## **PT330 Series**

System Board User's Manual

A13010102

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## FCC and DOC Statement on Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio TV technician for help.

#### Notice:

- 1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- 2. Shielded interface cables must be used in order to comply with the emission limits.

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## About this Manual

An electronic file of this manual is included in the CD. To view the user's manual in the CD, insert the CD into a CD-ROM drive. The autorun screen (Main Board Utility CD) will appear. Click "User's Manual" on the main menu.

## Warranty

- 1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.
- 2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.
- 3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.
- 4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

## Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

- 1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.
- 2. Wear an antistatic wrist strap.
- 3. Do all preparation work on a static-free surface.
- 4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.
- 5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or connectors by their ends.



#### Important:

Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## Safety Measures

To avoid damage to the system:

• Use the correct AC input voltage range.

To reduce the risk of electric shock:

• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

## About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ One system board
- ☑ Two USB cables
- ☑ Two Serial ATA data cables
- Two Serial ATA power cables
- ☑ One I/O shield
- ☑ One CD
- ☑ One QR (Quick Reference)

The system board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

## Before Using the System Board

Before using the system board, prepare basic system components.

If you are installing the system board in a new system, you will need at least the following internal components.

- A CPU
- Memory module
- Storage devices such as hard disk drive, CD-ROM, etc.

You will also need external system peripherals you intend to use which will normally include at least a keyboard, a mouse and a video display monitor.

## Chapter I - Introduction

## Specifications

Processor	<ul> <li>LGA 1156 socket for:</li> <li>Intel<sup>®</sup> Core<sup>™</sup> i7-860 2.80GHz/8M</li> <li>Intel<sup>®</sup> Core<sup>™</sup> i5-750 2.66GHz/8M</li> <li>Intel<sup>®</sup> Core<sup>™</sup> i5-660 3.33GHz/4M</li> <li>Intel<sup>®</sup> Core<sup>™</sup> i3-540 3.06GHz/4M</li> <li>Intel<sup>®</sup> Pentium<sup>®</sup> G6950 2.80GHz/3M</li> </ul>
Chipset	Intel® Q57 PCH (Platform Controller Hub)
System Memory	<ul> <li>Four 240-pin DDR3 DIMM sockets</li> <li>Supports DDR3 1066/1333MHz</li> <li>Supports maximum memory bandwidth of 21GB/s in dual- channel mode when using DDR3 1333MHz</li> <li>Supports dual channel memory interface</li> <li>Supports up to 16GB system memory</li> </ul>
Expansion Slots	<ul> <li>1 PCI Express x16 slot (PCIe 2.0)</li> <li>1 PCI Express x4 slot (PCIe 1.0)</li> <li>2 PCI slots (PCI 2.3)</li> </ul>
Graphics	<ul> <li>Intel<sup>®</sup> HD Graphics</li> <li>VGA display resolution up to 2048x1536</li> <li>Supports 3D, 2D and video capabilities</li> <li>Note: Both Intel<sup>®</sup> Core<sup>™</sup> i7-860 and Core<sup>™</sup> i5-750 CPUs do not support integrated graphics.</li> </ul>
Audio	<ul> <li>Realtek ALC262 2-channel High Definition Audio</li> <li>Two 24-bit stereo DACs and three 20-bit stereo ADCs</li> <li>S/PDIF audio interface</li> </ul>
LAN	<ul> <li>One Realtek RTL8111DL PCI Express Gigabit Ethernet controller</li> <li>One Intel W82578DM with iAMT6.0 Gigabit Ethernet PHY</li> <li>Supports 10Mbps, 100Mbps and 1Gbps data transmission</li> <li>IEEE 802.3 (10/100Mbps) and IEEE 802.3ab (1Gbps) compliant</li> </ul>
Serial ATA	<ul> <li>6 Serial ATA ports compliant with SATA 1.0 specification</li> <li>SATA speed up to 3Gb/s (SATA 2.0)</li> <li>Supports RAID 0/1/5/10</li> </ul>
INTEL ACTIVE MANAGEMENT TECHNOLOGY (AMT)	<ul> <li>Supports iAMT6.0</li> <li>Out-of-band system access</li> <li>Remote troubleshooting and recovery</li> <li>Hardware-based agent presence checking</li> <li>Proactive alerting</li> <li>Remote hardware and software asset tracking</li> </ul>

TPM - TRUSTED PLATFORM MODULE (optional)	<ul> <li>Provides a Trusted PC for secure transactions</li> <li>Provides software license protection, enforcement and password protection</li> </ul>
Rear Panel I/O Ports	<ul> <li>1 mini-DIN-6 PS/2 mouse port</li> <li>1 mini-DIN-6 PS/2 keyboard port</li> <li>2 DB-9 RS232 serial ports</li> <li>1 DB-15 VGA port</li> <li>1 DVI-I port (DVI-D signal only)</li> <li>2 RJ45 LAN ports</li> <li>4 USB 2.0/1.1 ports</li> <li>Mic-in, line-in and line-out</li> </ul>
I/O Connectors	<ul> <li>4 connectors for 8 external USB 2.0/1.1 ports</li> <li>1 8-bit Digital I/O connector</li> <li>1 front audio connector for line-out and mic-in jacks</li> <li>1 CD-in connector</li> <li>1 S/PDIF connector</li> <li>6 Serial ATA ports</li> <li>1 FDD connector</li> <li>1 24-pin ATX power connector</li> <li>1 8-pin 12V power connector</li> <li>1 chassis intrusion connector</li> <li>1 front panel connector</li> <li>2 fan connectors</li> </ul>
BIOS	• AMI BIOS • 64Mbit SPI BIOS
Energy Efficient Design	<ul> <li>ACPI v3.0 specification</li> <li>System Power Management</li> <li>Wake-On-Events include: <ul> <li>Wake-On-PS/2 Keyboard/Mouse</li> <li>Wake-On-USB Keyboard/Mouse</li> <li>Wake-On-LAN</li> </ul> </li> <li>AC power failure recovery</li> </ul>
Damage Free Intelligence	<ul> <li>Monitors CPU/system temperature and overheat alarm</li> <li>Monitors VCORE/5V/3.3V/V_DIMM/12V/5VSB voltages and failure alarm</li> <li>Monitors CPU/system fan speed and failure alarm</li> <li>Read back capability that displays temperature, voltage and fan speed</li> <li>Watchdog timer function</li> </ul>
Temperature	• 0°C to 60°C
Humidity	• 10% to 90%
РСВ	• microATX form factor • 244mm (9.6") x 244mm (9.6")

#### Introduction

#### **Features**

#### Watchdog Timer

The Watchdog Timer function allows your application to regularly "clear" the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

#### DDR3

DDR3 delivers increased system bandwidth and improved performance. It offers peak data transfer rate of up to 21 Gb/s bandwidth. The advantages of DDR3 are its higher bandwidth and its increase in performance at a lower power than DDR2.

#### Graphics

The Intel Clarkdale CPU comes integrated with the Graphics Processing Unit delivering exceptional 3D, 2D and video capabilities. It supports VGA and DVI interfaces.

#### PCI Express

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x4 PCI Express lane supports transfer rate of 1 Gigabyte per second. The PCI Express architecture also provides a high performance graphics infrastructure by enhancing the capability of a x16 PCI Express lane to provide 4 Gigabytes per second transfer rate.

#### Intel Active Management Technology (AMT)

Intel Active Management Technology (Intel® AMT) allows remote access and management of networked systems even while PCs are powered off, remotely repair systems after OS failures and has the capability to remotely update all systems with the latest security software.

#### Audio

The Realtek ALC262 audio codec provides 2-channel High Definition audio output.

#### S/PDIF

S/PDIF is a standard audio file transfer format that transfers digital audio signals to a device without having to be converted first to an analog format. This prevents the quality of the audio signal from degrading whenever it is converted to analog. S/PDIF is usually found on digital audio equipment such as a DAT machine or audio processing device. The S/PDIF connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

#### Serial ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. It supports RAID 0/1/5/10.

#### Gigabit LAN

The Intel W82578DM PHY and Realtek RTL8111DL PCI Express Gigabit controllers support up to 1Gbps data transmission.

#### USB

The system board supports USB 2.0 and USB 1.1 ports. USB 1.1 supports 12Mb/ second bandwidth while USB 2.0 supports 480Mb/second bandwidth providing a marked improvement in device transfer speeds between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

#### Wake-On-LAN

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port or via a PCI LAN card that uses the PCI PME (Power Management Event) signal. However, if your system is in the Suspend mode, you can power-on the system only through an IRQ or DMA interrupt.



#### Important:

The 5V\_standby power source of your power supply must support  $\geq$ 720mA.

#### Wake-On-PS/2

This function allows you to use the  $\mathsf{PS/2}$  keyboard or  $\mathsf{PS/2}$  mouse to power-on the system.



#### Important:

The 5V\_standby power source of your power supply must support  $\geq$  720mA.

#### Wake-On-USB

This function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state.



#### Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 1.5A. For 3 or more USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 2A.

#### Introduction

#### ACPI STR

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

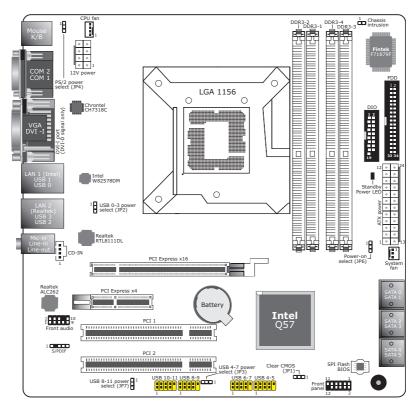


#### Power Failure Recovery

When power returns after an AC power failure, you may choose to either poweron the system manually or let the system power-on automatically.

## Chapter 2 - Hardware Installation

## System Board Layout





#### **Important:**

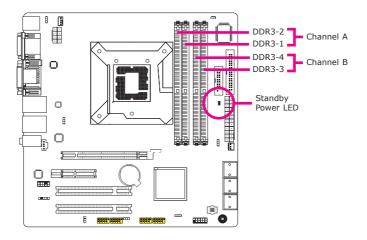
Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

## System Memory



#### Important:

When the Standby Power LED lit red, it indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.



The four DIMM sockets are divided into 2 channels:

Channel A - DIMM 1 and DIMM 2 Channel B - DIMM 3 and DIMM 4

The system board supports the following memory interface.

Single Channel (SC)

Data will be accessed in chunks of 64 bits from the memory channels.

Dual Channel (DC)

Data will be accessed in chunks of 128 bits from the memory channels. Dual channel provides better system performance because it doubles the data transfer rate.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or com- pletely different. However, we highly recommend using identical DIMMs. Not all slots need to be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.



#### Important:

- 1. You can populate either Channel A or Channel B first.
- 2. When installing a DIMM in Channel A or Channel B, always populate the socket that is farthest the CPU. This will mean populating DDR3-1 and/or DDR3-3 first.
- 3. If you intend to use dual channel, the same rule applies always the socket farthest the CPU. Populate DDR3-1 and/or DDR3-3 first; not DDR3-1 and DDR3-4 and not DDR3-3 and DDR3-2.

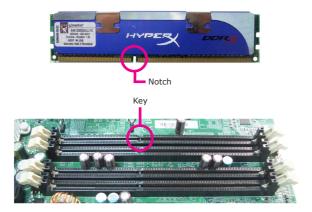
#### Installing the DIMM Module

**Note:** The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- 3. Locate the DIMM socket on the system board.
- 4. Push the "ejector tabs" which are at the ends of the socket to the side.



5. Note how the module is keyed to the socket.



6. Grasping the module by its edges, position the module above the socket with the "notch" in the module aligned with the "key" on the socket. The keying mechanism ensures the module can be plugged into the socket in only one way.



7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.



8. The ejector tabs at the ends of the socket will automatically snap into the locked position to hold the module in place.



## CPU

 $\mathbf{\Lambda}$ 

The system board is equipped with a surface mount LGA 1156 socket. This socket is exclusively designed for installing a LGA 1156 packaged Intel CPU.

#### Important:

- 1. Before you proceed, make sure (1) the LGA 1156 socket comes with a protective cap, (2) the cap is not damaged and (3) the socket's contact pins are not bent. If the cap is missing or the cap and/or contact pins are damaged, contact your dealer immediately.
- 2. Make sure to keep the protective cap. RMA requests will be accepted and processed only if the LGA 1156 socket comes with the protective cap.



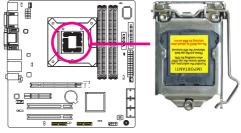
#### Installing the CPU

- 1. Make sure the PC and all other peripheral devices connected to it has been powered down.
- 2. Disconnect all power cords and cables.
- 3. Locate the LGA 1156 CPU socket on the system board.

#### Important:

The CPU socket must not come in contact with anything other than the CPU. Avoid unnecessary exposure. Remove the protective cap only when you are about to install the CPU.

 Unlock the socket by pushing the load lever down, moving it sideways until it is released from the retention tab; then lift the load lever up.





# 2

#### Hardware Installation

 Lifting the load lever will at the same time lift the load plate.

Lift the load lever up to the angle shown on the photo.

Load lever



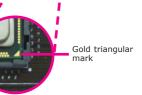
 Remove the protective cap from the CPU socket. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.





7. Insert the CPU into the socket. The gold triangular mark on the CPU must align with the corner of the CPU socket shown on the photo.





The CPU's notch will at the same time fit into the socket's alignment key.

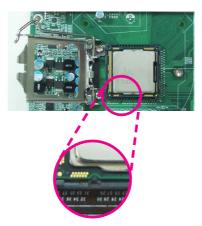
#### Important:

The CPU will fit in only one orientation and can easily be inserted without exerting any force.

Alignment key



Alignment key



## 2

#### Hardware Installation

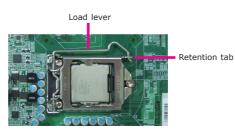
8. Close the load plate then push the load lever down.

While closing the load plate, make sure the front edge of the load plate slides under the retention knob.

9. Hook the load lever under the retention tab.



Retention knob



#### Installing the Fan and Heat Sink

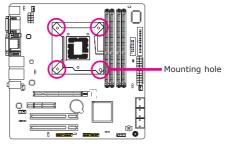
The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.

Note: A boxed Intel<sup>®</sup> processor already includes the CPU fan and heat sink assembly. If your CPU was purchased separately, make sure to only use Intel<sup>®</sup>-certified fan and heat sink.

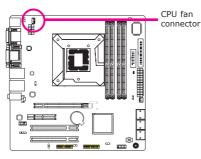
 Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the fan / heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound will disperse evenly.

Some heat sinks come with a patch of pre-applied thermal paste. Do not apply thermal paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

2. Place the heat sink on top of the CPU. The 4 pushpins around the heat sink, which are used to secure the heat sink onto the system board, must match the 4 mounting holes around the socket.

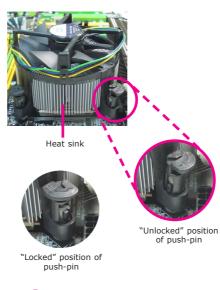


 Orient the heat sink such that the CPU fan's cable is nearest the CPU fan connector.

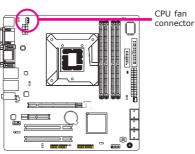


 Rotate each push-pin according to the direction of the arrow shown on top of the pin.

> Push down two pushpins that are diagonally across the heat sink. Perform the same procedure for the other two push-pins.

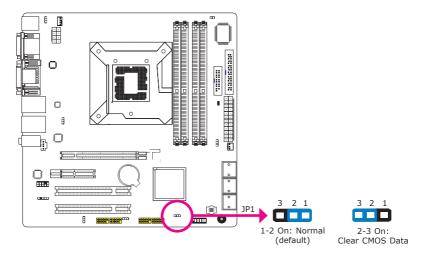


 Connect the CPU fan's cable to the CPU fan connector on the system board.



## Jumper Settings

#### Clear CMOS Data



If you encounter the following,

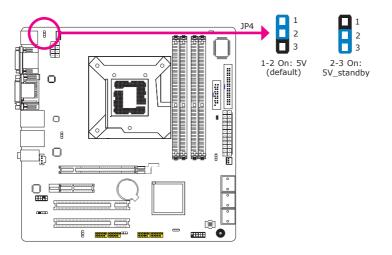
- a) CMOS data becomes corrupted.
- b) You forgot the supervisor or user password.

you can reconfigure the system with the default values stored in the ROM BIOS.

