LanParty JR GF9400 T2RS

System Board
User's Manual

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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.

Table of Contents

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
- ☑ One IDE cable
- ☑ One floppy cable
- ☑ Two Serial ATA data cables
- ☑ One power cable with 2 Serial ATA power connectors
- ☑ Smart connectors
- ☑ One I/O shield
- ☑ One DVD disk
- ☑ One user's manual
- ☑ Auto Boost System (ABS) installation guide

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 1 - Introduction

Specifications

Processor	• LGA 775 socket for: - Intel® Core™2 Quad and Intel® Core™2 Duo • Supports Intel Enhanced Memory 64 Technology (EMT64T) • Supports Enhanced Intel SpeedStep Technology (EIST) • Supports Intel Hyper-Threading Technology • Supports 1333/1066/800MHz FSB
Chipset	• NVIDIA GeForce 9400 chipset
System Memory	• Four 240-pin DDR2 DIMM sockets • Supports DDR2 667/800 MHz DIMMs • Supports dual channel (128-bit wide) memory interface • Supports up to 8GB system memory • Supports unbuffered non-ECC x8 and x16 DIMMs

Expansion Slots	• 2 PCI Express (Gen 2) x16 slots
	  - Hybrid SLI® - combination of the integrated graphics and a discrete graphics card in a PCIE slot (16-lane port)
	  - PCIE2 slot is a 16-lane port of PCI Express (Gen 2) x16 size
	  - PCIE3 slot is a 2-lane port of PCI Express (Gen 2) x16 size
	  - PCIE2 & PCIE3 can't build SLI mode
	  - Two external graphics and onboard graphic support 6 displays
	• 1 PCI Express x1 slot
	• 1 PCI slot

BIOS	• Award BIOS • CMOS Reloaded • 8Mbit SPI flash memory

Graphics	• Integrated graphics core
	• Hybrid SLI® technology combines the onboard integrated graphics and a discrete PCIE graphics card
	• Onboard graphics interface
	  - HDMI port for both digital audio and video HD display
	  - DVI-I port for digital LCD display
	• Microsoft® DirectX 10
	• PureVideo® HD and PhysX technology will provide high-definition video decode acceleration.

Audio	• Realtek ALC885 8-channel HD Audio Codec • High-performance DACs with 106dB dynamic range (A-Weight), ADCs with 101dB dynamic range (A-Weight)
LAN	• Vitesse VSC8601 PCIE Gigabit LAN controller • Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards

IDE	• One IDE connector allows connecting up to two UltraDMA 133Mbps hard drives
Serial ATA with RAID	• Supports up to 6 SATA devices • SATA speed up to 3Gb/s • RAID 0, RAID 1, RAID 0+1 and RAID 5
Rear Panel I/O	• 1 mini-DIN-6 PS/2 mouse port • 1 mini-DIN-6 PS/2 keyboard port • 1 HDMI-out port • 1 coaxial RCA S/PDIF-out port • 1 optical S/PDIF-out port • 1 DVI-I port • 4 USB 2.0/1.1 ports • 1 RJ45 LAN port • Center/subwoofer, rear R/L and side R/L jacks • Line-in, line-out (front R/L) and mic-in jacks
Internal I/O	• 3 connectors for 6 additional external USB 2.0 ports • 1 connector for an external COM port • 1 front audio connector • 1 CD-in connector • 1 IrDA connector • 1 CIR connector • 6 Serial ATA connectors • 1 40-pin IDE connector • 1 floppy connector • 1 24-pin ATX power connector • 1 8-pin 12V power connector • 2 4-pin 5V/12V power connectors (FDD type) • 1 front panel connector • 4 fan connectors • EZ touch switches (power switch and reset switch)
Power Management	• ACPI and OS Directed Power Management • ACPI STR (Suspend to RAM) function • Wake-On-PS/2 Keyboard/Mouse • Wake-On-USB Keyboard/Mouse • Wake-On-Ring • Wake-On-LAN • RTC timer to power-on the system • AC power failure recovery
Hardware Monitor	• Monitors CPU/system/chipset temperature • Monitors 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip voltages • Monitors the speed of the cooling fans • CPU Overheat Protection function monitors CPU temperature during system boot-up
PCB	• microATX form factor • 24.5cm (9.64") x 24.5cm (9.64")

Features

The system board supports high performance DDR2 technology whose data transfer rate delivers bandwidth of 12.8 Gb/s and beyond. That is twice the speed of the conventional DDR without increasing its power consumption. DDR2 SDRAM modules work at 1.8V supply compared to 2.6V memory voltage for DDR modules. DDR2 also incorporates new innovations such as the On-Die Termination (ODT) as well as larger 4-bit pre-fetch against DDR which fetches 2 bits per clock cycle.

The NVIDIA SLI® (Scalable Link Interface) technology connects two SLI-ready PCI Express graphics cards in a single and scalable system. The two identical graphics cards, which are connected via the SLI bridge, allows users to intelligently scale graphics performance. This provides extreme performance allowing you to enjoy games with the most visual effects and the most graphics demanding multimedia utilities. Dual GPUs provide increased 3D graphics and and doubles the graphics performance.

Based on the NVIDIA SLI® multi-GPU technology, the Hybrid SLI takes gaming experience to the next level. Hybrid SLI is a combination of the integrated graphics and a discrete graphics card delivering high quality gaming images and improved performance. Its multi-GPU performance capabilities enhance gaming performance, productivity and platform power efficiency to the mainstream PC.

PCI Express Gen 2 is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The x16 PCI Express lane supports transfer rate up to 5Gb/s.

DVI (Digital Visual Interface) is a form of video interface technology made to maximize the quality of flat panel LCD monitors and modern video graphics cards. Data is transmitted using the TMDS (Transition Minimized Differential Signaling) protocol, providing a digital signal from the PC's graphics subsystem to the display.

HDMI

HDMI (High-Definition Multimedia Interface) is a compact audio/video connector interface for transmitting uncompressed digital streams. It delivers multi-channel audio and uncompressed digital video signals for full HD 1080p visuals through a single cable. Connect a LCD monitor or digital TV that has the HDMI port.

HD 7.1 AUDIO

The onboard Realtek ALC885 is a High Definition audio codec and the 6 audio jacks at the rear I/O panel provides 8-channel audio output for advanced 7.1-channel super surround sound audio system. ALC885 also supports S/PDIF output, allowing digital connections with DVD systems or other audio/video multimedia.

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 interface on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

SATA II

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. It supports speed of up to 3Gb/s. Serial ATA improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

RAID

The system board allows configuring RAID on Serial ATA devices. It supports RAID 0, RAID 1, RAID 0+1 and RAID 5.

Gigabit LAN

The Vitesse VSC8601 PCI Express Gigabit LAN controller supports up to 1Gbps data rate.

CMOS Reloaded is a technology that allows storing multiple user-defined BIOS settings by using the BIOS utility to save, load and name the settings. This is especially useful to overclockers who require saving a variety of overclocked settings and being able to conveniently switch between these settings simultaneously.

The options in Genie BIOS allows configuring the system to optimize system performance and overclock capability.

The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

The system board supports Intel processors with Hyper-Threading Technology. Enabling the functionality of Hyper-Threading Technology for your computer system requires **ALL** of the following platforms.

Components:

- CPU - an Intel® Pentium® 4 Processor with HT Technology
- Chipset - an Intel® chipset that supports HT Technology
- BIOS - a BIOS that supports HT Technology and has it enabled
- OS - an operating system that includes optimizations for HT Technology

For more information on Hyper-Threading Technology, go to: www.intel.com/info/hyperthreading.

CPU Overheat Protection has the capability of monitoring the CPU's temperature during system boot up. Once the CPU's temperature exceeded the temperature limit pre-defined by the CPU, the system will automatically shutdown. This preventive measure has been added to protect the CPU from damage and insure a safe computing environment.

IrDA

The system board is equipped with an IrDA connector for wireless connectivity between your computer and peripheral devices. The IRDA (Infrared Data Association) specification supports data transfers of 115K baud at a distance of 1 meter.

USB 2.0

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 Ring

This feature allows the system that is in the Suspend mode or Soft Power Off mode to wake-up/power-on to respond to calls coming from an external modem or respond to calls from a modem PCI card that uses the PCI PME (Power Management Event) signal to remotely wake up the PC.

Important:
If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of ≥720mA.

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 5VSB power source of your power supply must support ≥720mA.

Wake On PS/2

This function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system.

Important:
The 5VSB power source of your power supply must support ≥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 5VSB power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.

RTC

The RTC installed on the system board allows your system to automatically power-on on the set date and time.

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 the system 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.

Important:
The 5VSB power source of your power supply must support ≥1A.

