

SUPER[®]

SUPER P3TDLR

USER'S MANUAL

Revision 1.0a

The information in this User's Manual has been carefully reviewed and is believed to be accurate. The vendor assumes no responsibility for any inaccuracies that may be contained in this document, makes no commitment to update or to keep current the information in this manual, or to notify any person or organization of the updates. **Please Note: For the most up-to-date version of this manual, please see our web site at www.supermicro.com.**

SUPERMICRO COMPUTER reserves the right to make changes to the product described in this manual at any time and without notice. This product, including software, if any, and documentation may not, in whole or in part, be copied, photocopied, reproduced, translated or reduced to any medium or machine without prior written consent.

IN NO EVENT WILL SUPERMICRO COMPUTER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES ARISING FROM THE USE OR INABILITY TO USE THIS PRODUCT OR DOCUMENTATION, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN PARTICULAR, THE VENDOR SHALL NOT HAVE LIABILITY FOR ANY HARDWARE, SOFTWARE, OR DATA STORED OR USED WITH THE PRODUCT, INCLUDING THE COSTS OF REPAIRING, REPLACING, INTEGRATING, INSTALLING OR RECOVERING SUCH HARDWARE, SOFTWARE, OR DATA.

Any disputes arising between manufacturer and customer shall be governed by the laws of Santa Clara County in the State of California, USA. The State of California, County of Santa Clara shall be the exclusive venue for the resolution of any such disputes. Supermicro's total liability for all claims will not exceed the price paid for the hardware product.

Unless you request and receive written permission from SUPER MICRO COMPUTER, you may not copy any part of this document.

Information in this document is subject to change without notice. Other products and companies referred to herein are trademarks or registered trademarks of their respective companies or mark holders.

Preface

About This Manual

This manual is written for system integrators, PC technicians and knowledgeable PC users. It provides information for the installation and use of the SUPER P3TDLR motherboard. The SUPER P3TDLR supports single or dual Pentium® III FCPGA 500 MHz-1.26 GHz+ processors, including low power Pentium III® processors, at front side bus speeds of 133 and 100 MHz. Please refer to the support section of our web site (<http://www.supermicro.com/TechSupport.htm>) for a complete listing of supported processors. Intel FCPGA processors are housed in a 370-pin package.

Manual Organization

Chapter 1 includes a checklist of what should be included in your mainboard box, describes the features, specifications and performance of the SUPER P3TDLR mainboard and provides detailed information about the chipset.

Chapter 2 begins with instructions on handling static-sensitive devices. Read this chapter when you want to install the processor and DIMM memory modules and when mounting the mainboard in the chassis. Also refer to this chapter to connect the floppy and hard disk drives, SCSI drives, the IDE interfaces, the parallel and serial ports and the twisted wires for the power supply, the reset button, the keylock/power LED, the speaker and the keyboard.

If you encounter any problems, read **Chapter 3**, which describes troubleshooting procedures for the video, the memory and the setup configuration stored in CMOS. For quick reference, a general FAQ [Frequently Asked Questions] section is provided. Instructions are also included for contacting technical support. In addition, you can visit our web site at:

< www.supermicro.com/techsupport.htm >

for more detailed information.

Chapter 4 includes an introduction to BIOS and provides detailed information on running the CMOS Setup utility.

Appendix A gives information on BIOS error beep codes and messages.

Appendix B provides post diagnostic error messages.

Table of Contents

Preface

About This Manual	iii
Manual Organization	iii

Chapter 1: Introduction

1-1 Overview	1-1
Checklist	1-1
Contacting Supermicro	1-2
SUPER P3TDLR Image	1-3
SUPER P3TDLR Layout	1-4
SUPER P3TDLR Quick Reference	1-5
Server Works LE Chipset: System Block Diagram	1-6
SUPER P3TDLR Motherboard Features	1-7
1-2 Chipset Overview	1-9
1-3 Special Features	1-9
ATI Graphics Controller	1-9
BIOS Recovery	1-9
Recovery from AC Power Loss	1-9
1-4 PC Health Monitoring	1-10
1-5 ACPI/PC 98 Features	1-11
1-6 Power Supply	1-13
1-7 Super I/O	1-13

Chapter 2: Installation

2-1 Handling the P3TDLR Motherboard	2-1
Precautions	2-1
Unpacking	2-2
2-2 Motherboard Installation	2-2
2-3 Connecting Cables	2-3
Connecting Data Cables	2-3
Connecting Power Cables	2-3
Connecting the Control Panel	2-4
2-4 I/O Ports	2-5
2-5 Installing Processors	2-5
2-6 Installing Memory	2-7
2-7 Connector Definitions	2-9
Power Supply Connectors	2-9
Power Supply Fail Enable/Disable	2-9

Power LED	2-10
HDD LED	2-10
NIC1 LED	2-10
NIC2 LED	2-10
Overheat LED	2-11
Reset	2-11
PWR_ON	2-11
Fan Headers	2-12
Serial Ports	2-12
Universal Serial Bus	2-13
Extra USB Connectors	2-13
LAN1/LAN2 Ports	2-13
SLED1 (SCSI LED) Indicator	2-13
Wake-On-Modem	2-14
Wake-On-LAN	2-14
2-8 DIP Switch Settings	2-14
DIP Switch 1: Core/Bus Ratio	2-14
2-9 Jumper Settings	2-15
Explanation of Jumpers	2-15
Front Side Bus Speed	2-15
PCI64 Speed Setting	2-15
CMOS Clear	2-16
Over Heat Alarm	2-16
LAN1 Enable/Disable	2-16
LAN2 Enable/Disable	2-16
SCSI Enable/Disable	2-17
Onboard VGA Enable/Disable	2-17
Watchdog Reset Enable/Disable	2-17
2-10 Floppy/Hard Disk and SCSI Connections	2-18
Floppy Connector	2-18
IDE Connectors	2-18
Ultra160 SCSI Connector	2-19
2-11 Installing Software Drivers	2-20

Chapter 3: Troubleshooting

3-1	Troubleshooting Procedures	3-1
	Before Power On	3-1
	No Power	3-1
	No Video	3-1
	Memory Errors	3-2
	Losing the System's Setup Configuration	3-2
3-2	Technical Support Procedures	3-2
3-3	Frequently Asked Questions	3-3
3-4	Returning Merchandise for Service	3-5

Chapter 4: BIOS

4-1	Introduction	4-1
4-2	BIOS Features	4-2
4-3	Running Setup	4-2
	Main BIOS Setup Menu	4-3
4-4	Advanced BIOS Setup	4-4
4-5	Chipset Setup	4-15
4-6	PCI PnP Setup	4-17
4-7	Power Setup	4-21
4-8	Boot Setup	4-24
4-9	Security Setup	4-26
4-10	Exit Setup	4-28

Appendices:

Appendix A:	BIOS Error Beep Codes and Messages	A-1
Appendix B:	AMIBIOS Post Checkpoint Codes	B-1

Chapter 1

Introduction

1-1 Overview

Checklist

Congratulations on purchasing your computer motherboard from an acknowledged leader in the industry. Supermicro boards are designed with the utmost attention to detail to provide you with the highest standards in quality and performance.

Please check that the following items have all been included with your motherboard. If anything listed here is damaged or missing, contact your retailer.

One (1) Supermicro Mainboard

Two (2) Supermicro Heatsinks (Retail Only)

One (1) ribbon cable for IDE devices

One (1) floppy ribbon cable for (1) 5.25-inch floppy and (2) 3.5-inch floppy drives

One (1) I/O backpanel shield

SCSI Accessories (depending on motherboard)

 One (1) 68-pin LVD SCSI cable

 One (1) set of SCSI driver diskettes

 One (1) SCSI manual

One (1) Supermicro CD or diskettes containing drivers and utilities

One (1) BIOS User's Manual

CONTACTING SUPERMICRO

Headquarters

Address: Super Micro Computer, Inc.
980 Rock Avenue
San Jose, CA 95131 U.S.A.
Tel: +1 (408) 503-8000
Fax: +1 (408) 503-8008
E-mail: marketing@supermicro.com (General Information)
support@supermicro.com (Technical Support)
Web site: www.supermicro.com

European Office

Address: Super Micro Computer B.V.
Het Sterrenbeeld 28, 5215 ML,
's-Hertogenbosch, The Netherlands
Tel: +31 (0) 73-6400390
Fax: +31 (0) 73-6416525
E-mail: sales@supermicro.nl (General Information)
support@supermicro.nl (Technical Support)
rma@supermicro.nl (Customer Support)

Asia-Pacific

Address: F3, #753 Chung-Cheng Road
Chung-Ho City, Taipei Hsien, Taiwan, R.O.C.
Tel: +886-(2) 8221-1690
Fax: +886-(2) 8221-2790
www : www.supermicro.com.tw
Email: support@supermicro.com.tw
Technical Support:
Tel : 886-2-8228-1366, ext.132

SUPER P3TDLR

Figure 1-4A. SUPER P3TDLR Image

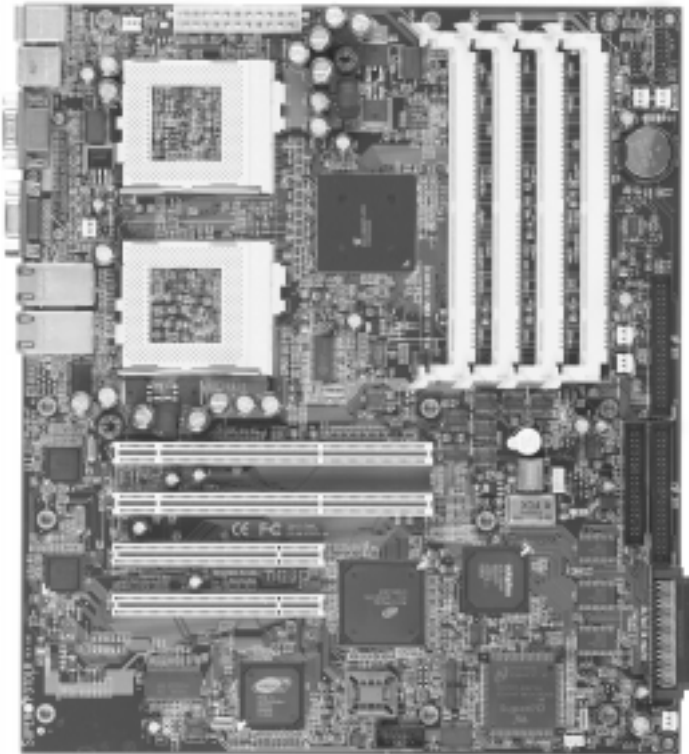
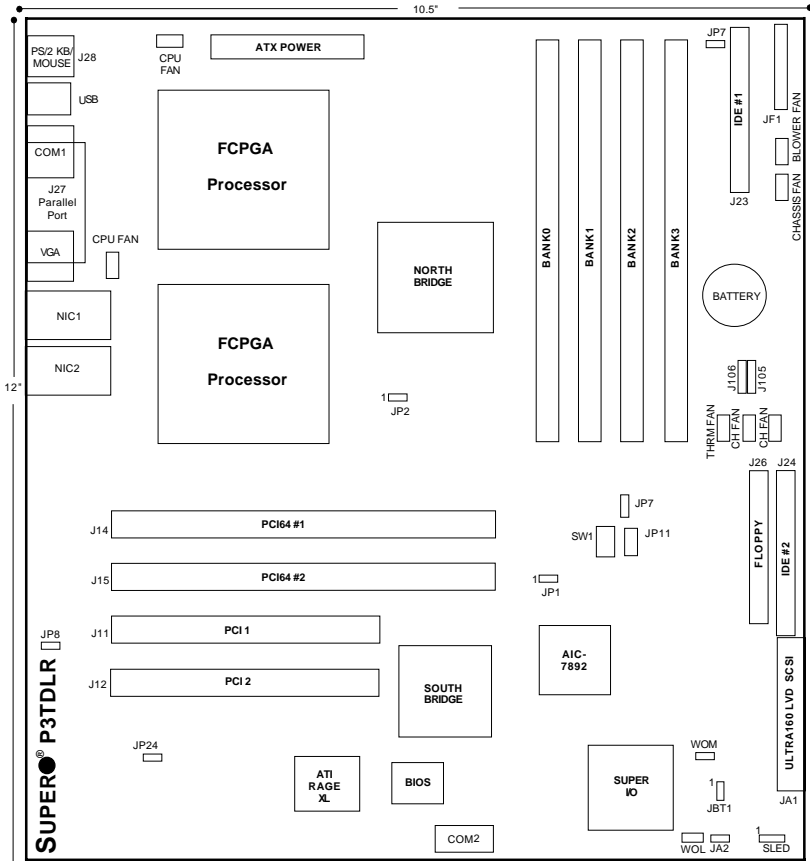


Figure 1-8A. SUPER P3TDLR Layout
(not drawn to scale)



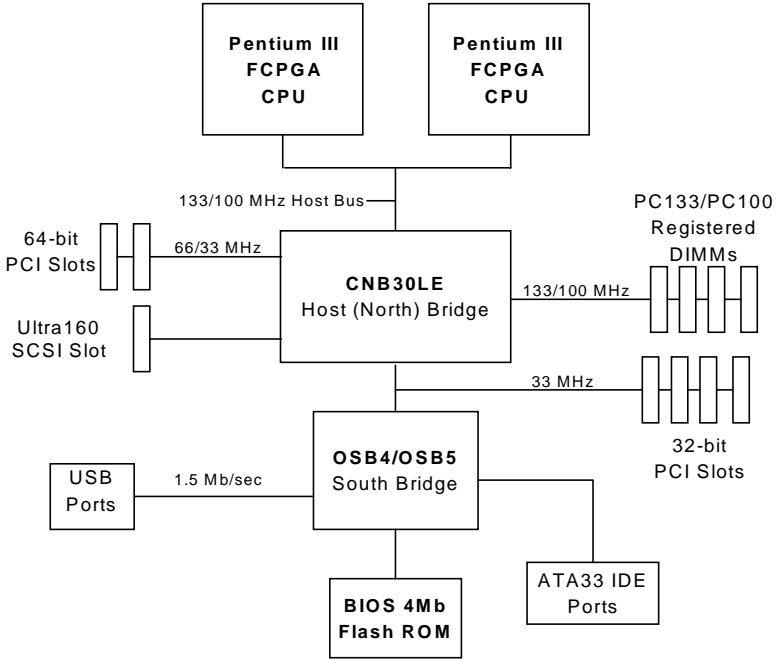
Also see the figure on page 2-7 for the locations of the I/O ports and 2-8 for the Front Control Panel (JF1) connectors.