To load the default values stored in the ROM BIOS, please follow the steps below.

- 1. Power-off the system and unplug the power cord.
- 2. Set JP1 pins 2 and 3 to On. Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 On.
- 3. Now plug the power cord and power-on the system.

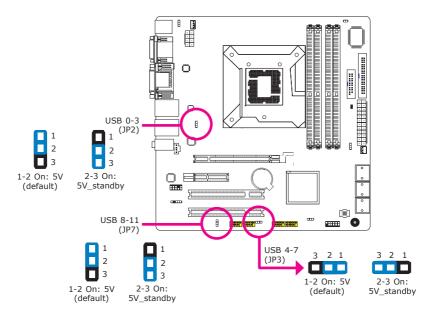
#### **PS/2** Power Select



JP4 is used to select the power of the PS/2 keyboard/mouse port. Selecting  $5V\_standby$  will allow you to use a PS/2 keyboard or PS/2 mouse to wake up the system.



#### USB Power Select



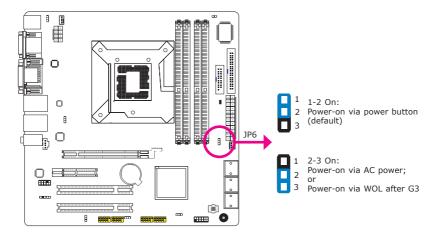
These jumpers are used to select the power of the USB ports. Selecting  $5V_{-}$  standby will allow you to use a USB device to wake up the system.



#### Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 1.5A. For 3 or more USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 2A.

#### **Power-on Select**



To power-on via WOL after G3:

- 1. Set JP6 pins 2 and 3 to On.
- 2. Set the "After G3" field to Power Off/WOL.
- 3. Set the "GbE Wake Up From S5" to Enabled.

The BIOS fields are in the "South Bridge Configuration" submenu (Chipset menu) of the AMI BIOS utility.

To power-on via AC Power:

- 1. Set JP6 pins 2 and 3 to On.
- 2. Set the "After G3" field to **Power On**.

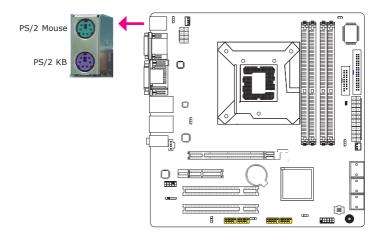
## Rear Panel I/O Ports



The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- 2 COM ports
- VGA port
- DVI-I port (DVI-D signal only)
- Intel LAN port
- Realtek LAN port
- 4 USB ports
- Mic-in jack
- Line-in jack
- Line-out jack

#### PS/2 Mouse and PS/2 Keyboard Ports



These ports are used to connect a PS/2 mouse and a PS/2 keyboard. The PS/2 mouse port uses IRQ12.

#### Wake-On-PS/2 Keyboard/Mouse

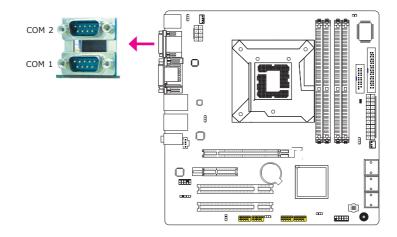
The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

• Jumper Setting

JP4 must be set to "2-3 On: 5V\_standby". Refer to "PS/2 Power Select" in this chapter for more information.



#### COM (Serial) Ports

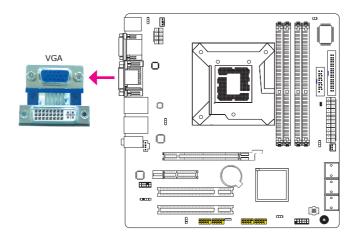


The serial ports are RS232 asynchronous communication ports with 16C550Acompatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

#### **BIOS Setting**

Configure the serial ports in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

#### VGA Port



The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

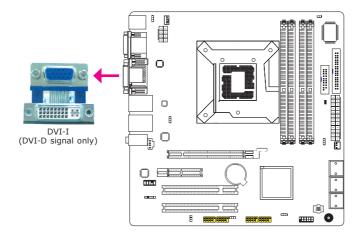
#### **BIOS Setting**

Configure the onboard graphics in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

#### **Driver Installation**

Install the graphics driver. Refer to chapter 4 for more information.

### DVI-I Port



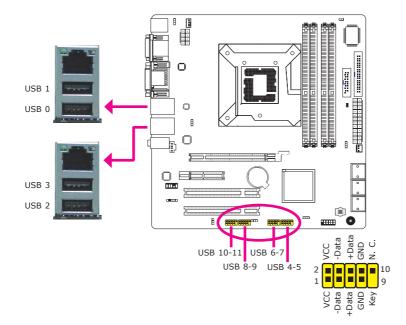
The DVI-I port is used to connect an LCD monitor. This port supports  $\ensuremath{\mathsf{DVI-D}}$  signal only.

Connect the display device's cable connector to the DVI-I port. After you plug the cable connector into the port, gently tighten the cable screws to hold the connector in place.

#### **BIOS Setting**

Configure the display device in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

**USB** Ports



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with four onboard USB 2.0/1.1 ports. The four 10-pin connectors allow you to connect 8 additional USB 2.0/1.1 ports. The additional USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the USB port cables to a connector.

#### **BIOS Setting**

Configure the onboard USB in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

#### **Driver** Installation

You may need to install the proper drivers in your operating system to use the USB device. Refer to your operating system's manual or documentation for more information.

# Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up a system from the S3 (STR - Suspend To RAM) state. To use this function:

#### • Jumper Setting

JP2, JP3 and/or JP7 must be set to "2-3 On: 5V\_standby". Refer to "USB Power Select" in this chapter for more information.

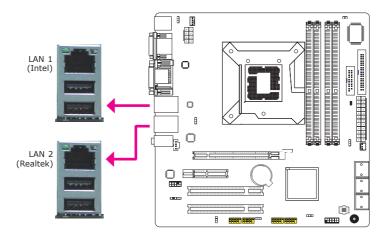


#### Important:

If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 1.5A. For 3 or more USB ports, the 5V\_standby power source of your power supply must support  $\geq$ 2A.

# Hardware Installation

# **RJ45 LAN Ports**



The LAN ports allow the system board to connect to a local area network by means of a network hub.

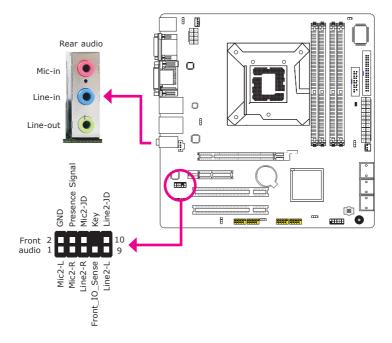
#### **BIOS Setting**

Configure the onboard LAN in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

#### **Driver** Installation

Install the LAN drivers. Refer to chapter 4 for more information.

# Audio



#### **Rear Audio**

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- Mic-in Jack (Pink) This jack is used to connect an external microphone.
- Line-in Jack (Light Blue) This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.
- Line-out Jack (Lime) This jack is used to connect a headphone or external speakers.

#### Front Audio

The front audio connector allows you to connect to the second line-out and micin jacks that are at the front panel of your system.

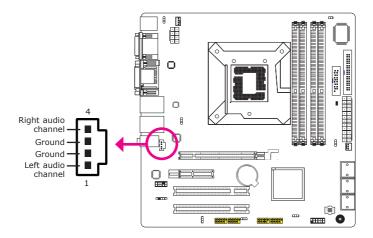
#### **Driver Installation**

Install the audio driver. Refer to chapter 4 for more information.

Hardware Installation

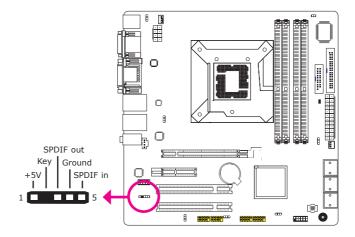
# I/O Connectors

**CD-in Internal Audio Connector** 



The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

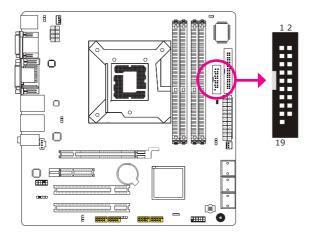
# S/PDIF Connector



The S/PDIF connector is used to connect an external S/PDIF port. Your S/PDIF port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable to the S/PDIF connector. Make sure pin 1 of the audio cable is aligned with pin 1 of the S/PDIF connector.

# Hardware Installation

# Digital I/O Connector

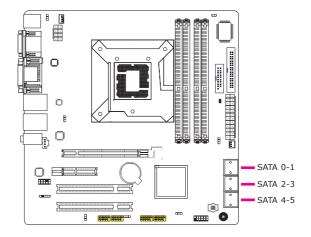


The Digital  $\ensuremath{\mathrm{I/O}}$  connector provides powering-on function to an external device that is connected to this connector.

Pins	Function	Pins	Function
1	GND	2	+12V
3	DIO7	4	+12V
5	DIO6	6	GND
7	DIO5	8	VCC
9	DIO4	10	VCC
11	DIO3	12	GND
13	DIO2	14	V_5P0_STBY
15	DIO1	16	V_5P0_STBY
17	DIO0	18	GND
19	GND		

# Digital I/O Connector

# SATA (Serial ATA) Ports



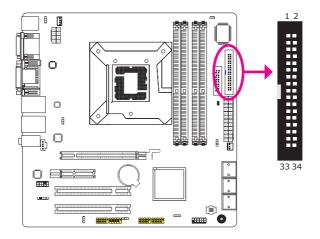
The Serial ATA ports are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA port and the other end to your Serial ATA device.

## **BIOS Setting**

Configure the Serial ATA drives in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

# Hardware Installation

# FDD (Floppy Disk Drive) Connector



The FDD connector supports a standard floppy disk drive. The floppy cable can be inserted into this connector only if pin 1 of the cable is aligned with pin 1 of this connector.

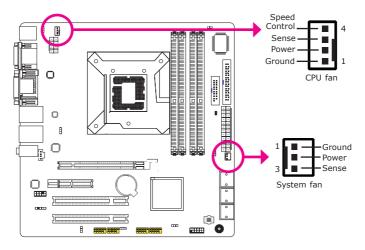
#### Connecting the FDD Cable

Insert one end of the FDD cable into the FDD connector and the other end of the cable to the floppy drive. Pin 1 of the cable must align with pin 1 of the FDD connector.

#### **BIOS Setting**

Enable or disable this function in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

# **Cooling Fan Connectors**



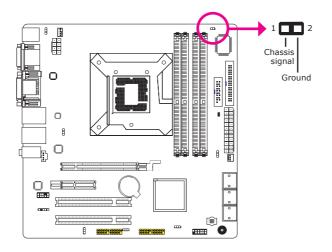
The fan connectors are used to connect cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

# **BIOS Setting**

The Advanced menu of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

# Hardware Installation

# **Chassis Instrusion Connector**



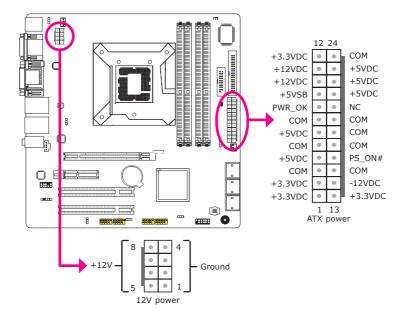
The board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to this connector. When the system's power is on and a chassis intrusion occurred, an alarm will sound. When the system's power is off and a chassis intrusion occurred, the alarm will sound only when the system restarts.

#### MyGuard Hardware Monitor

Install the "MyGuard Hardware Monitor" utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the "MyGuard Hardware Monitor" section in chapter 4 for more information.

# 2

# **Power Connectors**



Use a power supply that complies with the ATX12V Power Supply Design Guide Version 2.0. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into the 24-pin connector. The 8-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, we strongly recommend that you use a minimum of 400 Watt (or greater) power supply.

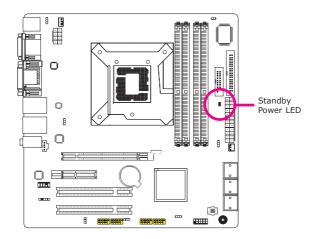


#### Important:

Insufficient power supplied to the system may result in instability or the add-in boards and peripherals not functioning properly. Calculating the system's approximate power usage is important to ensure that the power supply meets the system's consumption requirements.

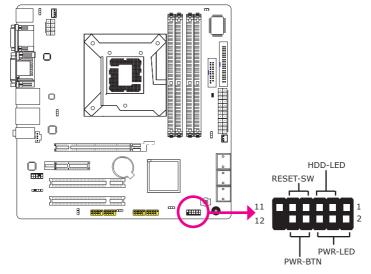
# Hardware Installation

# Standby Power LED



This LED will lit red when the system is in the standby mode. It indicates that there is power on the system board. Power-off the PC then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the motherboard and components.

# Front Panel Connectors



#### HDD-LED - HDD LED

This LED will light when the hard drive is being accessed.

#### **RESET SW - Reset Switch**

This switch allows you to reboot without having to power off the system.

#### **PWR-BTN** - Power Switch

This switch is used to power on or off the system.

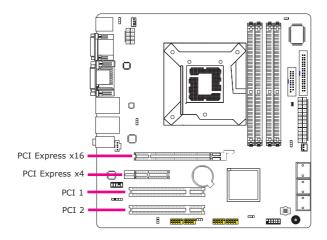
#### PWR-LED - Power/Standby LED

When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) state, it will blink every second. When the system is in the S3 (STR - Suspend To RAM) state, it will blink every 2 seconds.

	Pin	Pin Assignment		Pin	Pin Assignment
N. C.	1	N. C.	PWR-LED	2 4 6	LED Power LED Power Signal
HDD-LED	3 5	HDD Power Signal	PWR-BTN	8 10	Ground Signal
RESET SW	7 9	Ground RST Signal			
N. C.	11	N. C.	Кеу	12	Кеу

# Hardware Installation

# **Expansion Slots**



#### PCI Express x16 Slot

Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot will automatically hold the graphics card in place.

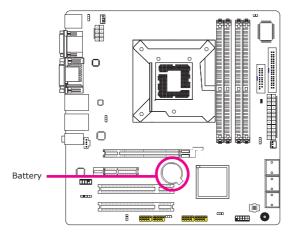
## PCI Express x4 Slot

Install PCI Express cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x4 slot.

## **PCI** Slots

The PCI slots support expansion cards that comply with PCI specifications.

# Battery



The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

# Safety Measures

- Danger of explosion if battery incorrectly replaced.
- Replace only with the same or equivalent type recommend by the manufacturer.
- Dispose of used batteries according to local ordinance.

# Chapter 3 - BIOS Setup

# **Overview**

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.



The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

## **Default Configuration**

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

## Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message "Press DEL to run setup" will appear on the screen. If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

# Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<esc></esc>	Exits to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
<f1></f1>	Displays General Help.
<f10></f10>	Saves and exits the Setup program.
<enter></enter>	Press <enter> to enter the high- lighted submenu.</enter>

# Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

## Submenu

When ">" appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

# AMI BIOS Setup Utility

# Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

BIOS SETUP UTILITY							
Main	Advanced	PCIPnP	Boot	Security	Chip	set E	xit
System Overview				NTER], [TA			
AMIBIOS Version Build Date: ID					or [SHIFT-TAB] to select a field. Use [+] or [-] to configure system Time.		
	e(TM) i5 CPU :3333MHz :1	660 (	@ 3.33GHz				
System Men Size System Time System Date	760MB		9:25] 1 01/25/2010	I	$\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ +- \\ Tab \\ F1 \\ F10 \end{array}$	Select Scr Select Iten Change Fi Select Fiel General H Save and I	n eld d elp
	v02.67.((	C)Copyright 198	5-2009 Ame	rican Megatrends	ESC	Exit	LAIU

#### **AMI BIOS**

Displays the detected BIOS information.

#### Processor

Displays the detected processor information.

#### **System Memory**

Displays the detected system memory information.

#### System Time

The time format is <hour>, <minute>, <second>. The time is based on the 24-hour military-time clock. For example, 1 p.m. is 13:00:00. Hour displays hours from 00 to 23. Minute displays minutes from 00 to 59. Second displays seconds from 00 to 59.