Power Failure Recovery

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

Chapter 2 - Hardware Installation

System Board Layout
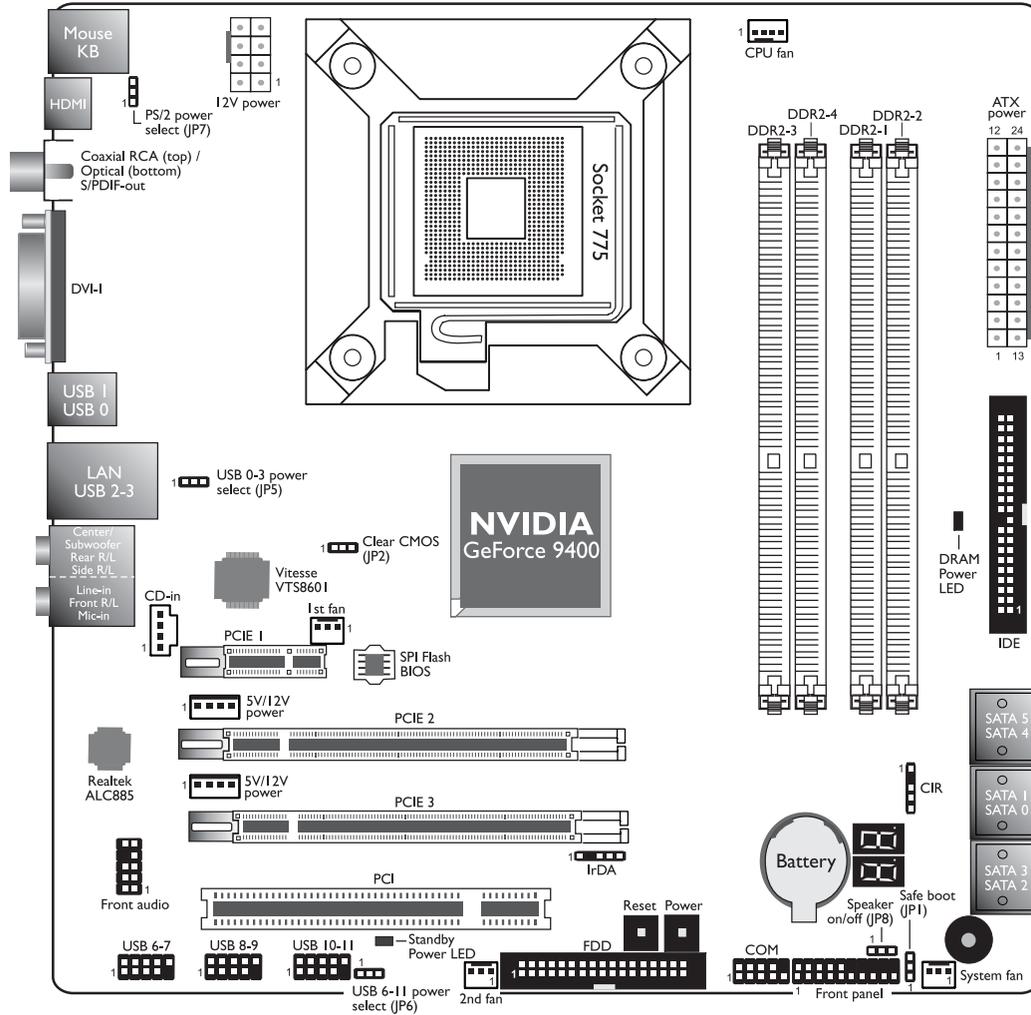
Warning:
Electrostatic discharge (ESD) can damage your system board, processor, disk drives, add-in boards, and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic 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

Warning:
When the DRAM Power LED lit red, it indicates that power is present on the DIMM sockets. Power-off the PC then unplug the power cord prior to installing any memory modules. Failure to do so will cause severe damage to the motherboard and components.
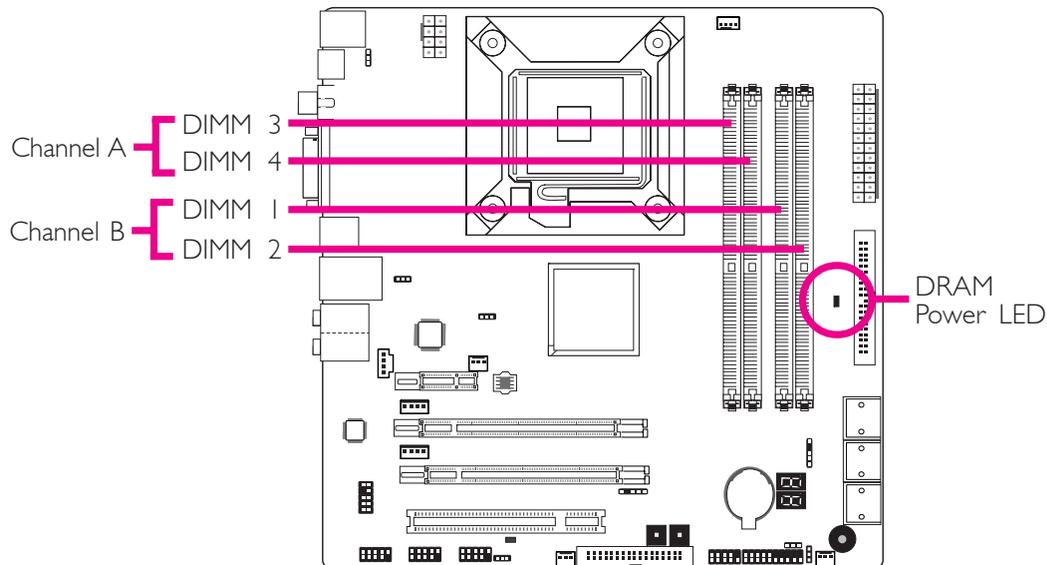
The four DIMM sockets on the system board are divided into 2 channels:

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

The system board supports the following memory interface.

Single Channel (SC)
Data will be accessed in chunks of 64 bits (8B) from the memory channels.

Virtual Single Channel (VSC)
If both channels are populated with different memory configurations, the MCH defaults to Virtual Single Channel.

Dual Channel (DC)
Dual channel provides better system performance because it doubles the data transfer rate.

Dynamic Mode Addressing
This mode minimizes the overhead of opening/closing pages in memory banks allowing for row switching to be done less often.

Single Channel	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. Not all slots need to be populated.
Virtual Single Channel	DIMMs of different memory configurations are on different channels. Odd number of slots can be populated.
Dual Channel	DIMMs of the same memory configuration are on different channels.
Dynamic Mode Addressing	In single channel, requires even number or rows (side of the DIMM) populated. This mode can be enabled with 1 SS, 2 SS or 2 DS.
	In VSC mode, both channels must have identical row structure.

BIOS Setting

Configure the system memory in the Genie BIOS Setting submenu of the BIOS. Refer to chapter 3 for more information.

The table below lists the various optimal operating modes that should be configured for the memory channel operation.

Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
No memory	E	E	E	E
Single channel A	P	E	E	E
Single channel A	P	P	E	E
Single channel A	E	P	E	E
Single channel B	E	E	P	E
Single channel B	E	E	P	P
Single channel B	E	E	E	P
Virtual single channel	E	P(**)	E	P(**)
Virtual single channel	E	P	P	E
Virtual single channel	E	P(**)	P	P(**)
Virtual single channel	P	E	E	P
Virtual single channel	P(**)	E	P(**)	E
Virtual single channel	p(**)	E	P(**)	P
Virtual single channel	P	P(**)	E	P(**)
Virtual single channel	P(**)	P	P(**)	E
Virtual single channel	P(**)	P(**)	P(**)	P(**)
Dual channel	E	P(*)(2,4)	E	P(*)(2,4)
Dual channel	P(*)(1,3)	E	P(*)(1,3)	E
Dual channel	P(*)(1,3)	P(*)(2,4)	P(*)(1,3)	P(*)(2,4)

Continued on the next page...

Config	DIMM 1	DIMM 2	DIMM 3	DIMM 4
Dynamic Mode Addressing	E	P(*)(2,4) DS	E	P(*)(2,4) DS
Dynamic Mode Addressing	P(*)(1,3) DS	E	P(*)(1,3) DS	E
Dynamic Mode Addressing	P(*)(1,3) DS	P(*)(2,4) DS	P(*)(1,3) DS	P(*)(2,4) DS
Dynamic Mode Addressing	E	P(*)(2,4) SS	E	P(*)(2,4) SS
Dynamic Mode Addressing	P(*)(1,3) SS	E	P(*)(1,3) SS	E
Dynamic Mode Addressing	P(*)(1,3) SS	P(*)(2,4) SS	P(*)(1,3) SS	P(*)(2,4) SS

P - denotes populated
E - denotes empty
* - denotes DIMMs are identical
** - denotes DIMMs are not identical
SS - denotes Single Sided DIMM
DS - denotes Double Sided DIMM
1, 2, 3 or 4 - denotes the DDR DIMM slot

Installing the Memory 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.