P3TDLR Quick Reference

<u>Jumpers</u>	<u>Description</u>	<u>Default Setting</u>
JBT1	CMOS Clear (p. 2-18)	Pins 1-2 (Normal)
JP1	SCSI (p. 2-19)	Pins 1-2 (Enabled)
JP2	Front Side Bus Speed (p. 2-17)	Pins 1-2 (Auto)
JP7	Overheat Alarm (p. 2-18)	Closed (Enabled)
JP8	LAN1 Enable/Disable (p. 2-18)	Open (Enabled)
JP11	Power Supply Fail (p. 2-11)	Pin 4 (Reset)
JP12	Power Supply Fail (p. 2-11)	Closed (Enabled)
JP13	Speed for 64-bit PCI (2-17)	Closed (33 MHz)
JP24	LAN2 Enable/Disable (p. 2-18)	Open (Enabled)
JP62	Onboard VGA (p. 2-19)	Pins 1-2 (Enabled)
J210	Watchdog Reset (p. 2-19)	Open (Disabled)

<u>DIP Switches</u>	<u>Description</u>	<u>Default Setting</u>
SW1(1-4)	CPU Core/Bus Ratio	(see p. 2-16)

<u>Connectors</u>	<u>Description</u>
ATX Power	24-pin ATX Power Connector (p. 2-11)
DIMM0-DIMM3	Memory (SDRAM) Slots (p. 2-9)
COM1/2	COM1/COM2 Serial Port Connector (p. 2-14)
CPU FAN (2 ea)	CPU1/CPU2 Fan Header (p. 2-14)
Fan Headers (5 ea)	Chassis, thermal and blower (p. 2-14)
J23/J24	IDE Hard Disk Drive 1/2 Connectors (p. 2-20)
J26	Floppy Disk Drive Connector (p. 2-20)
J28	PS/2 Keyboard/Mouse (p. 2-9)
J105/106	USB3/USB4 (p. 2-15)
JA1	Ultra160 LVD SCSI Connector (p. 2-21)
JF1	Front Control Panel (p. 2-4)
JP61	PWR_LED (p. 2-4)
LAN1/2	Ethernet Ports 1/2 (p. 2-15)
SLED1	SCSI LED header (p. 2-15)
USB 1/2	Universal Serial Bus 1/2 Ports (p. 2-15)
WOL	Wake-on-LAN Header (p. 2-16)
WOM	Wake-on-Modem Header (p. 2-16)



**Figure 1-9. ServerWorks LE Chipset:
System Block Diagram**

***Note:** This is a general block diagram. See next page for details on actual processor support and PCI slots for your motherboard.

Features of the SUPER P3TDLR

CPU

- Single or dual Intel Pentium® III FCPGA 500 MHz-1.26+ GHz processors and single or dual low power Pentium® III processors at front bus speeds of 133 and 100 MHz

Note: Please refer to the support section of our web site for a complete listing of supported processors. (<http://www.supermicro.com/TechSupport.htm>)

Memory

- Four 168-pin DIMM sockets supporting up to 4 GB registered ECC DIMMs

Note: The memory and front side bus speeds are synchronized. If PC133 memory is used with a 100 MHz FSB, the memory will run at 100 MHz. See page 3-3 for details.

Chipset

- ServerWorks ServerSet III LE (see page 1-19 for details)

Expansion Slots

- Two 64-bit, 66/33 MHz PCI slots
- Two 32-bit, 33 MHz PCI slots

BIOS

- 4 Mb AMI® Flash BIOS
- APM 1.2, DMI 2.1, PCI 2.2, ACPI 1.0, Plug and Play (PnP)

PC Health Monitoring

- Seven onboard voltage monitors for CPU core, chipset voltage, +5V and +12V
- Fan status monitor with firmware/software on/off control
- Environmental temperature monitor and control
- CPU fan auto-off in sleep mode
- Power-up mode control for recovery from AC power loss
- System overheat LED and control
- System resource alert

ACPI/PC 98 Features

- Microsoft OnNow
- Slow blinking LED for suspend state indicator
- Main switch override mechanism
- External modem ring-on

Onboard I/O

- AIC-7892 for single channel Ultra160 SCSI
- 66 MHz SCSI supported
- Integrated ATI Rage XL Graphics Controller
- Intel 82559 for integrated onboard Ethernet
- 2 EIDE bus master interfaces support Ultra DMA/33
- 1 floppy port interface (up to 2.88 MB)
- 2 Fast UART 16550A compatible serial ports
- 1 EPP (Enhanced Parallel Port) and ECP (Extended Capabilities Port) supported parallel port
- PS/2 mouse and PS/2 keyboard ports
- 4 USB (Universal Serial Bus) ports

Other

- Selectable CPU and chassis fan speed control (set in BIOS)
- Internal/external modem ring-on
- Recovery from AC power loss control
- Wake-on-LAN (WOL)
- Multiple FSB clock frequency selections (set in BIOS)

CD/Diskette Utilities

- BIOS flash upgrade utility
- Device Drivers

Dimensions

- SUPER P3TDLR - Full ATX: 12" x 10.5" (305 x 267 mm)

1-2 Chipset Overview

The ServerWorks ServerSet™ III LE is a high-performance core logic chipset that consists of a North Bridge and a South Bridge.

The North Bridge includes an integrated main memory subsystem and a dual channel PCI bus that bridges the processor bus to a 64-bit PCI bus and a 32-bit PCI bus. The North Bridge also packs and unpacks data for PCI accesses, which reserves more processor bandwidth for multiprocessor motherboards.

The South Bridge provides various integrated functions, including the PCI to ISA bridge and support for UDMA33, security (passwords and system protection), Plug & Play, USBs, power management, interrupt controllers and the SMBus.

The North and South Bridges communicate over a serial bus that uses the PCI clock as a timing reference. This serial bus uses a single pin on both bridges to send a 4-bit word for transmitting commands back and forth.

1-3 Special Features

ATI Graphics Controller

The P3TDLR has an integrated ATI video controller based on the Rage XL graphics chip. The Rage XL fully supports sideband addressing and AGP texturing. An 8 MB graphics memory chip has been integrated aboard the P3TDLR to provide graphics memory. This onboard graphics package can provide a bandwidth of up to 512 MB/sec over a 32-bit graphics memory bus.

BIOS Recovery

The BIOS Recovery function allows you to use an image file to recover your BIOS if the BIOS flashing procedure fails (see Section 3-3).

Recovery from AC Power Loss

BIOS provides a setting for you to determine how the system will respond when AC power is lost and then restored to the system. You can choose for the system to remain powered off (in which case you must press the

power switch to turn it back on) or for it to automatically return to a power on state. See the Power Lost Control setting in the BIOS chapter of this manual to change this setting. The default setting is "Always OFF."

1-4 PC Health Monitoring

This section describes the PC health monitoring features of the SUPER P3TDLR. All have an onboard System Hardware Monitor chip that supports PC health monitoring.

Seven Onboard Voltage Monitors for the CPU Core, Chipset Voltage, +5V and +12V

The onboard voltage monitor will scan these seven voltages continuously. Once a voltage becomes unstable, it will give a warning or send an error message to the screen. Users can adjust the voltage thresholds to define the sensitivity of the voltage monitor.

Fan Status Monitor with Firmware/Software On/Off Control

The PC health monitor can check the RPM status of the cooling fans. The onboard 3-pin CPU and chassis fans are controlled by the power management functions. The thermal fan is controlled by the overheat detection logic.

Environmental Temperature Control

The thermal control sensor monitors the CPU temperature in real time and will turn on the thermal control fan whenever the CPU temperature exceeds a user-defined threshold. The overheat circuitry runs independently from the CPU. It can continue to monitor for overheat conditions even when the CPU is in sleep mode. Once it detects that the CPU temperature is too high, it will automatically turn on the thermal control fan to prevent any overheat damage to the CPU. The onboard chassis thermal circuitry can monitor the overall system temperature and alert users when the chassis temperature is too high.

CPU Fan Auto-Off in Sleep Mode

The CPU fan activates when the power is turned on. It can be turned off when the CPU is in sleep mode. When in sleep mode, the CPU will not run at full power, thereby generating less heat.

CPU Overheat LED and Control

This feature is available when the user enables the CPU overheat warning function in the BIOS. This allows the user to define an overheat temperature. When this temperature is exceeded, both the overheat fan and the warning LED are triggered.

System Resource Alert

This feature is available when used with Intel's LANDesk Client Manager (optional). It is used to notify the user of certain system events. For example, if the system is running low on virtual memory and there is insufficient hard drive space for saving the data, you can be alerted of the potential problem.

Hardware BIOS Virus Protection

The system BIOS is protected by hardware so that no virus can infect the BIOS area. The user can only change the BIOS content through the flash utility provided by SUPERMICRO. This feature can prevent viruses from infecting the BIOS area and destroying valuable data.

Auto-Switching Voltage Regulator for the CPU Core

The auto-switching voltage regulator for the CPU core can support up to 20A current and auto-sense voltage IDs ranging from 1.4V to 3.5V. This will allow the regulator to run cooler and thus make the system more stable.

1-5 ACPI/PC 98 Features

ACPI stands for Advanced Configuration and Power Interface. The ACPI specification defines a flexible and abstract hardware interface that provides a standard way to integrate power management features throughout a PC system, including its hardware, operating system and application software. This enables the system to automatically turn on and off peripherals such as CD-ROMs, network cards, hard disk drives and printers. This also includes consumer devices connected to the PC such as VCRs, TVs, telephones and stereos.

In addition to enabling operating system-directed power management, ACPI provides a generic system event mechanism for Plug and Play and an operating system-independent interface for configuration control. ACPI leverages the Plug and Play BIOS data structures while providing a processor architecture-independent implementation that is compatible with both Windows 98 and Windows NT

5.0. **Note:** To utilize ACPI, you must reinstall Windows 98/2000. You can check to see if ACPI has been properly installed by looking for it in the Device Manager, which is located in the Control Panel in Windows.

Microsoft OnNow

The OnNow design initiative is a comprehensive, system-wide approach to system and device power control. OnNow is a term for a PC that is always on but appears to be off and responds immediately to user or other requests.

Slow Blinking LED for Suspend-State Indicator

When the CPU goes into a suspend state, the chassis power LED will start blinking to indicate that the CPU is in suspend mode. When the user presses any key, the CPU will wake-up and the LED will automatically stop blinking and remain on.

Main Switch Override Mechanism

When an ATX power supply is used, the power button can function as a system suspend button. When the user depresses the power button, the system will enter a SoftOff state. The monitor will be suspended and the hard drive will spin down. Depressing the power button again will cause the whole system to wake-up. During the SoftOff state, the ATX power supply provides power to keep the required circuitry in the system alive. In case the system malfunctions and you want to turn off the power, just depress and hold the power button for 4 seconds. The power will turn off and no power will be provided to the motherboard.

External Modem Ring-On

Wake-up events can be triggered by a device such as the external modem ringing when the system is in the SoftOff state. Note that external modem ring-on can only be used with an ATX 2.01 (or above) compliant power supply.

Wake-On-LAN (WOL)

Wake-On-LAN is defined as the ability of a management application to remotely power up a computer that is powered off. Remote PC setup, updates and

asset tracking can occur after hours and on weekends so that daily LAN traffic is kept to a minimum and users are not interrupted. The motherboards have a 3-pin header (WOL) to connect to the 3-pin header on a Network Interface Card (NIC) that has WOL capability. Wake-On-LAN must be enabled in BIOS. Note that Wake-On-Lan can only be used with an ATX 2.01 (or above) compliant power supply.

1-6 Power Supply

As with all computer products, a stable power source is necessary for proper and reliable operation. It is even more important for processors that have high CPU clock rates.

The SUPER P3TDLR accommodates ATX power supplies. Although most power supplies generally meet the specifications required by the CPU, some are inadequate. You should use one that will supply at least 300W of power - or even higher wattage power supply is recommended for high-load configurations. Also your power supply must provide a +5V standby voltage that supplies at least 1.5A of current.

It is strongly recommended that you use a high quality power supply that meets ATX power supply Specification 2.02 or above. Additionally, in areas where noisy power transmission is present, you may choose to install a line filter to shield the computer from noise. It is recommended that you also install a power surge protector to help avoid problems caused by power surges.