#### System Date

The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1980 to 2099.

# Advanced

The Advanced menu allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



#### Important:

Setting incorrect field values may cause the system to malfunction.

Main         Advanced         PCIPnP         Boot         Security           Advanced Settings	Chipset Exit
WARNING: Setting wrong values in below sections	Configure CPU.
<ul> <li>CPU Configuration</li> <li>IDE Configuration</li> <li>Floppy Configuration</li> <li>Super IO Configuration</li> <li>Hardware Health Configuration</li> <li>ACPI Configuration</li> <li>AHCI Configuration</li> <li>Intel ANT Configuration</li> <li>Intel VT-d Configuration</li> <li>Intel VT-d Configuration</li> <li>Stated Computing</li> <li>USB Configuration</li> <li>Case Open [Disabled]</li> <li>ACP Ower Lose [ON]</li> <li>Watchdog Timer [Disabled]</li> <li>Resume by PME [Disabled]</li> </ul>	← → Select Screen ↑↓ Select Item Enter Go to Sub Scr F1 General Help F10 Save and Exit ESC Exit

#### **CPU Configuration to USB Configuration**

Refer to the following pages for information about these submenus.

#### Case Open

Set this field to Enabled to allow the system to alert you of a chassis intrusion event.

#### **AC Power Lose**

#### Off

When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.

On

When power returns after an AC power failure, the system will automatically power-on.

#### Last State

When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

BIOS Setup

#### Watchdog Timer

This field is used to select the time interval of the Watchdog timer. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

#### **Resume by PME**

Enable this field to use the PME signal to wake up the system.

#### **CPU** Configuration

This section is used to configure the CPU. It will also display detected CPU information.

	BIOS SETUP UTILITY		
Advanced			
Manufacturer         : Intel           Intel(R) Core(TM) i5 CPU           Frequency         : 3.33GHz           BCLK Speed         : 133MHz           Cache L1         : 128 KB           Cache L2         : 512 KB           Cache L3         : 4096 KB           Ratio Status         : unlocked (Mi           Ratio Actual Value:         25	660 @ 3.33GHz n:09; Max:25)	Î	For UP platforms, leave it enabled. For DP/MP servers, it may use to tune performance to the specific application.
Hardware Prefetcher Adjacent Cache Line Prefetch Intel(R) Virtualization Tech Execute-Disable Bit Capability Intel (R) HT Technology Active Processor Cores A20M Intel(R) SpeedStep(TM) tech Intel(R) C-STATE tech Intel(R) TurboMode tech	[Enabled] [Enabled] [Enabled] [Enabled] [All] [Disabled] [Enabled] [Enabled] [Enabled] [Enabled]	Ţ	←→ Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit ESC Exit
v02.67 (C	Copyright 1985-2009, American Megatre	nds.	Inc.

#### **Hardware Prefetcher**

For UP platforms, leave it enabled. For DP/MP servers, it may be used to tune performance to the specific application.

#### **Adjacent Cache Line Prefetch**

Enables or disables the Adjacent Cache Line Prefetch feature.

#### Intel(R) Virtualization Tech

When this field is set to Enabled, the VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

#### **Execute Disable Bit Capability**

When this field is set to Disabled, it will force the XD feature flag to always return to 0.

#### **Intel HT Technology**

When disabled, only one thread per enabled core is enabled.

#### **Active Processor Cores**

This field is used to enter the number of cores to enable in each processor package.

#### A20M

Enable this for legacy operating systems and APs.

Intel(R) SpeedStep(tm) Tech

Enables or disables GV3.

#### Intel(R) C-STATE Tech

When enabled, CPU idle is set to C2/C3/C4.

#### Intel(R) TurboMode Tech

When Enabled, Turbo mode allows processor cores to run faster than marked frequency in specific conditions.

**BIOS Setup** 

# **IDE** Configuration

This section is used to configure the IDE drives.

	BIOS SETUP UTILITY	
Advanced		
IDE Configuration		IDE
Mirrored IDER Configuration Configure SATA as SATA#1 IDE Configuration SATA#2 IDE Configuration • Primary IDE Master • Primary IDE Slave • Secondary IDE Master • Secondary IDE Master • Fourth IDE Master	[Enabled] [DDE] [Compatible] [Enhanced] : [Not Detected] : [Not Detected] : [Not Detected] : [Not Detected] : [ATAPI CDROM] : [Not Detected]	RAID AHCI Disabled ←→ Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit ESC Exit
v02.67 (C)Cop	yright 1985-2009, American Megatr	ends, Inc.

#### **Mirrored IDER Configuration**

Enables or disables the IDER feature.

#### **Configure SATA as**

#### IDE

This option configures the Serial ATA drives as  $\ensuremath{\mathsf{Parallel}}$  ATA storage devices.

#### RAID

This option allows you to create RAID or Intel Matrix Storage configuration on Serial ATA devices.

#### AHCI

This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).

#### SATA#1 IDE Configuration / SATA#2 IDE Configuration

These fields are used to configure the IDE device mode.

#### SATA#1 IDE Configuration

The options are Compatible and Enhanced.

#### SATA#2 IDE Configuration

The options are Disabled and Enhanced.

Compatible Legacy IDE channels will appear allowing you to configure the devices.

*Enhanced* "Configure SATA as" will appear allowing you to configure the devices.

#### Primary IDE Master to Fourth IDE Master

When you enter the BIOS Setup Utility, the BIOS will auto detect the existing IDE devices then displays the status of the detected devices. To configure an IDE drive, move the cursor to a field then press <Enter>.

BIOS SETUP UTILITY					
	Advanced				
Primary IDE M	laster		Select the type of device connected		
Device :Hard Disk Vendor :ST3120023AS Size :120.0GB LBA Mode :Supported Block Mode :IoSectors PIO Mode :4 Async. DMA :Multiword DMA-2 Ultra DMA :Ultra DMA-6 S.M.A.R.T :Supported			to the system.		
Type LBA/Large Mode Block (Multi-Sector Transfer) PIO Mode DMA Mode S.M.A.R.T. 32Bit Data Transfer		[Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Enabled]	<ul> <li>←→ Select Screen</li> <li>↑↓ Select Item</li> <li>+- Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>		
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#### Туре

Selects the type of IDE drive connected to the system.

#### LBA/Large Mode

Auto

The LBA mode will automatically be enabled, that is, if the LBA mode was not previously disabled.

Disabled Disables the LBA mode.

#### Block (Multi-Sector Transfer)

Auto

Data transfer from and to the device occurs multiple sectors at a time.

Disabled

Data transfer from and to the device occurs one sector at a time.

#### **PIO Mode**

Selects the data transfer mode. PIO means Programmed Input/Output. Rather than have the BIOS issue a series of commands to effect a transfer to or from the disk drive, PIO allows the BIOS to tell the controller what it wants and then let the controller and the CPU perform the complete task by themselves. Your system supports five modes, 0 to 4, which primarily differ in timing. When Auto is selected, the BIOS will select the best available mode after checking your drive.

Auto

The default is Auto. The BIOS will automatically set the system according to your hard disk drive's timing.

#### Mode 0-4

You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors.

#### DMA Mode

This field allows you to set the Ultra DMA in use. When Auto is selected, the BIOS will select the best available option after checking your hard drive or CD-ROM.

Auto Automatically detects the DMA mode. SWDMAn SingleWord DMAn. MWDMAn MultiWord DMAn. UDMAn Ultra DMAn.

#### S.M.A.R.T.

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/ IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. SMART is supported in ATA/33 or later hard drives. The options are Auto (default), Enabled and Disabled.

#### 32Bit Data Transfer

Enables or disables 32-bit data transfer.

**BIOS Setup** 

# **Floppy Configuration**

This section is used to configure the floppy drives.

BIOS SETUP UTILITY					
Advanced					
Floppy Configuration		Select the type of			
Floppy A	[1.44MB 3 <sup>1/</sup> 2"]	floppy drive <sup>1</sup> connected to the system. ↔ → Select Screen ↑↓ Select Item +→ Change Option FI General Help F10 Save and Exit ESC Exit			
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#### **Floppy A**

This field identifies the type of floppy disk drive installed.

Disabled Disables the floppy drive 360K, 5.25 in. 5-1/4 in. standard drive; 360KB capacity 1.2M, 5.25 in. 5-1/4 in. AT-type high-density drive; 1.2MB capacity 720K, 3.5 in. 3-1/2 in. double-sided drive; 720KB capacity 1.44M, 3.5 in. 3-1/2 in. double-sided drive; 1.44MB capacity 2.88M, 3.5 in. 3-1/2 in. double-sided drive; 2.88MB capacity

# Super IO Configuration

This section is used to configure the I/O functions.

BIOS SETUP UTILITY			
Advanced			
Configure F71879F Super IO Chipset	Allows BIOS to En-		
Onboard Floppy Controller [Enabled] Serial Port1 Address [3F&/IRQ4] Serial Port2 Address [2F8/IRQ3]	<ul> <li>←→ Select Screen</li> <li>↑↓ Select Item</li> <li>+→ Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>		
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#### **Onboard Floppy Controller**

Enabled Enables the onboard floppy disk controller. Disabled Disables the onboard floppy disk controller.

#### Serial Port1 Address and Serial Port2 Address

 $3F8/IRQ4,\ 2F8/IRQ3,\ 3E8/IRQ4,\ 2E8/IRQ3$  Allows you to manually select an I/O address for the onboard serial port 1 and serial port 2.

Disabled Disables the onboard serial port 1 and/or serial port 2.

# Hardware Health Configuration

This section is used to configure the hardware monitor function.

H/W Health Function [Enabled] CPU Temperature :38°C	BIOS SETUP UTILITY					
H/W Health Function     [Enabled]       CPU Temperature     :38°C       System Temperature     :29°C       CPUFAN Speed     :1335 RPM       SystemFAN Speed     :N/A       Vcore     :1.144 V       5V     :4.743 V       +12V     :12.232V       V DIMM     :1.536 V       5VSB     :50.56V						
CPU Temperature         :38°C           System Temperature         :29°C           CPUFAN Speed         :1335 RPM           SystemFAN Speed         :N/A           Vcore         :1.144 V           5V         :4.743 V           +12V         :12.232V           V_DIMM         :1.536 V           5VSB         :50.56V	Lowest Speed Value Min=0					
SystemFAN Speed         :N/A           Vcore         :1.144 V           5V         :4.743 V           +12V         :12.232V           V DIMM         :1.536 V           5VSB         :5.056V	Max=100 Please input Dec number:					
5V :4.743 V +12V :12.232V V DIMM :1.536 V 5VSB :5.056V						
VBAT     :3.328V       CPU FAN Mode Setting-Smart FAN     [Auto Mode]       Highest CPU Temperature Limit     [080]       2nd CPU Temperature Limit     [065]       3rd CPU Temperature Limit     [050]       Lowest CPU Temperature Limit     [053]       CPU Fan Highest Setting     [100]       CPU Fan Second Setting     [080]       CPU Fan Fourth Setting     [060]       CPU Fan Fourth Setting     [060]	← → Select Screen ↑↓ Select Item Enter Update F1 General Help F10 Save and Exit ESC Exit					

#### **H/W Health Function**

Enables or disables the hardware monitoring function.

#### **CPU Temperature to VBAT**

These fields will show the temperature, fan speed and output voltage of the monitored devices or components.

#### **CPU Fan Mode Setting-Smart Fan**

Enable this function to configure the CPU temperature's limit and the CPU fan's settings.

#### Highest CPU Temperature Limit to Lowest CPU Temperature Limit

Sets the CPU's highest, 2nd, 3rd and lowest temperature limit.

#### **CPU Fan Highest Setting to CPU Fan Lowest Setting**

Sets the CPU fan's highest, 2nd, 3rd, 4th and lowest fan speed limit.

# **ACPI** Configuration

This section is used to configure ACPI.

BIOS SETUP UTILITY			
Advanced			
ACPI Settings		al ACPI	
<ul> <li>General ACPI Configuration</li> <li>Advanced ACPI Configuration</li> <li>Chipset ACPI Configuration</li> </ul>	coniig	uration settings	
	$\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ Enter \\ F1 \\ F10 \\ ESC \end{array}$	Select Screen Select Item Go to Sub Screen General Help Save and Exit Exit	
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# General ACPI Configuration

Configures the general ACPI settings.

BIOS SETUP UTILITY			
Advanced			
General ACPI Configuration		Select the ACPI	
Suspend mode	[S1 (POS)]	state used for System Suspend.	
		←→ Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit ESC Exit	
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# BIOS Setup

#### **Suspend Mode**

This field is used to select the type of Suspend mode.

S1(POS)Enables the Power On Suspend function. S3(STR)Enables the Suspend to RAM function.

## **Advanced ACPI Configuration**

Configures additional ACPI functions.

BIOS SETUP UTILITY			
Advanced			
Advanced ACPI Configuration		Enable RSDP pointers	
ACPI Version Features	[ACPI v1.0]	<ul> <li>to 64-bit Fixed System Description Tables.</li> <li>Different ACPI version has some addition.</li> <li>← → Select Screen</li> <li>↑↓ Select Item</li> <li>+ Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>	
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#### **ACPI Version Features**

Selects the ACPI version. The options are ACPI v1.0, ACPI v2.0 and ACPI v3.0.

BIOS Setup 💼

## **Chipset ACPI Configuration**

Configures relevant chipset ACPI functions.

	BIOS SETUP UTILITY			
Advanced				
South Bridge ACPI Configuration			Enable/Disable APIC	
APIC ACPI SCI IRQ	[Disabled]	ACPI ←→ ++ F10 ESC	SCI IRQ. Select Screen Sclect Item Change Option General Help Save and Exit Exit	
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# APIC ACPI SCI IRQ

Enables or disables the APIC ACPI SCI IRQ.

# **AHCI** Configuration

This section is used to configure AHCI.

	BIOS SETUP UTILITY		
Advanced			
AHCI Settings		Enables for supporting	
AHCI BIOS Support	[Enabled]	AHCI controller operates in AHCI mode during BIOS control otherwise operates in IDE mode. ←→ Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit	
<ul> <li>AHCI Port0 [Not Detected]</li> <li>AHCI Port1 [Not Detected]</li> <li>AHCI Port2 [Not Detected]</li> <li>AHCI Port3 [Not Detected]</li> <li>AHCI Port4 [Not Detected]</li> <li>AHCI Port5 [Not Detected]</li> <li>AHCI Port5 [Not Detected]</li> </ul>			
		ESC Exit	
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#### **AHCI BIOS Support**

Enable this field to allow the AHCI controller to operate in AHCI mode during BIOS control otherwise it will operate in IDE mode.

#### **AHCI Port0 to AHCI Port5**

When entering the setup utility, the BIOS auto detects the presence of any IDE devices. It displays the status of the auto detected IDE devices.

	BIOS SETUP UTILITY		
	Advanced		
AHCI Port0			the type
Device	:Not Detected	of device connected to the system.	
SATA Port0 S.M.A.R.T.	[Auto] [Enabled]		
		$\stackrel{\leftarrow}{\uparrow\downarrow}^{\rightarrow}$	Select Screen Select Item
		+- F1 F10	Change Option General Help Save and Exit
		ESC	Exit
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#### SATA Port0

Selects the type of device connected to the system.

#### S.M.A.R.T.

The system board supports SMART (Self-Monitoring, Analysis and Reporting Technology) hard drives. SMART is a reliability prediction technology for ATA/ IDE and SCSI drives. The drive will provide sufficient notice to the system or user to backup data prior to the drive's failure. The default is Disabled. If you are using hard drives that support S.M.A.R.T., set this field to Enabled. SMART is supported in ATA/33 or later hard drives. The options are Enabled and Disabled.

# Intel AMT Configuration

This section is used to configure AMT.

BIOS SETUP UTILITY		
Advanced		
Configure Intel AMT Parameters	Options	
Intel AMT Support [Enabled] Force IDER [Disabled] Force SOL [Disabled] Unconfigure AMT/ME [Disabled] Activate Remote Assistance [Disabled] MEBx Ctrl+P Delay (Seconds) [0]	<ul> <li>← → Select Screen</li> <li>↑↓ Select Item</li> <li>+ Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>	
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#### **Intel AMT Support**

Enables or disables Intel's AMT (Active Management Technology) function.

