2MB	512Kx36	None	None
4MB	512Kx36	None	512Kx36
6MB	512Kx36	None	1Mx36
4MB	1Mx36	None	None
8MB	1Mx36	1Mx36	None
12MB	1Mx36	1Mx36	1Mx36
20MB	1Mx36	4Mx36	None
24MB	1Mx36	1Mx36	4Mx36
40MB	1Mx36	1Mx36	8Mx36
8MB	2Mx36	None	None
12MB	2Mx36	None	1Mx36
16MB	2Mx36	None	2Mx36
24MB	2Mx36	None	4Mx36
40MB	2Mx36	None	8Mx36
16MB	4Mx36	None	None
32MB	4Mx36	4Mx36	None
48MB	4Mx36	4Mx36	4Mx36
64MB	4Mx36	4Mx36	8Mx36
32MB	8Mx36	None	None
48MB	8Mx36	None	4Mx36
64MB	8Mx36	None	8Mx36

## Installing DRAM SIMMs



When working with DRAM SIMMs, it is extremely important that you avoid static electricity. Always ground yourself by wearing a wrist or ankle strap.

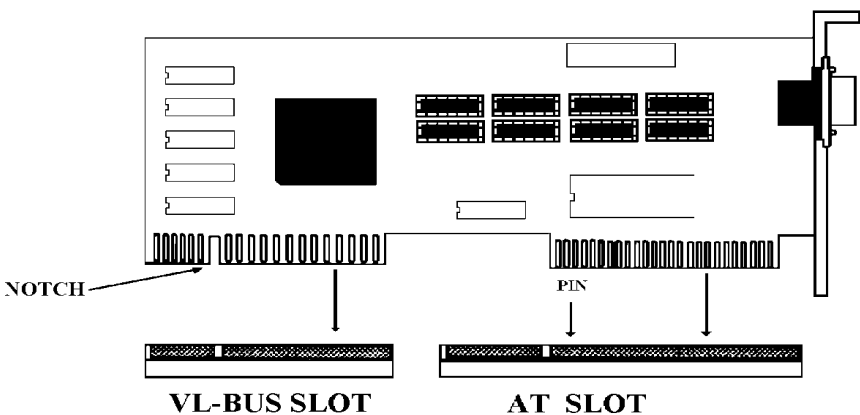
1. The SIMM module should face to the right with pin 72 next to the power supply connectors.
2. Insert the SIMM at a 45 degree angle, tilted towards ISA slots.
3. Gently push the SIMM to an upright position until it "snaps" into place.
4. Repeat above steps until the entire bank is filled.



## INSTALLING A VL-BUS CARD

Carefully follow these steps to install a VL-Bus card:

1. Turn off your computer and unplug the power cord.
2. Turn off the power to all peripheral devices, such as your printer.
3. Disconnect the cables from the back of the system in order to give more room to work. Note how all cables are connected prior to disconnection.
4. Remove the computer's cover.
5. Choose an unused VL-Bus slot.
6. Setting the VL-Bus card according to its user's manual.
7. Holding the card at the center of the top edge, gently push straight down with equal pressure at both ends.
8. Replace the screw to hold the card into place.
9. Replace and secure the system cover.
10. Reconnect all the wires and cables.



## EQUIPMENT REQUIRED

The dimension of the 486MIS system board is designed to fit perfectly in a PC/XT (or PC/AT) standard case. To build a complete high performance system based on the 486MIS system board, the following equipment are needed:

- A chassis with dimension similar to PC/XT/AT standard chassis.

- A standard AT 220W power supply which is capable to provide a continuous power within a +4.85 VDC to +5.25 VDC range. A power line filter may be needed for areas with noisy transmission.

- A 2-inch, 8-Ohm speaker to provide sound capability.

- A 2-position switch with a 2-pin connector for speed function.

- A push button switch with 2-pin connector for reset function.

- One floppy drive (360K or 1.2M or 1.44M).

- Hard disk drive.

- A video card (Monochrome, CGA, EGA, VGA).

- A set of flat cables for floppy drive and hard disk drive.

- An AT-compatible keyboard (84 or 101 Keyboard) with cable.

- A video display monitor.

Following additional equipment will be useful to enhance the system:

- A bus or serial mouse.

- A tape pack up drive.



# SCSI / IDE SETUP

## SCSI ID Setup

Each SCSI device must have its own unique SCSI ID. The SCSI IDE is a number between 0 and 7. Devices with higher ID numbers have a higher priority in communicating with the computer. The 486MIS SCSI port is given to the highest priority ID 7. Make sure that there is no duplication of the ID with the target devices.

## SCSI Device Termination

The SCSI bus must be terminated correctly to ensure proper operation. The first and last physical SCSI devices on the SCSI cable must have terminators installed. All other SCSI devices must have terminators removed. If the 486MIS SCSI port is not at either end of the SCSI bus, terminators RT1, RT2 and RT3 (located next to the SCSI connector) must be removed.

## SCSI Default Setting

The 486MIS SCSI port is shipped with the following factory default settings:

SCSI Disconnection	Enabled
SCSI Address	7
SCSI Parity	Enabled
Terminators	Installed
Terminator Power	Supplying
Synchronous Negotiation	Enabled
Interrupt Channel	11
Port Address	340H
ISA BIOS Address	DCOOOH, Enabled

## SCSI/IDE Dual Operation

The 486MIS supports up to two IDE and 7 SCSI devices. The IDE hard drives should always be installed as drive C: or drive D:. Below are some possibilities:

- **One IDE hard drive and no SCSI hard drive** - Install IDE hard drive as drive C:. During system BIOS Setup, enter IDE drive type for drive C:. Leave drive D: **"not installed"** and disable 486MIS SCSI BIOS through jumper block W1.

- **One IDE hard drive and one SCSI hard drive** - Install IDE hard drive as drive C:. During system BIOS Setup, enter IDE drive type for drive C:. Leave drive D: "**not installed**" so the 486MIS SCSI BIOS will install the SCSI drive as drive D:
- **Two IDE hard drive and one SCSI hard drive** - Install IDE hard drives as drive C: and drive D:. During system BIOS Setup, enter IDE drive types for drive C: and D:. Run the *Install* program (in the DOS/WINDOWS DRIVERS diskette).
- **Two SCSI hard drives and no IDE hard drive** - During system BIOS Setup, set hard disk drive types for C: and D: to "**not installed**". Enable the 486MIS SCSI BIOS through jumper block W1.