1-7 Super I/O

The disk drive adapter functions of the Super I/O chip include a floppy disk drive controller that is compatible with industry standard 82077/765, a data separator, write pre-compensation circuitry, decode logic, data rate selection, a clock generator, drive interface control logic and interrupt and DMA logic. The wide range of functions integrated onto the Super I/O greatly reduces the number of components required for interfacing with floppy disk drives. The Super I/O supports 360 K, 720 K, 1.2 M, 1.44 M or 2.88 M disk drives and data transfer rates of 250 Kb/s, 500 Kb/s or 1 Mb/s. It also provides two high-speed, 16550 compatible serial communication ports (UARTs), one of which supports serial infrared communication. Each UART includes a 16-byte send/receive FIFO, a programmable baud rate generator, complete modem control capability and a processor interrupt system. Each UART includes a 16-byte send/receive FIFO, a programmable baud

rate generator, complete modem control capability and a processor interrupt system. Both UARTs provide legacy speed with baud rate of up to 115.2 Kbps as well as an advanced speed with baud rates of 250 K, 500 K, or 1 Mb/s, which support higher speed modems.

The Super I/O supports one PC-compatible printer port (SPP), Bi-directional Printer Port (BPP), Enhanced Parallel Port (EPP) or Extended Capabilities Port (ECP).

The Super I/O provides functions that comply with ACPI (Advanced Configuration and Power Interface), which includes support of legacy and ACPI power management through an SMI or SCI function pin. It also features auto power management to reduce power consumption.

The IRQs, DMAs and I/O space resources of the Super I/O can flexibly adjust to meet ISA PnP requirements, which support ACPI and APM (Advanced Power Management).

Chapter 2

Installation

This chapter covers the steps required to install the P3TDLR motherboard into a chassis, connect the data and power cables and install add-on cards. All motherboard jumpers and connections are also described. A layout and quick reference chart are on pages 1-4 and 1-5. Remember to completely close the chassis when you have finished working with the motherboard to better cool and protect the system.

Tools Required

The only tools you will need to install the P3TDLR into the chassis are a long and a short Philips screwdriver.

2-1 Handling the P3TDLR Motherboard

Static electrical discharge can damage electronic components. To prevent damage to any printed circuit boards (PCBs), it is important to handle them very carefully (see previous chapter). Also note that the size and weight of the motherboard can cause it to bend if handled improperly, which may result in damage. To prevent the motherboard from bending, keep one hand under the center of the board to support it when handling. The following measures are generally sufficient to protect your equipment from static discharge.

Precautions

- Use a grounded wrist strap designed to prevent static discharge.
- Touch a grounded metal object before removing any board from its anti-static bag.
- Handle a board by its edges only; do not touch its components, peripheral chips, memory modules or gold contacts.
- When handling chips or modules, avoid touching their pins.
- Put the motherboard, add-on cards and peripherals back into their anti-static bags when not in use.

- For grounding purposes, make sure your computer chassis provides excellent conductivity between the power supply, the case, the mounting fasteners and the motherboard.

Unpacking

The motherboard is shipped in antistatic packaging to avoid static electrical damage. When unpacking the board, make sure the person handling it is static protected.

2-2 Motherboard Installation

This section explains the first step of physically mounting the P3TDLR into a chassis. Following the steps in the order given will eliminate the most common problems encountered in such an installation. To remove the motherboard, follow the procedure in reverse order.

1. **Check compatibility of motherboard ports and I/O shield:**

The P3TDLR requires a chassis big enough to support a 12" x 10" motherboard, such as Supermicro's SC810 1U rackmount. Make sure that the I/O ports on the motherboard properly align with their respective holes in the I/O shield at the back of the chassis.

2. **Mounting the motherboard onto the motherboard tray:**

Carefully mount the motherboard to the motherboard tray by aligning the board holes with the raised metal standoffs that are visible on the bottom of the chassis. Insert screws into all the mounting holes on your motherboard that line up with the standoffs and tighten until snug (if you screw them in too tight, you might strip the threads). Metal screws provide an electrical contact to the motherboard ground to provide a continuous ground for the system.

2-3 Connecting Cables

Now that the motherboard is installed, the next step is to connect the cables to the board. These include the data (ribbon) cables for the peripherals and control panel and the power cables.

Connecting Data Cables

The ribbon cables used to transfer data from the peripheral devices have been carefully routed to prevent them from blocking the flow of cooling air that moves through the system from front to back. If you need to disconnect any of these cables, you should take care to keep them routed as they were originally after reconnecting them (make sure the red wires connect to the pin 1 locations). The following data cables (with their locations noted) should be connected. (See the layout on page 5-10 for connector locations.)

- IDE Device Cables (J23 and J24)
- Floppy Drive Cable (J26)
- Ultra 160 LVD SCSI Connector (JA1)
- Control Panel Cable (JF1 Supplied with Supermicro Servers, see next page)

Connecting Power Cables

The P3TDLR has a 24-pin primary power supply connector designated "ATX Power" for connection to the ATX power supply. The ATX Power connector also is keyed to accept 20-pin power connectors if the power supply you are using has that type. See Section 5-8 for power connector pin definitions.

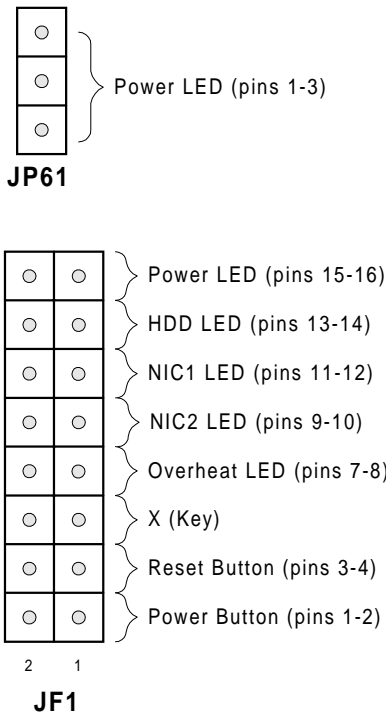
Connecting the Control Panel

JF1 contains header pins for various front control panel connectors. See Figure 5-1 for the pin locations of the various front control panel buttons and LED indicators. Please note that even and odd numbered pins are on opposite sides.

All JF1 wires have been bundled into a single ribbon cable to simplify this connection. Make sure the red wire plugs into pin 1 as marked on the board. The other end connects to JP4 of the Control Panel PCB board, located just behind the system status LEDs on the chassis. The control signals are all on the even numbered pins. See pages 5-12 to 5-14 for details and pin descriptions.

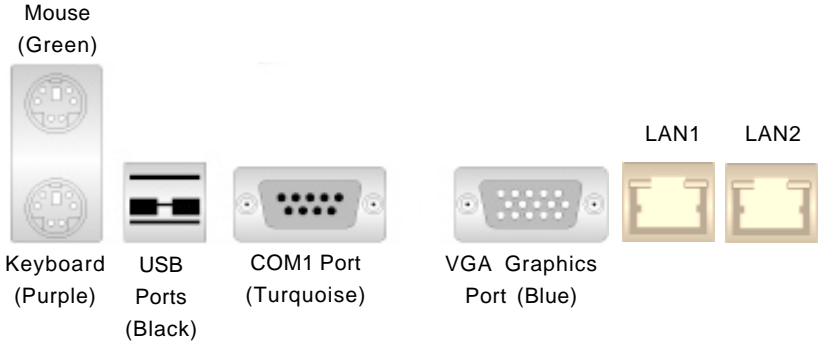
In addition to the 2-pin Power LED header on JF1, there is a 3-pin header for the same function at JP61 on the motherboard, which is located near JF1.

Figure 2-1. Control Panel Header Pins



2-4 I/O Ports

The I/O ports are color coded in conformance with the PC 99 specification. See Figure 2-2 below for the colors and locations of the various I/O ports.



Note: The COM2 Port is a header on the motherboard, located next to the mounting hole between the Super I/O chip and the RAGE XL chip.

Figure 2-2. I/O Ports

2-5 Installing Processors



Avoid placing direct pressure to the top of the processor package. Always connect the power cord last and always remove it before adding, removing or changing any hardware components.

1. Installing the FCPGA processors:

The P3TDLR has two 370-pin sockets, which support single or dual Intel Pentium® III FCPGA 500 MHz-1.26+ GHz processors and single or dual low power Pentium® III processors at front bus speeds of 133 and 100 MHz. Lift the lever on the FCPGA socket and insert the processor (with the heat sink attached) keeping the notched corner oriented toward pin one on the socket. Make sure the processor is fully seated in the socket and then close the lever. You can also install a single processor on the motherboard without changing any jumper settings. (See Figure 5-4 for views of a 370-pin FCPGA socket before and after processor installation.)

2. Attaching heat sinks to the processors:

Two passive heat sinks (one for each processor) have been included with your SUPER P3TDLR. Secure a heat sink to each processor with a suitable thermal compound to best conduct the heat from the processor to the heat sink. Make sure that you apply the compound evenly and that good contact is made between the CPU chip (the die) and the heat sink. Insufficient contact or improper types of heat sinks and thermal compounds can cause the processor to overheat, which may crash the system.

4. Removing the processors:

To remove the processors from the motherboard, simply follow the installation process in reverse order.

Figure 2-3. FCPGA Socket: Empty and with Processor Installed (low power Pentium III shown)



2-6 Installing Memory



CAUTION! Exercise extreme care when installing or removing DIMM modules to prevent any possible damage. The MEC must be populated in the manner described in Step 2 below.

1. Memory support:

The P3TDLR supports 128/256/512 MB and 1 GB registered ECC SDRAM DIMMs. PC133 and PC100 memory are both supported at their respective speeds. However, the memory bus is synchronized to the front side bus speed meaning you can not use PC100 with a 133 MHz FSB. Using PC133 with a 100 MHz FSB will result in 100 MHz memory operation.

2. Memory Slots:

The P3TDLR has four DIMM slots. There is no need to install the DIMM modules in pairs. The P3TDLR is not sensitive to the installed position of the memory DIMMs in the DIMM slots.

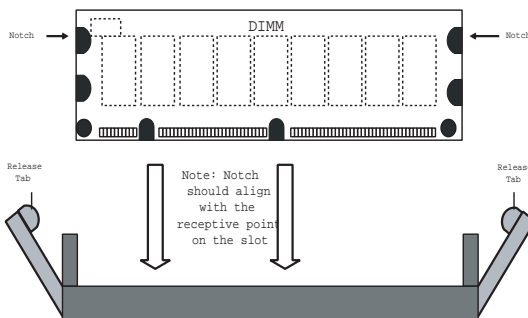
3. Installing memory modules:

Insert each DIMM module parallel to its slot's guide rails. Pay attention to the orientation of the two notches along the bottom of the module to prevent inserting a DIMM module incorrectly. Gently press down on the DIMM module until it snaps into place in the slot (see Figure 5-4).

4. Memory Position:

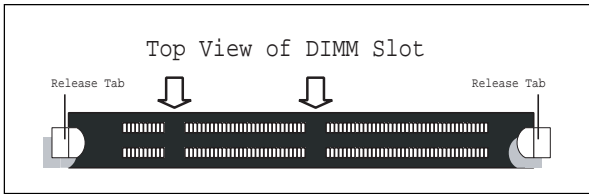
The capacity of the memory modules can be mixed; however, the memory speeds should all be the same for best results.

Figure 2-4. Side View of DIMM Installation into Slot



To Install: Insert module vertically and press down until it snaps into place. Pay attention to the bottom notches. **To Remove:** Use your thumbs to gently push each release tab outward to free the DIMM from the slot.

Figure 2-5. Side View of DIMM Installation into Slot



To Remove:

Use your thumbs to gently push each release tab outward. This should release the DIMM from the slot.

2-7 Connector Definitions

Power Supply Connectors

The primary power supply connector on the P3TDLR is designated as ATX POWER. This is a 24-pin connector, which will also accept 20-pin power connectors, which are used with some power supplies. If a 24-pin connector is used, please refer to Table 2.1 for pin definitions. If a 20-pin connector is used, please refer to Table 2-2 for pin definitions.

Table 2-1
ATX Power Supply 24-pin Connector
Pin Definitions (ATX POWER)

Pin Number	Definition	Pin Number	Definition
1	+3.3V	13	+3.3V
2	+3.3V	14	-12V
3	Ground	15	Ground
4	+5V	16	PS_ON#
5	Ground	17	Ground
6	+5V	18	Ground
7	Ground	19	Ground
8	PWR_OK	20	Res
9	5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	Ground

Table 2-2
ATX Power Supply 20-pin Connector
Pin Definitions (ATX PWR #1, ATX PWR #2)

Pin Number	Definition	Pin Number	Definition
1	+3.3V	11	3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PW-OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

Power Supply Fail Enable/Disable

Header JP11 and jumper JP12 allow you to enable or disable the power supply fail annunciator LEDs. The normal (default) position is closed to enable power fail indications. See Table 2-3a and 2-3b for pin definitions.

Table 2-3a
Power Fail Header Pin
Definitions
(JP11)

Pin Number	Definition
1	P/S 1 Fail Signal
2	P/S 2 Fail Signal
3	P/S 3 Fail Signal
4	Reset (from MB)

Table 2-3b
Onboard VGA Enable/Disable
Jumper Settings (JP12)

Jumper Position	Definition
Closed	Enabled
Open	Disabled

Power LED

The Power LED connection is located on pins 15 and 16 of JF1. When illuminated, this LED indicates that power is applied to the system. There is also a 3-pin header for the Power LED located at JP61. See Tables 2-4a and 2-4b for pin definitions and Figure 2-2 for pin locations.