#### Force IDER

The options are:

Disabled IDER Pri. Master IDER Pri. Slave IDER Sec. Master IDER Sec. Slave

#### **Force SOL**

The options are Enabled and Disabled.

#### **Unconfigure AMT/ME**

Set this field to Enabled and MEBx setup will load the default values.

#### **Activate Remote Assistance**

The options are Enabled and Disabled.

#### MEBx Ctrl+P Delay (Seconds)

Enters the delay time of MEBx.

BIOS Setup

# Intel VT-d Configuration

This section is used to configure VT-d.

BIOS SETUP UTILITY		
Advar	nced	
		Options
Intel VT-d		Disabled Enabled
		$\begin{array}{lll} \leftarrow & \rightarrow & \text{Select Screen} \\ \uparrow & & \text{Select Item} \\ + & & \text{Change Option} \\ FI & & \text{General Help} \\ F10 & & \text{Save and Exit} \\ ESC & & \text{Exit} \end{array}$
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#### Intel VT-d

The options are Enabled and Disabled.

## **Remote Access Configuration**

BIOS SETUP UTILITY Advanced Configure Remote Access Type and Parameters Select Remote Access type. [COM3] Serial Port Number [115200 8, n, l] Serial Port Mode [None] [Always] [ANSI] [Enabled] [No Delay] Flow Control Redirection After BIOS POST Terminal Type VT-UTF8 Combo Key Support Sredir Memory Display Delay Select Screen  $\stackrel{\leftarrow}{\uparrow\downarrow}$ Select Item Change Option General Help +-F1 F10 Save and Exit ESC Exit v02.67 (C)Copyright 1985-2009, American Megatrends, Inc

This section is used to configure the remote access.

#### **Remote Access**

Enables or disables the remote access feature.

**Serial Port Number** 

Selects the serial port.

#### **Base Address, IRQ**

Selects an IRQ for the serial port.

**Serial Port Mode** 

Selects a mode for the serial port.

#### **Flow Control**

Selects the flow control for console redirection.

#### **Redirection After BIOS POST**

Boot Loader Redirection is active during POST and during Boot Loader. Always Redirection is always active. Some OSes may not work when this field is set to Always. Disable Turns off the redirection after POST.

#### **Terminal Type**

Selects the target terminal type.

#### **VT-UTF8 Combo Key Support**

Enables or disables VT-UTF8 combination key support for ANSI/VT100 terminals.

#### **Sredir Memory Display Delay**

Selects the delay time (in seconds) before displaying the memory information.

## Trusted Computing (optional)

This section configures settings relevant to Trusted Computing innovations.

BIOS SETUP UTILITY							
Advanced							
Trusted Computing	Enable/Disable TPM						
TCG/TPM Support	[N0]	TCG (TPM 1.1/1.2) support in BIOS					
		$\begin{array}{ll} \leftarrow \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ + & \text{Change Option} \\ F1 & \text{General Help} \\ F10 & \text{Save and Exit} \\ \text{ESC} & \text{Exit} \end{array}$					
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### **TCG/TPM Support**

Enables or disables TPM TCG. The options are Yes and No.

If you selected Yes, additional fields will appear.

BIOS SETUP UTILITY						
Advanced						
Trusted Computing	Trusted Computing					
TCG/TPM Support	[Yes]	TCG (TPM 1.1/1.2) support in BIOS				
Execute TPM Command Clearing the TPM TPM Enable/Disable Status TPM Owner Status	[Don't change] [Press Enter] [Disabled] [UnOwned]	←→ Select Screen ↑↓ Select Item + Change Option F1 General Help F10 Save and Exit ESC Exit				
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BIOS Setup

#### **Execute TPM Command**

Enables (activates) or disables (deactivates) command to TPM.

#### **Clearing the TPM**

This field allows you to clear the user information saved in the TPM security chip. When you press <Enter>, a warning message will appear to ask if you want to clear the user information in the security chip. Use the left / right arrow key to select between [OK] and [Cancel], then press <Enter> to confirm your choice.

#### **TPM Enable/Disable Status**

Enables or disables the TPM status.

#### **TPM Owner Status**

Enables or disables the TPM owner's status.

## **USB** Configuration

This section is used to configure USB devices.

BIOS SETUP UTILITY						
Advanced						
USB Configuration	Enables support for					
Module Version - 2.24.5-13.4 USB Devices Enabled : 2 Hubs	legacy USB. AUTO option disables legacy support if no USB devices are connected.					
Legacy USB Support [Enabled] USB 2.0 Controller Mode [HiSpeed] BIOS EHCI Hand-Off [Enabled]						
	←→ Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit ESC Exit					
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#### Legacy USB Support

Enabled Enables Legacy USB. Auto Disables support for Legacy when no USB devices are connected. Disabled Keeps USB devices available only for EFI applications.

#### **USB 2.0 Controller Mode**

Configures the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).

### **BIOS EHCI Hand-Off**

This is a workaround for OSes that does not support EHCI hand-off. The EHCI ownership change should be claimed by the EHCI driver.

**PCIPnP** 

**BIOS Setup** 

The PCIPnP menu is used to configure PCI Plug and Play devices.

#### Important:

Setting incorrect field values may cause the system to malfunction.

BIOS SETUP UTILITY									
Main	Advanced	PCIPnP	Boot	Security	Chip	set	Exit		
Advanced F	PCI/PnP Settings						during		
WARNING	WARNING: Setting wrong values in below sections may cause system to malfunction.					Boot.			
Clear NVR. Plug & Play PCI Latency IRQ3 IRQ4 IRQ5 IRQ7 IRQ9 IRQ10 IRQ11	y O/S		[Ava [Ava [Ava [Ava [Ava [Ava [Ava	j ailable] ailable] ailable] ailable] ailable] ailable] ailable]					
IRQ14 IRQ15				ailable] ailable]	$\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ +- \\ F1 \\ F10 \\ ESC \end{array}$	Select Chang Gener	Screen Item ge Option al Help ind Exit		
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#### Clear NVRAM

This field allows clearing the NVRAM during system boot.

#### Plug & Play O/S

Yes

The operating system configures Plug and Play (PnP) devices that are not required to boot in a Plug and Play supported operating system.

No

The BIOS configures all the devices in the system.

#### **PCI** Latency Timer

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus. Since each access to the bus comes with an initial delay before any transaction can be made, low values for the PCI Latency Timer will reduce the effectiveness of the PCI bandwidth while higher values will improve it.

## IRQ3 to IRQ15

Available The specified IRQ is available for PCI/PnP devices. Reserved The specified IRQ is reserved for Legacy ISA devices.

# BIOS Setup

# Boot

	BIOS SETUP UTILITY									
Main	Advanced	PCIPnP	Boot	Security	Chi	pset	Exit			
Boot Setting	s		Configure settings during system boot.							
	le Drives				during ↑↓ Enter F1 F10 ESC	Select Select 1	Screen tem Sub Screen I Help			
	v02.67 (C	C)Copyright 1985	5-2009, Ame	rican Megatrends	, Inc.					

## Boot Settings Configuration

This section is used to configure settings during system boot.

BIOS SETUP UTILITY							
	Boot						
Boot Settings Configuration			Allows BIOS to skip certain tests while				
Quiet Boot Bootup Num-Lock	[Disabled] [On]		bootin decrea	g. This will se the time I to boot the			
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#### **Quick Boot**

When Enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

#### **Bootup Num-Lock**

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

### **Boot Device Priority**

This section is used to select the boot priority sequence of all available devices.

BIOS SETUP UTILITY Boot						
Boot Device Priority		Specifies the boot				
Ist Boot Device 2nd Boot Device 3rd Boot Device 4th Boot Device	[1st FLOPPY DRIVE] [HDD:PM-ST3120023AS] [Network: Realtek PX] [CD/DVD:3M-POINEER]	sequence from the available devices. A device enclosed in parenthesis has been disabled in the corre- sponding type menu. ← → Select Screen ↑↓ Select Item +→ Change Option F1 General Help F10 Save and Exit ESC Exit				
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#### **1st Boot Device and 4th Boot Device**

Select the drive to boot 1st, 2nd, 3rd and 4th in the "1st Boot Device", "2nd Boot Device" , "3rd Boot Device" and "Fourth Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected.

## Hard Disk Drives

 BIOS SETUP UTILITY

 Boot

 Hard Disk Drives
 Specifies the boot sequence from the available devices.

 1st Drive
 [HDD: PM-ST3120023AS]

 ← → Select Screen
 ↑↓ Select Item
 ↑← Change Option
 F1 General Help
 F10
 Save and Exit
 ESC Exit
 Science Screen
 Austral Science Screen
 Austral Science Science
 Austral Science Science Science
 Austral Science Science Science Science
 Austral Science Science

This section is used to select the boot priority sequence of the hard drives.

## **Removable Drives**

This section is used to select the boot priority sequence of the removable devices.

BIOS SETUP UTILITY Boot									
Removable Drives	Specifies the boot								
1st Drive	[1st FLOPPY DRIVE]	<ul> <li>sequence from the available devices.</li> <li>← → Select Screen</li> <li>↑↓ Select Item</li> <li>+ Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> <li>ESC Exit</li> </ul>							
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## **CD/DVD** Drives

BIOS SETUP UTILITY								
Boot								
CD/DVD Drives	Specifies the boot							
Ist Drive	[CD/DVD:3M-POINEER]	<ul> <li>sequence from the available devices.</li> <li>← → Select Screen</li> <li>↑↓ Select Item</li> <li>+ Change Option</li> <li>F1 General Help</li> <li>F10 Save and Exit</li> </ul>						
		ESC Exit						
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This section is used to select the boot priority sequence of the optical devices.

## BIOS Setup

# Security

	BIOS SETUP UTILITY									
Main	Advanced	PCIPnP	Boot	Security	Chip	oset Exit				
Security Set	tings				Install	or Change the				
	Supervisor Password User Password				passwo	nu.				
Change Sup Change Use	ervisor Password er Password									
					$\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ Enter \\ F1 \\ F10 \\ ESC \end{array}$	Select Screen Select Item Change General Help Save and Exit Exit				
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## Change Supervisor Password

This field is used to set or change the supervisor password. To set a new password:

- 1. Select the Change Supervisor Password field then press <Enter>.
- 2. Type your password in the dialog box then press <Enter>. You are limited to six letters/numbers.

BIOS SETUP UTILITY								
Main Advance	ed PCIPnP	Boot	Security	Chips	set Exit			
Security Settings				Install of password	or Change the			
Supervisor Password User Password	: Not Installed : Not Installed			passwoi	iu.			
Change Supervisor Passy Change User Password	word							
Boot Sector Virus Prote	Enter New Password	d		$\begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ Enter \\ F1 \\ F10 \\ ESC \end{array}$	Select Screen Select Item Change General Help Save and Exit Exit			
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.								

- 3. Press <Enter> to confirm the new password.
- 4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

To clear the password, select Change Supervisor Password then press <Enter>. The Password Uninstalled dialog box will appear.

If you forgot the password, you can clear the password by erasing the CMOS RTC (Real Time Clock) RAM using the Clear CMOS jumper. Refer to the Jumper Settings section in chapter 2 for more information.

After you have set the supervisor password, the User Access Level field will appear.

	BIOS SETUP UTILITY								
	Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Exit	
I	Security Sett	ings							
	Supervisor Password User Password Change Supervisor Password User Access Level Change User Password Password Check		: Installed : Not Installed [Full Access] [Setup]	Not Installed ull Access]		Limited: only limited fields to be changed. No Access: prevent user access Setup Utility. View Only: allow ac- cess but the fields can not be changed. Full: allow change except Supervisor password.			
						$ \begin{array}{c} \leftarrow \rightarrow \\ \uparrow \downarrow \\ +- \\ F1 \\ F10 \\ ESC \end{array} $	Select Chang Gener		
		v02.61 (	C)Copyright 1985-	2006, Am	erican Megatrends	, Inc.			

#### **User Access Level**

Selects the access level to the fields in the Setup utility.

Limited Allows you to change settings to some fields such as Date and Time. No Access Prevents access to the Setup utility. View Only Allows you to view the settings but does not allow you to change the settings. Full Access Allows you to change settings to all the fields in the utility.

#### Change User Password

This field is used to set or change the user password.

To set a new password:

- 1. Select the Change User Password field then press <Enter>.
- 2. Type your password in the dialog box then press <Enter>. You are limited to six letters/numbers.
- 3. Press <Enter> to confirm the new password.
- 4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

After you have set the user password, the Clear User Password and Password Check fields will appear.

#### **Clear User Password**

To clear the password, select Clear User Password then press <Enter>. The Password Uninstalled dialog box will appear.

#### **Password Check**

Setup

The BIOS checks for the user password whenever accessing the Setup utility. *Always* 

The BIOS checks for the user password when accessing the Setup utility and booting the system.

## Chipset

1

This section is used to configure the system based on the specific features of the chipset.

#### Important: Setting incorrect field values may cause the system to malfunction.

BIOS SETUP UTILITY Main Advanced PCIPnP Security Chipset Exit Boot Configure North Bridge features. Advanced Chipset Settings WARNING: Setting wrong values in below sections may cause system to malfunction. South Bridge Configuration
 ME Subsystem Configuration Select Screen ¢↓ Select Item Go to Sub Screen General Help Enter F1 F10 Save and Exit ESC Exit v02.67 (C)Copyright 1985-2009, American Megatrends, Inc

## North Bridge Configuration

	BIOS SETUP UTILITY			
		Chipset		
North Bridge Chipset Configuration		ENABLE: Allow remapping of		
IMC Type: *Dale Family IMC Memory Remap Feature PCL MMIO Allocation: 4GB to 3	overlapped PCI memory above the total physical memory.			
DRAM Frequency	[Auto]	DISABLE: Do not allow remapping of		
Initiate Graphic Adapter IGD Graphics Mode Select IGD GIT Graphics Memory Size	[PEG/PCI] [Enabled, 128MB] [No VT mode, 2MB]	memory.		
NB PCIE Configuration PEG Port PEG Force GEN1	[Auto] [Disabled]	$\begin{array}{c} \leftarrow \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \end{array}$		
<ul> <li>Video Function Configuration</li> </ul>		+- Change Option F1 General Help F10 Save and Exit ESC Exit		
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**BIOS Setup** 1

#### Memory Remap Feature

#### Enabled

Allows remapping of overlapped PCI memory above the total physical memory.

Disabled

Does not allow remapping of memory.

#### **DRAM Frequency**

Selects the frequency of the DRAM.

Initiate Graphic Adapter

Selects the graphics controller to use as the primary boot device.

#### IGD Graphics Mode Select

Selects the amount of system memory used by the internal graphics device.

#### PEG Port

The options are Auto and Disabled.

#### PEG Force GEN1

Some PCIE graphics devices does not comply to the PCIE specification and may incorrectly report their Gen capability or link width. Select Enabled to force the graphics device in Gen 1 mode.

### **Video Function Configuration**

BIOS SETUP UTILITY					
		Chipset			
Video Function Configuration		Options			
DVMT Mode Select DVMT/FIXED Memory PAVP Mode	[DVMT Mode] [256MB] [Lite]	<ul> <li>Comparison of the second secon</li></ul>			
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#### **DVMT Mode Select**

#### DVMT Mode

Memory that is dynamically allocated based on memory requests made by an application and are released back to the system once the requesting application has been terminated.

#### **DVMT/FIXED Memory**

Selects the graphics memory size used by the DVMT/Fixed mode.

#### **PAVP Mode**

The option is Lite.

### South Bridge Configuration

	BIOS SETUP UTILIT	Y Chipset
South Bridge Chipset Configuration USB Function EHCI Controller#1 EHCI Controller#2 GbE Controller GbE LAN Boot GbE Wake Up From S5 HDA Controller After G3 PCIE Ports Configuration	on [Enabled] [Enabled] [Enabled] [Disabled] [Disabled] [Enabled] [Enabled] [Power On]	Chipset Chipset Enable/Disable USB controller in system.
Onboard LAN2	[Auto]	$\begin{array}{rcl} \leftarrow & \rightarrow & \text{Select Screen} \\ \uparrow \downarrow & \text{Select Item} \\ + & - & \text{Change Option} \\ FI & & \text{General Help} \\ F10 & & \text{Save and Exit} \\ ESC & & \text{Exit} \end{array}$

#### **USB** Functions

Enables or disables the USB controller.

