Olympus Pentium II/Pentium III PCI ISA Motherboard Guide

MAN-781
6/24/99

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Revision History

5/15/98	Initial release.
6/11/98	Revised AMIBIOS Setup chapter.
8/4/98	Revised motherboard drawing.
10/27/98	Revised the SW1 and Front Panel Connector descriptions.
4/12/99	Removed references to Xeon and external USB header..
6/24/99	Added support for Intel Pentium II/Pentium IIII CPUs.

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Preface

To the OEM

Thank you for purchasing the high performance American Megatrends Olympus PCI Pentium II/Pentium III ISA motherboard. This product is a state of the art motherboard that includes the famous AMIBIOS. It is assumed that you have also licensed the rights to use the American Megatrends documentation for the American Megatrends Olympus motherboard

This manual was written for the OEM to assist in the proper installation and operation of this motherboard. This manual describes the specifications and features of the Olympus motherboard. It explains how to assemble a system based on the Olympus motherboard and how to use the AMIBIOS that is specifically designed for this motherboard.

This manual is not meant to be read by the computer owner who purchases a computer with this motherboard. It is assumed that you, the computer manufacturer, will use this manual as a sourcebook of information, and that parts of this manual will be included in the computer owner's manual.

Disclaimer

AMI certifies only that this product will work correctly when this product is used with the same jumper settings, the same system configuration, the same memory module parts, and the same peripherals that were tested by AMI with this product. The complete list of tested jumper settings, system configurations, peripheral devices, and memory modules are documented in the AMI Compatibility Report for this product. Call your AMI sales representative for a copy of the Compatibility Report for this product.

Technical Support

AMI provides technical support only for AMI products purchased directly from AMI or from an AMI-authorized reseller.

If…	Then…
You purchased this product from AMI or from a certified AMI reseller,	Call AMI technical support at 770-246-8600. Please be prepared to specify the serial number of the product.
This AMI product was installed as part of a system manufactured by a company other than AMI or you purchased an AMI product from an unauthorized reseller,	Call the technical support department of the computer manufacturer or the unauthorized reseller. AMI does not provide direct technical support in this case.

If you need help installing, configuring, or running this product, call American Megatrends technical support at 770-246-8645. You can also send questions to tech support at:

support@ami.com.

Web Site

We invite you to access the American Megatrends world wide web site at:

http://www.ami.com.

Packing List

You should have received the following:

- an Olympus Pentium II/Pentium III PCI ISA motherboard,
- a diskette containing the American Megatrends AMI_ClientCare utility,
- the *American Megatrends AMIClientCare User's Guide,*
- a Warranty Card, and
- the *American Megatrends Olympus Pentium II/Pentium III PCI ISA Motherboard User's Guide*.

Warning

The pinout for the optional USB Cable Box is:

Pin 1	Red	VCC
Pin 2	Green	Data +
Pin 3	White	Data -
Pin 4	Black	Ground

Please make sure that the USB cable is correctly installed. Incorrect installation will damage the motherboard.

Static Electricity

The Olympus motherboard can easily be damaged by static electricity. Make sure you take appropriate precautions against static electric discharge:

- wear a properly-grounded wristband while handling the motherboard or any other electrical component,
- touch a grounded anti-static surface or a grounded metal fixture before handling the Olympus motherboard,
- handle system components by the mounting bracket, if possible.

Batteries Make sure you dispose of used batteries according to the battery manufacturer's instructions. Improper use of batteries may cause an explosion. Make sure you follow the battery manufacturer's instructions about using the battery. Replace used batteries with the same type of battery or an equivalent recommended by the battery manufacturer.

1 Hardware Installation

Overview

The American Megatrends Olympus PCI Pentium II/Pentium III ISA ATX motherboard supports intelligent diagnostic and power management, hardware monitoring, DMI reporting and modification, Ultra DMA/33, USB, the ACPI (Advanced Configuration and Power Interface) specification, and includes an Accelerated Graphics Port (AGP) socket for a super fast AGP video display card

CPU The CPU socket on the motherboard is a 242-pin slot. A switching voltage regulator is required. Install a 233, 266, 300, 333, 350, 400, 450 MHz or higher Intel® Pentium® II, Pentium III, and Celeron CPUs.

MMX Technology This motherboard supports Intel Pentium II/Pentium III CPUs that include MMX support. MMX technology allows you to experience richer video, audio, digital imaging and communications when running the latest generation of multimedia software on your computer.

AGP The Intel Accelerated Graphics Port (AGP) specification provides a new level of video display sophistication and speed. The Olympus motherboard includes an AGP expansion slot for a bus mastering AGP graphics card. AGP video cards support data transfer rates up to 528 MB/s.

AMI_ClientCare The Olympus motherboard is shipped with a copy of the American Megatrends AMI_ClientCare utility. AMI_ClientCare allows you to display system information, run diagnostic tests, and monitor environmental parameters such as the CPU temperature, fan speed, and system voltage levels.

Cont'd

Overview, Continued

Chipset

The Olympus motherboard uses an Intel 440BX chipset, including CPU interface controller, advanced cache controller, integrated SDRAM controller, synchronous ISA bus controller, concurrent PCI 2.0 and 2.1 local bus interface, and an integrated power management unit. This chipset supports intelligent diagnostic and power management through features like:

- hardware monitoring,
- DMI support,
- USB, and
- ACPI (Advanced Configuration and Power Interface) support.

Expansion Slots

The motherboard includes:

- two 16-bit ISA expansion slots and
- five 32-bit PCI expansion slots.

The PCI local bus throughput can be up to 132 megabytes per second.

Cache Memory

The Intel Pentium II/Pentium III card includes all cache memory. This includes 256 KB or 512 KB of synchronous pipeline burst L2 secondary cache memory. All of system memory can be cached.

Supported Standards

The Olympus motherboard supports:

- SB_Link,
- super multi I/O,
- Remote wakeup LAN support,
- LDCM software support,
- ACPI,
- AGP,
- DMI,
- the Intel DPMA (Dynamic Power Management Architecture,
- Concurrent PCI V2.0 and V2.1, and
- USB (Universal Serial Bus).

Cont'd

ACPI This motherboard fully implements the ACPI standard. ACPI is an open PC hardware, operating system, and peripheral device interface specification. ACPI allows the computer to come to full power instantly and to complete tasks even after power is turned off. ACPI is being implemented in Microsoft® Windows 95™, Windows 98™, and new versions of Windows NT™. ACPI:

- provides improved thermal management,
- reduced energy consumption, and
- Plug and Play features that are managed by the operating system.

Olympus ACPI This motherboard provides the following key ACPI features:

Feature	Description
soft-off support	You can turn off the computer via the Windows 95 operating system. The computer must have a power supply with a soft-off controller before this feature can be implemented.
remote ring on	Your computer can be turned on from a remote location via a modem signal when the computer is in Sleep Mode. This feature is useful if you are expecting a late-night fax. The only power you leave on is power to the modem. When the phone rings, the modem wakes up, powers on the entire computer, answers the phone, and the fax is received. The computer power is then turned off again to minimize power use. This feature can only be implemented in a computer that has a power supply with a soft-off controller. This motherboard supports the LDCM V3.0 specification.
RTC alarm	You can set a timer to turn computer power on at a certain time to perform a certain task.

Switching Voltage Regulator This motherboard includes a switching voltage regulator that significantly reduces the CPU and voltage regulator temperature. This voltage regulator is also fully upgradable to the next generation of Socket 7 CPUs. These new CPUs will require more electrical current and will generate more heat.

Cont'd

CPU Thermal Monitor The Olympus motherboard includes a special heat sensor under the CPU that monitors the CPU temperature. This heat sensor generates an SMI (System Management Interrupt) when the CPU temperature is too hot. The SMI can be set to turn on the external cooling fan and/or lower the CPU clock frequency. You are warned that the CPU is overheating. The CPU is returned to normal operating conditions when the CPU temperature returns to normal. This feature can only be implemented if a power supply with a soft-off power controller is installed in the computer.

High Voltage Protection The Olympus motherboard automatically shuts down the computer if the system voltage is 5% over the following standard voltage levels:

- +12V, -12V,
- +5V, -5V,
- +3.3V, and
- CPU core voltage.

SDRAM The Olympus motherboard provides four 168-pin DIMM system memory sockets that support up to 512 MB of SDRAM (Synchronous Dynamic Random Access Memory). SDRAM increases the CPU-to-memory data transfer rate to 528 MBs. The data transfer rate is 264 MBs if EDO DRAM is installed.

You can install 8 MB, 16 MB, 32 MB, 64 MB, or 128 MB SDRAM DIMM modules.

Cont'd

PC 97 Compliant The Olympus motherboard is fully compliant with the Microsoft PC 97 specification at both the hardware and the BIOS levels.

PC 97 is a set of hardware, bus, and device design requirements specified by Microsoft that make computers easier to use. PC 97 supports cooperation between the operating system, the hardware, and the applications software. Key PC 97 features include:

- Plug and Play compatibility,
- power management support for configuring and managing all system components
- 32-bit device drivers, and
- standard installation procedures for Microsoft Windows 95 and Windows NT.

The Olympus motherboard provides hardware monitoring and DMI features that permit continuous monitoring of key system performance parameters, such as ambient temperature and cooling fan status.

AMIBIOS Features This motherboard has an AMIBIOS system BIOS on a Flash ROM with built-in AMIBIOS Setup. AMIBIOS features include:

- IDE block mode and 32-bit data transfer support,
- IDE Programmed I/O modes 0, 1, 2, 3, and 4 support,
- PS/2 mouse support,
- IDE LBA mode support,
- APM (Advanced Power Management) and Flash BIOS hooks,
- EPA Green PC-compliant,
- PCI and Plug and Play (PnP) support, and
- DIM (Device Initialization Manager) support,
- DMI (Desktop Management Interface) support,
- can boot from a CD-ROM drive,
- automatically detects system memory, cache memory, and hard disk drive parameters,
- Intel NSP-compliant,
- Fast ATA IDE mode programming and ATAPI support,
- Boot sector virus protection,
- instant-on support,
- automatically configures PnP and PCI devices.

Cont'd

BIOS Shadowing The system BIOS is always copied from ROM to RAM for faster execution. The end user can shadow 16 KB ROM segments from C0000h – DCFFFh.

IDE The Olympus motherboard has two 40-pin IDE connectors onboard that support up to four IDE drives (hard disk drives, CD-ROM drives, or tape drives). The integrated PCI bus master enhanced IDE controller is on the PCI local bus. The IDE controller supports the Ultra DMA/33 protocol, which doubles the hard disk drive data transfer rates specified in the ATA-2 standards to 33 MB/s while maintaining full backward compatibility with existing PIO mode 3, PIO mode 4, and DMA mode 2 devices.

Fast ATA The motherboard supports the Fast ATA specification using PIO mode 4 and multiword DMA mode 2.

Ultra DMA/33 This motherboard includes an integrated enhanced IDE PCI bus master IDE controller that supports the Ultra DMA/33 protocol. The Ultra DMA/33 protocol permits data transfer rates up to 33 MBs. Ultra DMA/33 also reduces the CPU workload and permits increased CPU utilization. Ultra DMA/33 is completely backward-compatible with older DMA standards.

Floppy The Olympus motherboard has an onboard floppy controller that supports up to two 360 KB, 720 KB, 1.2 MB, 1.44 MB, or 2.88 MB floppy drives.

Parallel Port The Olympus motherboard has an onboard ECP and EPP-capable parallel port connector.

Serial Ports The Olympus motherboard has two onboard serial port connectors and two 16550 UART serial ports.

Keyboard The Olympus motherboard Includes a standard miniDIN keyboard connector.