## CHAPTER 4: BIOS SETUP

---

You need to setup a system once every time:

- You start a new and unconfigured system.
- You receive a start-up error message indicating the configuration information stored in the non-volatile CMOS RAM has somehow become corrupted.
- You add, remove or change peripherals from your system.

The first time you power up the system, the configuration information stored in the battery-backed CMOS RAM may not be correct. The BIOS detects this condition and prompts user to go through the SETUP section. This chapter explains how to use the BIOS SETUP program and make the appropriate entries.



**Some of the parameters are already factory preset and do not need to be changed. Please read the instructions carefully and only change the settings if necessary.**

### ENTERING SETUP

1. Reset the system by turning it OFF then ON or pushing the "RESET" button on the system front panel.
2. Hit the <Del> key momentarily as soon as the following message appears:

**"Hit <DEL>, if you want to run SETUP"**

3. After you press the <Del> key, the following BIOS Setup screen appears:

AMI BIOS SETUP PROGRAM - BIOS SETUP UTILITIES  
(C) 1992 American Megatrends Inc., All Rights Reserved

STANDARD CMOS SETUP  
ADVANCED CMOS SETUP  
AUTO CONFIGURATION WITH BIOS DEFAULTS  
AUTO CONFIGURATION WITH POWER-ON DEFAULTS  
CHANGE PASSWORD  
AUTO DETECT HARD DISK  
HARD DISK UTILITY  
WRITE TO CMOS AND EXIT  
DO NOT WRITE TO CMOS AND EXIT

Standard CMOS Setup for Changing Time, Date, Hard Disk Type, etc.

| ESC: Exit   ↓→←=: Sel   F2/F3: Color   F10: Save & Exit   |

4. Choose an option and press **<Enter>**. Modify the system parameters to reflect the options installed in the system.
5. Press **<Esc>** at anytime to return to the Main Menu.
6. In the Main Menu, choose **"WRITE TO CMOS AND EXIT"** to save your changes and reboot the system. Choosing **"DO NOT WRITE TO CMOS AND EXIT"** ignores your changes and exits the BIOS SETUP program.

In each setup screen, the following common keyboard controls may be used:

<b>&lt;F1&gt;</b>	: Help
<b>&lt;F2&gt;, &lt;F3&gt;</b>	: Color (to change screen color)
<b>&lt;F5&gt;</b>	: Old Setup Values
<b>&lt;F6&gt;</b>	: BIOS Setup Default Values
<b>&lt;F7&gt;</b>	: Power On Default Values
<b>&lt;ESC&gt;</b>	: Exit Setup Section
<b>Arrow Keys</b>	: Select Setup Item
<b>&lt;PG UP/ PG DN&gt;</b>	: Modify the Setup Item

## STANDARD CMOS SETUP

Use the standard CMOS Setup screen to check or modify general configuration information such as the date, time, floppy type, hard disk type, video type, etc.

- **Date** (Month/Date/Year): On the bottom right corner of the screen, a calendar has been provided for user. You manually set the electronic calendar only if the values are incorrect.
- **Time** (Hour/Minute/Second): The time here is 24-hour time. You would enter 5:30 P.M. as 17:30:00.
- **Hard Disk C:/D: Type**: The BIOS provides 46 predefined types of popular hard disk drives. Relevant specifications include the number of cylinders and heads, write pre-compensation time, read/write head landing zone, number of sectors per track. A hard disk will not work properly if you enter incorrect drive parameters.

If your particular drive is not one of the 46 pre-defined types, simply scroll down to select type 47 and enter the appropriate values for **cylinders**, **heads**, **WPcom**, **LZone**, and **sectors**. **Size** is automatically determined by the other entries. You can also let the BIOS to determine the drive type by selecting "**AUTO DETECT HARD DISK**" from the Main Menu.

- **Floppy Drive A: Type** (360KB, 720KB, 1.2MB, 1.44MB, 2.88MB, or Not Installed): Specify the type of the first floppy drive installed on the system. 'Not Installed' could be used as an option for diskless workstations.
- **Floppy Drive B: Type**: Specify the type of the second floppy drive installed on the system.
- **Primary Display Monitor** (Color 40x25, Color 80x25, VGA/PGA/EGA, Monochrome): The 'Not Installed' option could be used for network file servers.
- **Keyboard** (Installed / Not Installed): Default is "Installed". "Not Installed" allows your system to operate without keyboard.

After all selections have been done, press <Esc> key to exit this section.

## ADVANCED CMOS SETUP

"ADVANCED CMOS SETUP" lists some system features that allows you to fine tune your system setup.

- **Typematic Rate Programming:** Choose Enabled or Disabled. Enable this option to adjust the keystroke repeat rate. Adjust the rate via Typematic Rate Delay and Typematic Rate.
- **Typematic Rate Delay:** Choose the delay between holding down a key and when the character begins repeating. Default is 500milliseconds.
- **Typematic Rate:** Choose the rate a character keeps repeating. Default is 15 characters per second.
- **Above 1MB Memory Test:** Default is "Disabled" to speed up power-on initialization process and the BIOS will only test the extended memory every 32K locations only to determine the on-board memory size.
- **Memory Test Tick Sound:** Default is "Enabled" for the ticking sound during memory test.
- **Memory Parity Error Check:** Default is "Enabled" to test for transmission errors in data read from memory.
- **Hard Disk Type 47 RAM Area:** The BIOS uses this area to store extended information, such as user definable drive type 47.

There are two options:

Default option is **0:300** in lower system RAM

**DOS 1KB** in the top 1KB of the 640KB DOS base memory

- **System Boot Up NumLock:** When the computer boots, it selects the numeric values rather than the cursor control functions on the numeric keypad of IBM compatible keyboards. Most extended compatible keyboards have separate cursor control keys. It is therefore unnecessary to use the numeric keypad for this. The default setting is "On".
- **Floppy Drive Seek At Boot:** Default is "Disabled". On this setting the system will check the hard disk first to find the disk operating system. This option also allows the user to run the system without a floppy disk drive.