#### EHCI Controller#1 and EHCI Controller#2

This field is used to enable or disable the Enhanced Host Controller Interface controller.

#### **GbE** Controller

Enables or disables the Gigabit LAN controller.

#### GbE LAN Boot (for onboard Intel)

Enable this field if you want to use the boot ROM (instead of a disk drive) to boot-up the system and access the local area network directly. If you want to change the boot ROM's settings, type the <Ctrl> and <S> keys simultaneously when prompted during boot-up. Take note: you will be able to access the boot ROM's program (by typing <Ctrl> + <S>) only when this field is enabled.

#### GbE Wake Up From S5

When enabled, it allows the network LAN to wake up the system from S5.

#### **HDA Controller**

Enables or disables the High Definition Audio controller.

#### After G3

Power Off / WOL Power-on the system via WOL after G3. Power On Power-on the system after G3.

#### On Board LAN2

Enables or disables the LAN2 controller.

### ME Subsystem Configuration

	BIOS SETUP UTILITY	BIOS SETUP UTILITY					
		Chi	pset				
ME Subsystem Configuration			Options				
BootBlock HECI Message HECI Message End Of Post S5 HECI Message	[Enabled] [Enabled] <b>[Enabled]</b>	Disabl Enable					
ME HECI Configuration ME-HECI ME-IDER ME-KT	[Enabled] [Enabled] [Enabled]						
Management Engine Version: 6.0.3	.1195						
		←→ ↑↓ +- F1 F10 ESC	Select Screen Select Item Change Option General Help Save and Exit Exit				
v02.67 (C)C	opyright 1985-2009, American l	Megatrends, Inc.					

#### BootBlock HECI Message

Enables or disables the bootblock HECI message.

#### **HECI Message**

Enables or disables the HECI message.

End of Post S5 HECI Message

Enables or disables the end of post S5 HECI message.

#### **ME HECI Configuration**

#### ME-HECI

When this setting is set to [Enabled], Host Embedded Communication Interface (HECI) provides an interface for the exchange of message between the host software and the ME firmware.

#### ME-IDER

This setting disables/enables the IDE Redirection interface by which the remote management console is able to direct the client PC to boot.

#### ME-KT

When this setting is set to [Enabled], the KT function help redirect keyboard and POST message to the remote management console and thus facilitates the control of the client machine through the network.

## Exit

		BIOS	SETUP UTH	LITY			
Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Exit
Exit Options	3					stem setu	р
Save Chang Discard Cha Discard Cha Load Optim Load Failsa	nges and Exit nges al Defaults				change F10 ke	y can be operation Select S Select It	n. creen em ib Screen Help
	v02.67.(	C)Convright 198	5-2009 Ame	rican Megatrend	s. Inc		

### Save Changes and Exit

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F10> to save and exit Setup.

		BIOS S	ETUP UTII	JTY			
Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Exit
Exit Options Save Changes a Discard Change Discard Change	s and Exit				after sa change	vstem setu aving the es.	Î
Load Optimal I Load Failsafe E		Save configuration		d exit setup? ancel]	for this T↓ Enter F1 F10 ESC	Select S Select I Go to S General Save an Exit	creen tem ub Screen Help
	v02.61	(C)Copyright 1985	5-2006, Ame	rican Megatrend	s, Inc.		

## Discard Changes and Exit

To exit the Setup utility without saving the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <ESC> to exit without saving the changes.

		BIOS S	ETUP UTII	LITY		
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Exit Options	S				Exit syste without sa	
Discard Cha	inges and Exit				changes.	can be used
Load Optim Load Failsat			nges and exi	t setup?		
		[Ok]	[C:	ancel]	Enter G	elect Screen elect Item o to Sub Screen
					F10 Sa	eneral Help ave and Exit xit
	v02.61 (0	C)Copyright 198:	5-2006, Ame	rican Megatrend	ls, Inc.	

## **Discard Changes**

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK to discard all changes made and restore the previously saved settings.

You can also press  $\langle F7 \rangle$  to discard the changes.

		BIOS S	SETUP UTH	JTY			
Main	Advanced	PCIPnP	Boot	Security	Chij	pset	Exit
Exit Options	3					ds chang	
Save Chang Discard Cha Discard Cha Load Optim Load Failsal	nges and Exit nges al Defaults	Discard [Ok]	Changes? [Cancel]		F7 key	so far to a tup questi y can be t s operation Select 1 Go to 5 Genera Save ar Exit	ons. ised nn. Screen tem jub Screen I Help
	v02.61 (0	C)Copyright 198	5-2006, Ame	rican Megatrend	s, Inc.		

**BIOS Setup** 

### Load Optimal Defaults

To load optimal default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F9> to load optimal default values.

		BIOS S	ETUP UTIL	ITY			
Main	Advanced	PCIPnP	Boot	Security	Chip	oset	Exit
Exit Options	3					Optimal E	
Save Chang Discard Cha Discard Cha Load Optim Load Failsaf	nges and Exit nges al Defaults	Load Optin [Øk]	nal Defaults? [Cancel]	]	setup q F9 key	for all th uestions. can be u s operation Select S Select I Go to S General Save an Exit	screen tem ub Screen Help
	v02.61 (0	C)Copyright 198:	5-2006, Ameri	ican Megatrends	s, Inc.		

### Load Failsafe Defaults

To load the fail-safe default values from the BIOS ROM, select this field then press <Enter>. A dialog box will appear. Confirm by selecting OK.

You can also press <F8> to load the fail-safe default values.

		BIOS S	ETUP UTILI	TY			
Main	Advanced	PCIPnP	Boot	Security	Chij	pset	Exit
Exit Options						Failsafe I	
Save Change Discard Cha Discard Cha Load Optima Load Failsaf	nges and Exit nges al Defaults	Load Failse [Ok]	fe Defaults? [Cancel]		setup o F8 key	for all th questions / can be s operations / Select 1 Go to 5 Genera Save au Exit	used on. Screen Item Sub Screen I Help
	v02.61 (C	C)Copyright 198	5-2006, Ameri	can Megatrends	, Inc.		

## Updating the BIOS To update the BIOS, you will need the new BIOS file and a flash utility, AFUDOS. EXE. Please contact technical support or your sales representative for the files.

To execute the utility, type:

A:> AFUDOS BIOS\_File\_Name /b /n /c /p

then press <Enter>.

C:>AFUDOS.EXE filename /P /B /N /C					
	Firmware Update Utility Ver. 4.14 7 American Megatrends Inc. All Rights Reserved.				
Bootblock checksum     Module checksums     Erasing flash     Writing flash     Verifying flash     Verifying NVRAM     Writing NVRAM     Verifying NVRAM     Verifying Bootblock     Writing Bootblock     Verifying Bootblock     Verifying Bootblock     CMOS checksum destroyed     Program ended normally C⇔_	ok ok done done done done done done done done				

# Chapter 4 - Supported Software

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board.

Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".



## Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows  $^{\otimes}$  INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click "Intel Chipset Software Installation Utility" on the main menu.

1. Setup is now ready to install the utility. Click Next.



2. Read the license agreement then click Yes.



3. Go through the readme document for system requirements and installation tips then click Next.



4. Setup is now installing the driver. Click Next to continue.



5. Click "Yes, I want to restart this computer now" then click Finish.

> Restarting the system will allow the new software installation to take effect.



## Microsoft DirectX 9.0C Driver

To install the utility, click "Microsoft DirectX 9.0C Driver" on the main menu.

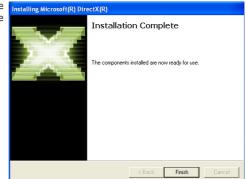
1. Click "I accept the Installing Microsoft(R) DirectX(R) agreement" then click Next.



2. To start installation, click Next.

Installing Microsoft(R) DirectX(R)	
DirectX Setup Install DirectX runtime components	
DirectX Runtime Install: This install package will search for upda and update as necessary. It may take a To start installation, please click. Next.	
	< Back Next> Cancel

3. Click Finish. Reboot the system for DirectX to take effect.



## Microsoft .NET Framework 3.5

Note: Before installing Microsoft .NET Framework 3.5, make sure you have updated your Windows XP operating system to Service Pack 3.

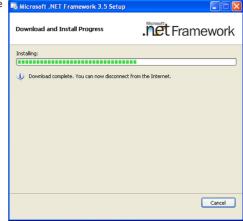
To install the driver, click "Microsoft .NET Framework 3.5" on the main menu.

1. Read the license agreement carefully.

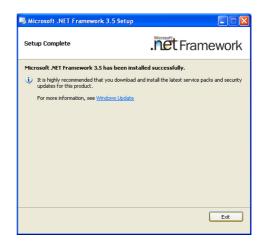
Click "I have read and accept the terms of the License Agreement" then click Install.

🌆 Microsoft .NET Framework	3.5 Setup			
Welcome to Setup	Microsoft	tFrame	work	
Be sure to carefully read and under license terms. You must accept the				
MICROSOFT SOFT	WARE SUPPLE	MENTAL		
Press the Page Down key to see mo I have read and ACCEPT the ter I DO NOT ACCEPT the terms of I	ms of the License Agreement		Print	
Send information about my setup experiences to Microsoft Corporation. Details regarding the <u>data collection policy</u>				
Download File Size: Download Time Estimate:	60 MB 2 hr 27 min (56 kbps) 16 min (512 kbps)			
		Install >	Cancel	

 Setup is now installing the driver.



3. Click Exit.



## Intel Graphics Drivers

To install the driver, click "Intel Graphics Drivers" on the main menu.

1. To start installation, click Next.



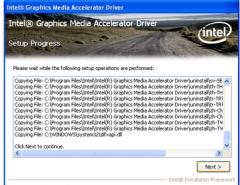
2. Read the license agreement Intel® Graphics Media Accelerator Driver then click Yes.



 Go through the readme document for system requirements and installation tips then click Next.
 Intel® Graphics Media Accelerator Driver Intel® Graphics Media Accelerator Driver Readme File Information



 Setup is now installing the driver. Click Next to continue.



 Click "Yes, I want to restart this computer now" then click Finish.

> Restarting the system will allow the new software installation to take effect.

Intel® Graphics Media Accelerator Driver	
Intel® Graphics Media Accelerator Driver Setup Is Complete	intel
You must restart this computer for the changes to take effect. Would you like to r computer now?	estart the
<ul> <li>Yes, I want to restart this computer now.</li> <li>No, I will restart this computer later.</li> </ul>	
Click Finish, then remove any installation media from the drives.	
	Finish
Intel® Install	ation Framework

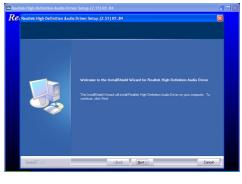
## **Audio Drivers**

To install the driver, click "Audio Drivers" on the main menu.

- Setup is now ready to install the audio driver. Click Re Reads Ingl between Audo Drive Next.
- Follow the remainder of the steps on the screen; clicking "Next" each time you finish a step.

Click "Yes, I want to restart Deduction and the Deduc

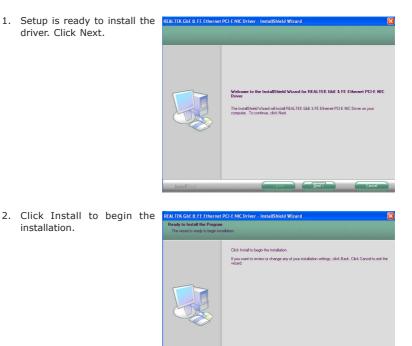
Restarting the system will allow the new software installation to take effect.





## **Realtek LAN Drivers**

To install the driver, click "Realtek LAN Drivers" on the main menu.



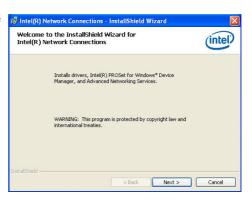
3. After completing installation, click Finish.



## Intel LAN Drivers

To install the driver, click "Intel LAN Drivers" on the main menu.

1. Setup is ready to install the driver. Click Next.



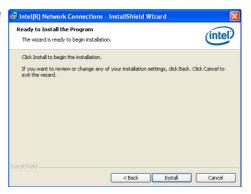
 Click "I accept the terms in the license agreement" then click "Next".

🖟 Intel(R) Network Connections - InstallShield Wizard				
License Agreement Please read the following license agreement carefully.	(intel)			
INTEL SOFTWARE LICENSE AGREEMENT (Final, License) IMPORTANT - READ BEFORE COPYING, INSTALLING OR USING. Do not use or load this software and any associated materials (collectively, the "Software") until you have carefully read the following terms and conditions. By loading or using the Software, you agree to the terms of this v				
I accept the terms in the license agreement     I do not accept the terms in the license agreement InstalSheld     CBack     Next >	Print			

3. Select the program featuers you want installed then click Next.

Intel(R) Network Connections	
Setup Options Select the program features you want installed.	(intel)
Install:	
Intel(R) PROSet for Windows* Device Manager     Intel(R) PROSet for Windows* Device Manager     Intel(R) Network Services     Intel(R) Network Connections SNMP Agent	
- Feeture Description	
<pre></pre>	Cancel

4. Click Install to begin the installation.



5. After completing installation, click Finish.

InstallShield Wizard Completed	intel
To access new features, open Device Manager, and view the properties of the network adapters.	
Instalished < Back	Cancel

## Intel Management Engine Interface

To install the driver, click "Intel Management Engine Interface" on the main menu.

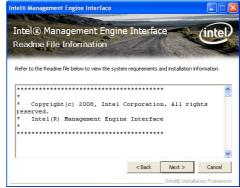
1. Setup is ready to install the driver. Click Next.



2. Read the license agreement Intel® Management Engine Interface then click Yes.



3. Go through the readme document for more installation tips then click Next.



4. Setup is currently installing the driver. After installation has completed, click Next.



5. After completing installation, click Finish.



# MyGuard Hardware Monitor

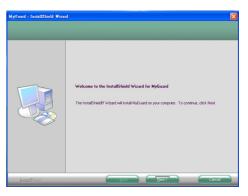
- 1. Locate for the MyGuard folder in the provided disc.
- In the MyGuard folder, right-click on the "setup" file.
- 3. Select Run As Administrator.
- 4. Double-click Setup.

#### Important:

Perform steps 1-3 only when using Windows 7 or Windows Vista.

5. Setup is ready to install the utility. Click Next.

Corganice  Corganice	New folder Name data1 data1.hdr data2 engine32 layout.bin setup setup setup setup	Open Run as administrator Troubleshoot compatibility	12/ 12/ 12/ 10/	e modified 2/2009 7:20 PM 2/2009 7:20 PM 2/2009 7:20 PM 2/2009 7:20 PM 2/2004 12:16 2/2009 7:20 PM 2/2009 7:20 PM 2/209 7:20 PM 2/209 7:20 PM	Type Cabinet File HDR File Cabinet File Cabinet File BIN File Application 18T File Configuration sett INX File	Size 519 KB 53 KB 3,261 KB 460 KB 1 KB 116 KB 368 KB	0
: Computer	setup	Restore previous versions Send to Cut Copy Create shortcut Delete Rename Properties	•	1/2004 12:17	ISIN File	63 KB	



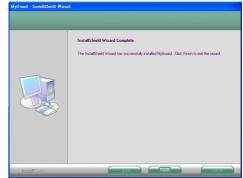
6. Click Install to begin installation.



7. Setup is currently installing Hydrawd - Ionalithiold Wiend the utility.



 After completing installation, click Finish to exit setup.



# Adobe Acrobat Reader 9.3

To install the reader, click "Adobe Acrobat Reader 9.3" on the main menu.

 Click Next to install or click Change Destination Folder to select another folder.



2. Click Install to begin installation.



3. Click Finish to exit installation.

H Adobe Reader 9.3 - Setup	x
A	
Setup Completed	
Setup has successfully installed Adobe Reader 9.3. Click Finish to exit setup.	
Adobe < Back Finish Cancel	

# Infineon TPM Driver and Tool (optional)

To install the driver, click "Infineon TPM Driver and Tool" on the main menu.

 TPM requires installing the Microsoft Visual C++ package prior to installing the driver. Click Install.