Table 2-4a
Overheat LED
Pin Definitions
(JF1)

Pin Number	Definition
15	+
16	-

Table 2-4b
PWR_LED Pin
Definitions (JP61)

Pin Number	Definition
1	+5V
2	Key
3	GND

HDD LED

The Hard Disk Drive LED connection is located on pins 13 and 14 of JF1. This provides an indication of IDE disk activity on the control panel. See Table 2-5 for pin definitions and Figure 2-2 for pin locations.

Table 2-5
IDE Hard Disk Drive LED
Pin Definitions
(JF1)

Pin Number	Definition
13	+
14	-

NIC1 LED

The Network Interface Controller 1 LED connection is located on pins 11 and 12 of JF1. This header is used to indicate network activity on LAN (Ethernet) port 1. See Table 2-6 for pin definitions and Figure 2-2 for pin locations.

Table 2-6
NIC1 LED
Pin Definitions
(JF1)

Pin Number	Definition
11	+
12	-

NIC2 LED

The Network Interface Controller 2 LED connection is located on pins 9 and 10 of JF1. This header is used to indicate network activity on LAN (Ethernet) port 2. See Table 2-7 for pin definitions and Figure 2-2 for pin locations.

Table 2-7
NIC2
Pin Definitions
(JF1)

Pin Number	Definition
9	+
10	-

Overheat LED

Pins 7 and 8 of JF1 are for the Overheat LED, which provides you with advanced warning of chassis overheating. This LED will also illuminate if the blower fan fails, which will cause the chassis temperature to rise. Refer to Table 2-8 for pin definitions and Figure 2-2 for pin locations.

Table 2-8
Overheat LED
Pin Definitions
(JF1)

Pin Number	Definition
7	+
8	-

Reset

The Reset connection is located on pins 3 and 4 of JF1. This connector attaches to the Reset button on the control panel, which allows you to reboot the system. See Table 2-9 for pin definitions and Figure 2-2 for pin locations.

Table 2-9
Reset Button
Pin Definitions
(JF1)

Pin Number	Definition
3	Reset
4	Ground

PWR_ON

The PWR_ON connection is located on pins 1 and 2 of JF1. This connector attaches to the Power button on the control panel, which allows you to turn the power to the system on and off. The user can also configure this button to function as a suspend button. (See the Power Button Mode setting in BIOS.) To turn off the power when set to suspend mode, hold down the power button for at least 4 seconds. See Table 2-10 for pin definitions and Figure 2-1 for pin locations.

Table 2-10
PWR Button
Pin Definitions
(JF1)

Pin Number	Definition
1	PW_ON
2	Ground

Fan Headers*

There are several fan headers on the P3TDLR that provide cooling for various components. In addition to one fan header for each processor, there are two over-heat and two chassis fan headers. If used, a blower fan should be connected to the chassis fan header located near the JF1 header. See the motherboard layout on page 2-9 for locations. Refer to Table 2-11 for pin definitions. **Note: The maximum current limitation for the onboard fans is 0.6 amps for each, not to exceed 1.25 amps for any two fans. I.e. both CPU fans, both chassis fans or both over-heat fans.**

Table 2-11
Fan Header Pin Definitions
(CPU, CHASSIS and OH FANS)

Pin Number	Definition
1	Ground (black)
2	+12V (red)
3	Tachometer

* Caution: These fan headers are DC power.

Serial Ports

Two connectors, for the COM1 and COM2 serial ports, are located on the P3TDLR board (see Figure 2-8). COM1 is located near USB1 connectors. COM 2 is located near the AMIBIOS (U33). See the motherboard layout on page 2-9 for locations. See Table 2-12 for pin definitions.

Table 2-12
Serial Port Pin Definitions
(COM1, COM2)

Pin Number	Definition	Pin Number	Definition
1	CD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	ARI
5	Ground		

ATX PS/2 Keyboard and PS/2 Mouse Ports

The ATX PS/2 keyboard and the PS/2 mouse are located on J28. See Table 2-13 for pin definitions. (The mouse port is above the keyboard port. See Figure 2-12.)

Table 2-13
PS/2 Keyboard and Mouse Port Pin Definitions (J28)

Pin Number	Definition
1	Data
2	NC
3	Ground
4	VCC
5	Clock
6	NC

Universal Serial Bus (USB)

Two Universal Serial Bus connectors are located on U38. USB1 is the bottom connector and USB2 is the top connector. Refer to Table 2-14 for pin definitions.

Table 2-14
Universal Serial Bus Pin Definitions

USB1		USB2	
Pin Number	Definition	Pin Number	Definition
1	+5V	1	+5V
2	P0-	2	P0-
3	P0+	3	P0+
4	Ground	4	Ground
5	N/A	5	Key

Extra USB Connectors (J105/J106)

J105 is USB3, and J106 is USB4. You will need a USB cable (not included) to use this connection. Refer to Table 2-14 for pin definitions.

LAN1/LAN2 Ports

Two Ethernet ports (designated NIC1 and NIC2) are located beside the VGA port on the I/O backplane. These ports accept RJ45 type cables. There are two jumpers for the LAN1/LAN2 ports: JP8: NIC 1 Enable/Disable (Open: enable), JP24: NIC2 Enable/Disable (Open: enable). Each indicate a successful connection (yellow) and activity (green).



RJ45 Ethernet Port

SLED1 (SCSI LED) Indicator

The SLED connector is used to provide an LED indication of SCSI activity. Refer to Table 2-15 for connecting the SCSI LED.

Table 2-15
SLED1 (SCSI LED) Pin Definitions

Pin Number	Definition
1	+
2	-
3	-
4	+

Wake-On-Modem

The Wake-on-Modem (WOM) header allows your computer to receive and be "awakened" by an incoming call when in the suspend state. Refer to Table 2-16 for pin definitions. You must also have a WOM card and cable to use WOM.

Table 2-16
Wake-on-modem Pin Definitions (WOM)

Pin Number	Definition
1	Ground
2	Wake-up

Wake-On-LAN

The Wake-On-LAN (WOL) header allows the system to be woken up upon receiving an appropriate signal via the LAN. You must enable the LAN Wake-Up setting in BIOS to use this feature and have a LAN card with a Wake-on-LAN connector and cable. Refer to Table 2-17 for pin definitions.

Table 2-17
Wake-On-LAN Pin Definitions (WOL)

Pin Number	Definition
1	+5V Standby
2	Ground
3	Wake-up

2-8 DIP Switch Settings

DIP Switch 1: Core/Bus Ratio

One DIP switch labeled SW1 is located on the P3TDLR motherboard. The switch housing has four individual switches. They are used to set the CPU core/bus ratio. The table on the right will show you how to choose the proper CPU core/bus ratio. After determining the ratio, refer to Table 2-18 for the correct settings of DIP switch 1.

Table 2-18
CPU Core/Bus Ratio Selection (DIP Switch 1)

133/100 CPU	SW 1 #1	SW 1 #2	SW 1 #3	SW 1 #4
600/450		ON		ON
667/500	ON			ON
733/550				ON
800/600	ON	ON	ON	
866/650		ON	ON	
933/700	ON		ON	
1G/750			ON	
1.06G/800	ON	ON		
1.13G/850	ON		ON	ON
1.20G/900			ON	ON
1.26G/950			ON	ON
1.4G/1G	ON	ON		ON

Core/bus ratio = CPU speed / front side bus speed. Example: a 550 MHz CPU running at a 100 MHz FSB speed:

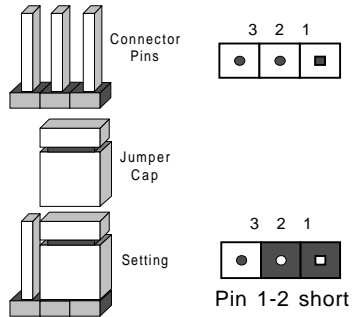
$$550 \text{ (MHz)} / 100 \text{ (MHz)} = 5.5 \text{ (ratio)}$$

2-9 Jumper Settings

Explanation of Jumpers

To modify the operation of the motherboard, jumpers can be used to choose between optional settings. Jumpers create shorts between two pins to change the function of the connector. Pin 1 is identified with a square solder pad on the printed circuit board. See the motherboard layout pages for jumper locations.

Note: Closed refers to the jumper being set over both pins on a two-pin jumper header. Open refers to the jumper being set over a single pin of a two-pin jumper.



Front Side Bus Speed

JP2 sets the FSB speed. CPU speed = FSB x Core/Bus ratio. Core/Bus Ratio settings are described in Section 2-9. See Table 2-19 for jumper settings.

Table 2-19
Front Side Bus Speed
Jumper Settings (JP2)

Jumper Position	Definition
1-2	Auto
2-3	100 MHz
Open	133 MHz

* Note: The Auto setting allows the CPU to set the speed.

PCI 64 Speed Setting

JP13 sets the speed PCI 64. When JP13 is set to "open", the PCI speed is set 66MHz, and when the JP13 is closed, the PCI speed is set to 33 MHz. See Table 2-20 for jumper settings.

Table 2-20
PCI 64 Speed Setting
Jumper Settings (JP13)

Jumper Position	Definition
Open	66 MHz
Closed	33 MHz

CMOS Clear

Refer to Table 2-21 for setting JBT1 to clear CMOS. Always remove the AC power cord from the system before clearing CMOS.

Table 2-21
CMOS Clear Jumper Settings (JBT1)

Jumper Position	Definition
1-2	Normal
2-3	CMOS Clear

Over Heat Alarm

Jumper JP7 allows you to enable or disable the over heat alarm. Refer to Table 2-22 for jumper settings.

Table 2-22
Over Heat Alarm Jumper Settings (JP7)

Jumper Position	Definition
Open	Disabled
Closed	Enabled

LAN 1 Enable/Disable

Use jumper JP8 to enable or disable the onboard LAN 1 (Ethernet) port. The default setting is enabled. See Table 2-23 for jumper settings.

Table 2-23
LAN 1 Enable/Disable Jumper Settings (JP8)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

LAN 2 Enable/Disable

Use jumper JP24 to enable or disable the onboard LAN 2 (Ethernet) port. The default setting is enabled. See Table 2-24 for jumper settings.

Table 2-24
LAN 2 Enable/Disable Jumper Settings (JP24)

Jumper Position	Definition
Open	Enabled
Closed	Disabled

SCSI Enable/Disable

Jumper JP1 allows you to enable or disable all onboard SCSI. The normal (default) position is open to enable SCSI operation. See Table 2-25 for jumper settings.

Table 2-25
SCSI Enable/Disable
Jumper Settings (JP1)

Jumper Position	Definition
Pin 1-2	Enabled
Pin 2-3	Disabled

Onboard VGA Enable/Disable

Jumper JP62 allows you to enable or disable the onboard VGA. The normal (default) position is open to enable VGA operation. See Table 2-26 for jumper settings.

Table 2-26
Onboard VGA Enable/Disable
Jumper Settings (JP62)

Jumper Position	Definition
Closed	Enabled
Open	Disabled

Watchdog Reset Enable/Disable

Jumper JP210 allows you to enable or disable the Watchdog function. The normal (default) position is open to disable Watchdog. See Table 2-27 for jumper settings.

Table 2-27
Watchdog Reset Enable/Disable
Jumper Settings (JP62)

Jumper Position	Definition
Closed	Enabled
Open	Disabled

2-10 Floppy/Hard Disk and SCSI Connections

Be aware of the following when connecting the floppy and hard disk drive cables:

- A red mark on a wire typically designates the location of pin 1.
- A single floppy disk drive ribbon cable has 34 wires and two connectors to provide for two floppy disk drives. The connector with the twisted wires always connects to drive A, and the connector that does not have twisted wires always connects to drive B.

Floppy Connector

The floppy connector is located on J26 and requires a 34-pin ribbon cable for operation. See Table 2-28 for pin definitions.

Table 2-28
Floppy Connector Pin Definitions (J26)

Pin Number	Function	Pin Number	Function
1	GND	2	FDHDIN
3	GND	4	Reserved
5	Key	6	FDEDIN
7	GND	8	Index-
9	GND	10	Motor Enable
11	GND	12	Drive Select B-
13	GND	14	Drive Select A-
15	GND	16	Motor Enable
17	GND	18	DIR-
19	GND	20	STEP-
21	GND	22	Write Data-
23	GND	24	Write Gate-
25	GND	26	Track 00-
27	GND	28	Write Protect-
29	GND	30	Read Data-
31	GND	32	Side 1 Select-
33	GND	34	Diskette

Table 2-29
IDE Connector Pin Definitions
(J23, J24)

Pin Number	Function	Pin Number	Function
1	Reset IDE	2	GND
3	Host Data 7	4	Host Data 8
5	Host Data 6	6	Host Data 9
7	Host Data 5	8	Host Data 10
9	Host Data 4	10	Host Data 11
11	Host Data 3	12	Host Data 12
13	Host Data 2	14	Host Data 13
15	Host Data 1	16	Host Data 14
17	Host Data 0	18	Host Data 15
19	GND	20	Key
21	DRQ3	22	GND
23	I/O Write-	24	GND
25	I/O Read-	26	GND
27	IOCHRDY	28	BALE
29	DACK3-	30	GND
31	IRQ14	32	IOCS16-
33	Addr 1	34	GND
35	Addr 0	36	Addr 2
37	Chip Select 0	38	Chip Select 1-
39	Activity	40	GND

IDE Connectors

There are no jumpers to configure the onboard IDE connectors J23 and J24. Refer to Table 2-29 for pin definitions.