Cont'd

Mouse The Olympus motherboard includes a standard miniDIN mouse connector.

USB The Olympus motherboard has two 4-pin USB connectors. USB allows future generations of USB-compliant peripheral devices to be automatically detected and configured through a single port. USB uses Plug and Play technology. All USB peripherals are automatically detected and configured. The AMIBIOS on this motherboard provides complete USB system BIOS support.

Power Connectors The Olympus motherboard has standard ATX power supply connectors.

RTC/CMOS RAM A real time clock and 128 bytes of CMOS RAM with a battery backup is provided on the motherboard.

Power Management Power management services include:

- power management signal to Green PC-aware power supplies,
- automatic IDE and video power down,
- monitor blanking,
- SMI (System Management Interrupt) support,
- APM, and
- system stop clock.

Cont'd

PCI Slots

The motherboard conforms to the PCI Version 2.1 specification. The concurrent PCI architecture of this motherboard allows faster CPU, PCI, and ISA bus transactions for faster and smoother multimedia performance. This motherboard allows you to install either PCI V2.0 or PCI V2.1-comaptible adapter cards

The five PCI slots are automatically configured by the AMIBIOS. The PCI slots operate synchronously with the CPU clock, as follows:

CPU External Clock Frequency	PCI Expansion Slot Frequency
66 MHz	33 MHz
100 MHz	33 MHz

Onboard I/O

The Olympus Pentium II/Pentium III ISA motherboard includes:

- two 40-pin IDE connectors on the PCI bus that support up to four IDE drives,
- a 34-pin floppy drive connector,
- two DB9 serial port connectors (with 16550 UARTs),
- a DB25 parallel port connector with ECP and EPP support,
- an infrared connector,
- two USB connectors that permit high speed USB-compliant external peripheral devices,
- a PS/2 keyboard connector, and
- a PS/2 mouse connector.

Cont'd

DMI

In a corporate environment, system manageability is an important consideration. DMI (Desktop Management Interface) is a specification for a standard method of storing and reporting system information. This motherboard supports the DMI specification on the system BIOS level. DMI detects and records system configuration information, including the CPU type and speed, memory size and type, and much more information. DMI maintains a local database of system configuration information that can be accessed and even modified from a remote location.

The American Megatrends AMI_ClientCare utility is also shipped with this motherboard. AMI_ClientCare allows you to display system information, run diagnostic tests, and display system environmental parameters such as the CPU voltage, fan speed, and system voltage levels. See *the American Megatrends AMI_ClientCare User's Guide* for additional information.

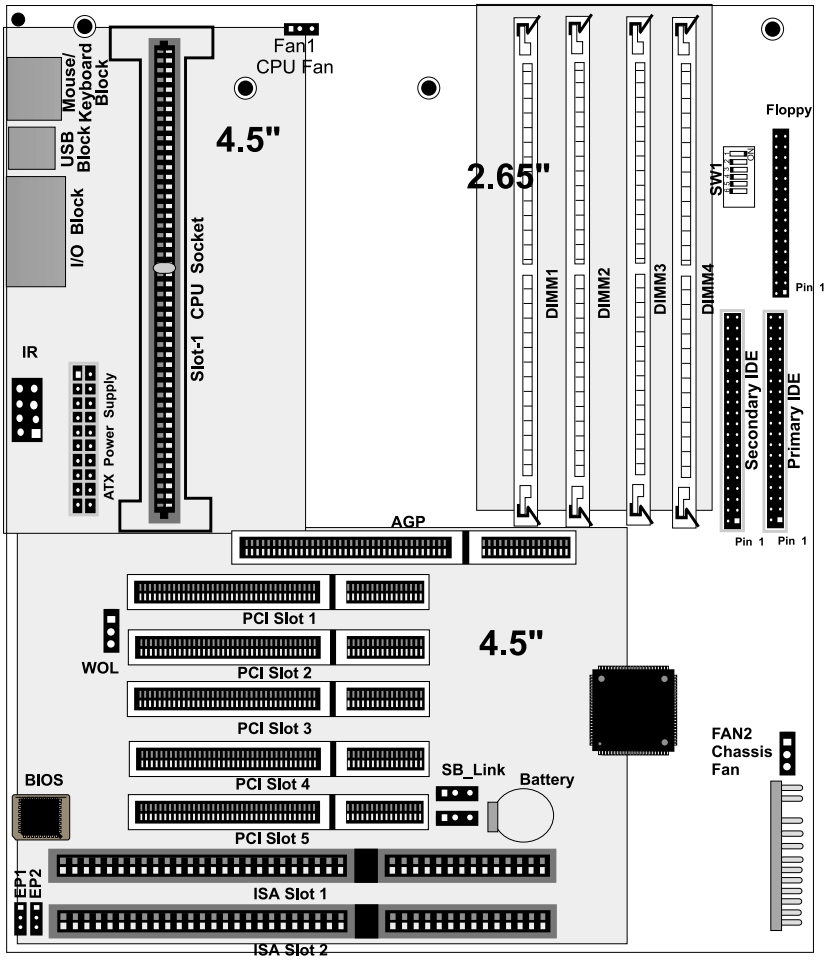
Infrared

This motherboard includes a 10-pin serial infrared connector. Infrared allows bidirectional cordless data transactions with other IrDA-compliant computers and peripheral devices. Infrared transmissions can occur in half-duplex (sequential transmission/receiving) or full-duplex (simultaneous transmission) modes.

A 10-pin infrared connector is provided on the motherboard. The motherboard and AMIBIOS comply with the IrDA SIR infrared device standards and specifications.

Olympus Dimensions

Motherboard Height Restrictions The Altantis II motherboard measures 7 1/8 inches by 12 inches. The areas on the motherboard with the height restrictions are shaded.



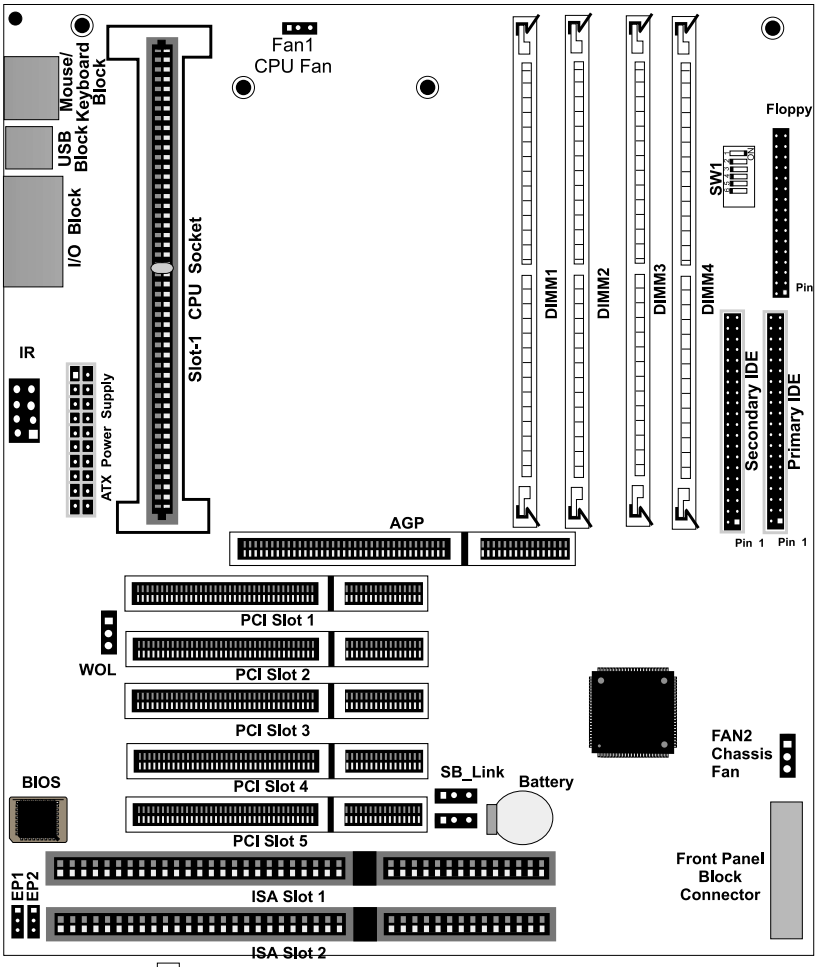
Installation Steps

Step	Action	Turn to
1	Unpack the motherboard.	page 13
2	Set Jumpers.	Page 14
3	Configure the CPU. Select the CPU voltage. Select the CPU speed.	Page 16 Page 16 Page 16
4	Install the CPU.	Page 17
5	Install memory. Install system memory.	Page 21 Page 21
6	Install the motherboard.	Page 23
7	Attach cables to connectors. Connect the power supply. Attach the keyboard and mouse cables. Attach cables	Page 24 Page 25 Page 25 Page 26
8	Connect onboard I/O. Connect the serial ports. Connect the parallel port.	Page 29 Page 29 Page 30
9	Connect floppy drive(s).	Page 31
10	Connect the IDE drive(s).	Page 32
11	Test and configure.	Page 37

Warning

This motherboard contains sensitive electronic components that can be easily damaged by static electricity. Follow the instructions carefully to ensure correct installation and to avoid static damage.

Olympus Motherboard Layout



A Square Pad □ identifies Pin 1 in Jumpers and Connectors.

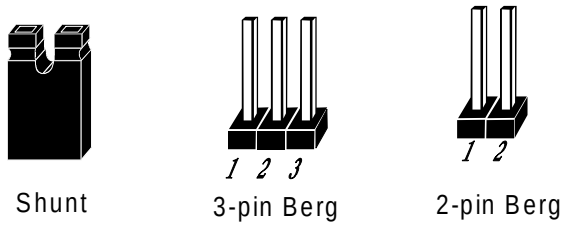
Step 1 Unpack the Motherboard

Step	Action
1	Inspect the cardboard carton for obvious damage. If damaged, call 770-246-8645. Leave the motherboard in its original packing.
2	Perform all unpacking and installation procedures on a ground-connected anti-static mat. Wear an anti-static wristband grounded at the same point as the anti-static mat. Or use a sheet of conductive aluminum foil grounded through a 1 megohm resistor instead of the anti-static mat. Similarly, a strip of conductive aluminum foil wrapped around the wrist and grounded through a 1 megohm resistor serves the same purpose as the wristband.
3	Inside the carton, the motherboard is packed in an anti-static bag, and sandwiched between sheets of sponge. Remove the sponge and the anti-static bag. Place the motherboard on a grounded anti-static surface component side up. Save the original packing material.
4	Inspect the motherboard for damage. Press down on all ICs mounted in sockets to verify proper seating. Do not apply power to the motherboard if it has been damaged.
5	If the motherboard is undamaged, it is ready to be installed.

Step 2 Set Jumpers

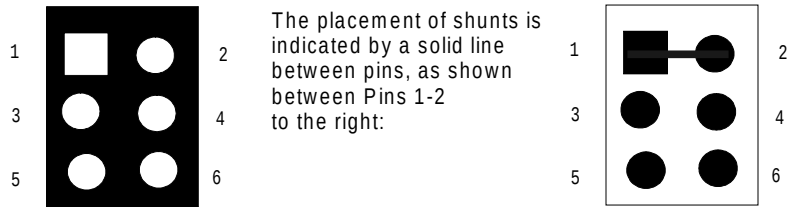
Set all jumpers and install the CPU before placing the motherboard in the chassis. Set jumpers by placing a shunt (shorting bridge) on the designated pins of the jumper. A shunt and jumpers are shown below:

3-dimensional view of motherboard jumpers and a shunt.