Ejector tab

Ejector tab

DIMM sockets
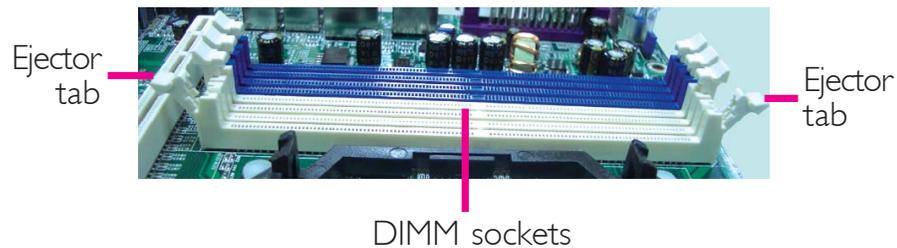
5. Note how the module is keyed to the socket.
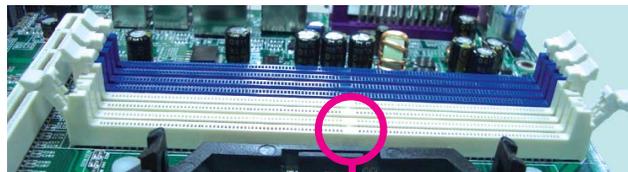
Notch

Key

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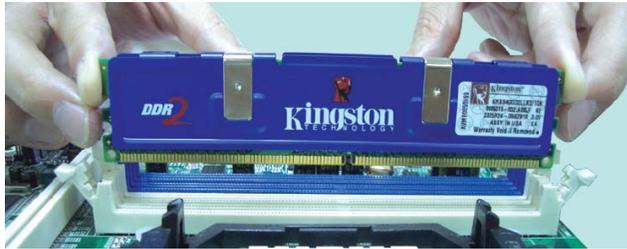
7. Seat the module vertically, pressing it down firmly until it is completely seated in the socket.

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

CPU

Overview

The system board is equipped with a surface mount LGA 775 socket. This socket is exclusively designed for installing a LGA 775 packaged Intel CPU.

> **Important:**
> 1. *Before you proceed, make sure (1) the LGA775 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 LGA775 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 775 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.
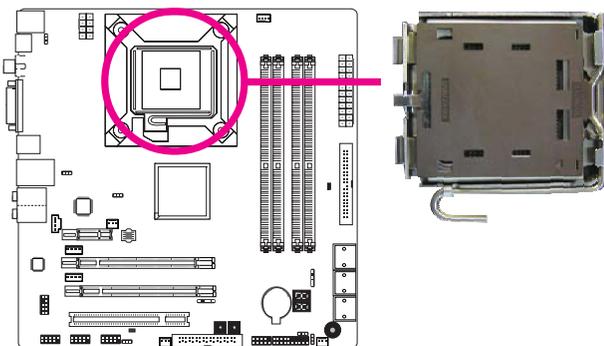
4. The CPU socket comes with a cover that is attached with a removable protective cap. The cap is used to protect the CPU socket against dust and harmful particles. Remove the protective cap only when you are about to install the CPU.

Cover

Protective cap
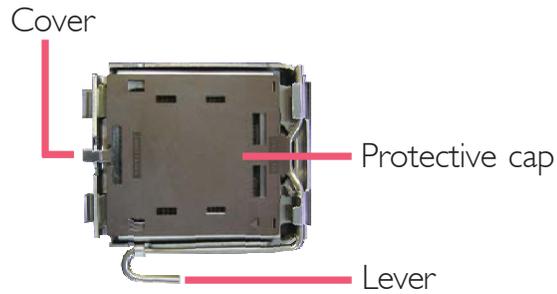
Lever

5. Lift the protective cap from the location pointed below to detach the cap from the cover.

Lift this part up
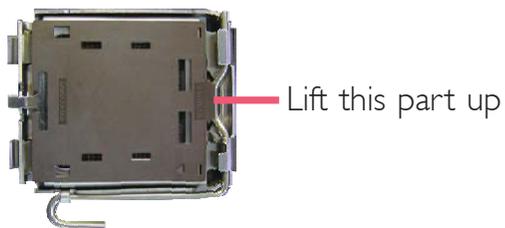
6. Unlock the socket by pushing the lever down, moving it away from the side tab of the socket, then lifting it up.

Lever lifted

Tab
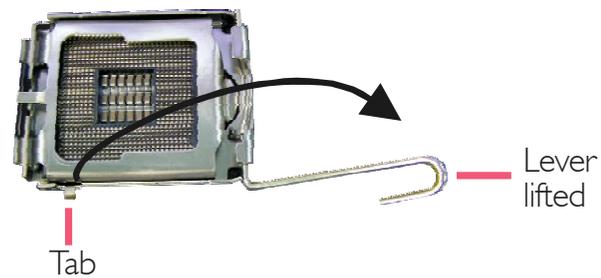
7. Now lift the cover.

Cover
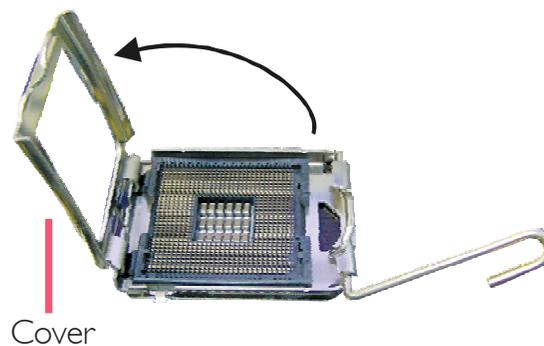
8. Position the CPU above the socket. The gold mark on the CPU must align with pin 1 of the CPU socket.

    Important:
    Handle the CPU by its edges and avoid touching the pins.

Pin 1 of the socket

Gold mark
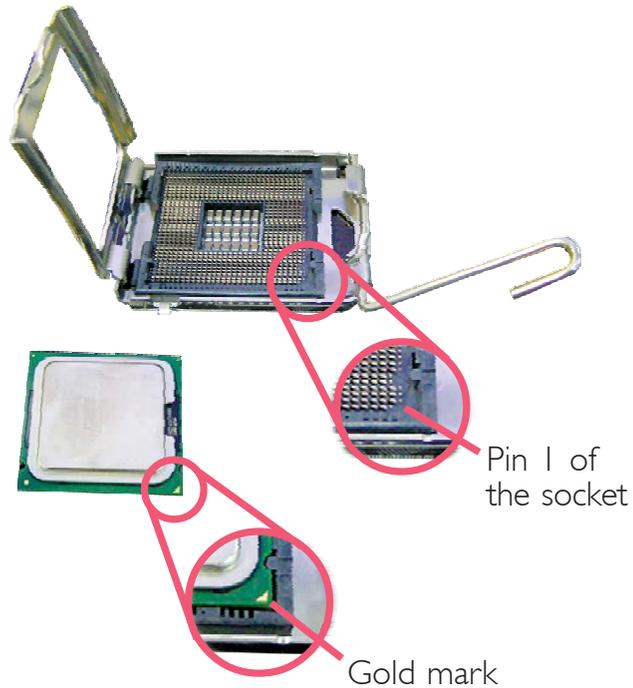
9. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

    Important:
    Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.

10. Once the CPU is in place, move the cover down.

Cover
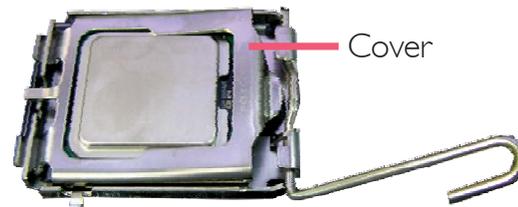
11. Push the lever down to lock the socket. The lever should hook onto the side tab to indicate that the CPU is completely secured in the socket.

Lever

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:**
> * *Use only certified fan and heat sink.*
> * *The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.*

1. 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 CPU or 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.

   Do not apply the 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 studs 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.

Mounting hole

Mounting hole
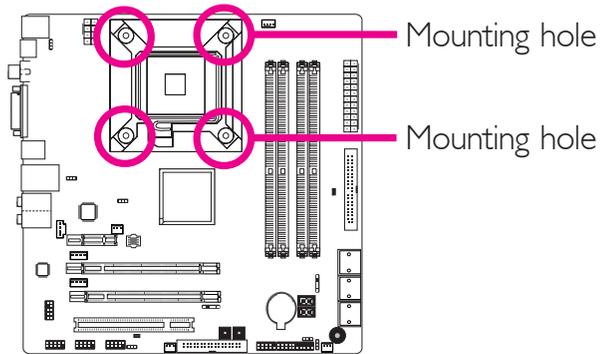
Position each stud so that the groove faces the heat sink then push it down firmly until it clicks into place.

Fan

Heat sink

Stud
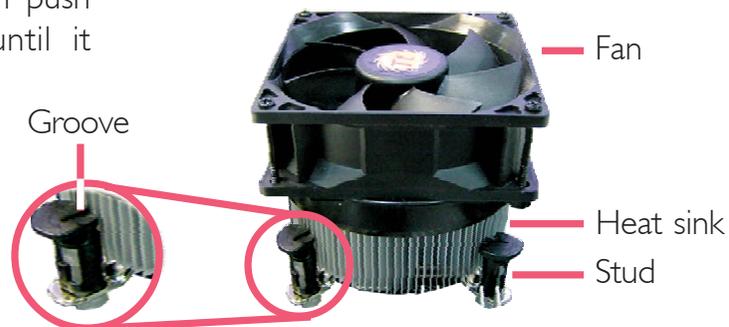
Groove

Note:
You will not be able to secure the fan and heat sink assembly in place if the groove is not facing the heat sink.

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

Chipset Heat Sink

The chipset must be kept cool by using a heat sink. The heat sink will dissipate heat generated by the chipset. Without the heat sink, the chipset will overheat damaging both the chipset and the system board.