Ultra160 SCSI Connector

Refer to Table 2-30 for pin definitions for the Ultra160 SCSI connector located at JA1.

Table 2-30
68-pin Ultra160 SCSI Connectors (JA1)

Connector Contact Number	Signal Names	Connector Contact Number	Signal Names
1	+DB(12)	35	-DB(12)
2	+DB(13)	36	-DB(13)
3	+DB(14)	37	-DB(14)
4	+DB(15)	38	-DB(15)
5	+DB(P1)	39	-DB(P1)
6	+DB(0)	40	-DB(0)
7	+DB(1)	41	-DB(1)
8	+DB(2)	42	-DB(2)
9	+DB(3)	43	-DB(3)
10	+DB(4)	44	-DB(4)
11	+DB(5)	45	-DB(5)
12	+DB(6)	46	-DB(6)
13	+DB(7)	47	-DB(7)
14	+DB(P)	48	-DB(P)
15	GROUND	49	GROUND
16	DIFFSENS	50	GROUND
17	TERMPWR	51	TERMPWR
18	TERMPWR	52	TERMPWR
19	RESERVED	53	RESERVED
20	GROUND	54	GROUND
21	+ATN	55	-ATN
22	GROUND	56	GROUND
23	+BSY	57	-BSY
24	+ACK	58	-ACK
25	+RST	59	-RST
26	+MSG	60	-MSG
27	+SEL	61	-SEL
28	+C/D	62	-C/D
29	+REQ	63	-REQ
30	+I/O	64	-I/O
31	+DB(8)	65	-DB(8)
32	+DB(9)	66	-DB(9)
33	+DB(10)	67	-DB(10)
34	+DB(11)	68	-DB(11)

2-11 Installing Software Drivers

After the OS (Operating System) has been installed, you must install the software drivers. The necessary drivers are all included on the Supermicro CD that came packaged with your motherboard. After inserting this CD into your CDROM drive, the display shown in Figure 2-6 should appear. (If this display does not appear, click on the My Computer icon and then on the icon representing your CDROM drive. Finally, double click on the S "Setup" icon.)

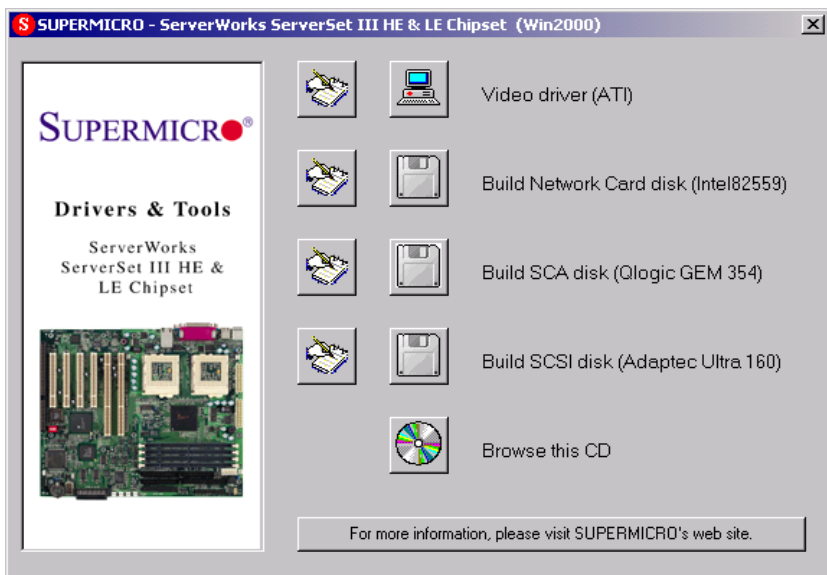


Figure 2-6. Driver/Tool Installation Display Screen

Click the icons showing a hand writing on paper to view the readme files for each item. The bottom icon with a CD on it allows you to view the entire contents of the CD.

Video driver (ATI)

Build Network Card disk

Build SCA disk (QLogic GEM 354): For integration with the SuperServer SC850 and SC860 chassis.

Build SCSI disk (Ultra160)

Chapter 3

Troubleshooting

3-1 Troubleshooting Procedures

Use the following procedures to troubleshoot your system. If you have followed all of the procedures below and still need assistance, refer to the 'Technical Support Procedures' and/or 'Returning Merchandise for Service' section(s) in this chapter.

Note: Always disconnect the power cord before adding, changing or installing any hardware components.

Before Power On

1. Make sure no short circuits exist between the motherboard and chassis.
2. Disconnect all ribbon/wire cables from the motherboard, including those for the keyboard and mouse.
3. Remove all add-on cards.
4. Install one CPU (making sure it is fully seated) and connect the chassis speaker and the power LED to the motherboard. (Check all jumper settings as well.)

No Power

1. Make sure no short circuits exist between the motherboard and the chassis.
2. Verify that all jumpers are set to their default positions.
3. Check that the 115V/230V switch on the power supply is properly set.
4. Turn the power switch on and off to test the system.
5. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.

No Video

1. If the power is on but you have no video, remove all the add-on cards and cables.
2. Use the speaker to determine if any beep codes exist. Refer to Appendix A for details on beep codes.

NOTE

If you are a system integrator, VAR or OEM, a POST diagnostics card is recommended. For I/O port 80h codes, refer to App. B.

Memory Errors

1. Make sure the DIMM modules are properly and fully installed.
2. Determine if different speeds of DIMMs have been installed and verify that the BIOS setup is configured for the fastest speed of RAM used. It is recommended to use the same RAM speed for all DIMMs in the system.
3. Make sure you are using PC133 or PC100 compliant, registered ECC SDRAM. EDO and unbuffered SDRAM are not supported.
4. Check for bad DIMM modules or slots by swapping a single module between two slots and noting the results.
5. Make sure all memory modules are fully seated in their slots.
6. Check the power supply voltage 115V/230V switch.

Losing the System's Setup Configuration

1. Check the setting of jumper JBT1. Ensure that you are using a high quality power supply. A poor quality power supply may cause the system to lose the CMOS setup information. Refer to page 1-13 for details on recommended power supplies.
2. The battery on your motherboard may be old. Check to verify that it still supplies ~3VDC. If it does not, replace it with a new one.
3. If the above steps do not fix the Setup Configuration problem, contact your vendor for repairs.

3-2 Technical Support Procedures

Before contacting Technical Support, please take the following steps. Also, note that as a motherboard manufacturer, Super Micro does not sell directly to end-users, so it is best to first check with your distributor or reseller for troubleshooting services. They should know of any possible problem(s) with the specific system configuration that was sold to you.

1. Please go through the 'Troubleshooting Procedures' and 'Frequently Asked Question' (FAQ) sections in this chapter or see the FAQs on our

web site < <http://www.supermicro.com/techsupport.htm> > before contacting Technical Support.

2. BIOS upgrades can be downloaded from our web site at < <http://www.supermicro.com/techsupport/download.htm> >.

Note: Not all BIOS can be flashed depending on the modifications to the boot block code.

3. If you still cannot resolve the problem, include the following information when contacting Super Micro for technical support:

- Motherboard model and PCB revision number
- BIOS release date/version
(this can be seen on the initial display when your system first boots up)
- System configuration

An example of a Technical Support form is on our web site at http://www.supermicro.com/techsupport/contact_support.htm.

4. Distributors: For immediate assistance, please have your account number ready when placing a call to our technical support department. We can be reached by e-mail at < support@supermicro.com > or by fax at (408) 503-8019.

3-3 Frequently Asked Questions

Question: What are the various types of memory that the SUPER P3TDLR motherboard can support?

Answer: The SUPER P3TDLR has four DIMM slots that support 168-pin, registered DIMMs with ECC only. Note that since the motherboard has a 133 MHz memory bus, both PC133 and PC100 memory are fully supported. However, since the memory bus is synchronized to the front side bus speed, you cannot use PC100 with a 133 MHz FSB. Also, using PC133 with a 100 MHz FSB will result in 100 MHz memory speed operation. **Note:** Unbuffered SDRAM and non-ECC memory are not supported.

Question: How do I update my BIOS?

Answer: It is recommended that you **do not** upgrade your BIOS if you are experiencing no problems with your system. Updated BIOS files are located on our web site at <http://www.supermicro.com>. Please check our BIOS warning message and the info on how to update your BIOS on our web site. Also, check the current BIOS revision and make sure it is newer than

your BIOS before downloading. Select your motherboard model and download the BIOS file to your computer. Unzip the BIOS update file and you will find the readme.txt (flash instructions), the flash.com (BIOS flash utility) and the BIOS image (xxxxxx.rom) files. Copy these files onto a bootable floppy and reboot your system. It is not necessary to set BIOS boot block protection jumpers on the motherboard. At the DOS prompt, enter the command "flash." This will start the flash utility and give you an opportunity to save your current BIOS image. Flash the boot block and enter the name of the update BIOS image file.

Note: It is important to save your current BIOS and **rename it "super.rom"** in case you need to recover from a failed BIOS update. Select flash boot block, then enter the update BIOS image. Select "Y" to start the BIOS flash procedure and do not disturb your system until the flash utility displays that the procedure is complete. After updating your BIOS, please clear the CMOS then load Optimal Values in the BIOS.

Question: After flashing the BIOS my system does not have video. How can I correct this?

Answer: If the system does not have video after flashing your new BIOS, it indicates that the flashing procedure failed. To remedy this, first clear CMOS per the instructions in this manual and retry the BIOS flashing procedure. If you still do not have video, please use the following **BIOS Recovery Procedure**. First, make sure jumper JPWAKE is set to pins 1-2. Then, turn your system off and place the floppy disk with the saved BIOS image file (see above FAQ) in drive A. Press and hold <CTRL> and <Home> at the same time, then turn on the power with these keys pressed until your floppy drive starts reading. Your screen will remain blank until the BIOS program is done. If the system reboots correctly, then the recovery was successful. The BIOS Recovery Procedure will not update the boot block in your BIOS.

Question: Do I need the CD that came with your motherboard?

Answer: The supplied compact disc has quite a few drivers and programs that will greatly enhance your system. We recommend that you review the CD and install the applications you need. Applications on the CD include chipset drivers for Windows and security and audio drivers.

Question: Why can't I turn off the power using the momentary power on/off switch?

Answer: The instant power off function is controlled in BIOS by the Power Button Mode setting. When the On/Off feature is enabled, the motherboard

will have instant off capabilities as long as the BIOS has control of the system. When the Standby or Suspend feature is enabled or when the BIOS is not in control such as during memory count (the first screen that appears when the system is turned on), the momentary on/off switch must be held for more than four seconds to shut down the system. This feature is required to implement the ACPI features on the motherboard.

3-4 Returning Merchandise for Service

A receipt or copy of your invoice marked with the date of purchase is required before any warranty service will be rendered. You can obtain service by calling your vendor for a Returned Merchandise Authorization (RMA) number. When returning to the manufacturer, the RMA number should be prominently displayed on the outside of the shipping carton, and mailed prepaid or hand-carried. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty only covers normal consumer use and does not cover damages incurred in shipping or from failure due to the alteration, misuse, abuse or improper maintenance of products.

During the warranty period, contact your distributor first for any product problems.

NOTES

Chapter 4

BIOS

4-1 Introduction

This chapter describes the AMIBIOS for the SUPER P3TDLR. The AMI ROM BIOS is stored in a Flash EEPROM and can be easily upgraded using a floppy disk-based application.

Note: Due to periodic changes to the BIOS, some settings may have been added or deleted and might not yet be recorded in this manual. Refer to the Manual Download area of our web site for any changes to BIOS that are not reflected in this manual.

System BIOS

The BIOS is the Basic Input Output System used in all IBM® PC, XT™, AT®, and PS/2® compatible computers. The BIOS ROM stores the system parameters, such as amount of memory, type of disk drives and video displays, etc. BIOS ROM requires very little power. When the computer is turned off, a back-up battery provides power to the BIOS ROM, enabling it to retain the system parameters. Each time the computer is powered-on, the computer is then configured with the values stored in the BIOS ROM by the system BIOS, which gains control when the computer is powered on.

How To Change the Configuration Data

The configuration data that determines the system parameters may be changed by entering the BIOS Setup utility. This Setup utility can be accessed by pressing <Delete> at the appropriate time during system boot.

Starting the Setup Utility

Normally, the only visible POST (Power On Self Test) routine is the memory test. As the memory is being tested, press the <Delete> key to enter the main menu of the BIOS Setup utility. From the main menu, you can access the other setup screens, such as the Chipset and Power menus. Section 4-3 gives detailed descriptions of each parameter setting in the Setup utility.

An AMIBIOS identification string is displayed at the left bottom corner of the screen, below the copyright message.