Shunt 3-pin Berg 2-pin Berg

In this manual, jumpers are shown in two -dimensions, as if viewed from directly above, as shown below:



The placement of shunts is indicated by a solid line between pins, as shown between Pins 1-2 to the right:

SW1 Clear Password Positions 5 and 6 on SW1 allows you to delete the system BIOS password should you forget the password. Set switch 5 ON and 6 OFF to clear the password. The default is switches 5 – 6 ON.

Cont'd

Step 2 Set Jumpers, Continued

EP1, EP2 Flash ROM Type EP1 and EP2 are 3-pin bergs that specify the type of flash ROM installed on the Olympus motherboard. The settings are:

Flash ROM Type	EP1	EP2
2 MB ROM		
MXIC MX28F2000P	Short Pins 1-2	Short Pins 2-3
SST 29EE010	Short Pins 2-3	Short Pins 2-3
ATMEL AT29C010	Short Pins 2-3	Short Pins 2-3
AMD AM29F002T	Short Pins 2-3	Short Pins 2-3

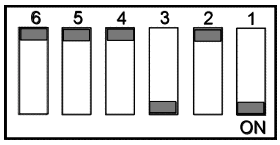
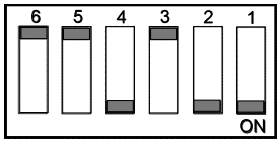
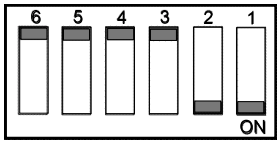
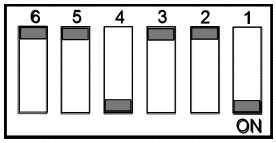
Avoid Static Electricity

Static electricity can damage the motherboard and other computer components. Keep the motherboard in the anti-static bag until it is to be installed. Wear an anti-static wrist grounding strap before handling the motherboard. Make sure you stand on an anti-static mat when handling the motherboard.

Avoid contact with any component or connector on any adapter card, printed circuit board, or memory module. Handle these components by the mounting bracket.

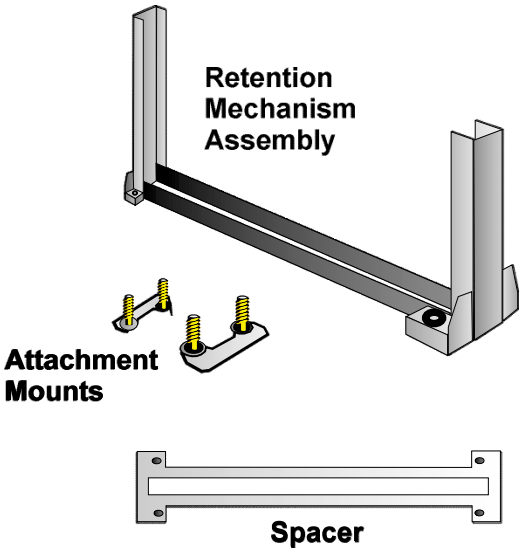
Step 3 Configure CPU

Switches 1 – 4 on SW1 are used to configure the internal frequency of the CPU:

Internal Frequency of CPU if Bus Frequency is 100 MHz	Internal Frequency of CPU if Bus Frequency is 66 MHz	SW1 Setting
350 MHz This is the factory setting.	233 MHz	
400 MHz	266 MHz	
450 MHz	300 MHz	
	333 MHz	

Step 4 Install CPU

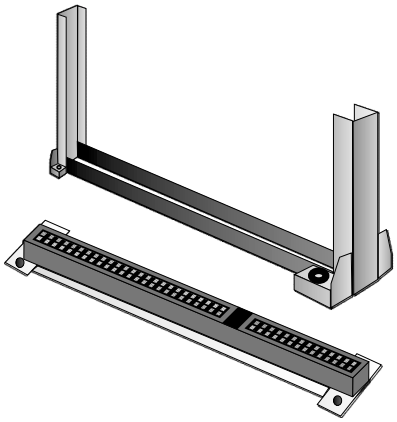
Retention Mechanism Kit You must mount the Intel Retention Mechanism Kit before installing all Pentium II/Pentium III CPU modules. This kit includes: the retention mechanism assembly, attachment mounts, and spacer, as shown below:



Step 4 Install CPU, Continued

Install Retention Mechanism Place the retention mechanism on top of the CPU socket, as shown below:

2. Install CPU Retention Module Assembly on top of spacer, fitting it completely over the CPU socket.

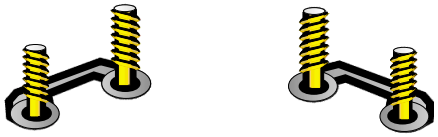


Install Attachment Mounts Place the two attachment mounts on the bottom of the motherboard, directly under the ends of the CPU socket.

3. Install the two attachment mounts on solder side of motherboard through mounting holes around the CPU Slot-1 connector. Make sure the attachment mounts face toward the ouside of the CPU Slot-1 connector.

Tighten the mounting screws from the top of the motherboard.

Do not over-tighten the screws.

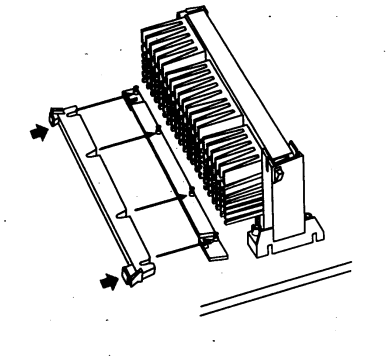


screw assembly

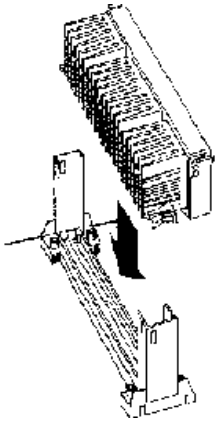
Cont'd

Step 4 Install CPU, Continued

Install the Heat Sink If the heat sink is not already installed on the CPU module, slide the heat sink top support into the lowest gap on the CPU module, as shown below:

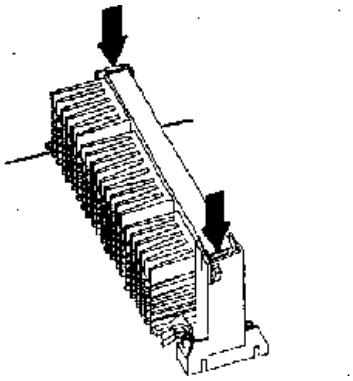


Then slide the CPU module into the Retention Mechanism Assembly, as shown below:

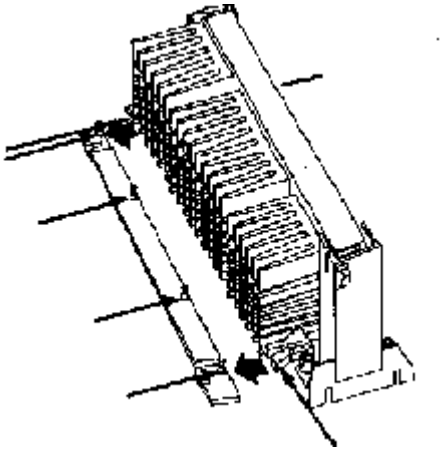


Cont'd

Install the Heat Sink, cont'd Press the buttons on either side of the CPU module, as shown below:



Hook the top support of the heat sink to the support base of the heat sink to complete the CPU module installation:



Step 5 Install Memory

System Memory The motherboard has four 168-pin SDRAM DIMM sockets.

The motherboard supports up to 512 MB of system memory mounted in the four motherboard DIMM sockets. You can use 8 MB, 16 MB, 32 MB, 64 MB, or 128 MB SDRAM PC100 DIMMs.

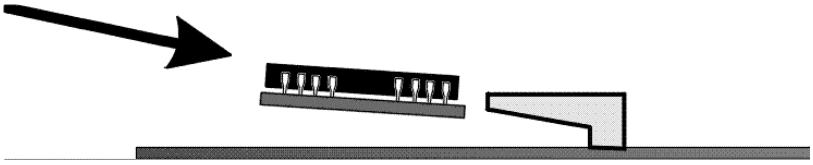
Supported System Memory Configurations

DIMM1	DIMM2	DIMM3	DIMM43	Total System Memory
8 MB				8 MB
8 MB	8 MB			16 MB
8 MB	8 MB	8 MB		24 MB
16 MB				16 MB
16 MB	16 MB			32 MB
16 MB	16 MB	16 MB		48 MB
32 MB				32 MB
32 MB	32 MB			64 MB
32 MB	32 MB	32 MB	32 MB	96 MB
64 MB				64 MB
64 MB	64 MB			128 MB
64 MB	64 MB	64 MB	64 MB	192 MB
128 MB				128 MB
128 MB	128 MB			256 MB
128 MB	128 MB	128 MB		384 MB
128 MB	128 MB	128 MB	128 MB	512 MB

Cont’d

Step 5 Install Memory, Continued

Installing DIMMs The motherboard has four DIMM (Dual Inline Memory Module) sockets. Place the motherboard on an anti-static mat. With the component side of the DIMM facing you, firmly push the DIMM into the socket at an angle, then push it up. When properly inserted, the DIMM clicks into place as the latching pins engage. The DIMM installation process is shown below:



Memory Display System memory is reported by AMIBIOS as it boots and again when the AMIBIOS System Configuration Screen displays just before the operating system boots. The memory displayed by AMIBIOS on the System Configuration Screen is 384 KB less than the total memory installed.

Step 6 Install the Motherboard

The motherboard mounting hole pattern is the same as the mounting hole pattern on the standard ATX motherboard. Standoffs and mounting screws are not supplied with the motherboard. The chassis manufacturer should supply these parts.

Step	Action
1	Place the chassis on an anti-static mat. Connect the chassis to ground to avoid static damage during installation. Connect an alligator clip with a wire lead to any unpainted part of the chassis. Ground the other end of the lead at the same point as the mat and the wristband.
2	Rotate the chassis so the front is to the right, and the rear is to the left. The side facing you is where the motherboard is mounted. The power supply is mounted at the far end of the chassis.
3	Hold the motherboard, component-side up, with the edge with the DIMM sockets toward you and the edge with the power supply connector away from you. The keyboard, mouse, and video connectors should be to the left.
4	Carefully slide the motherboard into the chassis. Make certain the edge connectors fit the ports in the rear of the chassis. The motherboard should rest level with the chassis.
5	Place the mounting screws in the holes provided and tighten them. If necessary, shift the motherboard slightly to align the mounting holes on the motherboard with the holes on the chassis.

Warning

If using metallic screws, make sure you use them only in the plated mounting holes.

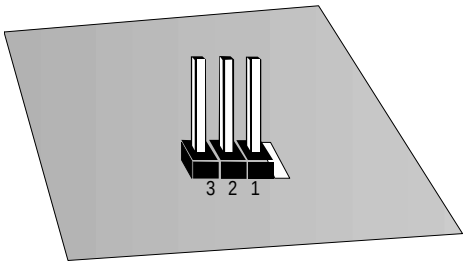
If using metallic screws, make sure the head of the screw fits completely inside the plated mounting holes.

Step 7 Attach Cables

Connectors The motherboard connectors are:

Connector	Turn to
Power Supply Connector	page 25
Keyboard and Mouse Connectors	Page 25
CPU Fan	Page 26
Chassis Fan	Page 26
IR Infrared	Page 27
USB Connectors	Page 27
Block Connector	Page 28
Speaker	Page 29
IDE LED	Page 29
Remote Power Switch	Page 29
Hardware Reset Switch	Page 29
Power LED (lit when power is on)	Page 29
Keyboard Lock	Page 29
Turbo LED (lit when high speed is active)	Page 29
Suspend Mode Switch	Page 29
Suspend LED (lit when system in suspend mode)	Page 29
Serial Ports	Page 29
Parallel Port	Page 30
Floppy Drive Connector	Page 31
IDE Drive Connectors	Page 33

Cable Connector Ends When connecting chassis connectors to the motherboard, make sure to connect the correct connector end. Most connector wires are color-coded. Match the color of the wires leaving the switch or LED to the same pin on the connector end. There may be more than one connector with the same color-coded wires. If so, follow the wire to the switch or LED. Pin 1 is indicated.