The system board comes with the heat sink already installed on the board. The copper-made heat pipe technology provides excellent heat dissipation.
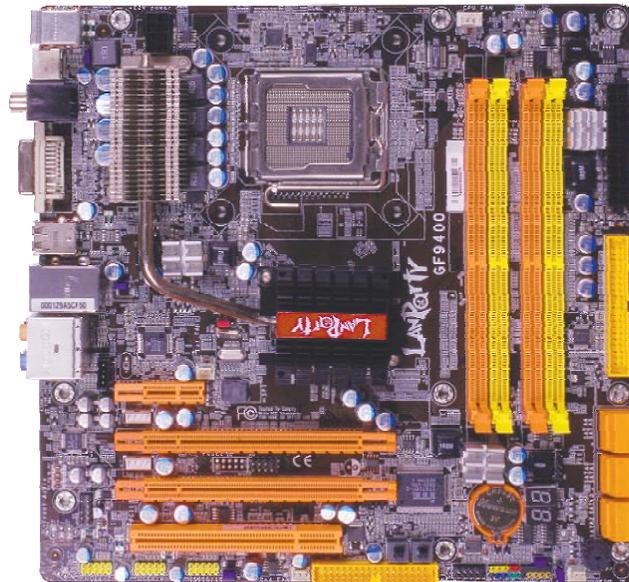
Jumper Settings

Clear CMOS Data

JP2

1 2 3

1-2 On: Normal
(default)

1 2 3

2-3 On:
Clear CMOS Data
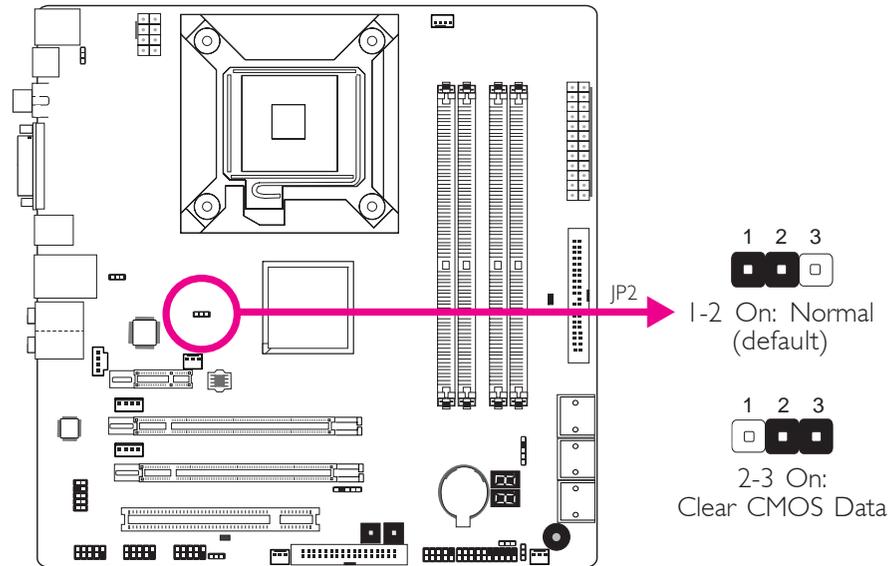
If you encounter the following,

a) CMOS data becomes corrupted.
b) You forgot the supervisor or user password.
c) The overclocked settings in the BIOS resulted to the system's in-
    stability or caused system boot up problems.

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 then unplug the power cord.

2. Set JP2 pins 2 and 3 to On. Wait for a few seconds and set JP2
    back to its default setting, pins 1 and 2 On.

3. Now plug the power cord then power-on the system.

PS/2 Power Select

JP7

3
2
1

1-2 On: 5V
(default)

3
2
1

2-3 On: 5VSB

Important:
The 5VSB power source of your power supply must support ≥720mA.
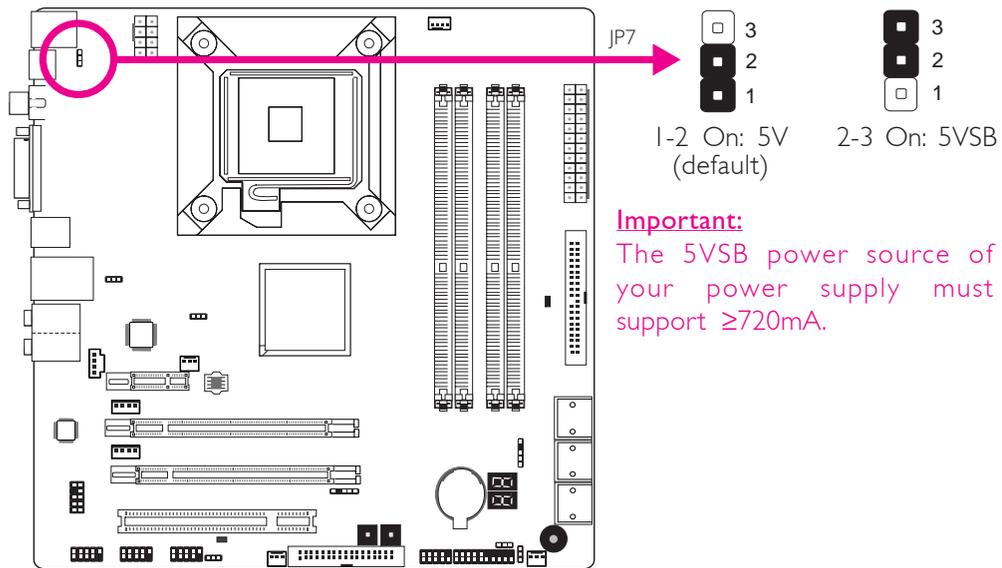
Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

USB Power Select

USB 0-3
(JP5)

1 2 3

1-2 On: 5V
(default)

1 2 3

2-3 On: 5VSB

USB 6-11
(JP6)

1 2 3

1-2 On: 5V
(default)

1 2 3

2-3 On: 5VSB
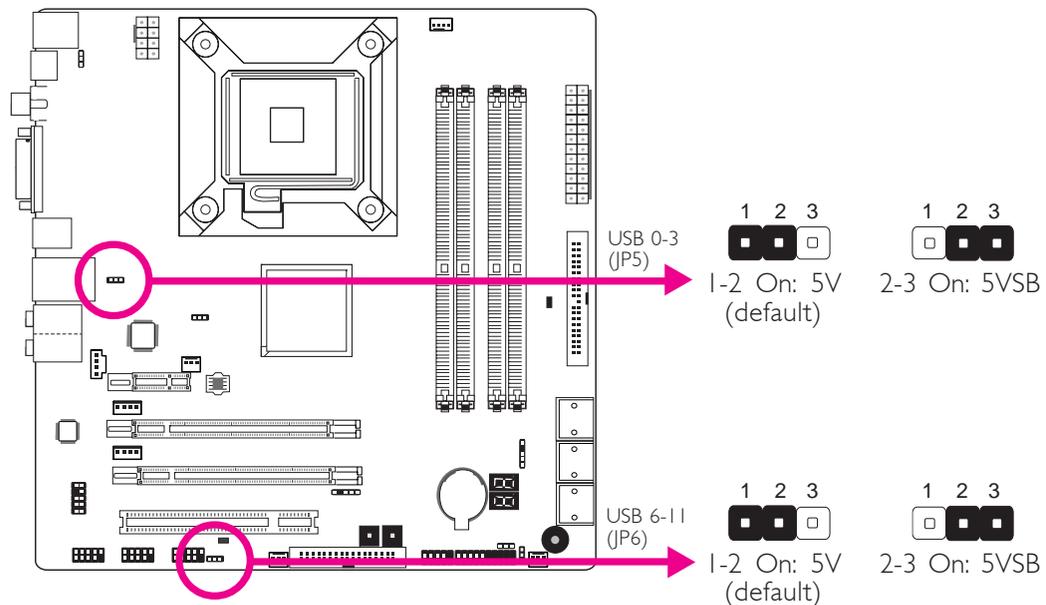
Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system.

Important:
The 5VSB power source of your power supply must support ≥1.5A (2 devices) or ≥2A (3 or more devices).

Speaker On/Off Select

Buzzer

JP8

1 2 3

1-2 On:
Speaker Off

1 2 3

2-3 On:
Speaker On
(default)
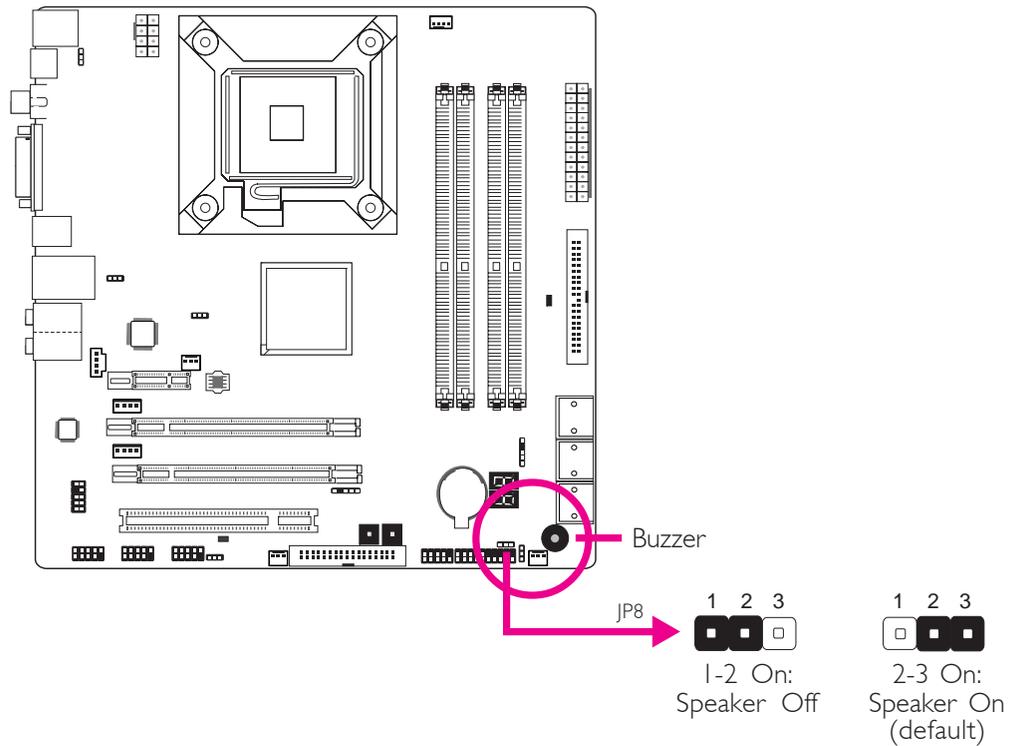
The system board is equipped with a buzzer which serves as the PC's speaker. By default the buzzer is "on" allowing you to hear the system's beep messages and warnings. If you intend to use an external speaker, turn this function off by setting JP8 pins 1 and 2 to On.