- **System Boot-Up Sequence:** If "A:, C:" (default), the BIOS will look for bootable operating system files from floppy drive A: first before looking for them in drive C:. You can reverse this sequence by selecting "C:, A:".
- **External Cache Memory:** Select "Enabled" to enable external on-board cache memory.
- **Internal Cache Memory:** Select "Enabled" to enable the cache memory inside the 486 CPU chip.
- **Password Checking Option:** Choose "Setup" or "Always". default setting is "Setup". The password feature can be used to prevent unauthorized system boot-up or unauthorized use of BIOS SETUP.
  - "Always" Each time the system is turned on, the pass word prompt appears.
  - "Setup" If there is a password set, the Password prompt only appears if you attempt to enter the BIOS Setup program. If there is no set password, the Password Checking Option is disabled. You create a password by using "CHANGE PASSWORD" in the Main Menu.
- **Video ROM Shadow C000, 32K:** Shadowing helps to speed up BIOS access by copying BIOS code to fast 32-bit RAM area and executes it from there. The default setting is "Enabled".
- **Adapter ROM Shadow:** Default setting is "Disabled". If you have other expansion cards with ROMs on them such as SCSI controller, you will need to know which addresses the ROMs use.
- **Boot Sector Virus Protection:** Select 'Enabled' to protect the Boot sector of your hard disk from software virus such as "Michael Angelo".

- **IDE Block Mode Transfer:** Some latest IDE hard disks support multiple sector (Block Mode) transfer for faster performance. Users select "Enabled" to take advantage of this feature. If your system hard disk supports Block Mode, BIOS message "Block Mode Enabled" will appear during boot-up.
- **IDE Standby Mode:** Default is "Disabled". If this feature is enabled, IDE hard disk will go into Standby Mode to save power in 15 minutes of no access.
- **DRAM Speed, DRAM Write CAS Pulse, DRAM Write Cycle:** Select these options according to table below:

CPU Clock Speed	DRAM Speed	DRAM Write CAS Pulse	DRAM Write Cycle
20MHz or 25MHz	Fastest	1T	0 W/S
33MHz	Slower	1T	1 W/S
40MHz	Slower	2T	1 W/S
50MHz	Slowest	2T	1 W/S

- **DRAM Hidden Refresh:** Select "Enabled" to maximize system performance.
- **Cache Write Cycle, Cache Burst Read Cycle:** Follow below table to set these Cache options.

CPU Clock Speed	Cache Write Cycle	Cache Burst Read Cycle
20MHz or 25MHz	2T	1T
33MHz with 64KB or 256KB Cache	3T	1T
33MHz with 128KB cache	3T	2T
40MHz	3T	2T
50MHz	3T	2T



- **ISA Bus Clock:** Default setting is 7.16MHz for any CPU speed. Latest ISA adapters may operate with ISA bus clock speed up to 10MHz. ISA bus speed above 10MHz is not recommended. Different than 7.16MHz speed can also be selected by following below table.

CPU Clock Speed	ISA Bus Clock
20MHz	1/3 CLK = 6.67MHz
25MHz	1/3 CLK = 8.33MHz
33MHz	1/4 CLK = 8.33MHz
40MHz	1/5 CLK = 8.00MHz
50MHz	1/6 CLK = 8.33MHz

- **Local Bus Ready, Latch Local Bus Device:** Follow below table to set these options.

CPU Clock Speed	Local Bus Ready	Latch Local Bus Device
20MHz	TRANS	2T
25MHz	TRANS	2T
33MHz	SYNC	2T
40MHz	SYNC	2T
50MHz	SYNC	2T or 3T

## AUTO CONFIGURATION WITH BIOS DEFAULTS

Use this option to load the default configuration values directly from ROM. If the stored record created by the Setup program becomes corrupted, these defaults will load automatically when you turn the computer on.

## AUTO CONFIGURATION WITH POWER-ON DEFAULTS

Use this option to load the settings detected by the system when you turn it on. If your system behaves erratically you can use this feature to check for incorrect settings.

## CHANGE PASSWORD

Follow these steps to change system password. Note that the pass word cannot be longer than 6 characters.

1. Choose "CHANGE PASSWORD" from the Setup Main Menu and press <Enter>.
2. If this option has never been used, the screen will display the following message.

Enter NEW Password:

If you want to disable the password option, just press <Enter> key to return to the Main Menu.

3. If this option has been used to enter the password, the screen will display the following message:

Enter Current Password:

Enter the current password (default is AMI) and follow the screen instructions to change the password.

4. After you correctly enter the current password, the following message appears prompting you for the new password.

Enter NEW Password:

5. Enter the new password and the following message appears:

Re-Enter NEW Password:

6. Re-enter the new password. If the password is miskeyed, the following error message appears:

ERROR, Press Any Key...

If the password is keyed in correctly the following confirmation message appears:

NEW Password Installed

7. Press <Esc> to exit to the Main Menu.

## AUTO DETECT HARD DISK

Use this BIOS utility to automatically detect popular IDE hard disk type if it is not readily available. It is not guaranteed that this utility will work with all IDE hard disk. There is no need to use this utility if you already have hard disk type information.

## HARD DISK UTILITY

Use this option to do low-level harddisk format, Auto-Interleave and Media-Analysis of your MFM harddisk drive. IDE, ESDI, and SCSI drives don't need this utility and you should not use it on them.

Low-level **harddisk format** should be done for new harddisks and should be done yearly for used harddisks. This format function allows you to format the entire disk or a part of the disk. **Warning! All data on the harddisk may be lost after a low-level format.**

With **Auto-Interleave** you need not speculate about the value of the interleave factor while entering the parameters for format. This function determines the optimum interleave factor for the best disk performance.

**Media Analysis** does a comprehensive analysis of the harddisk surface to find out bad patches on your harddisk. This leaves the surface of the harddisk formatted with bad tracks marked bad.

## WRITE TO CMOS AND EXIT

After you have made any changes during setup, use this option to store those new information into non-volatile CMOS memory. The system should reboot with the correct system board configuration.

## DO NOT WRITE TO CMOS AND EXIT

After you have/have not made any changes during setup and decided not to store those information into non-volatile CMOS memory, use this option to exit Setup. The system should reboot with the current configuration stored in CMOS memory.

---

---

## CHAPTER 5: DOS/WINDOWS DRIVERS

---

---

DOS/WINDOWS DRIVERS enable you to quickly and easy install SCSI peripherals such as fixed disk drives, CD-ROM drives and removable media drives on your PC. In-depth knowledge of DOS or Windows is not required.