Cont'd

CPU Fan

A three-pin berg labeled FAN1 attaches to the CPU fan. The FAN1 connector is near the end of the CPU module socket.

Pin	Description
1	Ground
2	+12V
3	LM78 (SENSE1 signal)

Chassis Fan

A three-pin berg labeled FAN2 attaches to the chassis cooling fan. The FAN2 connector is near the block connector.

Pin	Description
1	Ground
2	+12V
3	LM78 (SENSE2 signal)

Cont'd

IR Infrared The 10-pin (2 by 5) infrared connector (IR) near the edge of the motherboard and the ATX power connector attaches to an infrared port mounted on the computer chassis. It allows data transmission to any other device that supports the IrDA standards for infrared transmission. The infrared connector pinout is:

Pin	Description	Pin	Description
6	Ground	1	VCC
7	IRTX	2	VCC
8	IRTX	3	IRRX
9	VCC	4	FIRRX
10	VCC	5	Ground

USB Connectors The motherboard has two 4-pin headers (USB1 and USB2) that attach to a USB connector on the chassis. The USB port allows you to attach to a USB hub. The USB connector pinouts are the same for both USB connectors:

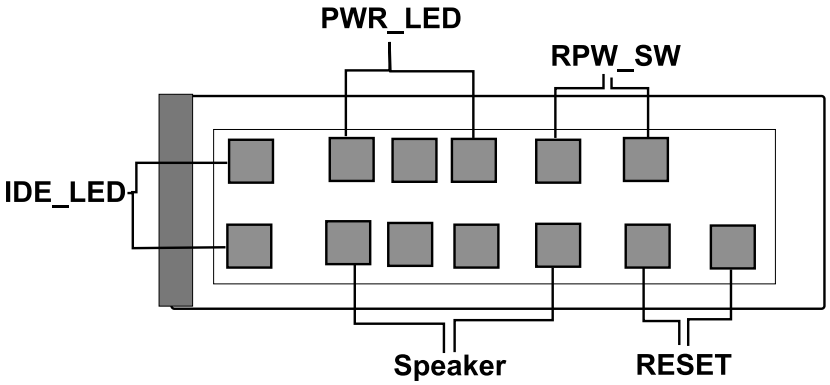
Pin	Signal Description
1	VCC (Fused 5V)
2	SBD-
3	SBD+
4	Ground

Cont'd

Front Panel Block Connector The Front panel block connector is used to attach connectors to switches and LEDs on the front panel of the computer. See page 12 for the location of the front panel connector.

Attach the cables from the IDE LED, Power LED, Remote Power Switch, Speaker switch, and Reset switches to the block connector.

The front panel connector layout and pin descriptions are shown below:



Step 8 Connect Onboard I/O

Onboard I/O

The Olympus motherboard has:

- two serial ports (COM1 and COM2),
- a parallel port (LPT),
- an IDE controller on the PCI bus. The primary IDE connector is IDE1. The secondary connector is IDE2.
- a floppy controller (FDD).

The serial and parallel port connectors are described below. The floppy connector is described on page 31. The IDE connector is described on page 33.

Conflicts

AMIBIOS minimizes conflicts between onboard and offboard I/O devices.

AMIBIOS automatically checks the adapter cards installed in the expansion slots on the Olympus motherboard for a hard disk or floppy controller and serial or parallel ports.

Serial Ports

COM1 and COM2 are DB9 connectors that provide an AT-compatible serial port interface. Connect the cables supplied with the motherboard to the DB9 serial connectors. The serial port base I/O port address and other serial port settings can be selected in Peripheral Setup in AMIBIOS Setup. The serial connector pinout is shown below.

Pin	Description	Pin	Signal Description
1	Carrier Detect	6	Data Set Ready
2	Receive Data	7	Request to Send
3	Transmit Data	8	Clear to Send
4	Data Terminal Ready	9	Ring Indicator
5	Ground		

Cont’d

Parallel Port

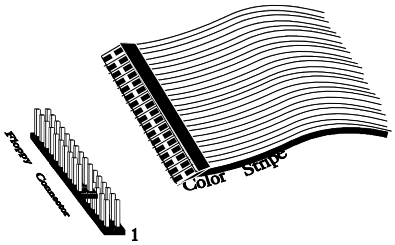
PRINTER is a DB25 connector for a parallel port. The LPT pinout is shown below. All parallel port settings can be configured through Peripheral Setup in AMIBIOS Setup.

Pin	Signal Description	Pin	Signal Description
1	STROBE#	2	PD0
3	PD1	4	PD2
5	PD3	6	PD4
7	PD5	8	PD6
9	PD7	10	ACK#
11	BUSY	12	PE
13	SLCT	14	AUTOFD#
15	ERROR#	16	INIT#
17	SLCTIN#	18	Ground
19	Ground	20	Ground
21	Ground	22	Ground
23	Ground	24	Ground
25	Ground		

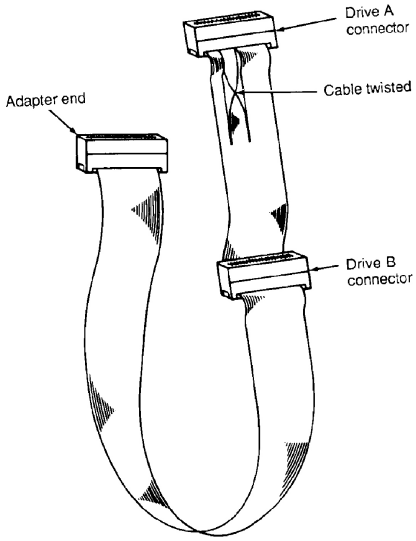
Step 9 Attach Floppy Drive

FLOPPY

FLOPPY is a 34-pin dual-inline berg. Connect the cable from the floppy drive to FLOPPY, as shown below. The onboard floppy controller cannot be used if a hard disk card with a floppy controller is installed. Choose Standard Setup and Peripheral Setup to configure the floppy controller.



The motherboard supports up to two 720 KB, 1.44 MB, or 2.88 MB 3½" drives and 360 KB and 1.2 MB 5¼" drives. The connecting cable is a 34-pin ribbon connector with two 34-pin edge connectors for attaching the floppy disk drives. There is a small twist in the cable between the floppy connectors. The last (end) connector should be connected to floppy drive A: as shown below.



Cont'd

Step 9 Attach Floppy Drive, Continued

Floppy Connector Pinout

Pin	Use	Pin	Use
1	GND	2	DENSE1
3	GND	4	N/C
5	GND	6	DRATE0
7	GND	8	-INDEX
9	GND	10	-MOTOR0
11	GND	12	-FDSEL1
13	GND	14	-FDSEL0
15	GND	16	-MOTOR1
17	GND	18	DIR
19	GND	20	-
21	GND	22	-WDATA
23	GND	24	-WGATE
25	GND	26	-TRK0
27	GND	28	-WRPROT
29	GND	30	-RDATA
31	GND	32	HDSEL
33	GND	34	DSKCHNG

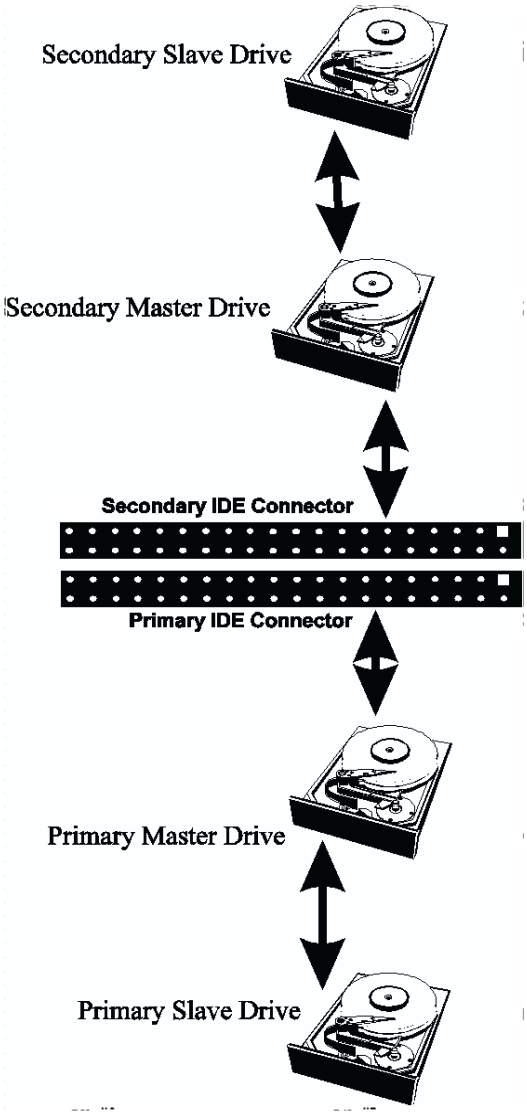
Twist in Floppy Cable

Floppy B to A	Floppy B to A	Floppy B to A	Floppy B to A
10 to 16	12 to 14	14 to 12	16 to 10
11 to 15	13 to 13	15 to 11	

Step 10 Attach IDE Drive

IDE Drives

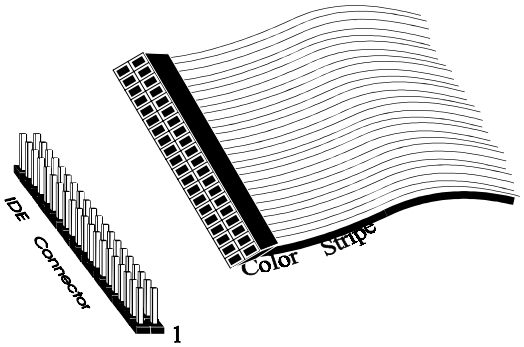
Attach the IDE drives in the following manner. Choose Peripheral Setup in AMIBIOS Setup to enable the onboard IDE controller.



Cont'd

Step 10 Attach IDE Drive, Continued

Attach IDE Cable The primary IDE (Integrated Drive Electronics) hard disk drive connector is marked PRIMARY. Both the primary master and the primary slave IDE drives must be connected by cable to PRIMARY, as shown below.



PRIMARY is a 40-pin dual-inline berg that connects an IDE drive to the primary onboard IDE connector. This motherboard supports IDE Modes 0, 1, 2, 3, and 4, IDE prefetch, LBA (Logical Block Address) mode, high capacity drives (over 528 MB), 32-bit data transfer, and fast IDE transfer. These IDE features are configured in Peripheral Setup in the AMIBIOS Setup utility. Disable the onboard IDE interface in Peripheral Setup to use an ISA ESDI, RLL, MFM, or SCSI hard disk drive controller.

Cont'd

PRIMARY Pinout The PRIMARY IDE pinout is:

Pin	Use	Pin	Use
1	-RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	KEY (N/C)
21	N/C	22	GND
23	-IOW	24	GND
25	-IOR	26	GND
27	IDERDY	28	ALE
29	N/C	30	GND
31	INT14	32	-IOCS16
33	HA1	34	N/C
35	HA0	36	HA2
37	-CS0	38	-CS1
39	-IDEACT	40	GND

Secondary IDE Controller The secondary IDE connector is labeled SECONDARY. It connects the secondary primary and slave IDE drives to the secondary onboard IDE controller.