Safe Boot

3
2
1
JP1   1-2 On: 2-3 On:
      Safe boot   Default
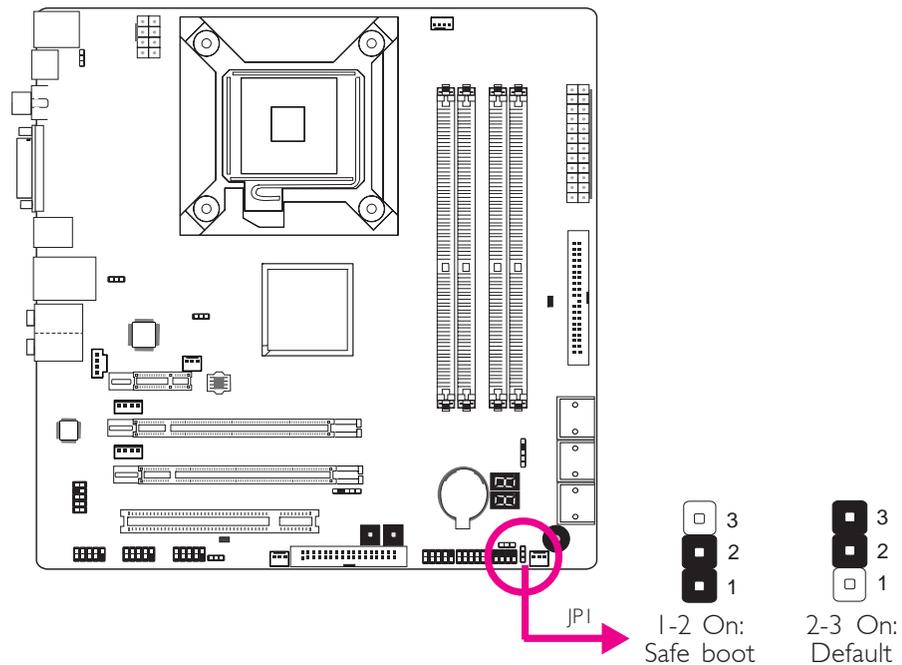
This jumper is used to safely reboot the system whenever the system hangs and you are unable to restart the system.

1. Power-off the system then unplug the power cord.

2. Set pins 1 and 2 to On. Wait for a few seconds then set the jumper back to its default setting, pins 2 and 3 On.

3. Plug the power cord then power-on the system. The system will reboot normally without losing all data stored in the CMOS.

Rear Panel I/O Ports
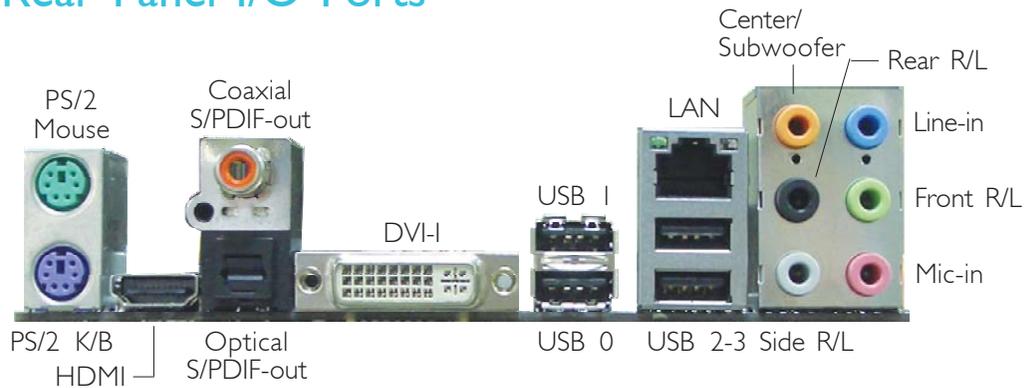
PS/2 Ports and S/PDIF Ports
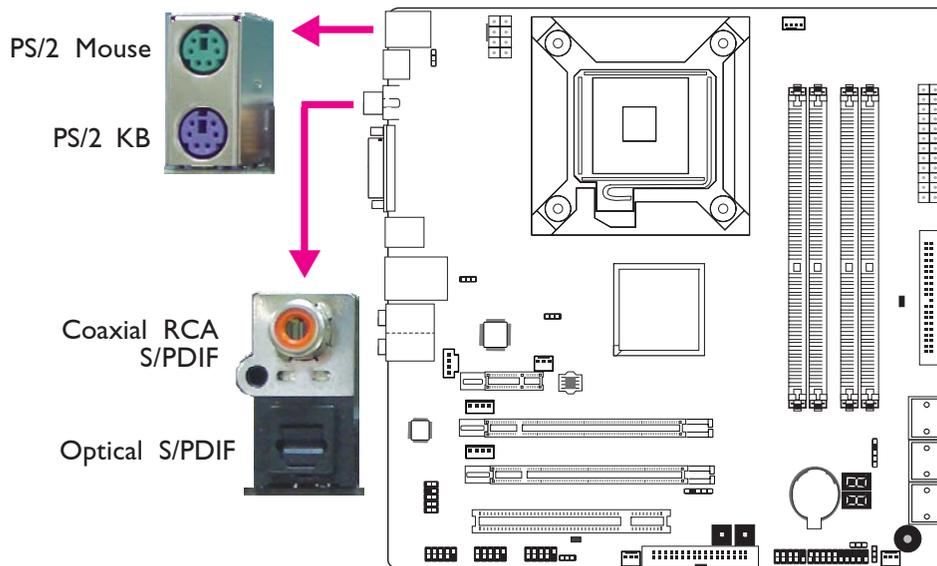
PS/2 Mouse and PS/2 Keyboard Ports
These ports are used to connect a PS/2 mouse and a PS/2 key-board.

Optical S/PDIF
The optical S/PDIF jack is used to connect an external audio output device using an optical S/PDIF cable.

Coaxial RCA S/PDIF
The coaxial RCA S/PDIF jack is used to connect an external audio output device using a coaxial S/PDIF cable.

> **Important:**
> *DO NOT use optical S/PDIF and Coaxial RCA S/PDIF at the same time.*

HDMI and DVI-I Ports
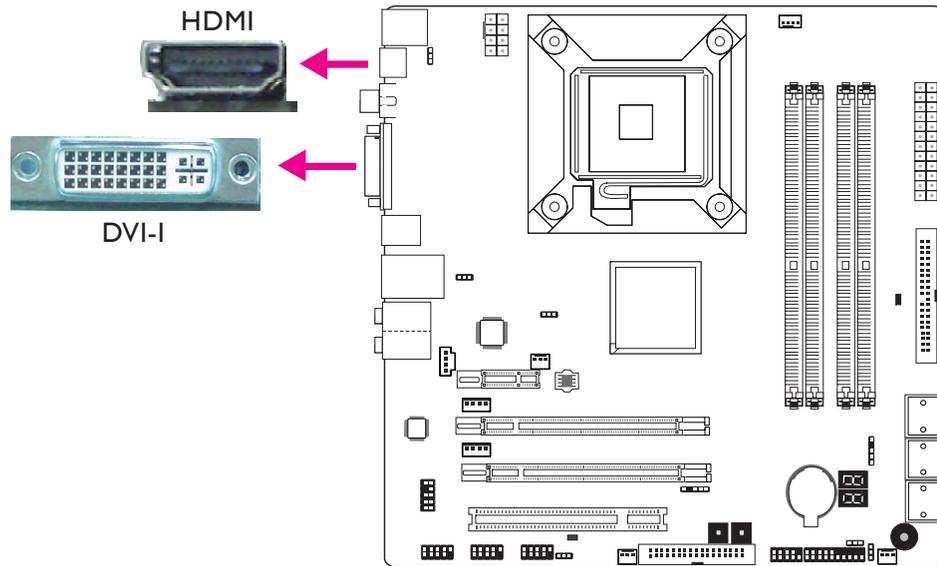
HDMI

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

DVI-I

The DVI-I port is used to connect a digital LCD monitor or LCD TV.