## **DOS/WINDOWS DRIVERS QUICK INSTALLATION**

1. Insert the DOS/WINDOWS DRIVERS Installation diskette in a floppy diskette drive on your PC.
2. Change to the drive letter where your diskette is inserted (either A or B).
3. Type *install* to start the *Install* program.
4. Follow the simple instructions that appear on the screen. In most cases, you will simply press **<Enter>** to accept the defaults suggested by DOS/WINDOWS DRIVERS.

Press **<F1>** on any screen to view additional Help information. Press **<Esc>** to exit from a Help screen

5. Reboot your PC so the new configuration can take effect. You can do this by pressing **Ctrl-Alt-Del** keys.

# ASPI2DOS ASPI MANAGER

## aspi2dos Command Line Options

After you run the *Install* program, use a text editor if you need to view the command line change in your **config.sys**. The change involves adding the **device=[path]aspi2dos** command line as shown below:

```
DEVICE=C:\ADAPTEC\ASPI2DOS /D /Z
```

This section contains complete information about all available command line options.

The full syntax of the **device=aspi2dos.sys** line in your **config.sys** file is:

```
device=[path]aspi2dos.sys [/Group 1 options] [/Group 2 options]
```

You can type command line options in either lowercase or uppercase letters. Each option is preceded by a forward slash and should be separated from other options by at least one blank space.

- *aspi2dos* command line options are divided into Group 1 and Group 2.
- Group 1 options are mandatory for 486MIS SCSI port.
- Group 2 options are optional.

### Group 1 Command Line Options

The meaning of each Group 1 option is as follows:

#### **/c and /c-**

The **/c** option prevents SCSI target devices from disconnecting during command execution; the **/c-** option *allows* SCSI target devices to disconnect during command execution. If neither option is specified, the default setting is **/c-** (allow target devices to disconnect).

You might need to use these options if your system has multiple SCSI target devices. If you enter the **/c** option, *do not* also enter the **/c-** option, and vice-versa.

## **/hx**

This option allows you to specify the 486MIS SCSI ID. The value *x* specifies the single-digit decimal address. Valid entries are the numbers 0 through 7. Any other values will be rejected, an error message will be displayed and the 486MIS SCSI ID will default to 7. If no **/h** option is present, a default SCSI ID of 7 is used.

This option is never used, because the 486MIS SCSI ID is fixed at 7.

EXAMPLE: /h5

## **/u and /u-**

The **/u** option enables the 486MIS SCSI port to initiate negotiation with the SCSI target device for synchronous data transfer. The **/u-** option prevents synchronous negotiation. If synchronous negotiation is disabled the 486MIS SCSI port defaults to asynchronous data transfer, and it negotiates for synchronous data transfer if a target device initiates the negotiation.

Synchronous negotiation is *enabled* by default on the 486MIS board, because data moves faster on the SCSI bus in synchronous mode. You may need to disable synchronous negotiation if you have a CD-ROM drive that does not support it. If your system does not recognize the CD-ROM drive, or if the drive doesn't work properly, add the **/u-** option to **config.sys**. Then, to assure the best performance on your system, enable synchronous negotiation on all SCSI devices that *do* support it, such as fixed disk drives.

If you enter the **/u** option, *do not* also enter the **/u-** option, and vice-versa.

## **/y and /y-**

The **/y** option prevents the 486MIS SCSI from checking SCSI bus parity. The **/y-** option enables parity checking. If neither option is specified, the default setting is **/y-** (enable parity checking).

Be sure that parity checking is supported by all installed SCSI devices and is enabled on those devices. (most SCSI devices have a jumper to enable or disable parity.) If you enter the **/y** option, *do not* also enter the **/y-** option, and vice-versa.

## /z

This option sets all Group 1 options, plus the /qx Group 2 option, to their default values. This convenient shortcut is much faster than changing each Group 1 option individually. Entering /z on the command line is equivalent to entering these default settings:

Default	Value
/c-	Allow SCSI target devices to disconnect
/y-	Enable SCSI parity checking
/u	Enable synchronous negotiation
/h7	Set 486MIS SCSI port ID to 7
/q11	Set interrupt request channel to 11

After restoring the default values with /z, you can add customized Group 1 options on the same command line. For example, /z /u- sets the defaults and then disables synchronous negotiation.

## Group 2 Command Line Options

The meaning of each Group 2 option is as follows:

### /b and /b-

The /b option tells *aspi2dos* to wait 250 milliseconds when it receives a busy status from a SCSI target device and then try to access the device again. It keeps trying until the SCSI device becomes available. The /b- option tells *aspi2dos* to notify the program that called it that it received a busy status from the target device. *aspi2dos* does *not* try to access the device again unless told to do so by the calling program. If neither option is specified, the default setting is /b- (notify the calling program and do not try to access the device again).

For example, a tape backup program may stop working or hang because *aspi2dos* tried to access the device while it was rewinding, received no response, and did not try again. To solve the problem, add /b to the **config.sys**, *aspi2dos* will then keep trying to access the device until it succeeds. If you enter the /b option, *do not* also enter the /b- option, and vice-versa.

## **/d**

This option, which is entered automatically by DOS/WINDOWS DRIVERS, displays useful information about the 486MIS SCSI port and attached SCSI devices when you boot your computer.

## **/i**

This option disables loading of the embedded Int 13 module. When */i* is specified, Int 13 calls are routed through the 486MIS SCSI BIOS instead of the Int 13 code in *aspi2dos* (This only applies to SCSI disks installed with the 486MIS SCSI BIOS.) The */i* option is rarely used and is intended for debugging purposes.

## **/L**

This option enables support for SCSI logical units (LUNs) other than zero. The driver can recognize all eight possible LUNs associated with each SCSI target ID. If this option is not entered, *aspi2dos* will only recognize LUN 0 for each SCSI target ID.

You only need to use **/L** if your system includes a disk device such IOMEGA's Bernoulli Dual multi-drive that supports more than one LUN.

## **/p<port address>**

Always set the I/O port address to 340hex.

EXAMPLE: */p340*

## **/pause**

This option makes your system pause after loading *aspi2dos* at boot-time so you can read the message that appears on the screen. After you read the message you press any key to resume the booting process.

## **/qx**

This option allows you to specify the interrupt request channel. You do this by entering for x the (decimal) value of the channel number. Valid entries are the numbers 11 and 10. Any other values will be rejected, an



error message will be displayed and the 486MIS SCSI port will default to the jumper setting. The default value is 11.