Attach the secondary master and slave IDE drives to IDE2 via a standard 40-pin IDE cable as shown on page 34.

Cont’d

SECONDARY IDE Pinout The SECONDARY pinout is:

Pin	Use	Pin	Use
1	-RESET	2	GND
3	DATA7	4	DATA8
5	DATA6	6	DATA9
7	DATA5	8	DATA10
9	DATA4	10	DATA11
11	DATA3	12	DATA12
13	DATA2	14	DATA13
15	DATA1	16	DATA14
17	DATA0	18	DATA15
19	GND	20	KEY (N/C)
21	N/C	22	GND
23	-IOW	24	GND
25	-IOR	26	GND
27	IDERDY	28	ALE
29	N/C	30	GND
31	INT15	32	-IOCS16
33	HA1	34	N/C
35	HA0	36	HA2
37	-CS2	38	-CS3
39	N/C	40	GND

Step 11 Test and Configure

Review the following points before powering up:

- make sure that all adapter cards are seated properly,
- make sure all connectors are properly installed,
- make sure the CPU is seated properly,
- make sure there are no screws or other foreign material on the motherboard,
- plug the system into a surge-protected power strip, and
- make sure blank back panels are installed on the back of the chassis to minimize RF emissions.

Start the Test Plug everything in and turn on the switch. If there are any signs of a problem, turn off the unit immediately. Reinstall the connectors. Call Technical Support if there are problems.

BIOS Errors If the system operates normally, a display should appear on the monitor. The BIOS Power On Self Test (POST) should execute.

If POST does not run successfully, it will beep or display error messages. Beeps indicate a serious problem with the system configuration or hardware. The Beep Code indicates the problem. AMIBIOS Beep Codes are defined in *the AMIBIOS Technical Reference.* Make sure the affected part is properly seated and connected. An error message is displayed if the error is less serious. Recheck the system configuration or the connections.

Configure the System Run AMIBIOS Setup. You must enter the requested information and save the configuration data in CMOS RAM. The system will then reset, run POST, and boot the operating system. See the following chapter for information about configuring the computer.

2 AMIBIOS Setup

In ISA and EISA computers, the system parameters (such as amount of memory, type of disk drives and video displays, and many other elements) are stored in CMOS RAM. Unlike the DRAM (dynamic random access memory) that is used for standard system memory, CMOS RAM requires very little power. When the computer is turned off, a back-up battery provides power to CMOS RAM, which retains the system parameters. Every time the computer is powered-on, the computer is configured with the values stored in CMOS RAM by the system BIOS, which gains control when the computer is powered on.

The system parameters are configured by a system BIOS Setup utility. Historically, BIOS Setup utilities have been character-based, required keyboard input, and have had user interfaces that were not very intuitive.

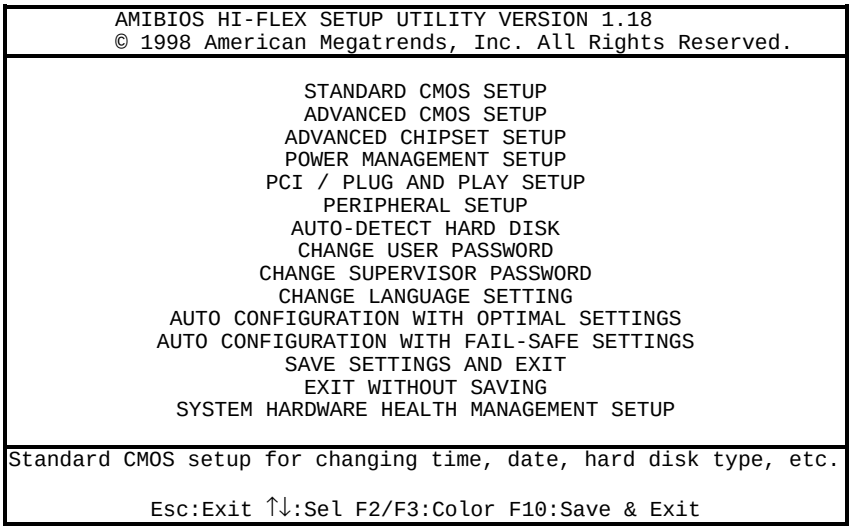
Starting AMIBIOS Setup As POST executes, the following appears:

```
Hit DEL if you want to run SETUP
```

Press Delete to run AMIBIOS Setup.

AMIBIOS Setup Menu

The AMIBIOS Setup main menu appears as follows. Each menu item is described in this chapter.



Section 1 Standard Setup

Choose Standard CMOS Setup from the AMIBIOS Setup main menu. All Standard Setup options are described in this section. The Standard CMOS Setup screen is shown below.

```
                AMIBIOS SETUP-STANDARD CMOS SETUP
      (C)1998 American Megatrends, Inc. All Rights Reserved

Date (mm/dd/yyyy): Thu May 28,1998          Base Memory: 640 KB
Time (hh/mm/ss) : 16:05:13                  Extd Memory: 255 KB

Floppy Drive A: 1.44MB 3½
Floppy Drive B: Not Installed

                                            LBA  Blk  PIO 32Bit
               Type Size Cyln Head Wpcom Sec Mode Mode Mode Mode
Pri Master: Auto 42   40  981   5    981  17  Off  Off  Auto On
Pri Slave: Not Installed
Sec Master: Not Installed
Sec Slave: Not Installed

Boot Sector Virus Protection Disabled

Month:  Jan – Dec                           ESC:Exit       ↑↓:Sel
Day:    01 – 31                             PgUp/PgDn:Modify
Year:   1901 – 2099                         F2/F3:Color
```

Date/Time

Select Standard CMO Setup from the AMIBIOS Setup main menu. Highlight Date or Time using the arrow keys. Enter new values through the keyboard. Press the <Tab> key or the arrow keys to move between fields. The date must be entered in MM/DD/YYYY format. The time is entered in HH:MM:SS format. The time is in 24-hour format, also. For example, 5:30 a.m. appears as 05:30:00, and 5:30 p.m. as 17:30:00.

Press <PgUp> or <PgDn> after you have selected an option to display the complete list of valid setting in the bottom section of the screen. For example, when the cursor is in the Date field, the options for month, day, and year display, as seen in the screen above.

Cont’d

Floppy Drive A: and B: Move the cursor to these fields via ↑ and ↓ and select the floppy type. The settings are *360 KB 5¼ inch*, *1.2 MB 5¼ inch*, *720 KB 3½ inch*, or *1.44 MB 3½ inch.*

Boot Sector Virus Protection This option is near the bottom of the Standard Setup screen. The settings are *Enabled* or *Disabled.* Choose *Enabled* to enable boot sector protection. AMIBIOS displays a warning when any program (or virus) issues a Disk Format command or attempts to write to the boot sector of the hard disk drive. If enabled, the following appears when a write is attempted to the boot sector. You may have to type *N* several times to prevent the boot sector write.

```
Boot Sector Write!!!
Possible VIRUS: Continue (Y/N)? _
```

The following appears after any attempt to format any cylinder, head, or sector of any hard disk drive via the BIOS INT 13 Hard Disk Drive Service:

```
Format!!!
Possible VIRUS: Continue (Y/N)? _
```

Cont'd

Primary Master, Primary Slave, Secondary Master, Secondary Slave Select one of these hard disk drives to configure the hard disk drive named in the option. Press ENTER to autodetect. The settings for each of these drives are:

Setting	How to Configure
1 – 46 Predefined types	If you are configuring an old MFM drive and you know the drive type, select the correct drive type between 1 – 46.
USER: Enter parameters manually	If you are installing an old MFM drive and you do not know the drive type or the drive parameters do not match the drive parameters for types 1 – 46, enter the correct hard disk drive parameters.
AUTO: Set parameters automatically on each boot	Select *Auto* to let AMIBIOS determine the parameters. Click on OK when AMIBIOS displays the drive parameters. You can also change these parameters if you do not think AMIBIOS detected the drive parameters correctly or if you want to enable an enhanced IDE feature. You can modify these parameters as follows: Select *LBA/Large Mode*. Select *On* if the drive has a capacity greater than 540 MB. Select *Block Mode*. Select *On* to allow block mode data transfers. Select *32-Bit Mode*. Select *On* to allow 32-bit data transfers. Select the *PIO Mode*. It is best to select *Auto* to allow AMIBIOS to determine the PIO mode. If you select a PIO mode that is not supported by the IDE drive, the drive will not work properly. If you are absolutely certain that you know the drive's PIO mode, select PIO mode 0 - 5, as appropriate.
CDROM: Use for ATAPI CDROM drives	Select *CDROM* if configuring an ATAPI drive. AMIBIOS displays the drive parameters.
ARMD: Use for LS120, MO, Iomega Zip drives	Select this setting if you are configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive.

Cont'd

Entering Drive Parameters You can also enter the hard disk drive parameters. The drive parameters are:

Parameter	Description
Type	The number for a drive with certain identification parameters.
Size	The formatted size of the drive is the number of heads times the number of cylinders times the number of sectors per track times 512 (bytes per sector).
Cylinders	The number of cylinders in the disk drive.
Heads	The number of heads.
Write Precompensation	The actual physical size of a sector gets progressively smaller as the track diameter diminishes. Yet each sector must still hold 512 bytes. Write precompensation circuitry on the hard disk compensates for the physical difference in sector size by boosting the write current for sectors on inner tracks. This parameter is the track number on the disk surface where write precompensation begins.
Landing Zone	This number is the cylinder location where the heads normally park when the system is shut down.
Sectors	The number of sectors per track. MFM drives have 17 sectors per track. RLL drives have 26 sectors per track. ESDI drives have 34 sectors per track. SCSI and IDE drives have even more sectors per track.
LBA Mode	LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 8.4GB.
Blk Mode	Block mode boosts IDE drive performance by increasing the amount of data transferred. Only 512 bytes of data can be transferred per interrupt if block mode is not used. Block mode allows transfers of up to 64 KB per interrupt.
PIO Mode	IDE PIO mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases.
32Bit Mode	Hard disk drives connected to the computer via the ISA bus transfer data 16 bits at a time. An IDE drive on the PCI bus or VL-Bus can use a 32-bit data path.

Cont'd

Hard Disk Drive Types

Type	Cylinders	Heads	Write Precompensation	Landing Zone	Sectors	Size
1	306	4	128	305	17	10 MB
2	615	4	300	615	17	20 MB
3	615	6	300	615	17	31 MB
4	940	8	512	940	17	62 MB
5	940	6	512	940	17	47 MB
6	615	4	65535	615	17	20 MB
7	462	8	256	511	17	31 MB
8	733	5	65535	733	17	30 MB
9	900	15	65535	901	17	112 MB
10	820	3	65535	820	17	20 MB
11	855	5	65535	855	17	35 MB
12	855	7	65535	855	17	50 MB
13	306	8	128	319	17	20 MB
14	733	7	65535	733	17	43 MB
16	612	4	0	663	17	20 MB
17	977	5	300	977	17	41 MB
18	977	7	65535	977	17	57 MB
19	1024	7	512	1023	17	60 MB
20	733	5	300	732	17	30 MB
21	733	7	300	732	17	43 MB
22	733	5	300	733	17	30 MB
23	306	4	0	336	17	10 MB
24	925	7	0	925	17	54 MB
25	925	9	65535	925	17	69 MB
26	754	7	754	754	17	44 MB
27	754	11	65535	754	17	69 MB
28	699	7	256	699	17	41 MB
29	823	10	65535	823	17	68 MB
30	918	7	918	918	17	53 MB
31	1024	11	65535	1024	17	94 MB
32	1024	15	65535	1024	17	128 MB
33	1024	5	1024	1024	17	43 MB
34	612	2	128	612	17	10 MB
35	1024	9	65535	1024	17	77 MB
36	1024	8	512	1024	17	68 MB
37	615	8	128	615	17	41 MB
38	987	3	987	987	17	25 MB
39	987	7	987	987	17	57 MB
40	820	6	820	820	17	41 MB
41	977	5	977	977	17	41 MB
42	981	5	981	981	17	41 MB
43	830	7	512	830	17	48 MB
44	830	10	65535	830	17	69 MB
45	917	15	65535	918	17	114 MB
46	1224	15	65535	1223	17	152 MB
	AMIBIOS automatically sets IDE drive parameters. Select USER to enter MFM, ESDI, or RLL drive parameters. Select Not Installed for SCSI drives. Select CDROM for CD-ROM drives.					