2. The setup program is preparing to install the driver.

InstallShield Wizard	
٤	Preparing to Install Infineon TPM Professional Package Setup is preparing the
	InstallShield Wizard, which will guide you through the program setup process. Please wait.
	Configuring Windows Installer
	Cancel

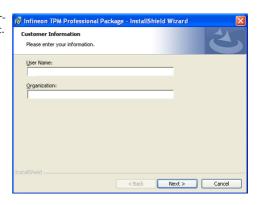
3. The setup program is ready to install the driver. Click Next.



 Click "I accept the terms in the license agreement" and then click "Next".

Infineon TPM Professional Package - InstallShield Wizard
License Agreement Please read the following license agreement carefully.
Software Setup End User License Conditions for the Infineon TPM Professional Package
1. Attention
This software contains copyright protected content (e.g. codes and structures) and confidential content (e.g. algorithms, ideas and concepts) of Infineon Technologies AG and Microsoft Corporation (Wicrosoft patterms & practices Enterprise Library © Microsoft Corporation).
<ul> <li>I accept the terms in the license agreement</li> <li>I do not accept the terms in the license agreement</li> </ul>
InstallShield
< Back Next > Cancel

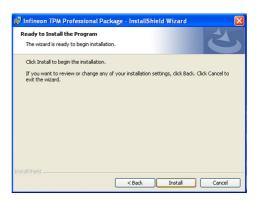
5. Enter the necessary information and then click Next.



6. Select a setup type and then click Next.

🙀 Infineon TPM	l Professional Package - InstallShield Wizard 🛛 🛛 🔀
Setup Type Choose the set	tup type that best suits your needs.
Please select a	setup type.
• Complete	All program features will be installed. (Requires the most disk space.)
Custom	Choose which program features you want installed and where they will be installed. Recommended for advanced users.
InstaliShield ———	< Back Next > Cancel

7. Click Install.



8. The setup program is currently installing the driver.

-	Infineon TPM Professional Package ram features you selected are being installed.
1 <del>7</del>	Please wait while the InstallShield Wizard installs Infineon TPM Professional Package: This may take several minutes. Status:

9. Click Finish.



10. Click Yes to restart the system.

Restarting the system will allow the new software installation to take effect.

👸 Infine	on TPM Professiona	ıl Package Installer Info 💹			
You must restart your system for the configuration changes made to Infineon TPM Professional Package to take effect. Click Yes to restart now or No if you plan to restart later.					
	Yes	No			

# Chapter 5 - RAID

The Intel Q57 chip allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 5 and RAID 10.

## **RAID** Levels

### RAID 0 (Striped Disk Array without Fault Tolerance)

RAID 0 uses two new identical hard disk drives to read and write data in parallel, interleaved stacks. Data is divided into stripes and each stripe is written alternately between two disk drives. This improves the I/O performance of the drives at different channel; however it is not fault tolerant. A failed disk will result in data loss in the disk array.

### RAID I (Mirroring Disk Array with Fault Tolerance)

RAID 1 copies and maintains an identical image of the data from one drive to the other drive. If a drive fails to function, the disk array management software directs all applications to the other drive since it contains a complete copy of the drive's data. This enhances data protection and increases fault tolerance to the entire system. Use two new drives or an existing drive and a new drive but the size of the new drive must be the same or larger than the existing drive.

### RAID 5

RAID 5 stripes data and parity information across hard drives. It is fault tolerant and provides better hard drive performance and more storage capacity.

### RAID 10 (Mirroring and Striping)

RAID 10 is a combination of data striping and data mirroring providing the benefits of both RAID 0 and RAID 1. Use four new drives or an existing drive and three new drives for this configuration.

# Settings

RAID

To enable the RAID function, the following settings are required.

- 1. Connect the Serial ATA drives.
- 2. Configure Serial ATA in the AMI BIOS.
- 3. Configure RAID in the RAID BIOS.
- 4. Install the RAID driver during OS installation.
- 5. Install the Intel Rapid Storage Drivers.

### Step 1: Connect the Serial ATA Drives

Refer to chapter 2 for details on connecting the Serial ATA drives.



#### Important:

- Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.
- 2. Treat the cables with extreme caution especially while creating RAID. A damaged cable will ruin the entire installation process and operating system. The system will not boot and you will lost all data in the hard drives. Please give special attention to this warning because there is no way of recovering back the data.

### Step 2: Configure Serial ATA in the AMI BIOS

- 1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.
- 2. Configure Serial ATA in the appropriate fields.
- 3. Save the changes in the Save & Exit menu.
- 4. Reboot the system.

### Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the Intel RAID BIOS status message screen will appear. Press the <Ctrl> and <I> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

RAID

### Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows<sup>®</sup> XP or Windows<sup>®</sup> 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

- 1. Start Windows Setup by booting from the installation CD.
- 2. Press <F6> when prompted in the status line with the 'Press F6 if you need to install a third party SCSI or RAID driver' message.
- 3. Press <S> to "Specify Additional Device".
- 4. At this point you will be prompted to insert a floppy disk containing the RAID driver. Insert the RAID driver diskette.
- 5. Locate for the drive where you inserted the diskette then select RAID or AHCI controller that corresponds to your BIOS setup. Press <Enter> to confirm.

You have successfully installed the driver. However you must continue installing the OS. Leave the floppy disk in the floppy drive until the system reboots itself because Windows setup will need to copy the files again from the floppy disk to the Windows installation folders. After Windows setup has copied these files again, remove the floppy diskette so that Windows setup can reboot as needed.

RAID

### Step 5: Install the Intel Matrix Storage Manager for RAID/AHCI

The Intel Matrix Storage Manager can be installed from within Windows. It allows RAID volume management (create, delete, migrate) from within the operating system. It will also display useful SATA device and RAID volume information. The user interface, tray icon service and monitor service allow you to monitor the current status of the RAID volume and/or SATA drives. It enables enhanced performance and power management for the storage subsystem.

- 1. Insert the provided CD into an optical drive.
- 2. Click "Intel Matrix Storage Manager for RAID/AHCI" on the main menu.
- 3. Setup is ready to install the utility. Click Next.



4. Read the warning carefully then click Next.

Intel(R) Matrix Stora	ge Manager 7.5.0.1017
(intel)	Warning!           Please read the following information:           The drive you are about to install might be used to control the hard drive the compare is booing or to control a hard drive that contains imported data.           For this reason, you cannot recove or uninstall this drive from the computer after instalation. However, you can uninstall other, non-critical components. The following components can be uninstalled:           Intel[F] Mahins Storage Console           Heip Documentation           System Tray foot Service           Event Monitor Service           Event Monitor Service           Event Monitor Service           Elick Next to continue the setup. Click Cancel to exit the setup.
	KBack Next > Cancel     Intel(R) Installation Frameworks

RAID

5. Read the license agreement then click Yes.



 Go through the readme document to view system requirements and installation information then click Next.
 Go through the readme file Informa Refer to the Readme file Informa Refer to the Readme file Information. Presenter the Readme file Information.

Readmer File Information
 Readmer File Information
 Readmer File Information
 Rest to the Pleadwork like block to view uptern requirements and initialiation
 rformation. Press the Page Down key to view the rest of the file.
 "Initialiation Readmer for Intel[R] Matrix Storage Manager.
 "Infert to the system requirements for the corporating
 wytems supported by Intel[R] Matrix Storage Manager.
 "Initial There are some retrictions on how these products
 may be used, and what information may be developed by
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7. Click "Yes, I want to restart my computer now" then click Finish.



# Chapter 6 - Intel AMT Settings

## Overview

Intel Active Management Technology (Intel $^{\otimes}$  AMT) combines hardware and software solution to provide maximum system defense and protection to networked systems.

The hardware and software information are stored in non-volatile memory. With its built-in manageability and latest security applications, Intel<sup>®</sup> AMT provides the following functions.

Discover

Allows remote access and management of networked systems even while PCs are powered off; significantly reducing desk-side visits.

• Repair

Remotely repair systems after OS failures. Alerting and event logging help detect problems quickly to reduce downtime.

Protect

Intel AMT's System Defense capability remotely updates all systems with the latest security software. It protects the network from threats at the source by proactively blocking incoming threats, reactively containing infected clients before they impact the network, and proactively alerting when critical software agents are removed.

# Enable Intel<sup>®</sup> AMT in the AMI BIOS

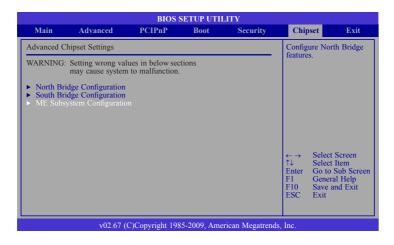
- 1. Power-on the system then press <Del> to enter the main menu of the AMI BIOS.
- In the Advanced menu, select Intel AMT Configuration then press <Enter>.

		BIOS S	SETUP UTII	LITY			
Main	Advanced	PCIPnP	Boot	Security	Chips	et Exit	
Advanced Settings					Configur	Configure CPU.	
	y cause system ration ation guration figuration alth Configuration unfiguration se Configuration se Configuration se Configuration ([		tions		↑↓ Enter F1 F10	Select Screen Select Item Go to Sub Screen General Help Save and Exit Exit	
	v02.67 (	C)Copyright 198	5-2009, Ame	rican Megatrend	s, Inc.		

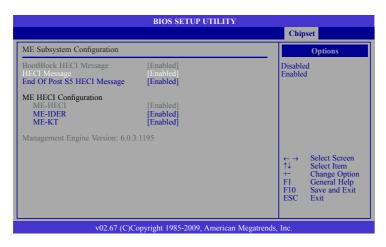
3. In the Intel AMT Support field, select Enabled.

BIOS SETUP	UTILITY
Advanced	
Configure Intel AMT Parameters	Options
Intel AMT Support [Enabled] Force IDER [Disabled Force SOL [Disabled Unconfigure AMT/ME [Disabled Activate Remote Assistance [Disabled MEBx Ctrl+P Delay (Seconds) [0]	d] Enabled d] d] ←→ Select Screen ↑↓ Select Item
	+- Change Option F1 General Help F10 Save and Exit ESC Exit
v02.67 (C)Copyright 1985-2009,	American Megatrends, Inc.

 In the Chipset menu, select ME Subsystem Configuration then press <Enter>.



5. Configure the fields in the ME Subsystem Configuration submenu.



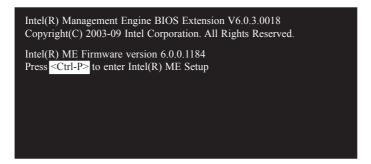
6. In the Exit menu, select Save Changes and Exit then select OK.

		BIOS S	SETUP UTH	LITY			
Main	Advanced	PCIPnP	Boot	Security	Chips	et Exit	
Exit Options Save Chang Discard Cha Discard Cha Load Optim Load Failsal	es and Exit nges and Exit nges al Defaults				after sav changes F10 key for this ↑↓ Enter F1 F10		en
	v02.67 (	C)Copyright 198	5-2009, Ame	rican Megatrend	s, Inc.		

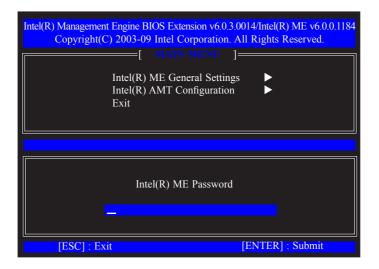
Intel AMT Settings

# Enable Intel<sup>®</sup> AMT in the Intel<sup>®</sup> Management Engine BIOS Extension (MEBX) Screen

 When the system reboots, the following message will be displayed. Press Ctrl-P> as soon as the message is displayed; as this message will be displayed for only a few seconds.



 You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password then press Enter.



- 3. Enter a new password in the space provided under Intel(R) ME New Password then press Enter. The password must include:
  - 8-32 characters
  - Strong 7-bit ASCII characters excluding {:, and "} characters
  - At least one digit character (0, 1, ...9)
  - At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
  - Both lower case and upper case characters

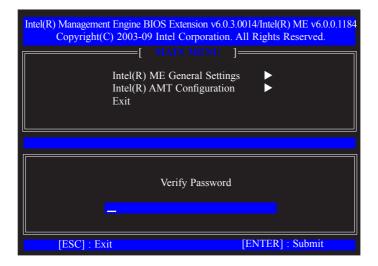
#### Note:

 $`\_'$  (underscore) and ' ' (space) are valid password characters but are not used in the determination of complexity.

Copyright(C) 20	tine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184 03-09 Intel Corporation. All Rights Reserved. =[ MAIN MENU ] el(R) ME General Settings ► el(R) AMT Configuration ► t
_	Intel(R) ME New Password
[ESC] : Exit	[ENTER] : Submit

## Intel AMT Settings

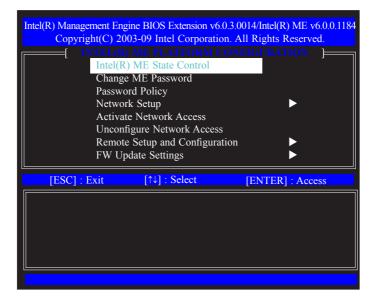
4. You will be asked to verify the password. Enter the same new password in the space provided under Verify Password then press Enter.



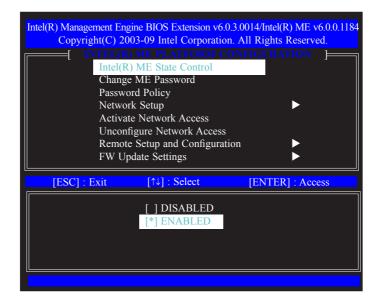
5. Select Intel(R) ME General Settings then press Enter.

	) 2003-09 Intel Corporatio	Ű
	Intel(R) ME General Setti	
	Intel(R) AMT Configurati Exit	on 🕨
		1
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access

6. Select Intel(R) ME State Control then press Enter.



7. Select Enabled then press Enter.



#### 8. Select Change ME Password then press Enter.

You will be prompted for a password. The default password is "admin". Enter the default password in the space provided under Intel(R) ME Password then press Enter.

- 8-32 characters
- Strong 7-bit ASCII characters excluding {:, and "} characters
- At least one digit character (0, 1, ...9)
- At least one 7-bit ASCII non alpha-numeric character, above 0x20, (e.g. !, \$, ;)
- Both lower case and upper case characters

Note:

 $`\_'$  (underscore) and ' ' (space) are valid password characters but are not used in the determination of complexity.

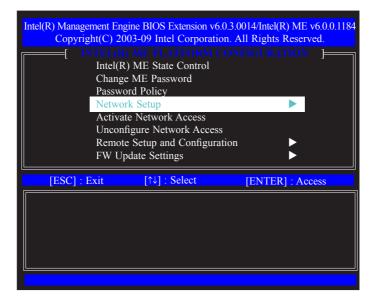
Intel(R) Management Engine BIOS Extension v6. Copyright(C) 2003-09 Intel Corporation	
INTEL(R) ME PLATFORM C Intel(R) ME State Control Change ME Password Password Policy Network Setup Activate Network Access Unconfigure Network Access Remote Setup and Configura FW Update Settings	CONFIGURATION )
[ [ESC] : Exit [↑↓] : Select	[ENTER] : Access
Intel(R) ME Passwo	rd

### 9. Select **Password Policy** then press Enter.

You may choose to use a password only during setup and configuration or to use a password anytime the system is being accessed.