4-2 BIOS Features

- Supports Plug and Play V1.0A and DMI 2.1
- Supports Intel PCI (Peripheral Component Interconnect) (PME) local bus specification
- Supports Advanced Power Management (APM) specification v 1.1
- Supports ACPI
- Supports Flash ROM

AMIBIOS supports the LS120 drive made by Matsushita-Kotobuki Electronics Industries Ltd. The LS120:

- Can be used as a boot device
- Is accessible as the next available floppy drive

AMIBIOS supports PC Health Monitoring chips. When a failure occurs in a monitored activity, AMIBIOS can sound an alarm and display a message. The PC Health Monitoring chips monitor:

- CPU temperature
- Additional temperature sensors
- Chassis intrusion detector
- Five positive voltage inputs
- Two negative voltage inputs
- Three fan speed monitor inputs

4-3 Running Setup

**Optimal default settings are in bold text unless otherwise noted.*

The BIOS setup options described in this section are selected by choosing the appropriate text from the Standard Setup screen. All displayed text is described in this section, although the screen display is often all you need to understand how to set the options (see on next page).

The Main BIOS Setup Menu

Press the <Delete> key during the POST (Power On Self Test) to enter the Main Menu of the BIOS Setup Utility. All Main Setup options are described in this section. The Main BIOS Setup screen is displayed below.

BIOS SETUP UTILITY	
Main	Advanced Chipset PCI/PnP Power Boot Security Exit
AMIBIOS Version :	07.00:xx
BIOS Build Date :	xxx/xx/xx
BIOS ID :	SSM70626
Processor Type :	PentiumIII™
Processor Speed :	933MHz
System Memory :	256MB
System Time	[10:10:00]
System Date	[Thu 08/24/00]
	↔ Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.	

Use the <Up/Down> arrow keys or the <Tab> key to move between the different settings in the above menu.

When the items "System Time", and "System Date" are highlighted, type in the correct time/date in the time field, and then press <Enter>. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format. The time is in also 24-hour format. For example, 5:30 a.m. appears as 05:30:00 and 5:30 p.m. as 17:30:00.

Press the <ESC> key to exit the Main Menu and use the <Left/Right> arrow keys to enter the other categories of BIOS settings. The next section describes in detail how to navigate through the menus.

***Note: Items displayed in gray are preset and cannot be selected. Items with a blue arrow are commands, not options (i.e., Discard Changes).**

4-4 Advanced BIOS Setup

Choose "Advanced BIOS Setup" from the AMIBIOS Setup Utility main menu with the <Left/Right> arrow keys. You should see the following display. Select one of the items in the left frame of the screen, such as SuperIO Configuration, to go to the sub screen for that item. Advanced BIOS Setup options are displayed by highlighting the option using the arrow keys. All Advanced BIOS Setup options are described in this section.

BIOS SETUP UTILITY	
Main <u>Advanced</u> Chipset PCIPnP Power Boot Security Exit	Configure SuperIO Chipset Winbond627F
Setup Warning Setting items on this screen to incorrect values may cause the system to malfunction! > SuperIO Configuration > IDE Configuration > Floppy Configuration > Boot Settings Configuration > Event Log Configuration > Peripheral Device Configuration > Processor Configuration > System Health Monitoring Hardware	↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.	

Use the <Up/Down> arrow keys to select the "Super I/O Configuration" line.

When the "Super IO Configuration" line is highlighted, Press <ENTER> to display its menu.

The following Super IO Configuration screen will appear. Here you can select your options for your computer's I/O (Input/Output) devices.

Super IO Configuration

BIOS SETUP UTILITY	
Advanced	
Configure Nat 317 Serial Port(s)and Parallel P	
Serial Port1 Address	[3F8]
Serial Port1 IRQ	[4]
Serial Port2 Address	[2F8]
Serial Port2 IRQ	[3]
Parallel Port Address	[378]
Parallel Port IRQ	[7]
Parallel Port Mode	[ECP]
ECP Mode DMA Channel	[3]
	↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.	

The Super IO Configuration includes the following items:

Serial Port 1 Address

This option specifies the base I/O port address of serial port 1. The settings for this item include Disabled, **3F8** and 3E8 and 2E8. Select the desired setting and then press <Enter>.

Serial Port 1 IRQ

This option specifies the Interrupt Request address of serial port 1. The settings for this item include Disabled, **4** and 3. Select the desired setting and then press <Enter>.

Serial Port 2 Address

This option specifies the base I/O port address of serial port 2. The settings for this item include Disabled, **2F8**, 3E8 and 2E8. Select the desired setting and then press <Enter>.

Serial Port 2 IRQ

This option specifies the Interrupt Request address of serial port 2. The settings for this item include Disabled, 4 and **3**. Select the desired setting and then press <Enter>.

Parallel Port Address

This option specifies the I/O address used by the parallel port. The settings for this item include Disabled, **378**, 278 and 3BC. Select your setting and then press "Enter".

Parallel Port IRQ

This option allows the user to set the Parallel Port IRQ. The settings for this item include 5 and **7**.

Parallel Port Mode

This option specifies the parallel port mode. The settings for this item include Normal, Bi-directional, EPP and **ECP**.

ECP Mode DMA Channel

This option allows the user to set the setting for the ECP Mode of the DMA Channel. The settings for this item include **0**, 1 and 3.

IDE Configuration

Onboard PCI IDE Controller

This option allows the user to enable or disable the integrated IDE Controller. The settings include Disabled and **Both**. Select "Disabled" to disable the Integrated IDE Controller. Select "Both" to enable both Primary and Secondary IDE Controllers.

Primary IDE Master

When entering "Setup", BIOS automatically detects the presence of IDE devices. This displays the auto detection status of the IDE devices. You can also manually configure the IDE drives by providing the following information:

This option allows the user to configure the IDE devices. When the desired item is highlighted (selected), press <Enter> and the following screen will be displayed:

Type

This option sets the type of device that the AMIBIOS attempts to boot from after AMIBIOS POST is completed. The settings include Not installed, **Auto**, CDROM and ARMD. The "Auto" setting allows BIOS to automatically detect the presence of the IDE controller.

LBA/Large Mode

LBA (Logical Block Addressing) is a method of addressing data on a disk drive. In LBA mode, the maximum drive capacity is 137 GB. The settings are Disabled and **Auto**. Select "Disabled" to disable LBA mode. Select "Auto" to enable LBA mode if your device supports it and is not already formatted with the LBA mode.

Block (Multi-Sector Transfer) Mode

This option sets the block mode multi sector transfers option. The settings include Disabled and **Auto**. Disabled: This option prevents the BIOS from using Multi-Sector Transfer on the specified channel. The data to and from the device will occur one sector at a time. Auto: This option allows the BIOS to auto detect device support for Multi-Sector Transfers on the specified channel. If supported, this option allows the BIOS to auto detect the number of sectors per block for transfer from the hard disk drive to memory. The data transfer to and from the device will occur multiple sectors at a time (if the device supports it).

PIO Mode

IDE PIO (Programmable I/O) mode programs timing cycles between the IDE drive and the programmable IDE controller. As the PIO mode increases, the cycle time decreases. The settings are: **Auto**, 0, 1, 2, 3 and 4.

DMA Mode

This item allows the users to select the DMA mode. The settings are: **Auto**, SWDMA0, SWDMA1, SWDMA2, MWDMA0, MWDMA1, MWDMA2, UWDMA0, UWDMA1, UWDMA2, UWDMA3 and UWDMA4. Select Auto to auto detect the DMA Mode. Select SWDMA0 through SWDMA2 to set single word DMA0 through DMA2. Select MWDMA0 through MWDMA2 to set Multi-word DMA0 through DMA2. Select UDMA0 through UDMA4 to set Ultra DMA0 through Ultra DMA4.

S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring Analysis and Reporting Technology, a feature that can help predict impending drive failures. The settings are **Auto**, Disabled and Enabled. Select "Enabled" or "Disabled" to enable or disable the S.M.A.R.T. Select "Auto" to auto detect S.M.A.R.T.

32Bit Data Transfer

The settings are Disabled, and **Enabled**. Select "Enabled" or "Disabled" to enable or disable the 32-bit Data Transfer function.

ARMD Emulation Type

This option is used to select the emulation used when configuring an LS120, MO (Magneto-Optical), or Iomega Zip drive. The settings are **Auto**, Floppy and HardDisk.

Primary IDE Slave

When the system enters "Setup", BIOS automatically detects the presence of IDE devices. This option displays the auto detection status of IDE devices. The settings for "Primary IDE Slave" are the same as those for the "Primary IDE Master". The default setting for this option is **ATAPI CDROM.Secondary IDE Master**

Secondary IDE Slave

This displays the status of auto detection of IDE devices. The settings for "Secondary IDE Slave" are the same as those for the "Primary IDE Master". The default setting for this option is **Not Detected**.

Hard Disk Write Protect

This item allows the user to prevent the hard disk from being overwritten. The options are Enabled or Disabled. Enabled allows the drive to be used normally; read, write and erase functions can all be performed. Disabled prevents the hard disk from being erased. This function is effective only when the device can be accessed through BIOS.

ATA(PI) Detect Timeout

Set this option to stop the system search for ATAPI devices within the specified number of seconds. The options are 0, 5, 10, 15, 20, 25, 30, and **35** (seconds). Most ATA disk drives can be detected within 5 seconds.

ATA(PI) 80Pin Cable Detection

This option selects the mechanism for detecting the 80-pin ATA(PI) cable. Options include Host & Device, Host, and Device. Host: This option uses the motherboard onboard IDE controller to detect the type of IDE cable used. Device This option uses the IDE disk drive to detect the type of IDE cable used. Host & Device: This option uses both the motherboard onboard IDE controller and IDE disk drive to detect the type of IDE cable used.

Floppy Configuration

Floppy A

Use this option to specify which of floppy drive you have installed in the A drive. The settings are Disabled, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", **1.44 MB 3 1/2"** and 2.88 MB 3 1/2".

Floppy B

Use this option to specify which of floppy drive you have installed in the B drive. The settings are **Disabled**, 360 KB 5 1/4", 1.2 MB 5 1/4", 720 KB 3 1/2", 1.44 MB 3 1/2" and 2.88 MB 3 1/2".

Diskette Write Protect

This option allows you to prevent any writing to your floppy diskette. The settings are Enabled and **Disabled**. The Enabled setting is effective only if the device is accessed through BIOS.

Floppy Drive Seek

Use this option to Enable or **Disable** the floppy seek routine on bootup.

Boot Settings Configuration

Quick Boot

This option allows the BIOS to skip certain tests that are normally performed on boot up. You can disable the option to speed up boot time. The settings are Disabled and **Enabled**.

Quiet Boot

If Disabled, this option will cause the normal POST messages to be displayed upon setup. When Enabled, the OEM logo is displayed instead of the POST messages. The default setting is **Disabled**.

Add-On ROM Display Mode

Set this option to display add-on ROM (read-only memory) messages. The settings for this option are **Force BIOS** and Keep Current. Force BIOS allows the computer to force a third party BIOS to display during system boot. Keep Current has the system display AMIBIOS information on bootup.

BootUp Num Lock

This option is used to select the status of the Number Lock function on your keyboard on bootup. The settings are **On** and Off.

BootUp CPU Speed

This option is used set the CPU speed to either **High** or Low.

PS/2 Mouse Support

This option specifies whether a PS/2 Mouse will be supported. Settings are **Enabled** and Disabled.

Typematic Rate

Set this option to select the rate at which the computer repeats a key that is held down. Settings are **Fast** and Slow. Fast: This sets the rate the computer repeats a key to over 20 times per second. Under normal operations, this setting should not be changed. Slow: This sets the rate the computer repeats a key to under 8 times per second.

System Keyboard

This option is to let the system know if a keyboard is **Present** or Absent.

Primary Display

This option specifies the type of monitor display you have installed on the system. The settings are Absent, **VGA/EGA**, Color 40 x 25, Color 80 x 25 and monochrome.

Parity Check

Use this option to either Enable or **Disable** the use of memory parity checking.

Boot to OS/2

This option can be used to boot the system to an OS/2 operating system. The settings are **No** and Yes.

Wait for F1 if Error

This settings for this option are **Enabled** and Disabled. Disabled: This prevents the AMIBIOS to wait on an error for user intervention. This setting should be used if there is a known reason for a BIOS error to appear. An example would be a system administrator must remote boot the system when the computer system does not have a keyboard currently attached. If this setting is set, the system will continue to bootup into the operating system. If "F1" is enabled, the system will wait until the BIOS setup is entered. Enabled: This option configures the system BIOS to wait for any error. If an error is detected, pressing <F1> will enter Setup and the BIOS setting can be adjusted to fix the problem. This normally happens when upgrading the hardware and not setting the BIOS to recognize it.

Press <Delete> Message Display

This option tells the system to display or not display the "Hit Delete to Enter Setup" message. The settings are **Enabled** and Disabled.

Internal Cache

This option is for enabling or disabling the internal CPU L1 cache. Settings include Disabled, Write-Thru and **Write-Back** and Reserved. Disabled: This option prevents the system from using the internal CPU L1 cache. This setting should be used to slow the computer system down or to troubleshoot error messages. Write-Thru: This option allows the computer system to use the internal CPU L1 cache as Write-Through cache. Write-Through cache is slower than Write-Back cache. It performs write operations to the internal L1 CPU cache and system memory simultaneously. Write-Back This option allows the computer system to use the internal CPU L1 cache as Write-Back cache. Write-Back cache is faster than Write-Through cache. Write-Back cache is a caching method in which modifications to data in the cache aren't copied to the cache source until absolutely necessary. Write-back caching is available on all CPUs supported by this BIOS. With these CPUs, write operations stored in the L1 cache aren't copied to main memory until absolutely necessary. Write-Back cache is the default setting.