If you change the IRQ jumper(s) from the default setting of 11, you must also enter a corresponding **/q** option for the **device=aspi2dos** line in the **config.sys** file. For example, if you change the jumper(s) to IRQ10, you must add **/q10** in **config.sys**.

EXAMPLE: /q10

## DOS/WINDOWS DRIVERS FORMATTING UTILITIES

DOS/WINDOWS DRIVERS includes two formatting utilities: *scsifmt* and *afdisk*.

You can use *scsifmt* to low-level format SCSI fixed disks, removable fixed disks (e.g., Bernoulli removable media) and magneto optical drives. You can also use it to scan disk devices for surface defects to make sure the devices are reliable before you store data on them.

You can use *afdisk* to partition SCSI disk devices and to perform high-level formatting. *afdisk* allows you to add or delete DOS partitions or to delete a non-DOS partition. You must use this utility to partition SCSI disks that are not mounted by the 486MIS SCSI BIOS.

These utilities and the two other utilities described in this chapter are automatically copied to your fixed disk by the DOS/WINDOWS DRIVERS *Install* program.

### Low-Level Formatting with *scsifmt*

When you run *scsifmt* it automatically detects and lists the disk devices installed on your system. You then select a device from the list and either format it or scan it for defects.

#### *scsifmt* Command Line Options

There are two *scsifmt* command line options you can use when starting the program. The syntax of the *scsifmt* command is:

```
[path]scsifmt [/m or /mono] [/?]
```

You can type command line options in either lowercase or uppercase letters. Each option is preceded by a forward slash and should be separated from other options by at least one blank space.

The command line switches operate as follows:

### **/m or /mono**

This switch forces *scsifmt* to run in black and white mode. This capability is provided because *scsifmt* screens do not display properly on some laptop, monochrome VGA and other types of displays.

If the /m option does not correct any screen display problem, try executing the DOS mode **bw80** command before running *scsifmt*. Remember to issue a DOS mode **co80** command after you are finished with the program.

Example: `scsifmt /mono`

### **/?**

This option displays the currently supported command line options.

Example: `scsifmt /?`

### **Running scsifmt**

Before you start *scsifmt*, be sure all disk devices you want to format are physically connected to your PC and are powered. If you want to format removable media, make sure it is in the disk device.

You cannot run *scsifmt* from the MS-DOS prompt under Microsoft Windows. Exit from Windows entirely before starting the utility, or you will get an error message.

You can view on-line help information for any *scsifmt* screen by pressing **F1**. Press **Esc** to exit the Help screens.

Change to the directory where *scsifmt* is located (the default directory is *c:\adaptec*) and enter *scsifmt* to start the program.

## **Partitioning & High-Level Formatting with `afdisk`**

*afdisk* is a SCSI disk partitioning and high-level formatting utility. You must use this utility to partition SCSI disks that are not mounted by the 486MIS BIOS. *afdisk* allows you to add or delete a DOS partition or to delete a non-DOS partition.

*afdisk.exe* and its accompanying files *afdisk.hlp* (the help file) and *afdisk.cwa* (the system file) are copied automatically to your fixed disk when you run the DOS/WINDOWS DRIVERS Install program.

*afdisk* disk partitions are mounted when you boot your machine with the *aspidisk* driver. Partitions that you create with *afdisk* are completely compatible with DOS partitions.

Partitions that are moved to 486MIS BIOS control are bootable if they were high-level formatted to include the system files (e.g., using the *is* option of DOS *format.com*). In order for a SCSI disk to be bootable, the DOS version used must be 3.3 or later. We recommend that you do a DOS high-level format (using *format*) on all media partitioned with *afdisk* before you use it.

### **afdisk Command Line Options**

There are two *afdisk* command line options you can use when starting the program. The syntax of the *afdisk* command is:

```
[path]afdisk [/m or /mono] [/?]
```

You can type command line options in either lowercase or uppercase letters. Each option is preceded by a forward slash and should be separated from other options by at least one blank space.

#### **/m or /mono**

This option forces *afdisk* to run in black and white mode. This capability is provided because *afdisk* screens do not display properly on some laptop, monochrome VGA and other displays.

If the */m* option does not correct any screen display problem, try executing the DOS mode **bw80** command before running *afdisk*. Remember to issue a DOS mode **co80** command after you are finished with the program.

Example: *afdisk /mono*

***/?***

This option displays the currently supported command line options.

Example: `afdisk /?`

## **Running afdisk**

Before you start *afdisk*, be sure the disk devices you want to format or partition are physically connected to your PC and are powered. If you intend to format a removable fixed disk, make sure there is removable media in the device before running *afdisk*.

You can view on-line help information for any *afdisk* screen by pressing **F1**. Press **Esc** to exit the Help screens.

To run *afdisk* change to the directory where *afdisk.exe* is located (the default directory is *C:\adaptec*) and enter `afdisk` to start the program.

## **Viewing Device Information with showscsi**

*showscsi* is a useful Windows utility that allows you to view information about all the SCSI devices installed on your system. This utility is copied to your PC's fixed disk when you run the DOS/WINDOWS DRIVERS *Install* program.

### **Installing showscsi**

The most convenient way to use *showscsi* is to install it as an icon in Windows. Then you can double-click it at any time to view SCSI device information. Follow these steps to install *showscsi*:

1. Select **Install ASPI for Windows** when you run the DOS/WINDOWS DRIVERS program.
2. Start Windows and select the program group to which you want to add the *showscsi* utility.
3. Select **File/New**. When the **New Program Object** window appears, click on OK to add a new program item.
4. When the **Program Item Properties** window appears, click on **Browse** and change to the directory where the DOS/WINDOWS DRIVERS files were copied (the default is *c:\adaptec*.) Double-click

on *showscsi.exe* to enter the command line information in the **Program Item Properties** window.

You can type the full path name in the Command Line box, instead of using Browse.

5. Click on OK. The **Showscsi** icon will appear in the **Program Group** window.

## Running showscsi

1. Double-click on the **Showscsi** icon, and the **Adaptec SCSI Interrogator** window will appear. Each installed SCSI device is represented by an icon and is labeled with a SCSI ID number. A crossed-out **No Device** icon indicates that no device is installed at that SCSI ID.
2. Double-click on any icon in the **SCSI Interrogator** window to view information about a SCSI device.