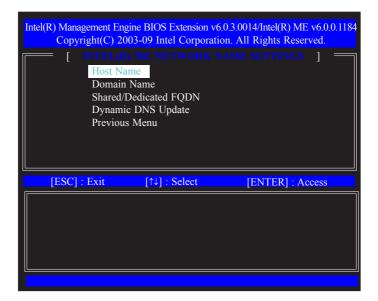
Copyright(C) 2	<u> </u>	5.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved. CONFIGURATION
Chang	R) ME State Control ge ME Password rord Policy	
Activa Uncon Remo	ork Setup ate Network Access nfigure Network Acces te Setup and Configura Ipdate Settings	
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
	AULT PASSWORD OF ING SETUP AND CO TIME	

10. Select Network Setup then press Enter.

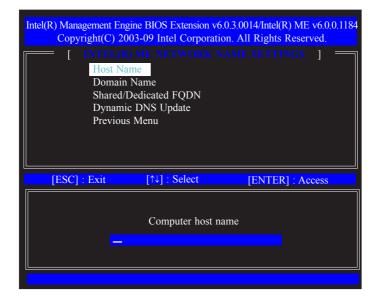


11. In the Intel(R) Network Setup menu, select Intel(R) ME Network Name Settings then press Enter.

		ne BIOS Extension vo 3-09 Intel Corporat		
	: [ <mark>]</mark> ]			]
		IE Network Name	Settings	
	TCP/IP Se Previous I	0		
[ESC] :	Exit	[↑↓] : Select	[ENTEI	R] : Access

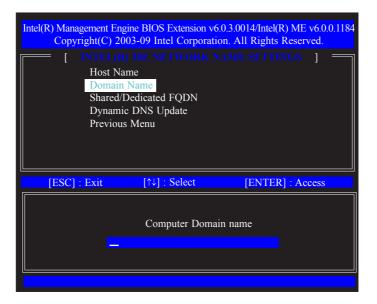


13. Enter the computer's host name then press Enter.



## Intel AMT Settings

14. Select **Domain Name** then press Enter. Enter the domain name then press Enter.



15. Select **Shared/Dedicated FQDN** then press Enter. Select Shared or Dedicated then press Enter.

	0	6.0.3.0014/Intel(R) ME v6.0.0.118 ion. All Rights Reserved.
Host N Domain Shared Dynam	<ul> <li>NE NETWORK Mame         <ul> <li>Name</li> <li><u>Dedicated FQDN</u></li> <li>ic DNS Update</li> <li>is Menu</li> </ul> </li> </ul>	vame settings ] ==
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
	EDICATED IARED	

16. Select **Dynamic DNS Update** then press Enter. Select Enabled or Disabled then press Enter.

		.0.3.0014/Intel(R) ME v6.0.0.118 on. All Rights Reserved.
Host N Domain Shared Dynam	8) ME NETWORK N ame 1 Name Dedicated FQDN ic DNS Update Is Menu	AME SETTINGS ] —
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
L J	SABLED IABLED	

17. Select Previous Menu until you return to the **Network Setup** menu. Select **TCP/IP Settings** then press Enter.

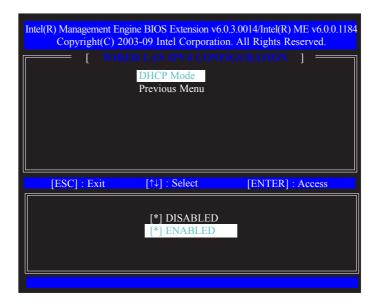
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Copyright(C) 20	003-09 Intel Corporati	on. All Rights Reserved.
[		RK SETUP ]
		-
Intel(P)	) ME Network Name S	Settings
	Settings	Settings
	is Menu	
Previou	s Menu	
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
	1	

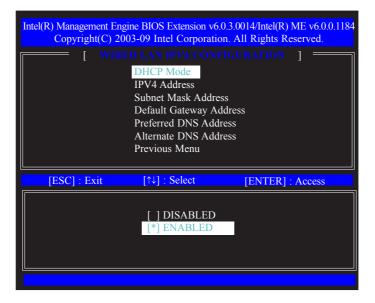
## Intel AMT Settings

18. In the **TCP/IP Settings** menu, select **Wired LAN IPV4 Configuration** then press Enter.

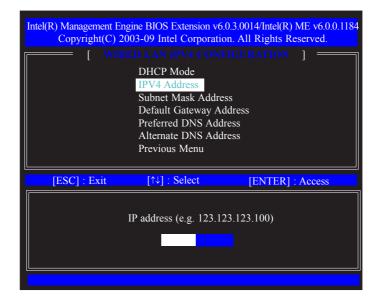
	<b>e</b>	5.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved.
	= [ TCP/IP SETTIN	NGS ]
М	/ired LAN IPV4 Configu /ired LAN IPV6 Configu revious Menu	
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access

19. In the **Wired LAN IPV4 Configuration** menu, select **DHCP Mode** then press Enter. Select Enabled then press Enter.



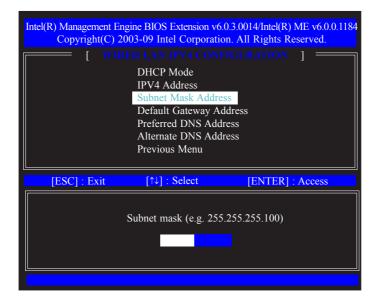


21. Select **IPV4 Address** then press Enter. Enter an IP Address then press Enter.



## Intel AMT Settings

22. Select **Subnet Mask Address** then press Enter. Enter the subnet mask address then press Enter.



23. Select **Default Gateway Address** then press Enter. Enter the default gateway address then press Enter.

		5.0.3.0014/Intel(R) ME v6.0.0.118 ion. All Rights Reserved.
	D LAN IPV4 CON DHCP Mode IPV4 Address Subnet Mask Addre Default Gateway A Preferred DNS Add Alternate DNS Add Previous Menu	ess .ddress dress
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
	Default Gateway	Address

		0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved.
	D LAN IPV4 CON DHCP Mode IPV4 Address Subnet Mask Addre Default Gateway A Preferred DNS Add Alternate DNS Add Previous Menu	ess ddress iress
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
	Preferred DNS A	.ddress

25. Select **Alternate DNS Address** then press Enter. Enter the alternate DNS address then press Enter.

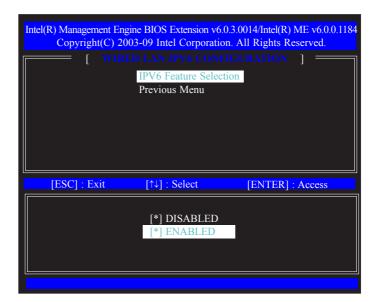
Intel(R) Management Engi Copyright(C) 200		5.0.3.0014/Intel(R) ME v6 on. All Rights Reserved	
	D LAN IPV4 CON DHCP Mode IPV4 Address Subnet Mask Addre Default Gateway A Preferred DNS Add Alternate DNS Add Previous Menu	ess .ddress .lress	
[ESC] : Exit	[↑↓] : Select	[ENTER] : Acces	S
	Alternate DNS A	Address	

## Intel AMT Settings

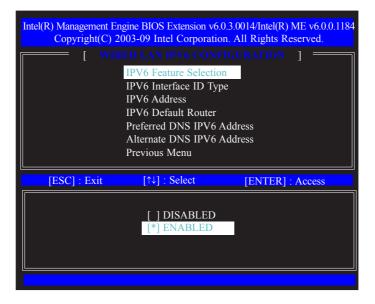
26. Select Previous Menu until you return to the **TCP/IP Settings** menu. Select **Wired LAN IPV6 Configuration** then press Enter.

Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184 Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.			
	[ TCP/IP SETT	NGS ]	
Wired LAN IPV4 Configuration ► Wired LAN IPV6 Configuration ► Previous Menu			
[ESC] : Exit	[↑↓] : Select	[ENTER]	: Access

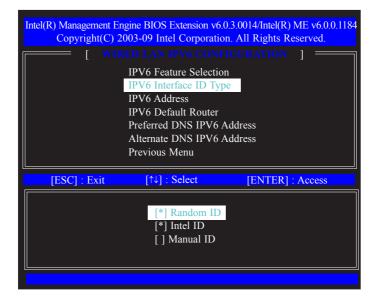
27. In the Wired LAN IPV6 Configuration menu, select IPV6 Feature Selection then press Enter. Select Enabled then press Enter.



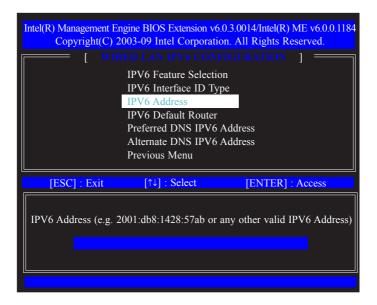
28. A list of options in the Wired LAN IPV6 Configuration menu will appear.



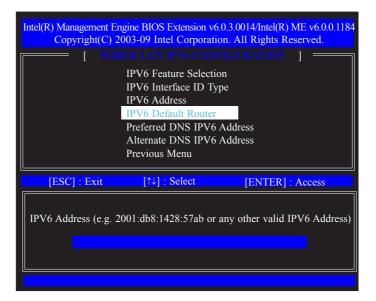
29. Select **IPV6 Interface ID Type** then press Enter. Select the ID type then press Enter.



30. Select **IPV6 Address** then press Enter. Enter the IPV6 address then press Enter.



 Select IPV6 Default Router then press Enter. Enter the IPV6 default router address then press Enter.



32. Select **Preferred DNS IPV6 Address** then press Enter. Enter the preferred DNS IPV6 address then press Enter.

Copyright(C)	e	.0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved.
	IPV6 Feature Selection IPV6 Interface ID Ty IPV6 Address IPV6 Default Router Preferred DNS IPV6 Alternate DNS IPV6 Previous Menu	pe Address
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
IPV6 Address (e.g.	2001:db8:1428:57ab or	any other valid IPV6 Address)

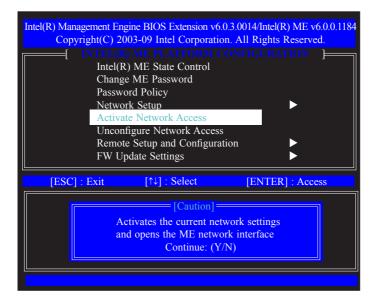
33. Select **Alternate DNS IPV6 Address** then press Enter. Enter the alternate DNS IPV6 address then press Enter.

Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.1184 Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.		
[ wi	RED LAN IPV6 CON IPV6 Feature Selection IPV6 Interface ID Ty IPV6 Address IPV6 Default Router Preferred DNS IPV6 Alternate DNS IPV6 Previous Menu	on pe Address
[ESC] : Exit	[↑↓] : Select	[ENTER] : Access
IPV6 Address (e.g.	2001:db8:1428:57ab or	any other valid IPV6 Address)

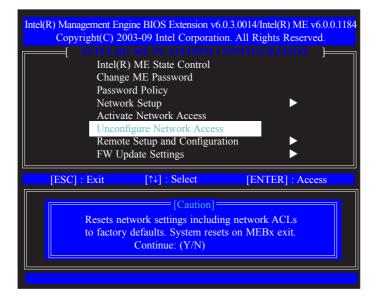
34. Select Previous Menu until you return to the Intel(R) ME Platform Configuration menu.

Select Activate Network Access then press Enter.

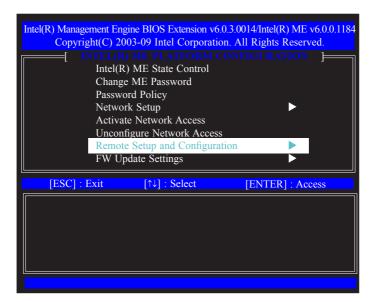
Type **Y** then press Enter.



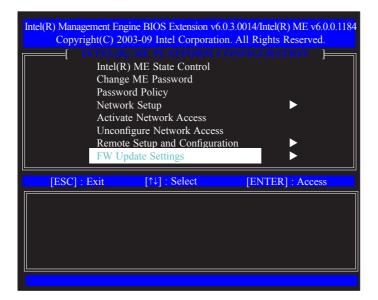
35. In the Intel(R) ME Platform Configuration menu, select Unconfigure Network Access then press Enter. Type Y then press Enter.



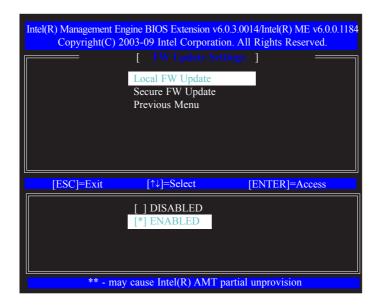
36. In the Intel(R) ME Platform Configuration menu, select Remote Setup and Configuration then press Enter.



 Select Previous Menu until you return to the Intel(R) ME Platform Configuration menu. Select FW Update Settings then press Enter.



 In the FW Update Settings menu, select Local FW Update then press Enter. Select Enabled then press Enter.



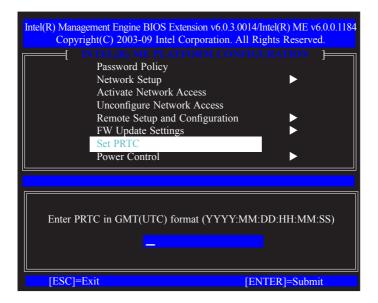
39. In the **FW Update Settings** menu, select **Secure FW Update** then press Enter. Select **Enabled** then press Enter.

	gine BIOS Extension v6.0.3 003-09 Intel Corporation.	.0014/Intel(R) ME v6.0.0.1184 All Rights Reserved.
	[ FW Update Settin	gs ]
	Local FW Update	
	Secure FW Update Previous Menu	
	i revious menu	
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access
	[] DISABLED	
	[*] ENABLED	
** - may	cause Intel(R) AMT part	ial unprovision

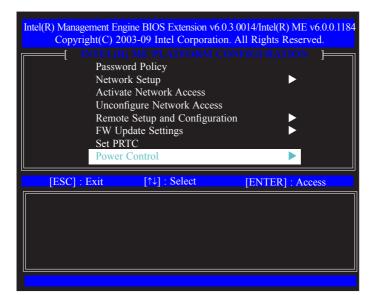
40. Select Previous Menu until you return to the Intel(R) ME Platform Configuration menu. Select Set PRTC then press Enter.

	0	0.3.0014/Intel(R) ME v6.0.0.1184 on. All Rights Reserved.
		CONFIGURATION
Passw	ord Policy	
Netwo	ork Setup	
Activa	ate Network Access	
Uncor	nfigure Network Access	
Remo	te Setup and Configurat	tion 🕨
FW U	pdate Settings	<b>&gt;</b>
Set PI	DTC	
~ ***		
~ ***	r Control	► ►
~ ***		ENTER] : Access
Power	r Control	ENTER] : Access
Power	r Control	ENTER] : Access
Power	r Control	ENTER] : Access
Power	r Control	ENTER] : Access
Power	r Control	ENTER] : Access
Power	r Control	ENTER] : Access

41. Enter the PRTC in GMT(UTC) format.



42. In the Intel(R) ME Platform Configuration menu, select Power Control then press Enter.



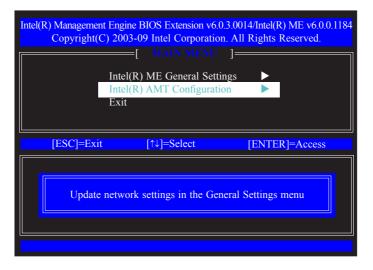
43. In the Intel(R) ME Power Control menu, select Intel(R) ME ON in Host Sleep States then press Enter. Select an option then press Enter.

Copyright(C) 2	<b>e</b>	
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access
[ ] Desktop: ON in [*] Desktop: ON ir	1 S0 1 S0, ME Wake in S3,	<u>84-5</u>

44. In the Intel(R) ME Power Control menu, select Idle Timeout then press Enter. Enter the timeout value.

Copyright(C) 2003-09 Intel C	ension v6.0.3.0014/Intel(R) ME v6.0.0.1184 Corporation. All Rights Reserved. POWER CONTROL ] 1 Host Sleep States
Timeout V	′alue (1-65534) ENTER⊫Submit

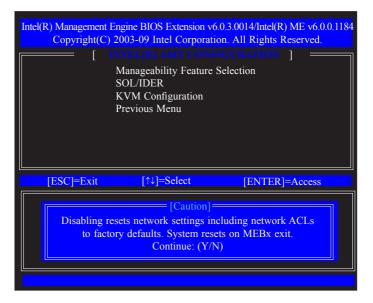
45. Select Previous Menu until you return to the Main Menu. Select Intel(R) AMT Configuration.



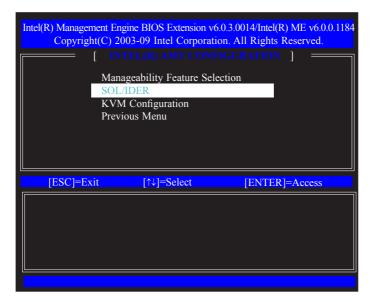
46. In the Intel(R) AMT Configuration menu, select Manageability Feature Selection then press Enter.