External Cache

This option is for enabling or disabling the internal CPU L2 cache. Settings include Disabled, Write-Thru and **Write-Back**. See description above.

System BIOS Cacheable

This option enables you to move the system BIOS to the memory cache to improve performance. Settings are **Enabled** and Disabled.

Event Log Configuration

Event Logging

This option **Enables** or Disables the logging of events. You can use this screen to select options for the Event Log Configuration Settings. You can access sub screens to view the event log and mark all events as read. Use the up and down arrow keys to select an item, and the <+> (plus) and <-> (minus) keys to change the option setting. The settings are described on the following pages. The screen is shown below.

ECC Event Logging

This option Enables or **Disables** the logging of ECC events. The events logged by AMIBIOS are post errors such as a bad BIOS, floppy errors, or hard drive errors.

Clear All Event Logs

This option can be used to tell the system to clear the event log on the next boot up. The settings are **No** and Yes.

View Event Log

Highlighting this and pressing <Enter> will allow you to view the unread events from the event log area.

View All Events as Read

Highlighting this and pressing <Enter> will mark all events in the log area as having already been read.

Peripheral Device Configuration

Onboard SCSI

This option allows you to enable the onboard SCSI. The settings are **Enabled** and Disabled.

Power Lost Control

This option determines how the system will respond when power is reapplied after a power loss condition. **Always On** means the system will automatically start up when power is reapplied. "Always Off" means you must push the main power button to restart the system after power is restored.

Processor Configuration

This option enables or disables the AMIBIOS to detect the serial number(s) of the processor(s). The settings are **Disabled** and Enabled.

System Health Monitor

The BIOS continuously monitors the health of your system by measuring certain voltage levels and temperatures.

System Overheat Warning

This option allows you to **Enable** or Disable a system overheat warning signal, used to notify you in the event of a dangerous rise in heat levels.

Overheat Warning Temperature

This option allows you to specify the temperature threshold that, when exceeded, will trigger the overheat warning alarm.

The rest of the Health Monitor menu lists various voltages and temperatures as they are currently being measured. These include CPU temperature, CPU voltage, the rpms of the fans (CPU, chassis and thermal control) as well as the primary voltage levels used by the system: +3.3V, +5V, +12V and -12V.

4-5 Chipset Setup

Choose "Chipset Setup" from the AMIBIOS Setup Utility main menu. The screen is shown below. All Chipset Setup options are described following the screen. You can use this screen to select options for the main controller hub (MCH, or North Bridge) configuration.

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
C000,16k Shadow [Cached/WP] C400,16k Shadow [Cached/WP] C800,16k Shadow [Disabled] CC00,16k Shadow [Disabled] D000,16k Shadow [Disabled] D400,16k Shadow [Disabled] D800,16k Shadow [Disabled] DC00,16k Shadow [Disabled] Act to Deact [6 CLKS] Act to Read/Write [3 CLKS] RAS Precharge Time [3 CLKS] RA Cycle Time [8] Write to Deact [3 CLKS] SDRAM CAS Latency [3] ISA IO Cycle Delay [1.5 BCLK] MPS 1.4 Support [Enabled]						Options for MCH ↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.							

C000, 16k Shadow

C400, 16k Shadow

C800, 16k Shadow

CC00, 16k Shadow

D000, 16k Shadow

D400, 16k Shadow

D800, 16k Shadow

DC00, 16k Shadow

These options specify how the 16 KB of video ROM at each of the above addresses is treated. When Disabled, the contents of the video ROM are not copied to RAM. When Enabled, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM for faster application. When set to Cached/WP, the contents of 16 KB of video ROM beginning at the above address are copied (shadowed) from ROM to RAM and can be written to or read from cache memory. The settings for this option are Disabled, Enabled and Cached/WP. (The optimal settings are Cached/WP for C000 and C400 and Disabled for all the other settings.

Act to Deact

This settings for this option are **6 CLKS** and 5 CLKS.

Act to Read/Write

This settings for this option are **3 CLKS** and 2 CLKS.

RAS Precharge Time

The precharge time is the number of cycles it takes for the RAS to accumulate a charge before a DRAM refresh. Insufficient recharge time may cause the DRAM to lose data. The settings are **3 CLKS** (which is more stable) and 2 CLKS. RAS stands for Row Address Strobe.

RAS Cycle Time

This option defines the RAS cycle time. Settings include **10 CLKS**, 9 CLKS, 8 CLKS and 7 CLKS.

Write to Deact

This settings for this option are **3 CLKS** and 2 CLKS.

SDRAM CAS Latency

This settings for this option are **CAS Latency 3** and CAS Latency 2. CAS stands for Column Address Strobe.

ISA IO Cycle Delay

This settings for this option are Full Delay, **1.5 BCLK**, 2.5 BLCK and 3.5 BLCK.

MPS 1.4 Support

The settings for this option are **Enabled** and Disabled.

4-6 PCI PnP Setup

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

BIOS SETUP UTILITY		
Main	Advanced	Chipset PCI/PnP Power Boot Security Exit
Plug & Play O/S	[No]	No: lets the BIOS configure all the devices in the system.
Reset Config Data	[No]	
PCI Latency Timer	[64]	Yes: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.
Allocate IRQ to VGA	[Yes]	
Palette Snooping	[Disabled]	
PCI IDE BusMaster	[Disabled]	
OffBoard PCI/ISA IDE Card	[Auto]	
USB Controller	[Enabled]	
PCI Slot-1 IRQ preference	[Auto]	
PCI Slot-2 IRQ preference	[Auto]	
Onboard VGA IRQ preference	[Auto]	↔ Select Screen
Onboard LAN1 IRQ preference	[Auto]	↑↓ Select Item
Onboard LAN2 IRQ preference	[Auto]	+ - Change Option
PCI Slot-3 IRQ preference	[Auto]	F1 General Help
PCI Slot-4 IRQ preference	[Auto]	F10 Save and Exit
Onboard SCSI IRQ preference	[Auto]	ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.		

Plug & Play OS

Choose the **No** setting for computers that do not meet the Plug and Play specifications, which will allow the BIOS to configure all the devices in the system. Choosing the Yes setting lets the operating system configure PnP devices that are not required for boot up (if the system has a PnP operating system). The operating system would have the ability to change interrupt,

I/O, and DMA settings. Set this option if the system is running Windows 95®, Windows 98® or Windows 2000®. Several other operating systems are also PnP-aware.

Reset Configuration Data

Choosing the Yes setting will cause the PnP configuration data in the BIOS to be cleared on the next boot up. Choosing the **No** setting does not force PnP data to be cleared on the next boot.

PCI Latency Timer

This option specifies the latency timing of the PCI clocks for all PCI devices. Settings include 32, **64**, 96, 128, 160, 192, 224 and 248 PCI clocks.

Allocate IRQ to PCI VGA

This option lets you allocate an interrupt request (IRQ) to the PCI VGA adapter card (if used). The settings are **Yes** and No.

Palette Snooping

When enabled, this option informs PCI devices that an ISA graphics device is installed. The settings are **Disabled** and Enabled. This does not necessarily indicate a physical ISA adapter card. The graphics chipset can be mounted on a PCI card. Always check with your adapter card manuals first, before modifying the default settings in the BIOS.

PCI IDE BusMaster

The settings for this option are **Disabled** and Enabled. Enable to specify that the IDE controller on the PCI bus has bus mastering capabilities.

OffBoard PCI/ISA IDE Card

The settings for this option are **Auto**, PCI Slot 1, PCI Slot 2, PCI Slot 3, PCI Slot 4, PCI Slot 5, and PCI Slot 6.

USB Function

The settings for this option are Disabled and **Enabled**. Disabled prevents the use of the USB ports and Enabled allows the use of the USB ports.

PCI Slot-1 IRQ Preference

This option allows you to change the IRQ for PCI slot 1. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

PCI Slot-2 IRQ Preference

This option allows you to change the IRQ for PCI slot 2. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

Onboard VGA IRQ Preference

This option allows you to change the IRQ for the onboard VGA. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

Onboard LAN1 IRQ Preference

This option allows you to change the IRQ for the onboard LAN1. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

Onboard LAN2 IRQ Preference

This option allows you to change the IRQ for the onboard LAN2. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

PCI Slot-3 IRQ Preference

This option allows you to change the IRQ for PCI slot 3. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

PCI Slot-4 IRQ Preference

This option allows you to change the IRQ for PCI slot 4. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

Onboard SCSI IRQ Preference

This option allows you to change the IRQ for the onboard SCSI. The settings are **Auto**, 3, 4, 5, 7, 9, 10, 11, 12, 14, and 15. The Auto setting lets the BIOS assign the IRQ.

IRQ 3

IRQ 4

IRQ 5

IRQ 7

IRQ 9

IRQ 10

IRQ 11

IRQ 14

IRQ 15

4-7 Power Setup

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

BIOS SETUP UTILITY	
Main	Advanced
Chipset	PCIPnP
Power	Boot Security Exit
ACPI Aware O/S	[Yes]
Power Management	[Enabled]
Power Button Mode	[On/Off]
Sleep Button Enable	[Suspend]
Green PC Monitor Power State	[StandBy]
Video Power Down Mode	[Suspend]
Hard Disk Power Down Mode	[Disabled]
Inactivity Timer	[Off]
Suspend Timeout (Minutes)	[Off]
IRQ1	[Monitor]
IRQ3	[Ignore]
IRQ4	[Ignore]
IRQ5	[Ignore]
IRQ6	[Ignore]
IRQ7	[Ignore]
IRQ9	[Ignore]
IRQ10	[Ignore]
IRQ11	[Ignore]
IRQ12	[Monitor]
IRQ14	[Monitor]
IRQ15	[Ignore]
↔ Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.	

ACPI Aware O/S

This option allows the system to utilize Intel's ACPI (Advanced Configuration and Power Interface) specification. Settings are No and **Yes**. DOS®, Windows 3.x®, and Windows NT® are examples of non-ACPI aware operating systems. Windows 95®, Windows 98® and Windows 2000® are examples of ACPI aware operating systems.

Power Management

This option allows you to select using APM (Advanced Power Management). The settings are Disabled and **Enabled**.

Power Button Mode

This option specifies how the external power button on the computer chassis functions. When set to **On/Off**, depressing the power button turns the computer on or off. When set to "Suspend", depressing the power button places the computer in Suspend mode or Full On power mode. The Standby setting places the computer in Standby or Full On mode.

Sleep Button Enable

This option is to enable the use of the sleep button. The settings are Suspend and Disabled.

Green PC Monitor Power State

This option specifies the power state that a green PC-compliant monitor enters when BIOS places it in a power saving state after the specified period of display inactivity has expired. The settings include Standby, **Suspend** and Off.

Video Power Down Mode

This option specifies the power state that the VGA video subsystem enters after the specified period of display inactivity has expired. The settings include Disabled, Standby and **Suspend**.

Hard Disk Power Down Mode

This option specifies the power conserving state that the hard disk drive(s) enters after the specified period of inactivity has expired. The settings include Disabled, Standby and **Suspend**.

Inactivity Timer

This option specifies the length of hard disk inactivity time that should expire before entering the power conserving state. The settings include **Off**, 1, 5, 10, 20, 30, 60 and 120 (minutes).

Suspend Timeout

This option specifies if BIOS is to monitor for display activity when in a power saving state. The settings include **Off**, 1, 2, 3, 4, 5, 6, 7, 8, 9 and 10 (minutes).

IRQ1

IRQ3

IRQ4

IRQ5

IRQ6

IRQ7

IRQ9

IRQ10

IRQ11

IRQ12

IRQ14

IRQ15

With the above options, you can monitor each interrupt request and resume the system's normal power up state when activated. Settings are Ignore and Monitor. All IRQs are defaulted to Ignore except for IRQ 1, 12 and 14, which default to Monitor.

4-8 Boot Setup

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

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
<pre> > Boot Device Priority > Hard Disk Drives > Removable Devices > ATAPI CDROM Drives </pre>						<pre> ↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit </pre>	
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.							

Boot Device Priority

1st Boot Device

This option is used to specify the order of the boot sequence that will be followed from the available system devices. The settings for the 1st Boot Device are **Removable Device**, ATAPI CDROM, Hard Drive and Disabled.

2nd Boot Device

The settings for the 2nd Boot Device are Removable Device, **ATAPI CDROM**, Hard Drive and Disabled.

3rd Boot Device

The settings for the 3rd Boot Device are Removable Device, **ATAPI CDROM**, Hard Drive and Disabled.

Hard Disk Drives

Use this screen to view the hard drives that have been auto-detected or entered manually on your system.

Removable Devices

Use this screen to view the removable devices that have been auto-detected or entered manually on your system.

ATAPI CDROM Drives

Use this screen to view the ATAPI CDROM drives that have been auto-detected or entered manually on your system.

4-9 Security Setup

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

BIOS SETUP UTILITY	
Main	Advanced
Chipset	PCIPnP
Power	Boot
Security	Exit
Supervisor Password :	Not Installed
User Password :	Not Installed
> Change Supervisor Password	
> Change User Password	
> Clear User Password	
Boot Sector Virus Protection	[Disabled]
	Install or Change the password.
	↔ Select Screen
	↑↓ Select Item
	Enter Go to Sub Screen
	F1 General Help
	F10 Save and Exit
	ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.	

Supervisor Password

User Password

AMIBIOS provides both Supervisor and User password functions. **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. 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 clear CMOS and reconfigure. **Remember your 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 CMOS.