Different kinds of information screens will appear in the **Inquiry** window, depending on the type of SCSI device.

- **SCSI Host Adapter:** A single information screen lists the model number of the adapter, the ASPI manager drivers it uses, and the SCSI programming interface it uses.
- **Disk Devices:** The first screen lists vendor and model number information, device type, storage capacity and bytes per sector. If the disk is a SCSI-2 device the screen lists available SCSI features, such as synchronous mode and SCSI linking.

If the disk device uses removable media, such as a CD-ROM, you can click on the **Eject Media** button to eject the CD. **Lock Media** and **Unlock Media** buttons allow you to lock removable media in devices that support this command and unlock it when you want to remove it. These three buttons are grayed-out if the SCSI device you are viewing does not support the commands.

You can click on the Read Defect List button to view information about disk defects. The notes in this window explain the meaning of the primary defects and grown defects that are listed. The SCSI Interrogator supports reading the defect list for most,

but not all, disk devices. A few disk devices do not present the defect list in a format that the SCSI Interrogator can interpret.

- **Other SCSI Devices:** There is only one screen of information for CD-ROM drives, tape drives, and other devices that do not have defect information.
3. To exit from the **Inquiry** window, click on the OK button.
  4. To close the **SCSI Interrogator** window, double-click on the Control-menu box in the upper left-hand corner of the window, or select **Inquiry/Exit** from the menu.

## Playing Audio CDs with **cdplayer**

**cdplayer**, CD-ROM audio play utility for DOS, provides full audio support for music CDs through either the keyboard or a mouse interface. In order to use **cdplayer**, you must configure your DOS environment to run with the Microsoft CD-ROM Extensions (*mscdex*) and you must install a CD-ROM driver, such as *aspicd* (The DOS/WINDOWS DRIVERS *install* program takes care of this automatically.)

Here is a list of **cdplayer's** audio functions:

- Play, Pause, Eject, and Stop
- Fast Forward and Reverse
- Next Track and Previous Track Selections
- Time Display, showing Elapsed Time or Remaining Time for either the current playing track or for the entire CD
- Stereo, Left Channel, Right Channel, and Mute
- Sequential or Shuffled Continuous play ordering

**cdplayer** requires a VGA (or higher) graphics controller and either a color or a monochrome display. The program consists of two files which are automatically copied to your fixed disk when you run the DOS/WINDOWS DRIVERS *Install* program: the executable file **cdplayer.exe** and a font file **cdplayer.fon**.

### **cdplayer Command Line Options**

By default, *cdplayer* accesses the CD-ROM drive with the lowest drive letter. If your system has more than one CD-ROM drive and the one with the lowest drive letter is not the one you want *cdplayer* to access, you can use a command line option to direct it to another drive.

For example, if you have two CD-ROM drives assigned to drive letters *E* and *F*, and you want to play an audio CD in drive *F*, simply start the program with this command line:

CDPLAYER /F:

You can type the command in uppercase or lowercase letters. Be sure to include the colon after the drive letter.

## Running cdplayer

To start *cdplayer*, change to the directory where *cdplayer.exe* and *cdplayer.fon* are located (c:\adaptec is the default) and enter CDPLAYER.

If there is no CD in the drive when you start the program, the message **No CD!** appears in the time display area. If a command to the drive fails, the message **Drive Fault!** appears in the time display area. As you select each function, the Status indicator shows the current disc status. Whenever you insert a new CD in the drive, the program displays the CD's total track count and run time.

The *cdplayer* screen simulates the control panel of a CD player. You select functions either by clicking the mouse on the appropriate control, or by pressing the Hot Key letter for that function (for example, **P** or **p** to play and **Q** or **q** to quit the program). The Hot Key letter is highlighted in white on each button. When you select a button, the icon inside it is displayed in yellow until you select another button.

## cdplayer Functions

Here are brief explanations of each *cdplayer* function.

- **Stop** - Stops the CD from playing. The track will be displayed at its 00:00 Elapsed Track Time.
- **Play** - Starts play operation at the current displayed track. If a CD is already playing, audio playing continues.

- **Pause** - Stops audio playing at its current position. Play will proceed if you select **Pause** a second time or if you select **Play**.
- **Fast Forward/Fast Reverse** - Moves forward or backward from the current track position in 15-second increments. If the new play position crosses a track boundary, *cdplayer* will access the next or previous track.
- **Eject** - Sends an **eject command** to the CD-ROM drive. Most drives support a CD **eject** function. You can select **Eject** even if a CD is still playing.
- **Next/Previous Track** - Increases or decreases the current track number, wrapping around to the first track from the last (or vice versa) if necessary. If the CD is playing, play will continue at the new track's starting location.
- **Audio Mode** - Allows you to select either **Stereo**, **Left Channel**, **Right Channel**, or **Muted** play.
- **CD-Time Mode** \_ Allows you to change the time display to Elapsed CD Time, Elapsed Track Time, Remaining CD Time, or Remaining Track Time.
- **Play Order** - Allows You to select either **Sequential** or **Shuffled Continuous** play.
- **Quit** - Exits *cdplayer*. If a CD is playing, it will continue playing to the end of the CD and will then stop. (You can also exit the Program by pressing the **Esc** key.)

You can enter the *cdplayer* utility, start playing a CD, then quit the utility while the CD continues playing. If you re-start *cdplayer* before the CD is finished playing, the screen will display the current playing time. You can then switch to a different track and playing, change a setting, or eject the CD and start playing a different one.



# CHAPTER 6: OS/2 v2.1 DRIVERS

---

This driver includes the following features:

1. Double word 32-bit PIO transfers with support for fast SCSI (10MByte/second)
2. Extended BIOS translation is supported for disk capacity larger than 1Gigabyte.
3. Full support for all command line options.

## INSTALLATION

1. Make a copy of OS/2 Diskette 1. Delete the file IBMSCSI.ADD from this copy.
2. Copy the AHA152X.ADD file from the 486MIS driver diskette (OS2 subdirectory) to the root directory on the copy of OS/2 Diskette 1. (The root directory is the first directory on the diskette.)
3. Begin OS/2 installation by inserting the Installation Diskette into drive A and restarting the system. When prompted to insert Diskette 1, insert the copy that you modified.