Copyright(C)	Engine BIOS Extension v6 2003-09 Intel Corporation INTEL(R) AMT CONF	0
	anageability Feature Sele	ection
	VM Configuration evious Menu	
11		
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access

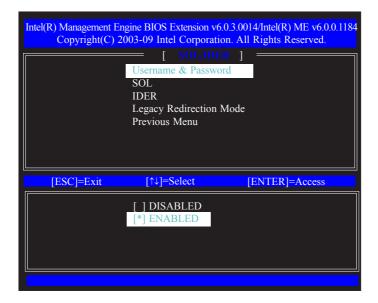
47. Type  ${\boldsymbol Y}$  then press Enter.



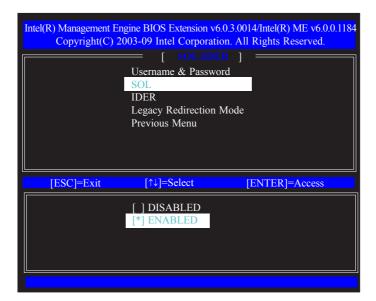
48. In the Intel(R) AMT Configuration menu, select SOL/IDER then press Enter.



49. In the **SOL/IDER** menu, select **Username & Password** then press Enter. Select Enabled then press Enter.



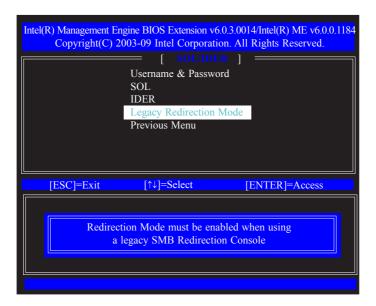
50. In the **SOL/IDER** menu, select **SOL** then press Enter. Select Enabled then press Enter.



51. In the **SOL/IDER** menu, select **IDER** then press Enter. Select Enabled then press Enter.

Intel(R) Management Engine BIOS Extension v6.0.3.0014/Intel(R) ME v6.0.0.118 Copyright(C) 2003-09 Intel Corporation. All Rights Reserved.
[ SOL/IDER ] Username & Password SOL IDER Legacy Redirection Mode Previous Menu
[ESC]=Exit [↑↓]=Select [ENTER]=Access
[ ] DISABLED [*] ENABLED

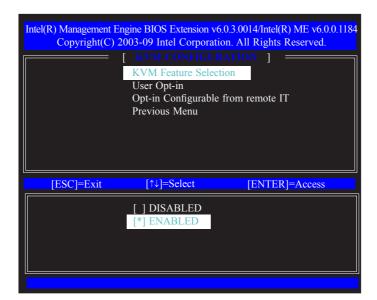
52. In the **SOL/IDER** menu, select **Legacy Redirection Mode** then press Enter.



 Select Previous Menu until you return to the Intel(R) AMT Configuration menu. Select KVM Configuration then press Enter.

Copyright(C) 2	003-09 Intel Corporati	5.0.3.0014/Intel(R) ME v6.0.0.1184 ion. All Rights Reserved.
		IGURATION ]
	ageability Feature Sele /IDER	ection
	A Configuration	
Prev	ious Menu	
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access

54. In the **KVM Configuration** menu, select **KVM Feature Selection** then press Enter. Select Enabled then press Enter.



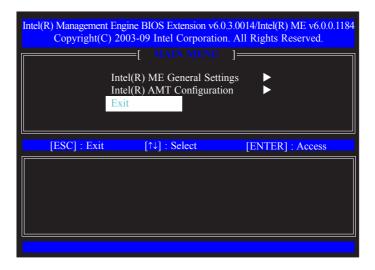
55. In the **KVM Configuration** menu, select **User Opt-in** then press Enter. Select **User Consent is required for KVM Session** then press Enter.

		ction
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access
	onsent is not require onsent is required fo	

 In the KVM Configuration menu, select Opt-in Configurable from Remote IT then press Enter. Select Enable Remote Control of KVM Opt-in Policy then press Enter.

	<b>e</b>	tion
[ESC]=Exit	[↑↓]=Select	[ENTER]=Access
	le Remote Control of I e Remote Control of K	

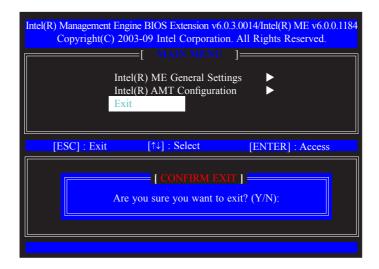
57. Select Previous Menu until you return to the **Main Menu.** Select Exit then press Enter.



58. The following message will be displayed on the screen.

[CONFIRM EXIT] Are you sure you want to exit? (Y/N):

Press Y.



# Appendix A - NLITE and AHCI Installation Guide

### nLite

nLite is an application program that allows you to customize your XP installation disc by integrating the RAID/AHCI drivers into the disc. By using nLite, the F6 function key usually required during installation is no longer needed.



**Note:** The installation steps below are based on nLite version 1.4.9. Installation procedures may slightly vary if you're using another version of the program.

1. Download the program from nLite's offical website.

http://www.nliteos.com/download.html

2. Install nLite.

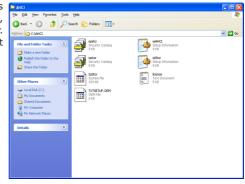


#### Important:

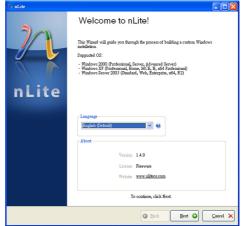
Due to it's coding with Visual.Net, you may need to first install .NET Framework prior to installing nLite.

3. Download relevant RAID/AHCI driver files from Intel's website. The drivers you choose will depend on the operating system and chipset used by your computer.

The downloaded driver files should include iaahci.cat, iaAHCI.inf, iastor.cat, iaStor. inf, IaStor.sys, license.txt and TXTSETUP.OEM.

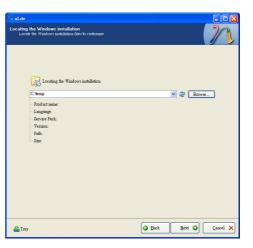


- 4. Insert the XP installation disc into an optical drive.
- Launch nLite. The Welcome screen will appear. Click Next.



 Click Next to temporarily save the Windows installation files to the designated default folder.

If you want to save them in another folder, click **Browse**, select the folder and then click **Next**.



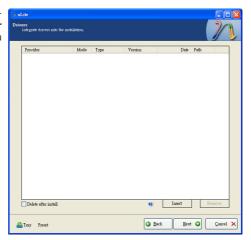
7. Click Next.



8. In the Task Selection dialog box, click **Drivers** and **Bootable ISO**. Click **Next**.

⟩∕1 nLite		
Task Selectio Choose the can choose	en stasks you wish to to make an ISO ar	perform. You can choose any number of tasks from below, e.g. you
		Service Pack
	Integrate	Hotfixes, Add-ons and Update Packs
		Drivers
	Remove	Components
		<ul> <li>Unattended</li> </ul>
	Setup	Options
		Tweaks
	Create	<ul> <li>Bootable ISO</li> </ul>
		All Note
🍰 Tray		G Back Mext O Cancel X

 Click Insert and then select Multiple driver folder to select the drivers you will integrate. Click Next.



 Select only the drivers appropriate for the Windows version that you are using and then click **OK**.

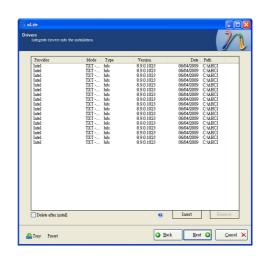
> Integrating 64-bit drivers into 32-bit Windows or vice versa will cause file load errors and failed installation.



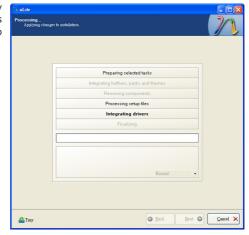
 If you are uncertain of the southbridge chip used on your motherboard, select all RAID/AHCI controllers and then click OK.



12. Click Next.



13. The program is currently integrating the drivers and applying changes to the installation.



14. When the program is finished applying the changes, click **Next**.

Preparing selected tasks
Integrating hotfixes, packs and themes
Removing components
Processing setup files
Integrating drivers
Finalizing
Finished1 Tobl size is 657.77MB Integrated drivers: 0.18MB
The installation grew by 0.54MB.
Normal

15. To create an image, select the **Create Image** mode under the General section and then click **Next**.

General Mode		Device			
Creste Image Label WinLite	•••••••••••••••••••••••••••••••••••••••	Burn speed	Media		& &
Advanced ISO Engine Default	<b>v</b> 0	Boot sector	Venify	Quick erase	
Progress					
			Click h	ere to start -> Me	dke ISO
Information If you want to inc.	lude additional file inst click next if w	s on your CD/DVD, co	py them to the working d D later.	irectory	

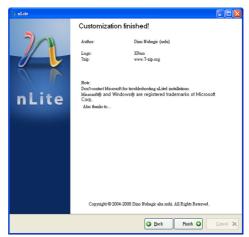
 Or you can choose to burn it directly to a disc by selecting the **Direct Burn** mode under the General section.

> Select the optical device and all other necessary settings and then click

hi nLite						
Bootable ISD Create a bootable ISD to berra on CUUUVD or for testing.						
Otaen) Mole Device						
Daret Funn v () 1:1.0,F. FIONEER DYD-RW DVR-111D 1.23 v () Label Burn speed Media						
WinLite Maximum V No media						
ISO Engine         Boot sector         Quick error           Default         V         Ø         Default         Test write						
Trogen Click here to dart > Burn						
Information If you wan't bankele editional files on your CD/OVD, oppy them to the working directory leftor thatting, or per click and if you want to make the ISO later. Explore	]					
Tray Back East O Cauci	×					

17. You have finished customizing the Windows XP installation disc. Click **Finish**.

> Enter the BIOS utility to configure the SATA controller to RAID/AHCI. You can now install Windows XP.

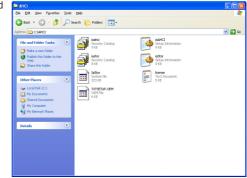


# AHCI

The installation steps below will guide you in configuring your SATA drive to AHCI mode.

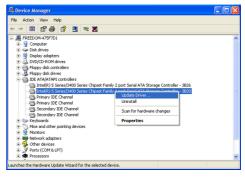
- 1. Enter the BIOS utility and configure the SATA controller to IDE mode.
- 2. Install Windows XP but do not press F6.
- 3. Download relevant RAID/AHCI driver files supported by the motherboard chipset from Intel's website.

Transfer the downloaded driver files to C:\AHCI.



 Open Device Manager and right click on one of the Intel Serial ATA Storage Controllers, then select Update Driver.

> If the controller you selected did not work, try selecting another one.



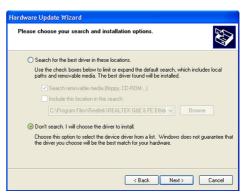
 In the Hardware Update Wizard dialog box, select "No, not this time" then click Next.



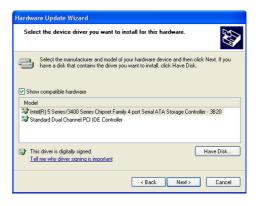
 Select "Install from a list or specific location (Advanced)" and then click Next.



 Select "Don't search. I will choose the driver to install" and then click Next.



8. Click "Have Disk".



 Select C:\AHCI\iaAHCI.inf and then click **Open**.



 Select the appropriate AHCI Controller of your hardware device and then click Next.



 A warning message appeared because the selected SATA controller did not match your hardware device.

Ignore the warning and click **Yes** to proceed.

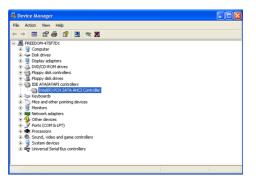
12. Click Finish.





- The system's settings have been changed. Windows XP requires that you restart the computer. Click Yes.
- Enter the BIOS utility and modify the SATA controller from IDE to AHCI. By doing so, Windows will work normally with the SATA controller that is in AHCI mode.





# Appendix B - Watchdog Sample Code

;Software programming example:

; ;(1) Enter Super IO Configuration mode :							
MOV MOV OUT OUT	DX,2EH AL,87H DX,AL DX,AL						
;							
	DX,2EH AL,07H	;Ready to Program Logical Device					
MOV MOV OUT	DX,2FH AL,07H DX,AL	;Select Logical Device 7					
MOV MOV OUT	DX,2EH AL, F6H DX,AL	;Select watchdog timer register					
MOV MOV OUT	DX,2FH AL,10H DX,AL	;Set watchdog timer value					
MOV MOV OUT	DX,2EH AL, F5H DX,AL	;Select watchdog Control Register					
MOV MOV OUT	DX,2FH AL,61H DX,AL	;Set Watchdog Control Value					
; ;(1) Exit extended function mode :							
MOV MOV	DX,2EH						

# Appendix C - Troubleshooting

### **Troubleshooting Checklist**

This chapter of the manual is designed to help you with problems that you may encounter with your personal computer. To efficiently troubleshoot your system, treat each problem individually. This is to ensure an accurate diagnosis of the problem in case a problem has multiple causes.

Some of the most common things to check when you encounter problems while using your system are listed below.

- 1. The power switch of each peripheral device is turned on.
- 2. All cables and power cords are tightly connected.
- 3. The electrical outlet to which your peripheral devices are connected is working. Test the outlet by plugging in a lamp or other electrical device.
- 4. The monitor is turned on.
- 5. The display's brightness and contrast controls are adjusted properly.
- 6. All add-in boards in the expansion slots are seated securely.
- 7. Any add-in board you have installed is designed for your system and is set up correctly.

### Monitor/Display

#### If the display screen remains dark after the system is turned on:

- 1. Make sure that the monitor's power switch is on.
- Check that one end of the monitor's power cord is properly attached to the monitor and the other end is plugged into a working AC outlet. If necessary, try another outlet.
- 3. Check that the video input cable is properly attached to the monitor and the system's display adapter.
- Adjust the brightness of the display by turning the monitor's brightness control knob.

#### The picture seems to be constantly moving.

- 1. The monitor has lost its vertical sync. Adjust the monitor's vertical sync.
- Move away any objects, such as another monitor or fan, that may be creating a magnetic field around the display.
- 3. Make sure your video card's output frequencies are supported by this monitor.

#### The screen seems to be constantly wavering.

1. If the monitor is close to another monitor, the adjacent monitor may need to be turned off. Fluorescent lights adjacent to the monitor may also cause screen wavering.

### **Power Supply**

#### When the computer is turned on, nothing happens.

- 1. Check that one end of the AC power cord is plugged into a live outlet and the other end properly plugged into the back of the system.
- 2. Make sure that the voltage selection switch on the back panel is set for the correct type of voltage you are using.
- The power cord may have a "short" or "open". Inspect the cord and install a new one if necessary.

### Floppy Drive

### The computer cannot access the floppy drive.

- 1. The floppy diskette may not be formatted. Format the diskette and try again.
- 2. The diskette may be write-protected. Use a diskette that is not write-protected.
- 3. You may be writing to the wrong drive. Check the path statement to make sure you are writing to the targeted drive.
- 4. There is not enough space left on the diskette. Use another diskette with adequate storage space.

## Hard Drive

### Hard disk failure.

- 1. Make sure the correct drive type for the hard disk drive has been entered in the BIOS.
- 2. If the system is configured with two hard drives, make sure the bootable (first) hard drive is configured as Master and the second hard drive is configured as Slave. The master hard drive must have an active/bootable partition.

### Excessively long formatting period.

If your hard drive takes an excessively long period of time to format, it is likely a cable connection problem. However, if your hard drive has a large capacity, it will take a longer time to format.

## Serial Port

The serial device (modem, printer) doesn't output anything or is outputting garbled characters.

- 1. Make sure that the serial device's power is turned on and that the device is on-line.
- 2. Verify that the device is plugged into the correct serial port on the rear of the computer.
- 3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
- 4. Make sure the COM settings and I/O address are configured correctly.

# Keyboard

Nothing happens when a key on the keyboard was pressed.

- 1. Make sure the keyboard is properly connected.
- 2. Make sure there are no objects resting on the keyboard and that no keys are pressed during the booting process.

## System Board

- 1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
- 2. Check the jumper settings to ensure that the jumpers are properly set.
- 3. Verify that all memory modules are seated securely into the memory sockets.
- 4. Make sure the memory modules are in the correct locations.
- 5. If the board fails to function, place the board on a flat surface and seat all socketed components. Gently press each component into the socket.
- 6. If you made changes to the BIOS settings, re-enter setup and load the BIOS defaults.