Section 2 Advanced Setup

Choose Advanced Setup from the AMIBIOS Setup main menu. Advanced Setup options are displayed by highlighting the option using the arrow keys. All Advanced Setup options are described in this section.

Quick Boot Set this option to *Enabled* to instruct AMIBIOS to boot quickly when the computer is powered on. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Primary Master ARMD Emulated As
Primary Slave ARMD Emulated As
Secondary Master ARMD Emulated As
Secondary Slave ARMD Emulated As These options specify the type of standard PC drive that an ARMD drive will use when attached as a master or slave to the specified IDE channel. The settings are *Auto* (AMIBIOS automatically determines the correct type of drive emulation), *Floppy*, or *Hard Disk.* The Optimal and Fail-Safe default settings are *Auto.*

If *Auto* is selected, AMIBIOS configures ARMD drives as follows:

Type of ARMD Device	Drive Emulation Configured
LS120	Floppy
Iomega Zip drive	Hard Disk
Magneto-Optical drive	Hard Disk

1st Boot Device This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled, NETWORK, Floppy, ARMD-FDD, ARMD-HDD, ATAPI CDROM, I2O, 1st IDE-HDD, 2nd IDE-HDD, 3rd IDE HDD,* or *4th IDE-HDD.* The default setting is *Floppy*. The Optimal and Fail-Safe default settings are *1st IDE-HDD.*

Cont'd

2nd Boot Device This option sets the type of device for the second boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Disabled*. The Optimal and Fail-Safe default settings are *Floppy*.

3rd Boot Device This option sets the type of device for the third boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are *Disabled*, *Floppy*, *ARMD-FDD*, *ARMD-HDD*, *ATAPI CDROM*, *1st IDE-HDD*, *2nd IDE-HDD*, *3rd IDE HDD*, or *4th IDE-HDD*. The default setting is *Disabled*. The Optimal and Fail-Safe default settings are *ATAPI CDROM*.

Try Other Boot Devices Set this option to *Yes* to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the **1st Boot Device, 2nd Boot Device,** and **3rd Boot Device** options. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Initialize I2O Devices The settings are *Yes* and *No*. If you select *Yes*, AMIBIOS will initialize the I2O processors, I2O storage devices, and provide INT13 support for I2O storage devices. If *No*, AMIBIOS will not initialize I2O processors and I2O storage devices.

Initialize Display Mode This option specifies the initial display mode when the system boots. The settings are:

Setting	Description
BIOS	The messages that AMIBIOS displays before booting the system will appear on the system monitor.
Silent	The messages that AMIBIOS displays will not appear on the system monitor.

The Optimal and Fail-Safe settings are *BIOS*.

Cont'd

Display Mode at Add-On ROM Init This option specifies the system display mode that is set at the time that AMIBIOS POST initializes an optional ROM. The settings are:

Setting	Description
Force BIOS	The display mode currently being used by AMIBIOS is used.
Keep Current	The current display mode is used.

The Optimal and Fail-Safe default settings are *Force BIOS*.

Floppy Access Control This option specifies the read/write access that is set when booting from a floppy drive. The settings are *Read-Write* or *Read-Only*. The Optimal and Fail-Safe default settings are *Read-Write*.

Hard Disk Access Control This option specifies the read/write access that is set when booting from a hard disk drive. The settings are *Read-Write* or *Read-Only*. The Optimal and Fail-Safe default settings are *Read-Write*.

S.M.A.R.T. for Hard Disks Set this option to *Enabled* to permit AMIBIOS to use the SMART (Self Monitoring Analysis and Reporting Technology) protocol for reporting server system information over a network. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Disabled*.

Boot Up Num Lock Set this option to *On* to turn the Num Lock key On at system boot. The settings are *On* or *Off*. The Optimal and Fail-Safe default settings are *On*.

PS/2Mouse Support Set this option to *Enabled* to enable AMIBIOS support for a PS/2-type mouse. The settings are *Enabled* or *Disabled*. The Optimal and Fail-Safe default settings are *Enabled*.

Cont'd

Primary Display This option configures the type of monitor attached to the computer. The settings are *Mono, CGA40x25, CGA80x25, VGA/EGA,* or *Absent*. The Optimal and Fail-Safe default settings are *VGA/EGA.*

Password Check This option enables the password check option every time the system boots or the end user runs Setup. If *Always* is chosen, a user password prompt appears every time the computer is turned on. If *Setup* is chosen, the password prompt appears if AMIBIOS is executed. See page 66 for instructions on changing a password. The Optimal and Power-On defaults are *Setup.*

Boot To OS/2 Set this option to *Yes* if running OS/2 operating system and using more than 64 MB of system memory on the motherboard. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *No.*

Internal Cache This option sets the type of caching algorithm used by the L1 internal cache memory. The settings are *WriteBack, WriteThru,* or *Disabled.* The Optimal and Fail-Safe default settings are *WriteBack.*

System BIOS Cacheable When set to *Enabled,* the contents of the F0000h system memory segment can be read from or written to cache memory. The contents of this memory segment are always copied from the BIOS ROM to system RAM for faster execution. The settings are *Enabled* or *Disabled.* The default setting is *Enabled*. The Optimal setting is *Enabled.* The Fail-Safe setting is *Disabled.*

Cont'd

C000,16K Shadow
C400,16K Shadow This option controls the location of the contents of video ROM. The settings are:

Setting	Description
Enabled	The contents of the video ROM area (C0000h - C7FFFh) are written to the corresponding address in RAM.
Cached	The contents of the video ROM area (C0000h - C7FFFh) are written to the corresponding RAM address and can be read from or written to cache memory.
Disabled	The video ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

The Optimal and Fail-Safe default settings are *Cached.*

C800,16K Shadow
CC00,16K Shadow
D000,16K Shadow
D400,16K Shadow
D800,16K Shadow
DC00,16K Shadow These options enable shadowing of the contents of the ROM area in the option title.

Setting	Description
Enabled	The contents of the ROM area are written to the corresponding address in RAM for faster execution.
Cached	The contents of the ROM area are written to the corresponding RAM address and can be read from or written to cache memory.
Disabled	The ROM is not copied to RAM. The contents of the video ROM cannot be read from or written to cache memory.

The Optimal and Fail-Safe default settings are *Cached*.

Section 3 Advanced Chipset Setup

Choose Advanced Chipset Setup from the AMIBIOS Setup main menu. All Chipset Setup options are described below.

USB Function Set this option to *Enabled* to enable the system BIOS USB (Universal Serial Bus) functions. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

USB Keyboard/Mouse Legacy Support Set this option to *Keyboard* to enable USB support for legacy keyboards and mice. The settings are *Keyboard*, *Auto*, *Keyb+Mouse*, or *Disabled.* The Optimal and Fail-Safe default settings are *Keyboard.*

Port 64/60 Emulation The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

SERR# Set this option to *Enabled* to enable the SERR# signal on the bus. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

PERR# Set this option to *Enabled* to enable the PERR# signal on the bus. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

USWC Write Post This option sets the status of USWC (Uncacheable, Speculatable, Write-Combined) posted writes. The settings are:

Settings	Description
Enabled	USWC posted writes to I/O are enabled.
Disabled	USWC posted writes to I/O are disabled.

The Optimal and Fail-Safe default settings are *Enabled.*

Cont'd

BX Master Latency Timer (Clks) This option specifies the master latency timings (in PCI clocks) for devices in the computer. The settings are *Disabled, 32, 64, 96, 128, 160, 192,* or *224.* The Optimal and Fail-Safe default settings are *64.*

Multi-Trans Timer (Clks) This option specifies the multi-trans latency timings (in PCI clocks) for devices in the computer. The settings are *Disabled, 32, 64, 96, 128, 160, 192,* or *224.* The Optimal and Fail-Safe default settings are *32.*

PCI1 to PCI0 Access Set this option to *Enabled* to enable access between two different PCI buses (PCI1 and PCI0). The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

DRAM Integrity Mode This option sets the type of system memory checking. The settings are:

Setting	Description
None	No error checking or error reporting is done.
ECC	Multibit errors are detected and reported as parity errors. Single-bit errors are corrected by the chipset. Corrected bits of data from memory are not written back to DRAM system memory. If *Level I* is selected, the J25 External SMI software jumper on the Series 745 board is disabled.
ECC Hardware	Multibit errors are detected and reported as parity errors. Single-bit errors are corrected by the chipset and are written back to DRAM system memory. If a soft (correctable) memory error occurs, writing the fixed data back to DRAM system memory will resolve the problem. Most DRAM errors are soft errors. If a hard (uncorrectable) error occurs, writing the fixed data back to DRAM system memory does not solve the problem. In this case, the second time the error occurs in the same location, a Parity Error is reported, indicating an uncorrectable error. If *ECCI* is selected, AMIBIOS automatically enables the System Management Interface (SMI). If you do not want to enable power management, set the **Power Management/APM** option to *Disabled* and set all Power Management Setup timeout options to *Disabled.* To enable power management, set **Power Management /APM** to *Enabled* and set the power management timeout options as desired.

The Optimal and Fail-Safe default settings are *ECC Hardware*.

Cont'd

Memory Hole This option specifies the location of an area of memory that cannot be addressed on the ISA bus. The settings are *Disabled, 15 MB-16 MB,* or *512KB-640KB.* The Optimal and Fail-Safe default settings are *Disabled.*

ACPI Control Register Set this option to *Enabled* to enable the ACPI (Advanced Configuration and Power Interface) control register. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Enabled.*

Graphics Aperture Size This option specifies the amount of system memory that can be used by the Accelerated Graphics Port (AGP). The settings are *4 MB, 8 MB, 16 MB, 32 MB, 64 MB, 128 MB, or 256 MB.* The Optimal and Fail-Safe default settings are *64 MB.*

AGP Mlti-Trans Timer (AGP Clocks) This option sets the AGP multi-trans timer. The settings are in units of AGP Clocks. The settings are *32, 64, 96, 128, 160, 192, 224,* or *Disabled.* The Optimal default setting is *32.* The Fail-Safe default setting is *Disabled.*

AGP Low-Priority Timer (AGP Clks) This option sets the AGP low-priority timer. The settings are in units of AGP Clocks. The settings are *16, 32, 48, 64, 80, 96, 112, 128, 144, 160, 176, 192, 208, 224,* or *Disabled*. The Optimal default setting is *16.* The Fail-Safe default setting is *Disabled*.