USB and LAN Ports
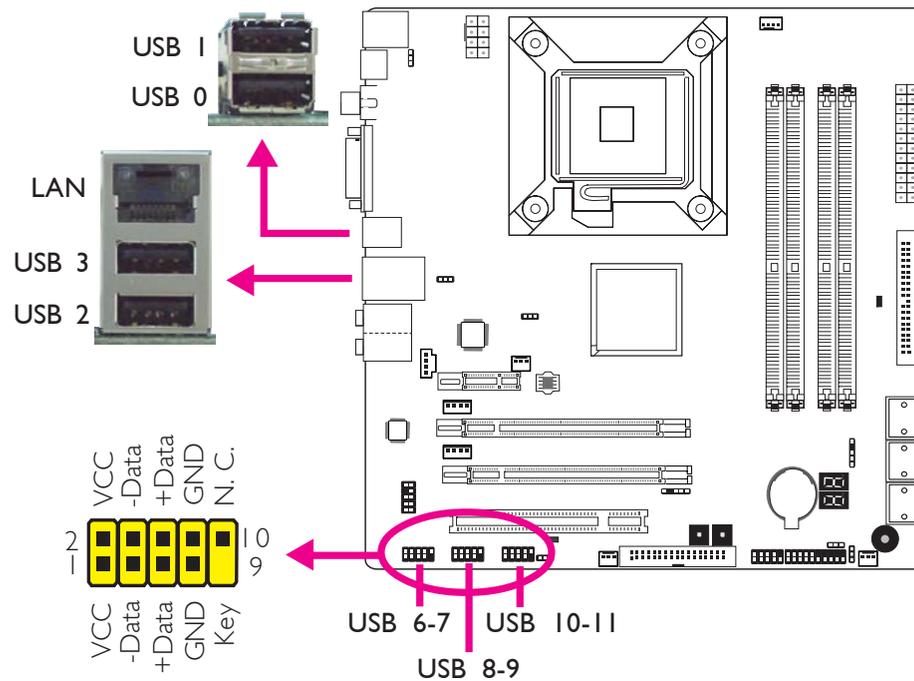
USB

The USB ports are used to connect USB 2.0/1.1 devices. The 10-pin connectors allow you to connect 6 additional USB 2.0/1.1 ports. Your USB ports may come 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 USB port cables to these connectors.

LAN

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

Audio and CD-In

Center/Subwoofer — Line-in
Rear R/L — Front R/L
Side R/L — Mic-in

Rear audio

10 9
AuD_L_Return — AuD_L_Out
Key — N. C.
AuD_R_Return — AuD_R_Out
AuD_Vcc — Mic Power
GND — Mic
2 1
Front audio

4
Right audio channel
Ground
Ground
Left audio channel

CD-in

1
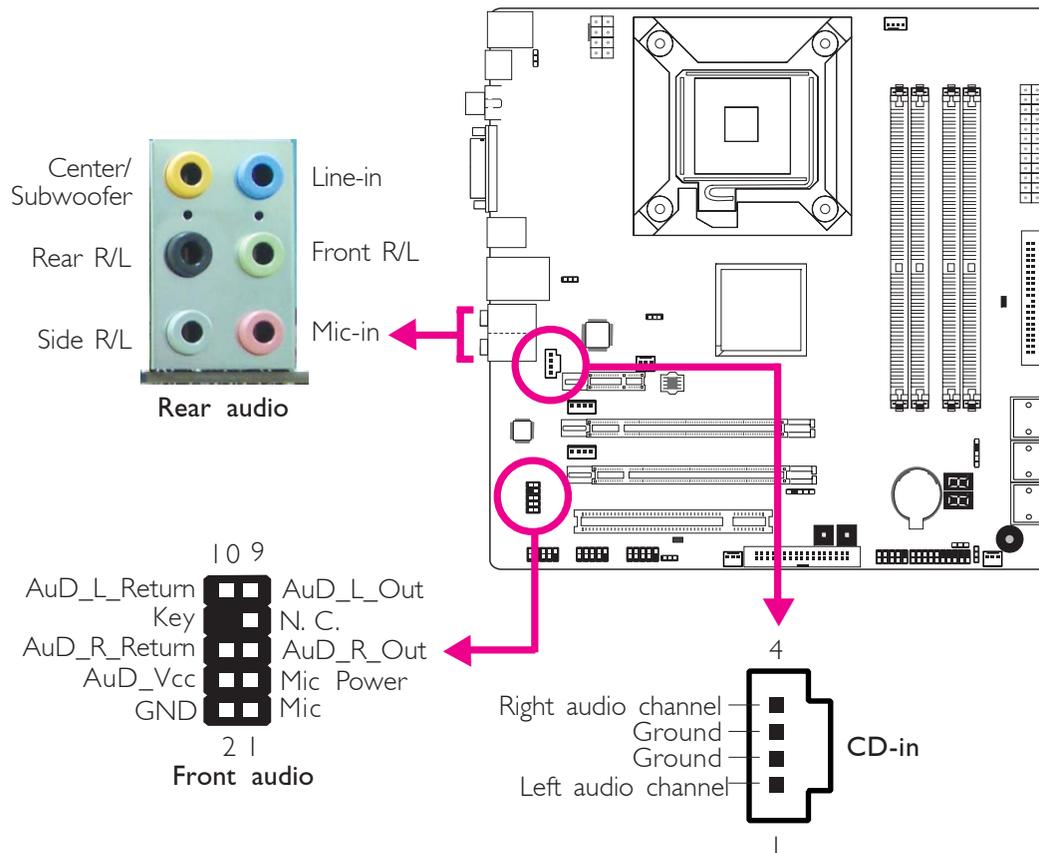
Rear Panel Audio

Center/Subwoofer Jack (Orange)
This jack is used to connect to the center and subwoofer speakers of the audio system.

Rear Right/Left Jack (Black)
This jack is used to connect to the rear right and rear left speakers of the audio system.

Side Right/Left Jack (Gray)
This jack is used to connect to the side left and side right speakers of the audio system.

Line-in (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 - Front Right/Left Jack (Lime)

This jack is used to connect to the front right and front left speakers of the audio system.

Mic-in Jack (Pink)

This jack is used to connect an external microphone.

Front Audio

The front audio connector is used to connect to the line-out and mic-in jacks that are at the front panel of your system.

CD-in

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

Internal I/O Connectors

Serial ATA Connectors

SATA 4-5
SATA 0-1
SATA 2-3
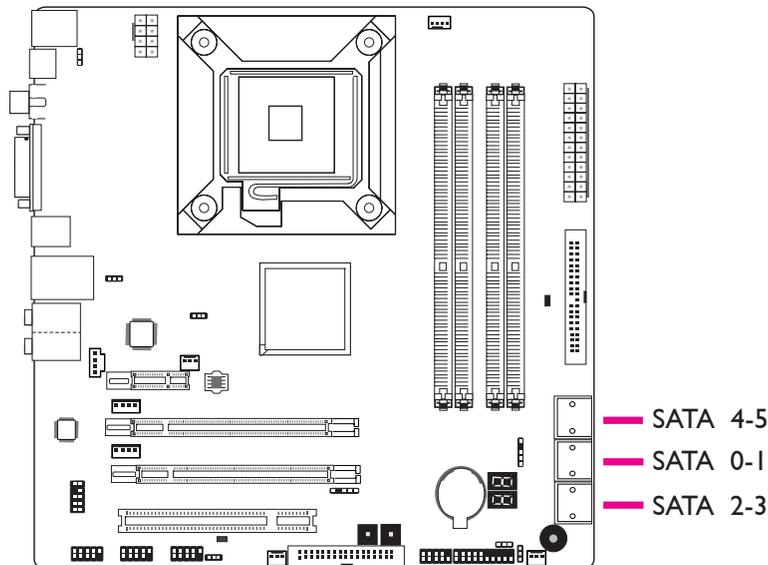
The Serial ATA (SATA) connectors are used to connect Serial ATA drives. Connect one end of the Serial ATA cable to a Serial ATA connector and the other end to your Serial ATA device.

Configuring RAID

Refer to the RAID chapter in this manual for more information about creating RAID on Serial ATA drives.