### Exceptional Case for Toshiba-3401 CD-ROM

If you are installing OS/2 from Toshiba-3401 CD-ROM, these extra steps are needed:

- Proceed with installation from step 3 above. During hard disk preparation, select **FAT file system**.
- After the first phase of installation is complete, system will restart. Boot the system with DOS diskette in drive A:. Do not let the system boot from hard disk.
- Go to C:\ and make the following changes to CONFIG.SYS file in root directory using DOS EDIT program.

Change     **BASEDEV=AHA152X.ADD**  
to           **BASEDEV=AHA152X.ADD //!SN**

- Restart the system. Let the system boot from hard disk and proceed with normal installation.

## COMMAND LINE USAGE

There are new command line switches to support the new features on the driver AHA152X.ADD.

### Universal Parameters

**/SN** - Allow synchronous negotiation (DEFAULT).

**!/SN** - Prevent synchronous negotiation.

### Special Unit Parameters

**/BOFF:t** allows the bus-off time to be set to a value between 1 and 15 microseconds. The default value for OS/2 2.x is 4 microseconds and this should be used for most systems.

**/BON:t** allows the bus-on time to be set to a value between 1 and 15 microseconds. The default value for OS/2 2.x is 7 microseconds and this value should be used for most systems.

**/D** Allow targets to disconnect from the SCSI bus (DEFAULT).

**!/D** Prevent targets from disconnecting from the SCSI bus.

**/H:x** Specifies the 486MIS SCSI ID. A number from 0-7 replaces x. The default ID is 7. If you specify an invalid number, the default is used.

**/PIO** Use programmed I/O to transfer data to/from the SCSI bus.

**/Y** Enable parity checking on the SCSI bus (DEFAULT).

**!/Y** Disable parity checking on the SCSI bus.

# CHAPTER 7: NOVELL NETWARE 3.1X, 4.0X

---

## INSTALLATION

We recommend that you make backup copies of all Novell and Driver supplied diskettes using DOS "DISKCOPY" and use those backup copies as your working diskettes.

Use the NetWare 386 file SERVER.EXE to start the installation process. You will be prompted for a file server name and an IPX internal network number. Consult the NetWare 386 User's manual for this information.

The NetWare 386 prompt (":") will now be displayed. Insert the 486MIS Driver Diskette into drive A:. Use the LOAD command to install the driver.

- The correct syntax to load the NetWare v3.11 driver is:

```
:load a:\net386.311\aha1510 [options]
```

- The correct syntax to load the NetWare v3.12 driver is:

```
:load a:\net386.312\aha1510 [options]
```

- The correct syntax to load the NetWare v4.01 driver is:

```
:load a:\net386.401\aha1510 [options]
```

The module "ASPITRAN.DSK" also needs to reside in the same directory.

There are several command line [options] that can be specified when the driver is loaded. These are described below.

Option	Possible Values	Description
port =	340 140	This option selects the 486MIS SCSI port location. Default value is 340.
verbose =	y	With this option, the driver will display

		486MIS SCSI configuration information during load time.
removable =	off	This option disables support for removable media. By default, removable media devices are supported. A user may want to disable "removable" media support in order to load their own ASPI Removable Disk Module.
fixed_disk =	off	This option disables support for fixed disk drives. By default, fixed disk drives are supported. A user may want to disable "fixed" disk support in order to load their own ASPI Fixed Disk Module.
int =	A, B	This option is used to select the interrupt channel of the 486MIS SCSI port. The 486MIS should be jumpered accordingly. The value is specified in hex (A=10, B=11).  If not specified, the user will be prompted for the interrupt channel.
id =	0-7	Always select 7.
sync =	on off	This option is used to enable or disable SCSI synchronous negotiation on the 486MIS SCSI port. If not specified, the default value of "on" will be used and the 486MIS SCSI port will negotiate for synchronous transfers. If "off" is selected, it will still accept synchronous negotiation if initiated by the SCSI peripheral.
disc =	on off	This option is used to enable or disable SCSI disconnection. If not specified, the default value of "on" will be used and the 486MIS SCSI port will allow SCSI disconnection to occur. If "off" is selected, the 486MIS SCSI port will not allow SCSI peripherals to disconnect from the SCSI bus.
parity =	on off	This option is used to enable or disable SCSI parity checking on the 486MIS SCSI port. If not specified, the default value of "on" will be used and the 486MIS SCSI port will check parity on all data

		transfers. If "off" is selected, the 486MIS SCSI port will not check for SCSI parity.
sel_to =	0 32 64 128	This option is used to set the selection time-out value. The values are specified in milliseconds (ms). If not specified, the default value of 0 will be used (when 0 ms is selected, a value of 256 ms is actually used). Use this option with caution since too low a value may make some targets not to appear to the driver.

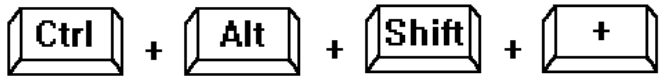
The command line options are NOT case sensitive, and not white-space sensitive.

# APPENDIX A: KEYBOARD SPEED SWITCH

System speed can also be changed through keyboard. There are two available speeds as shown below:

**Turbo speed:** Cache memory and 32-bit DRAM transfer mode are ON.

Set by pressing <+> key once while holding <Ctrl>, <Alt>, and <Shift> keys.



**Slow speed:** Cache memory and 32-bit DRAM transfer mode are OFF.

Set by pressing <-> key once while holding <Ctrl>, <Alt>, and <Shift> keys.