Change Supervisor Password

This option allows you to change supervisor password that was entered previously.

Change User Password

This option allows you to change a user password that was entered previously.

Clear User Password

Use this option to clear the user password so that it is not required to be entered when the system boots up.

Boot Sector Virus Protection

This option allows you to enable or disable a virus detection program to protect the boot sector of your hard disk drive. The settings for this option **Disabled** and Enabled. If Enabled, AMIBIOS will display 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.

4-10 Exit Setup

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

BIOS SETUP UTILITY							
Main	Advanced	Chipset	PCIPnP	Power	Boot	Security	Exit
> <u>Exit Saving Changes</u> > Exit Discarding Changes > Load Optimal Defaults > Load Fail-Safe Defaults > Discard Changes							Exit system setup with saving the changes.
							↔ Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit
V02.03 (C)Copyright 1985-2000, American Megatrends, Inc.							

Exit Saving Changes

Highlighting this setting and then pressing <Enter> will save any changes you made in the BIOS Setup program and then exit. Your system should then continue with the boot up procedure.

Exit Discarding Changes

Highlighting this setting and then pressing <Enter> will ignore any changes you made in the BIOS Setup program and then exit. Your system should then continue with the boot up procedure.

Load Optimal Defaults

Highlighting this setting and then pressing <Enter> provides the optimum performance settings for all devices and system features.

Load Failsafe Defaults

Highlighting this setting and then pressing <Enter> provides the safest set of parameters for the system. Use them if the system is behaving erratically.

Discard Changes

Highlighting this setting and then pressing <Enter> will ignore any changes you made in the BIOS Setup program but will not exit the BIOS Setup program.

NOTES

Appendix A

BIOS Error Beep Codes & Messages

During the POST (Power-On Self-Test) routines, which are performed each time the system is powered on, errors may occur.

Non-fatal errors are those which, in most cases, allow the system to continue the boot-up process. The error messages normally appear on the screen.

Fatal errors are those which will not allow the system to continue the boot-up procedure. If a fatal error occurs, you should consult with your system manufacturer for possible repairs.

These fatal errors are usually communicated through a series of audible beeps. The numbers on the following page correspond to the number of beeps for the error described.

AMIBIOS Error Beep Codes

POST Error Beep Codes

- 1 beep:** Refresh failure - the memory refresh circuitry on the motherboard is faulty. (Fatal error)
- 3 beeps:** Base 64KB memory failure - memory failure occurred in the first 64KB of memory. (Fatal error)
- 6 beeps:** Keyboard controller Gate A20 failure. The keyboard controller may be bad. The BIOS cannot switch to protected mode. (Fatal error)
- 7 beeps:** Processor exception interrupt error. The CPU generated an exception interrupt. (Fatal error)
- 8 beeps:** Display memory read/write error. The system video adapter is either missing or its memory is faulty. This is not a fatal error.

Bootblock Error Beep Codes

- 2 beeps:** BIOS ROM file absent - the BIOS was unable to find the specific file name required to flash the BIOS.
- 4 beeps:** Flash program successful.
- 5 beeps:** Media read error. The floppy or ATAPI media is not present or cannot be read.
- 7 beeps:** Flash not present. The BIOS was unable to detect the presence of a flash device.
- 10 beeps:** Flash erase error - the flash device could not be properly erased.
- 11 beeps:** Flash program error.
- 12 beeps:** BIOS ROM file incorrect size.
- 13 beeps:** BIOS ROM image mismatch. The BIOS ROM file layout configuration does not match the image present in the flash device.

If you hear...	it's because...
5 short and 1 long beeps	no memory detected in system
6 short and 1 long beeps	EDO memory detected in system
7 short and 1 long beeps	SMBUS (System Management Bus) error

Notes

Appendix B

AMIBIOS POST Diagnostic Error Messages

This section describes the power-on self-tests (POST) port 80 codes for the AMIBIOS.

Check

<u>Point</u>	<u>Description</u>
00	Code copying to specific areas is done. Passing control to INT 19h boot loader next.
03	NMI is Disabled. Next, checking for a soft reset or a power-on condition.
05	The BIOS stack has been built. Next, disabling cache memory.
06	Uncompressing the post code unit next.
07	Next, initializing the CPU init and the CPU data area.
08	The CMOS checksum calculation is done next.
0B	Next, performing any required initialization before keyboard BAT command is issued.
0C	The keyboard controller I/B is free. Next, issuing the BAT command to the keyboard controller.
0E	The keyboard controller BAT command result has been verified. Next, performing any necessary initialization after the keyboard controller BAT command test.
0F	The initialization after the keyboard controller BAT command test is done. The keyboard command byte is written next.

Check Point	<u>Description</u>
10	The keyboard controller command byte is written. Next, issuing the pin 23 and 24 blocking and unblocking commands.
11	Next, checking if the <End or <Ins> keys were pressed during power on. Initializing CMOS RAM if the Initialize CMOS RAM in every boot AMIBIOS POST option was set in AMIBCP or the <End> key was pressed.
12	Next, disabling DMA controllers 1 and 2 and interrupt controllers 1 and 2.
13	The video display has been disabled. Port B has been initialized. Next, initializing the chipset.
14	The 8254 timer test will begin next.
19	The 8254 timer test is over. Starting the memory refresh test next.
1A	The memory refresh test line is toggling. Checking the 15 second on/off time next.
23	Reading the 8042 input port and disabling the MEGAKEY Green PC feature next. Making the BIOS code segment writable and performing any necessary configuration before initializing the interrupt vectors.
24	The configuration required before interrupt vector initialization has completed. Interrupt vector initialization is done. Clearing the password if the POST DIAG switch is on.
25	Interrupt vector initialization is done. Clearing the password if the POST DIAG Switch is on.
27	Any initialization before setting video mode will be done next.

Check Point	Description
28	Initialization before setting the video mode is complete. Configuring the monochrome mode and color mode settings next.
2A	Bus initialization system, static, output devices will be done next, if present.
2B	Passing control to the video ROM to perform any required configuration before the video ROM test.
2C	All necessary processing before passing control to the video ROM is done. Looking for the video ROM next and passing control to it.
2D	The video ROM has returned control to BIOS POST. Performing any required processing after the video ROM had control.
2E	Completed post-video ROM test processing. If the EGA/VGA controller is not found, performing the display memory read/write test next.
2F	The EGA/VGA controller was not found. The display memory read/write test is about to begin.
30	The display memory read/write test passed. Look for retrace checking next.
31	The display memory read/write test or retrace checking failed. Performing the alternate display memory read/write test next.
32	The alternate display memory read/write test passed. Looking for alternate display retrace checking next.
34	Video display checking is over. Setting the display mode next.
37	The display mode is set. Displaying the power on message next.

<u>Check Point</u>	<u>Description</u>
38	Initializing the bus input, IPL, and general devices next, if present.
39	Displaying bus initialization error messages.
3A	The new cursor position has been read and saved. Displaying the Hit message next.
40	Preparing the descriptor tables next.
42	The descriptor tables are prepared. Entering protected mode for the memory test next.
43	Entered protected mode. Enabling interrupts for diagnostics mode next.
44	Interrupts enabled if the diagnostics switch is on. Initializing data to check memory wraparound at 0:0 next.
45	Data initialized. Checking for memory wraparound at 0:0 and finding the total system memory size next.
46	The memory wraparound test has completed. The memory size calculation has been completed. Writing patterns to test memory next.
47	The memory pattern has been written to extended memory. Writing patterns to the base 640 KB memory next.
48	Patterns written in base memory. Determining the amount of memory below 1 MB next.
49	The amount of memory below 1 MB has been found and verified. Determining the amount of memory above 1 MB memory next.
4B	The amount of memory above 1 MB has been found and verified. Checking for a soft reset and clearing the memory below 1 MB for the soft reset next. If this is a power on situation, going to checkpoint 4Eh next.

Check Point	Description
4C	The memory below 1 MB has been cleared via a soft reset. Clearing the memory above 1 MB next.
4D	The memory above 1 MB has been cleared via a soft reset. Saving the memory size next. Going to checkpoint 52h next.
4E	The memory test started, but not as the result of a soft reset. Displaying the first 64 KB memory size next.
4F	The memory size display has started. The display is updated during the memory test. Performing the sequential and random memory test next.
50	The memory below 1 MB has been tested and initialized. Adjusting the displayed memory size for relocation and shadowing next.
51	The memory size display was adjusted for relocation and shadowing. Testing the memory above 1 MB next.
52	The memory above 1 MB has been tested and initialized. Saving the memory size information next.
53	The memory size information and the CPU registers are saved. Entering real mode next.
54	Shutdown was successful. The CPU is in real mode. Disabling the Gate A20 line, parity, and the NMI next.
57	The A20 address line, parity, and the NMI are disabled. Adjusting the memory size depending on relocation and shadowing next.
58	The memory size was adjusted for relocation and shadowing. Clearing the Hit message next.
59	The Hit message is cleared. The <WAIT> message is displayed. Starting the DMA and interrupt controller test next.

Check Point	Description
60	The DMA page register test passed. Performing the DMA Controller 1 base register test next.
62	The DMA controller 1 base register test passed. Performing the DMA controller 2 base register test next.
65	The DMA controller 2 base register test passed. Programming DMA controllers 1 and 2 next.
66	Completed programming DMA controllers 1 and 2. Initializing the 8259 interrupt controller next.
7F	Extended NMI source enabling is in progress.
80	The keyboard test has started. Clearing the output buffer and checking for stuck keys. Issuing the keyboard reset command next.
81	A keyboard reset error or stuck key was found. Issuing the keyboard controller interface test command next.
82	The keyboard controller interface test completed. Writing the command byte and initializing the circular buffer next.
83	The command byte was written and global data initialization has been completed. Checking for a locked key next.
84	Locked key checking is over. Checking for a memory size mismatch with CMOS RAM data next.
85	The memory size check is done. Displaying a soft error and checking for a password or bypassing WINBIOS Setup next.
86	The password was checked. Performing any required programming before WINBIOS Setup next.

Check Point	Description
87	The programming before WINBIOS Setup has been completed. Uncompressing the WINBIOS Setup code and executing the AMIBIOS Setup or WINBIOS Setup utility next.
88	Returned from WINBIOS Setup and cleared the screen. Performing any necessary programming after WINBIOS Setup next.
89	The programming after WINBIOS Setup has been completed. Displaying the power-on screen message next.
8B	The first screen message has been displayed. The <WAIT...> message is displayed. Performing the PS/2 mouse check and extended BIOS data area allocation check next.
8C	Programming the WINBIOS Setup options next.
8D	The WINBIOS Setup options are programmed. Resetting the hard disk controller next.
8F	The hard disk controller has been reset. Configuring the floppy drive controller next.
91	The floppy drive controller has been configured. Configuring the hard disk drive controller next.
95	Initializing the bus option ROMs from C800 next.
96	Initializing before passing control to the adaptor ROM at C800.
97	Initialization before the C800 adaptor ROM gains control has been completed. The adaptor ROM check is next.
98	The adaptor ROM had control and has now returned control to BIOS POST. Performing any required processing after the option ROM returned control.

Check Point	<u>Description</u>
99	Any initialization required after the option ROM test has been completed. Configuring the timer data area and printer base address next.
9A	Set the timer and printer base addresses. Setting the RS-232 base address next.
9B	Returned after setting the RS-232 base address. Performing any required initialization before the Coprocessor test next.
9C	Required initialization before the Coprocessor test is over. Initializing the Coprocessor next.
9D	Coprocessor initialized. Performing any required initialization after the Coprocessor test next.
9E	Initialization after the Coprocessor test is complete. Checking the extended keyboard, keyboard ID, and Num Lock key next. Issuing the keyboard ID command next.
A2	Displaying any soft errors next.
A3	The soft error display has completed. Setting the keyboard typematic rate next.
A4	The keyboard typematic rate is set. Programming the memory wait states next.
A5	Memory wait state programming is over. Clearing the screen and enabling parity and the NMI next.
A7	NMI and parity enabled. Performing any initialization required before passing control to the adaptor ROM at E000 next.
A8	Initialization before passing control to the adaptor ROM at E000h completed. Passing control to the adaptor ROM at E000h next.

Check Point	Description
A9	Returned from adaptor ROM at E000h control. Next, performing any initialization required after the E000 option ROM had control.
AA	Initialization after E000 option ROM control has completed. Displaying the system configuration next.
AB	Building the multiprocessor table, if necessary. POST next.
B0	The system configuration is displayed.
AC	Uncompressing the DMI data and initializing DMI.
B1	Copying any code to specific areas.
D0h	The NMI is disabled. Power on delay is starting. Next, the initialization code checksum will be verified.
D1h	Initializing the DMA controller. Performing the keyboard controller BAT test. Starting memory refresh, and entering 4 GB flat mode next.
D3h	Starting memory sizing next.
D4h	Returning to real mode. Executing any OEM patches and setting the stack next.
D5h	Passing control to the uncompressed code in shadow RAM at E000:0000h. The initialization code is copied to segment 0 and control will be transferred to segment 0.
D6h	Control is in segment 0. Next, checking if <Ctrl><Home> was pressed and verifying the system BIOS checksum.
	If either <Ctrl><Home> was pressed or the system BIOS checksum is bad, next the system will go to checkpoint code E0h. Otherwise, going to checkpoint code D7h.

Notes