FDD Connector and IDE Connector

40 39

2 1

IDE

2 34
1 33

FDD
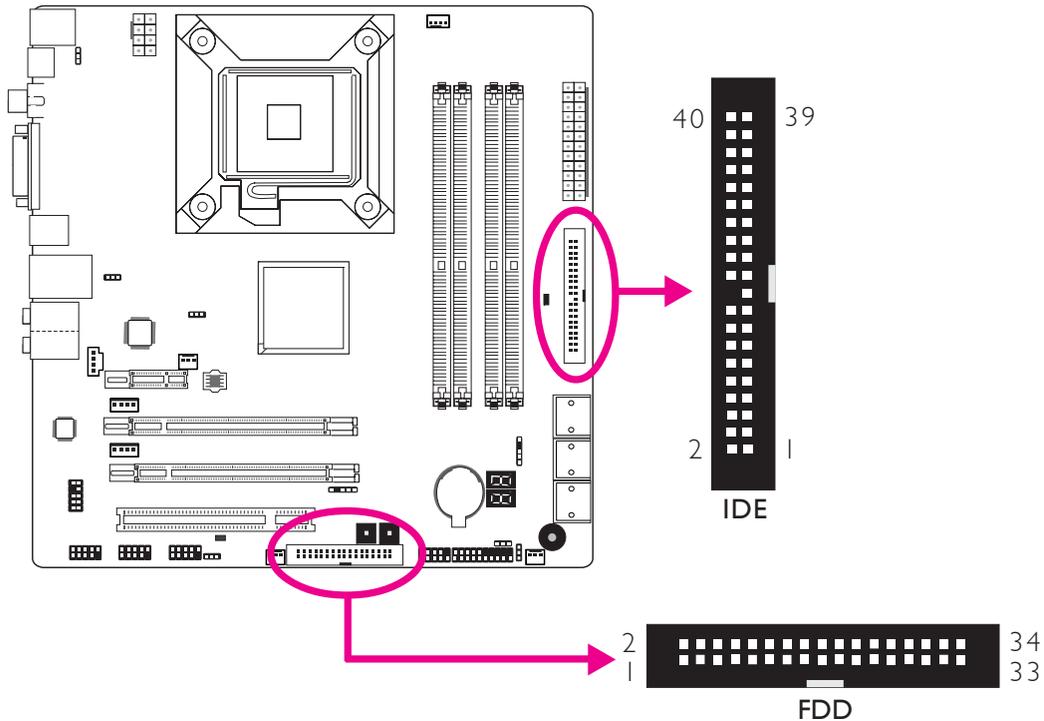
FDD Connector

The floppy disk drive connector is used to connect a floppy drive. Insert one end of the floppy cable into this connector and the other end-most connector to the floppy drive. The colored edge of the cable should align with pin 1 of this connector.

IDE Connector

The IDE disk drive connector is used to connect 2 IDE disk drives. An IDE cable have 3 connectors on them, one that plugs into this connector and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive. The colored edge of the cable should align with pin 1 of this connector.

> **Note:**
> *When using two IDE drives, one must be set as the master and the other as the slave. Follow the instructions provided by the drive manufacturer for setting the jumpers and/or switches on the drives.*

IrDA,CIR and Serial (COM) Connectors
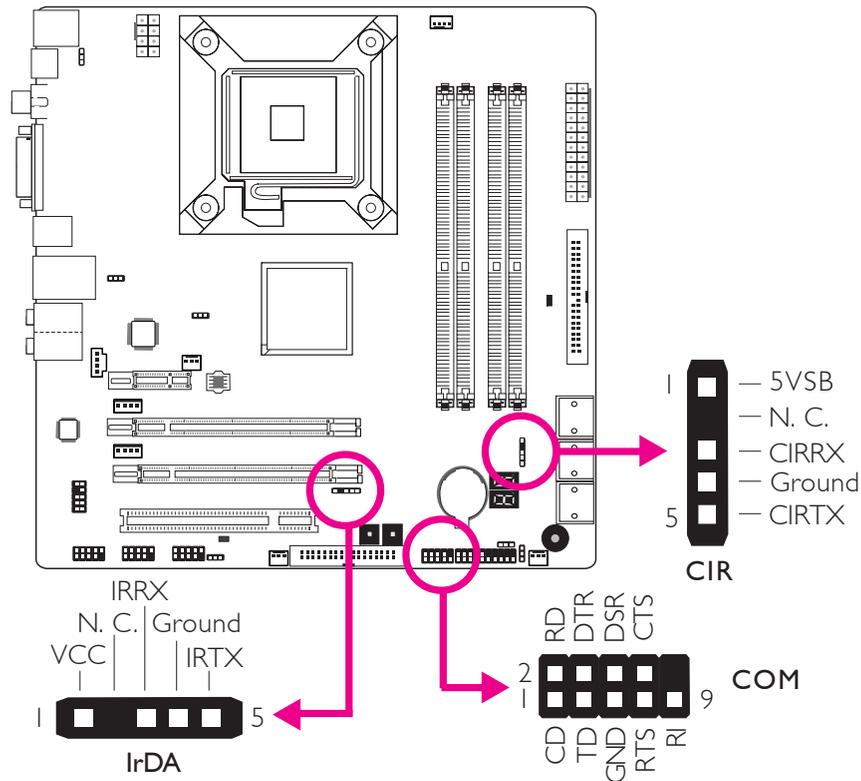
IrDA and CIR

Connect the cable connector from your IrDA module to the IrDA connector or CIR connector.

Note:
The sequence of the pin functions on some IrDA/CIR cable may be reversed from the pin function defined on the system board. Make sure to connect the cable connector to the IrDA/CIR connector according to their pin functions.

You may need to install the proper drivers in your operating system to use the IrDA/CIR function. Refer to your operating system's manual or documentation for more information.

Serial (COM)

The serial (COM) connector is used to connect modems, serial printers, remote display terminals, or other serial devices. Your COM port may come 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 serial port cable to this connector. The colored edge of the cable should align with pin 1 of this connector.

Cooling Fan Connectors
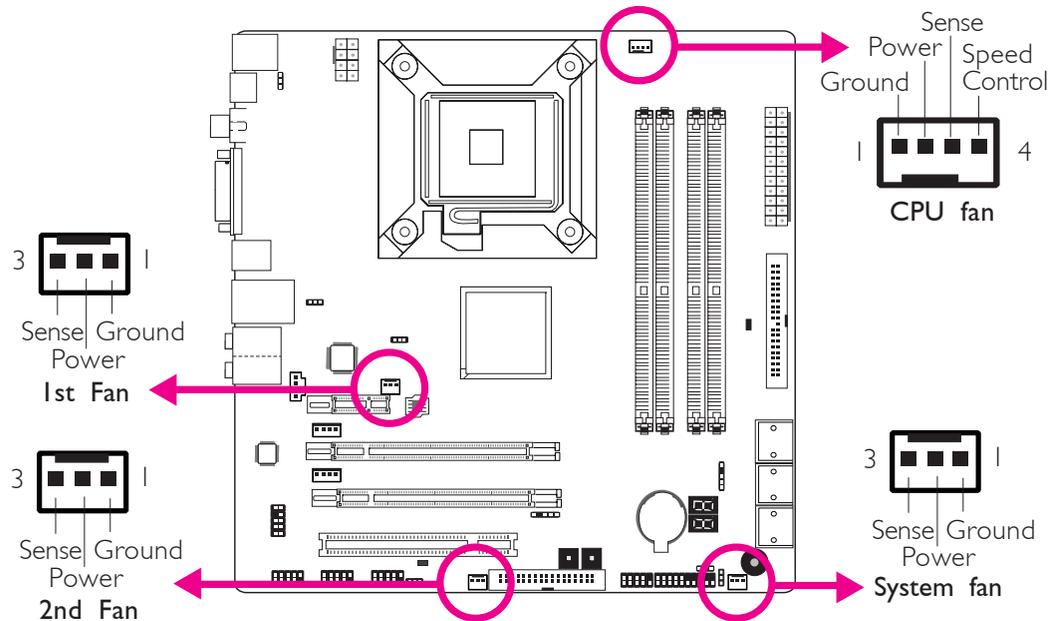
These fan connectors are used to connect cooling fans. Cooling fans will provide adequate airflow throughout the chassis to prevent over-heating the CPU and system board components.

EZ Touch Switches
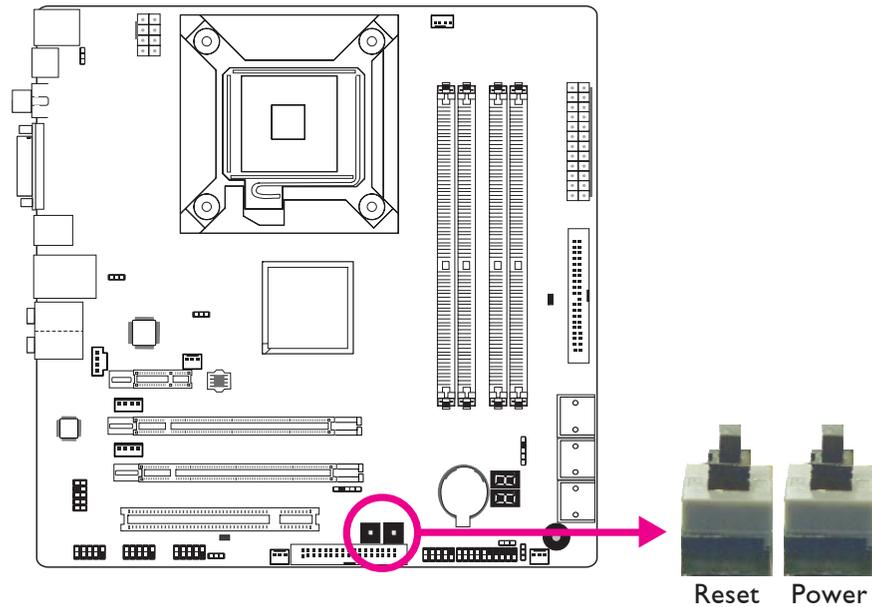
Reset   Power

The presence of the power switch and reset switch on the system board are user-friendly especially to DIY users. They provide convenience in powering on and/or resetting the system while fine tuning the system board before it is installed into the system chassis.