# APPENDIX B: AMI BIOS HARD DISK TYPE

Type	Cylinder	Heads	Write Precomp	Landing Zone	Sectors	Size
1	306	4	128	305	17	10MB
2	615	4	300	615	17	20MB
3	615	6	300	615	17	31MB
4	940	8	512	940	17	62MB
5	940	6	512	940	17	47MB
6	615	4	65535	615	17	20MB
7	462	8	256	511	17	31MB
8	733	5	65535	733	17	30MB
9	900	15	65535	901	17	112MB
10	820	3	65535	820	17	20MB
11	855	5	65535	855	17	35MB
12	855	7	65535	855	17	50MB
13	306	8	128	319	17	20MB
14	733	7	65535	733	17	43MB
16	612	4	0	663	17	20MB
17	977	5	300	977	17	41MB
18	977	7	65535	977	17	57MB
19	1024	7	512	1023	17	60MB
20	733	5	300	732	17	30MB
21	733	7	300	732	17	43MB
22	733	5	300	733	17	30MB
23	306	4	0	336	17	10MB
24	925	7	0	925	17	54MB
25	925	9	65535	925	17	69MB
26	754	7	754	754	17	44MB
27	754	11	65535	754	17	69MB
28	699	7	256	699	17	41MB
29	823	10	65535	823	17	68MB
30	918	7	918	918	17	53MB
31	1024	11	65535	1024	17	94MB
32	1024	15	65535	1024	17	128MB
33	1024	5	1024	1024	17	43MB
34	612	2	128	612	17	10MB
35	1024	9	65535	1024	17	77MB
36	1024	8	512	1024	17	68MB
37	615	8	128	615	17	41MB
38	987	3	987	987	17	25MB
39	987	7	987	987	17	57MB
40	820	6	820	820	17	41MB
41	977	5	977	977	17	41MB
42	981	5	981	981	17	41MB
43	830	7	512	830	17	48MB
44	830	10	65535	830	17	69MB
45	917	15	65535	918	17	114MB
46	1224	15	65535	1223	17	152MB
47	USER'S	TYPE				

# APPENDIX C: MEMORY MAPPING

<b>Address (hex)</b>	<b>Function</b>	<b>Comments</b>
00000000-0007FFFF	512K System RAM	Cached
00080000-0009FFFF	128K System RAM	Cached
000A0000-000BFFFF	128K Video RAM	Not Cached
000C0000-000C7FFF	32K Video BIOS	Cached
000C8000-000CFFFF	32K I/O ROM	Not Cached
000D0000-000DFFFF	64K I/O ROM	Not Cached
000E0000-000EFFFF	64K Extended BIOS	Not Cached
000F0000-000FFFFF	64K On-Board BIOS ROM	Cached
00100000-00BFFFFF	System Memory (RAM)	Cached
00C00000-00FFFFFF	System Memory (RAM)	Not cached if memory mapped I/O board is used in this range
01000000-BFFFFFFF	System Memory (RAM)	Cached
C0000000-C1FFFFFF	System Memory (RAM)	Cached
C2000000-FFDFDFFF	System Memory	Cached
FFFE0000-FFFFFFF	128K On-Board BIOS ROM	Not cached



## APPENDIX D: AT I/O ADDRESS MAP

I/O ADDRESS (HEX)	I/O DEVICE
000 - 01F	DMA Controller 1, 8237A-5
020 - 03F	Interrupt Controller 1, 8259A
040 - 05F	System Timer, 8254-2
060 - 06F	8742 Keyboard Controller
070 - 07F	Real-Time Clock/CMOS and NMI Mask
080 - 09F	DMA Page Register, 74LS612
0A0 - 0BF	Interrupt Controller 2, 8259A
0C0 - 0DF	DMA Controller 2, 8237A-5
0F0 - 0FF	CPU's Internal Math Coprocessor
1F0 - 1F8	Fixed Disk Drive Adapter
200 - 207	Game I/O
20C - 20D	Reserved
21F	Reserved
278 - 27F	Parallel Printer Port 2
2B0 - 2DF	Alternate Enhanced Graphic Adapter
2E1	GPIB Adapter 0
2E2 - 2E3	Data Acquisition Adapter 0
2F8 - 2FF	Serial Port 2 (RS-232-C)
300 - 31F	Prototype Card
360 - 363	PC Network (Low Address)
364 - 367	Reserved
368 - 36B	PC Network (High Address)
36C - 36F	Reserved
378 - 37F	Parallel Printer Port 1
380 - 38F	SDLC, Bisynchronous 2
390 - 393	Cluster
3A0 - 3AF	Bisynchronous 1
3B0 - 3BF	Monochrome Display and Printer Adapter
3C0 - 3CF	Enhanced Graphics Adapter
3D0 - 3DF	Color/Graphics Monitor Adapter
3F0 - 3F7	Diskette Drive Controller
3F8 - 3FF	Serial Port 1 (RS-232-C)
6E2 - 6E3	Data Acquisition Adapter 1
790 - 793	Cluster Adapter 1
AE2 - AE3	Data Acquisition Adapter 2

B90 - B93	Cluster Adapter 2
EE2 - EE3	Data Acquisition Adapter 3
1390 - 1393	Cluster Adapter 3
22E1	GPIB Adapter 1
2390 - 2393	Cluster Adapter 4
42E1	GPIB Adapter 2
62E1	GPIB Adapter 3
82E1	GPIB Adapter 4

# APPENDIX E: INTERRUPT ASSIGNMENTS

LEVEL	TYPICAL INTERRUPT SOURCE
NMI	Parity, AT Channel Check
IRQ0	Interval Timer 1, Counter 0 Out
IRQ1	Keyboard Controller
IRQ2	Cascade Interrupts from IRQ8 to IRQ15
IRQ3	Serial Port 2
IRQ4	Serial Port 1
IRQ5	Parallel Port 2
IRQ6	Diskette Controller
IRQ7	Parallel Port 1
IRQ8	Real Time Clock
IRQ9	Expansion Bus Pin
IRQ10	Expansion Bus Pin
IRQ11	Expansion Bus Pin
IRQ12	Expansion Bus Pin
IRQ13	Coprocessor Error
IRQ14	Fixed Disk Drive Controller
IRQ15	Expansion Bus Pin

# APPENDIX F: SPECIFICATION

## PHYSICAL DIMENSION

Length: 13.100"    Width: 8.700"

## POWER REQUIREMENT

5.25V to 4.75V tolerance on the AT power supply.

5 Amp maximum.

Ripple/Noise 100mV maximum

## TEMPERATURE RANGE

**Operating:**        50<sup>o</sup> to 104<sup>o</sup> Fahrenheit (10<sup>o</sup> to 40<sup>o</sup> Celsius)

**Non-Operating:** 50<sup>o</sup> to 104<sup>o</sup> Fahrenheit (10<sup>o</sup> to 40<sup>o</sup> Celsius)

**Shipping:**        -22<sup>o</sup> to 140<sup>o</sup> Fahrenheit (-30<sup>o</sup> to 60<sup>o</sup> Celsius)

## RELATIVE HUMIDITY (NON-CONDENSING)

**Operating:**        20% to 80%

**Non-Operating:** 5% to 90%