8-Bit I/O Recovery Time This option specifies the length of a delay inserted between consecutive 8-bit I/O operations. The settings are *Disabled, 1 SYCLK, 2 SYSCLKs, 3 SYSCLKs, 4 SYSCLKs, 5 SYSCLKs, 6 SYSCLKs,* or *8 SYSCLKs.* The Optimal and Fail-Safe default settings are *Disabled.*

Cont’d

16-Bit I/O Recovery Time This option specifies the length of a delay inserted between consecutive 16-bit I/O operations. The settings are *Disabled, 1 SYCLK, 2 SYSCLKs, 3 SYSCLKs,* or *4 SYSCLKs.* The Optimal and Fail-Safe default settings are *Disabled.*

TypeF DMA BufferControl1
TypeF DMA Buffer Control2 These options specify the DMA channel where TypeF buffer control is implemented. The settings are *Disabled, Channel-0, Channel-1, Channel-2, Channel-3, Channel-5, Channel-6,* or *Channel-7.* The Optimal and Fail-Safe default settings are *Disabled.*

DMA-0 Type
DMA-1 Type
DMA-2 Type
DMA-3 Type
DMA-5 Type
DMA-6 Type
DMA-7 Type These options specify the bus that the specified DMA channel can be used on. The settings *are PC/PCI, Distributed,* or *Normal ISA.* The Optimal and Fail-Safe default settings are *Normal ISA.*

Section 4 Power Management Setup

Choose Power Management Setup from the AMIBIOS Setup main menu. All Power Management Setup options are described in this section.

ACPI Aware O/S Set this option to *Yes* if the operating system you are running under complies with the Intel ACPI (Advanced Configuration and Power Interface) specification. The settings are *Yes* or *No.* The Optimal and Fail-Safe default settings are *No.*

Power Management/APM Set this option to *Enabled* to enable the chipset power management and APM (Advanced Power Management) features. The settings are *Enabled* or *Disabled.* The Optimal and Fail-Safe default settings are *Disabled.*

Power Button Function This option specifies how the power button mounted externally on the computer chassis is used. The settings are:

Setting	Description
On/Off	Pushing the power button turns the computer on or off.
Suspend	Pushing the Power button places the computer in Suspend mode or Full On power mode.

The Optimal and Fail-Safe default settings are *On/Off.*

Green PC Monitor Power State This option specifies the power state that the green PC-compliant video monitor enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are *Stand By, Suspend,* or *Off.* The Optimal default setting is *Suspend*. The Fail-Safe default setting is *Stand By.*

Cont'd

Power Management Setup, Continued

Video Power Down Mode This option specifies the power state that the video subsystem enters when AMIBIOS places it in a power saving state after the specified period of display inactivity has expired. The settings are *Standby, Suspend* or *Disabled.* The Optimal default setting is *Stand By*. The Fail-Safe default setting is *Disabled.*

Hard Disk Power Down Mode This option specifies the power conserving state that the hard disk drive enters after the specified period of hard drive inactivity has expired. The settings are *Disabled, Stand By,* or *Suspend.* The Optimal default setting is *Suspend*. The Fail-Safe default setting is *Disabled*.

Hard Disk Time Out (Minute) This option specifies the length of a period of hard disk drive inactivity. When this length of time expires, the computer enters power-conserving state specified in the **Hard Disk Power Down Mode** option. The settings are *Disabled, 1 min. (minute), 2 min, 3 min., 4 min., 5 min., 6 min, 7 min., 8 min., 9 min., 10 min., 11 min., 12 min., 13 min,* or *14 min*. The Optimal and Fail-Safe default settings are *Disabled.*

Power Saving Type The settings are *POS, Sleep, Stop Clock,* and *Deep Sleep*. The Optimal and Fail-Safe default settings are *POS*.

Standby/Suspend Timer Unit This option specifies the unit of time used for the Standby and Suspend timeout periods. The settings are *4 msec, 4 sec, 32 sec,* or *4 min.* The Optimal and Fail-Safe default settings are *4 min.*

Cont'd

Power Management Setup, Continued

Standby Time Out This option specifies the length of a period of system inactivity while in Full power on state. When this length of time expires, the computer enters Standby power state. The settings are *Disabled, 4 min, 8 min, up to and including 508 minutes, in increments of 4 minutes.* The Optimal and Fail-Safe default settings are *Disabled*.

Suspend Time Out This option specifies the length of a period of system inactivity while in Standby state. When this length of time expires, the computer enters Suspend power state. The settings are *Disabled, 4 min, 8 min, up to and including 508 minutes, in increments of 4 minutes*. The Optimal and Fail-Safe default settings are *Disabled.*

Slow Clock Ratio This option specifies the speed at which the system clock runs in the Standby Mode power saving state. The settings are expressed as a percentage between the normal CPU clock speed and the CPU clock speed when the computer is in the power-conserving state. The settings are *0 - 12.5%, 12.5% - 25%, 25% - 37.5%, 37.5% -50% , 50% - 62.5%, 62.5% - 75%,* or *75% -87.5%.* The Optimal and Fail-Safe default settings are *50% - 62.5%.*

Display Activity When set to *Monitor*, this option enables event monitoring on the video display. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for display activity. The computer enters the Full On state if any activity occurs. AMIBIOS reloads the Standby and Suspend timeout timers if display activity occurs. The settings are *Monitor* or *Ignore.* The Optimal and Fail-Safe default settings are *Ignore*.

Cont'd

Device 6 (Serial Port 1)
Device 7 (Serial Port 2)
Device 8 (Parallel Port)
Device 5 (Floppy Disk)
Device 0 (Primary Master IDE)
Device 1 (Primary Salve IDE)
Device 2 (Secondary Master IDE)
Device 3 (Secondary Slave IDE) When set to *Monitor*, these options enable event monitoring on the specified hardware interrupt request line. If set to *Monitor* and the computer is in a power saving state, AMIBIOS watches for activity on the specified IRQ line. The computer enters the Full On state if any activity occurs. AMIBIOS reloads the Standby and Suspend timeout timers if activity occurs on the specified IRQ line.

The settings for each of these options are *Monitor* or *Ignore*. The Optimal default setting is *Ignore*, except for Device 0 (Primary Master IDE), which has an Optimal default setting of *Monitor*. The Fail-Safe default setting is *Monitor*.

Section 5 PCI/PnP Setup

Choose PCI/PnP Setup from the AMIBIOS Setup main menu. All PCI/PnP Setup options are described in this section.

Plug and Play-Aware OS Set this option to *Yes* if the operating system in this computer follows the Plug and Play specification. Windows 95 is PnP-aware. The settings are *Yes* or *No*. The default setting is *Yes*. The Optimal and Fail-Safe default settings are *No*.

PCI Latency Timer (PCI Clocks) This option specifies the latency timings (in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are *32*, *64*, *96*, *128*, *160*, *192*, *224*, or *248*. The Optimal and Fail-Safe default settings are *64*.

PCI VGA Palette Snoop When this option is set to *Enabled*, multiple VGA devices operating on different buses can handle data from the CPU on each set of palette registers on every video device. Bit 5 of the command register in the PCI device configuration space is the VGA Palette Snoop bit (0 is disabled). For example: if there are two VGA devices in the computer (one PCI and one ISA) and the VGA Palette Snoop bit is:

Snoop Bit	Action
Disabled	Data read and written by the CPU is only directed to the PCI VGA device's palette registers.
Enabled	Data read and written by the CPU is directed to the both the PCI VGA device palette registers and the ISA VGA device palette registers, and the palette registers of both devices can be identical.

This option must be set to *Enabled* if an ISA adapter card installed in the system uses VGA palette snooping. The Optimal and Fail-Safe default settings are *Disabled*.

Allocate IRQ to PCI VGA Set this option to *Yes* to allocate an IRQ to a VGA adapter card that uses the PCI local bus. The settings are *Yes* or *No*. The Optimal and Fail-Safe default settings are *Yes*.

Cont’d

PCI IDE BusMaster Set this option to *Enabled* to specify that the IDE controller on the PCI bus has bus mastering capability. The settings are *Disabled* or *Enabled*. The Optimal and Fail-Safe default settings are *Disabled.*

Offboard PCI IDE Card This option specifies if an offboard PCI IDE controller adapter card is used in the computer. You must also specify the PCI expansion slot on the motherboard where the offboard PCI IDE controller card is installed. If an offboard PCI IDE controller is used, the motherboard onboard IDE controller is automatically disabled. The settings are *Auto, Slot1, Slot2, Slot3, Slot4,* or *Slot5*. If *Auto* is selected, AMIBIOS automatically determines the correct setting. The Optimal and Fail-Safe default settings are *Auto.* This option forces IRQ 14 and 15 to a PCI slot on the PCI local bus. This is necessary to support non-compliant PCI IDE adapter cards.

If you select *Auto*, the values for Offboard PCI IDE Primary IRQ, and Offboard PCI IDE Secondary IRQ, cannot be changed.

Offboard PCI IDE Primary IRQ This option specifies the PCI interrupt used by the primary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, Hardwired, INTA, INTB, INTC,* or *INTD.* The Optimal and Fail-Safe default settings are *Disabled.*

Offboard PCI IDE Secondary IRQ This option specifies the PCI interrupt used by the secondary IDE channel on the offboard PCI IDE controller. The settings are *Disabled, Hardwired, INTA, INTB, INTC,* or *INTD.* The Optimal and Fail-Safe default settings are *Disabled.*

Cont'd

USB IRQ Priority These options specify the IRQ priority for USB devices installed in the computer. The settings are *Auto, 3, 4, 5, 7, 9, 10, 11, 12,* and *14*, in priority order. If *Auto* is selected, AMIBIOS automatically determines the optimal IRQ priority order. The Optimal and Fail-Safe default settings are *Auto.*

PCI Slot1 IRQ Priority
PCI Slot2 IRQ Priority
PCI Slot3 IRQ Priority
PCI Slot4 IRQ Priority
PCI Slot5 IRQ Priority These options specify the IRQ priority for PCI devices installed in the four PCI expansion slots. The settings are *Auto, 3, 4, 5, 7, 9, 10, 11, 12,* and *14*, in priority order. If *Auto* is selected, AMIBIOS automatically determines the optimal IRQ priority order. The Optimal and Fail-Safe default settings are *Auto.*

DMA Channel 0
DMA Channel 1
DMA Channel 3
DMA Channel 5
DMA Channel 6
DMA Channel 7 These options allow you to specify the bus type used by each DMA channel. The settings are *PnP* or *ISA.* The Optimal and Fail-Safe default settings are *PnP.*

Cont'd

IRQ3
IRQ4
IRQ5
IRQ7
IRQ9
IRQ10
IRQ11
IRQ12
IRQ14
IRQ15

These options specify the bus that the specified IRQ line is used on. These options allow you to reserve IRQs for legacy ISA adapter cards. These options determine if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use these options to reserve the IRQ by assigning an *ISA* setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as *PCI/PnP*. IRQ14 and 15 will not be available if the onboard Triton 2 PCI IDE is enabled. If all IRQs are set to *ISA* and IRQ14 and 15 are allocated to the onboard PCI IDE, IRQ9 will still be available for PCI and PnP devices, because at least one IRQ must be available for PCI and PnP devices. The settings are *ISA* or *PCI/PnP*. The Optimal and Fail-Safe default settings are *PCI/PnP*.

Reserved Memory Size This option specifies the size of the memory area reserved for legacy ISA adapter cards. The settings are *Disabled, 16K, 32K,* or *64K.* The Optimal and Fail-Safe default settings are *Disabled.*

Reserved Memory Address This option specifies the beginning address (in hex) of the reserved memory area. The specified ROM memory area is reserved for use by legacy ISA adapter cards.

The settings are *C0000, C4000, C8000, CC000, D0000, D4000, D8000,* or *DC000.* The Optimal and Fail-Safe default settings are *C8000.*

Section 6 Peripheral Setup

Choose Peripheral Setup from the AMIBIOS Setup main menu. All Peripheral Setup options are described below.

Onboard FDC Set this option to *Enabled* to enable the floppy drive controller (FDC) on the motherboard. The settings are *Auto (AMIBIOS automatically determines if the floppy controller should be enabled), Enabled,* or *Disabled.* The Optimal and Fail-Safe default settings are *Auto*.

Onboard Serial PortA This option specifies the base I/O port address of serial port 1. The settings are *Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h/COM1, 2F8h/COM2, 3E8h/COM3,* or *2E8h/COM4.* The Optimal and Fail-Safe default settings are *Auto.*

Onboard Serial PortB This option specifies the base I/O port address of serial port 2. The settings are *Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h/COM1, 2F8h/COM2, 3E8h/COM3,* or *2E8h/COM4.* The Optimal and Fail-Safe default settings are *Auto.*

Serial PortB Mode This option specifies the operating mode for serial port 2.This option appears only if the **Onboard Serial PortB** option is not set to *Auto* or *Disabled.* The settings are *IrDA, ASK IR,* or *Normal.* The Optimal and Fail-Safe default settings are *Normal*.

IR Duplex Mode This option specifies the infrared transmission method. This option appears only if the **Onboard Serial PortB** option is not set to *Auto* or *Disabled.* The settings are *Full* or *Half*. There are no default settings.

Cont'd

IrDA Protocol The settings are *1.6 us* or *3/16*. The Optimal and Fail-Safe default settings are *1.6 us*.

Onboard Parallel Port This option specifies the base I/O port address of the parallel port on the motherboard. The settings are *Auto, Disabled, 378, 278,* or *3BC.* The Optimal and Fail-Safe default settings are *Auto*.

Parallel Port Mode This option specifies the parallel port mode. The Optimal and Fail-Safe default settings are *ECP*. The settings are:

Setting	Description
Normal	The normal parallel port mode is used.
EPP	The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bidirectional data transfer driven by the host device.
ECP	The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bidirectional communication.
Bi-Dir	Data can be sent to and received from the parallel port.

EPP Version This option specifies the Enhanced Parallel Port specification version number that is used in the system. This option appears only if the **Parallel Port Mode** option is set to *EPP*. The settings are *1.7*, *1.9*, and *N/A*.

There are no Optimal and Fail-Safe default settings because the default setting for the **Parallel Port Mode** option is not *EPP*. If the **Parallel Port Mode** is set to *Normal* or *ECP*, then *N/A* displays.

Cont'd

Parallel Port IRQ This option specifies the IRQ used by the parallel port. The settings are *Disabled, Auto,* or (*IRQ) 7.* The Optimal default setting is *Auto* when the **OnBoard Parallel Port** option is *Auto*.

Parallel Port DMA Channel This option is available only if the setting for the **Parallel Port Mode** option is *ECP*. This option sets the DMA channel used by the parallel port. The settings are *Auto,* (*DMA Channel) 1,* or *3*. The Optimal default setting is *Auto* when the **OnBoard Parallel Port** option is *Auto.*

Onboard IDE This option specifies the IDE channels used by the onboard IDE controller. The settings are *Disabled, Primary, Secondary,* or *Both.* The Optimal and Fail-Safe default settings are *Both.*

Section 7 Other Setup Options

Auto-Detect Hard Disks

Choose this option to let AMIBIOS automatically detect the hard disk drive parameters. The Standard CMOS Setup screen will appear after AMIBIOS has configured the drives. Press <Esc> and choose Save Settings and Exit to reconfigure the system configuration with the new hard disk drive parameters.

AMIBIOS Password Support

Two Levels of Password Protection AMIBIOS provides both a Supervisor and a User password. If you use both passwords, the Supervisor password must be set first.

The system can be configured so that all users must enter a password every time the system boots or when AMIBIOS Setup is executed, using either or both the Supervisor password or User password.

The Supervisor and User passwords activate two different levels of password security.

Set the **Password Check** option in Advanced Setup (see the Advanced Setup section) by choosing either *Always* (the password prompt appears every time the system is powered on) or *Setup* (the password prompt appears only when AMIBIOS Setup is executed). The password is encrypted and stored in NVRAM.

If you select password support, you are prompted for a 1 – 6 character password. Type the password on the keyboard. The password does not appear on the screen when typed. Make sure you write it down. If you forget it, you must drain NVRAM and reconfigure.

Remember the Password Keep a record of the new password when the password is changed. If you forget the password, you must erase the system configuration information in NVRAM (Non-Volatile Random Access Memory). See page 14 for information about erasing system configuration information.

Change User Password

Select Change User Password from the AMIBIOS Setup main menu.

```
Enter new User password:
```

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes. The next time the system boots, a password prompt appears if the Password Check option is set to *Always.*

Change Supervisor Password

Select Change Supervisor Password from the AMIBIOS Setup main menu.

```
Enter new supervisor password:
```

appears. Type the password and press <Enter>. The screen does not display the characters entered. Retype the password as prompted and press <Enter>. If the password confirmation is incorrect, an error message appears. The password is stored in NVRAM after AMIBIOS completes. The next time the system boots, a password prompt appears if the Password Check option is set to Always.

Change Language Settings

This option is not implemented in this AMIBIOS.

Auto Configuration with Optimal Settings

AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option. The following appears:

```
Load high performance settings (Y/N) N
```

The Optimal settings are designed for maximum system performance, but may not work best for all computer applications. In particular, do not use the Optimal AMIBIOS Setup options if your computer is experiencing system configuration problems.

Auto Configuration with FailSafe Settings

AMIBIOS will automatically set all AMIBIOS Setup options to a complete set of default settings when you choose this option. The following appears:

```
Load Failsafe settings (Y/N) N
```

The Fail-Safe settings are designed for maximum system stability, but not maximum performance. Choose the Fail-Safe AMIBIOS Setup options if your computer is experiencing system configuration problems.

Save Settings and Exit

When you have completed the system configuration changes, choose this option to leave AMIBIOS Setup and to reboot the computer so the new system configuration parameters can take effect.

Exit Without Saving

Choose this option to quit AMIBIOS Setup without making any permanent changes to the system configuration.

System Hardware Health Management Setup

AMIBIOS can monitor system health parameters such as CPU temperature, CPU voltage levels, and fan speed. You can set the acceptable upper and lower limits for all hardware health parameters by choosing System Hardware Health Management Setup from the AMIBIOS Setup main menu. The following appears. You can set the Low Alert, High Alert, Low Warning, and High Warning levels for each system health parameter. To change a setting, highlight the field to be changed. Press + or <Ctrl> + to raise the value. Press - or <Ctrl> - to lower a value.

3 Programming the Flash ROM

All versions of the Olympus motherboard use Flash EPROM to store the system BIOS. The advantage of Flash EPROM is the EPROM chip does not have to be replaced to update the BIOS. The end user can actually reprogram the BIOS, using a ROM file supplied by American Megatrends.

Programming the Flash EPROM

Step	Action
1	Turn power off. Make sure the computer has a working speaker.
2	Insert the floppy disk with the S781P.ROM file in drive A:.
3	Before DOS boots, press and hold down the <Ctrl> and <Home> keys to reprogram the Flash EPROM-based AMIBIOS. The bootblock code immediately reads the A: drive, looking for the new BIOS information.
4	When the flash ROM has successfully been programmed, the computer will reboot.

Bootblock BIOS Actions When you reprogram from system boot, the bootblock BIOS code:

Reads S781P.ROM from the root directory of the floppy disk in drive A:.

Erases the Flash EPROM.

Programs the Flash EPROM with the data read from the floppy disk in drive A:.

Generates a CPU reset, rebooting the computer.

The bootblock part of the Flash EPROM is not programmed. Should you inadvertently open the disk drive door or turn power off to the computer while programming the Flash EPROM, the bootblock will be unaffected. Simply turn power back on and begin the Flash ROM programming process again.

Cont’d

S781P.ROM S781P.ROM resides on a floppy disk and contains the updated main BIOS code. American Megatrends will provide this file when the AMIBIOS for the Olympus motherboard must be updated.

S781P.ROM must be present in the root directory of the floppy disk before the onboard Flash EPROM can be reprogrammed. The file that has the main BIOS code must be named S781P.ROM.

Sequence of Operation The sequence of operation and expected behavior of the bootblock BIOS code is:

Step	Expected behavior
1 Look for floppy disk.	The system beeps one time before the BIOS attempts to read from floppy drive A:.
2 Look for S781P.ROM on the floppy disk.	S781P.ROM must be in the root directory of the floppy disk in drive A:. There is no beep if successful.
3 Read the floppy disk.	The floppy disk is read. There is no beep if this step is successful.
4 Check for BIOS file size.	The BIOS file size is checked. There is no beep if this step is successful.
5 Check for Flash EPROM.	The BIOS looks for an Intel i28F001BX-T Flash EPROM. It does not beep if this step is successful.
6 Erase the Flash EPROM.	Two beeps sound when the BIOS begins erasing the Flash EPROM.
7 Program the Flash EPROM.	Three beeps sound when the AMIFlash Code begins reprogramming the Flash EPROM.
8 Continue programming the Flash EPROM.	Four beeps sound when reprogramming has been successfully completed.
9 AMIFlash does a reset.	A CPU reset is generated to reboot the computer.

Beep Codes

The bootblock code produces a series of beeps during Flash ROM programming to:

- signify completion of a step (as shown on the previous page), or to
- signal an error.

Error beeps are arranged in a coded sequence and have different meanings depending on when they occur. The error beep codes and when they can occur are:

Number of Beeps	Description
1	Insert diskette in floppy drive A:.
2	The AMIBOOT.ROM file was not found in the root directory of the diskette in floppy drive A:.
3	Base memory error.
4	Flash program successful.
5	Floppy read error.
6	Keyboard controller BAT command failed.
7	No Flash EPROM detected.
8	Floppy controller failure.
9	Boot Block BIOS checksum error.
10	Flash erase error.
11	Flash program error.
12	AMIBOOT.ROM file size error.
Continuous beep	Flash Programming successful. Turn power off. The turn power on again to restart.

Bootblock Code Checkpoint Codes

Code	Description
E0h	Verify the bootblock BIOS checksum. Disable the internal cache, DMA, and interrupt controllers. Initialize the system timer. Start memory refresh.
E1h	Initialize the chipset registers. Set the BIOS size to 128K. Make the 512 KB base memory available.
E2h	Test the base 64 KB of system memory. Send the BAT command to the keyboard controller. Make sure that <Ctrl> <Home> was pressed. Verify the main system BIOS checksum.
E3h	The main system BIOS is good. Transfer control to the main system BIOS.
E4h	Start the memory test.
E5h	The memory test is over. Initialize the interrupt vector table.
E6h	Initialize the DMA and interrupt controllers.
E7h	Determine the CPU internal clock frequency.
E8h	Initialize the I/O chipset, if any.
E9h	Program the CPU clock-dependent chip set parameters.
EAh	Enable the timer and the floppy diskette interrupt. Enable the internal cache. Copy the bootblock BIOS and pass control to the bootblock BIOS in the 0000h segment.
EDh	Initialize the floppy drive.
EEh	Look for a diskette in drive A:. Read the first sector of the diskette.
EFh	Floppy read error.
F0h	Search for AMIBOOT.ROM in the root directory of the floppy diskette in drive A:.
F1h	The AMIBOOT.ROM file is not in the root directory.
F2h	Read the FAT. Analyze the FAT to find the clusters occupied by the AMIBOOT.ROM.
F3h	Start reading the AMIBOOT.ROM file, cluster by cluster.
F4h	The AMIBOOT.ROM file is not the correct size.
F5h	Disable the internal cache. Raise the Vpp. Enable Flash write and reset the Flash ROM.
FBh	Detect the flash type.
FCh	Start erasing flash blocks.
FDh	Program the Flash ROM in the E0000-EFFFFh region.
FEh	Start programming Flash at F0000-FFFFF region.
FFh	Flash programming is successful. The computer reboots.

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