LEDs

DRAM
Power LED

Diagnostic
LED
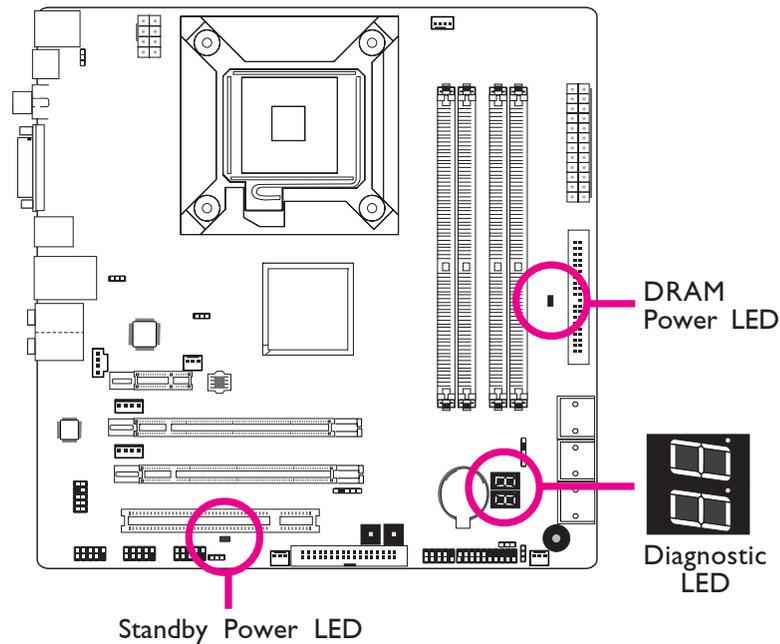
Standby Power LED

DRAM Power LED

This LED will light when the system's power is on.

Standby Power LED

This LED will light when the system is in the standby mode.

Diagnostic LED

The Diagnostic LED displays POST codes. POST (Power-On Self Tests) which is controlled by the BIOS is performed whenever you power-on the system. POST will detect the status of the system and its components. Each code displayed on the LED corresponds to a certain system status.

> **Warning:**
> *When the DRAM Power LED and/or Standby Power LED lit red, it indicates that power is present on the DIMM sockets and/or PCI slots. Power-off the PC then unplug the power cord prior to installing any memory modules or add-in cards. Failure to do so will cause severe damage to the motherboard and components.*

Power Connectors

Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted into this connector.

	12 24	
+3.3VDC	• •	COM
+12VDC	• •	+5VDC
+12VDC	• •	+5VDC
+5VSB	• •	+5VDC
PWR_OK	• •	NC
COM	• •	COM
+5VDC	• •	COM
COM	• •	COM
+5VDC	• •	PS_ON#
COM	• •	COM
+3.3VDC	• •	-12VDC
+3.3VDC	• •	+3.3VDC
	1 13	
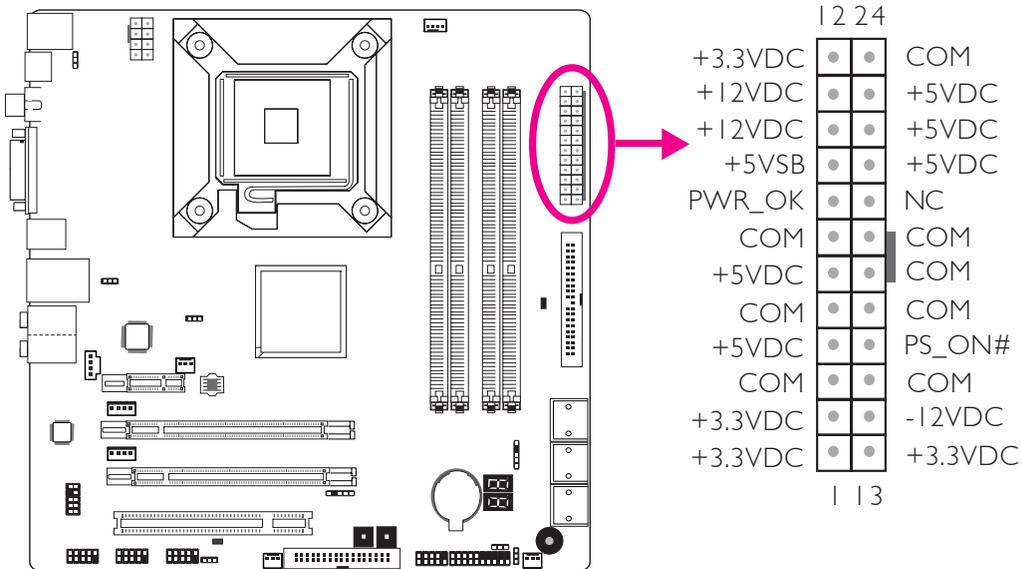
Your power supply unit may come with an 8-pin or 4-pin +12V power connector. The +12V power enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). If available, it is preferable to use the 8-pin power; otherwise connect a 4-pin power to this connector.

+12V — 8 • • 4 — Ground
       5 • • 1
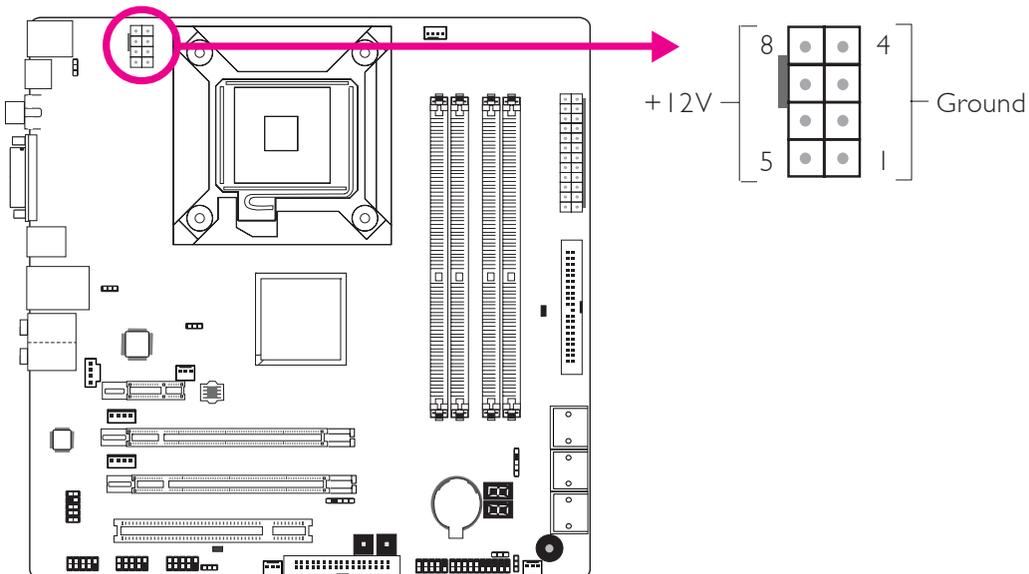
The power connectors from the power supply unit are designed to fit the 24-pin and 8-pin connectors in only one orientation. Make sure to find the proper orientation before plugging the connectors.

A FDD-type power connector provides auxiliary power to a graphics card. We recommend that you plug a power cable from the power supply unit to the 5V/12V power connector. This will provide more stability to the entire system. The system board will still work even if the additional power connector is not connected.
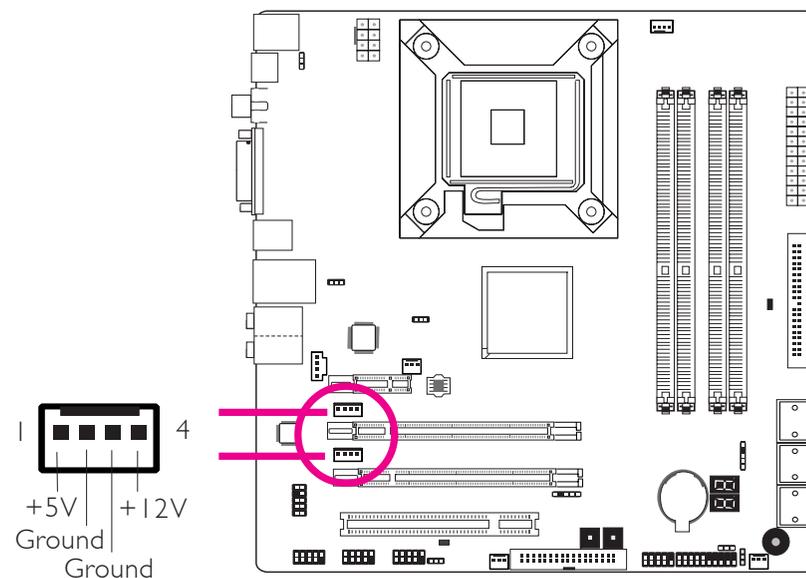
The system board requires a minimum of 300 Watt power supply to operate. Your system configuration (CPU power, amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, **we strongly recommend that you use a minimum of 400 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.

Restarting the PC

Normally, you can power-off the PC by:

1. Pressing the power button at the front panel of the chassis.
   or
2. Pressing the power switch that is on the system board (note: not all system boards come with this switch).

If for some reasons you need to totally cut off the power supplied to the PC, switch off the power supply or unplug the power cord. Take note though that if you intend to restart it at once, please strictly follow the steps below.

1. The time where power is totally discharged varies among power supplies. It's discharge time is highly dependent on the system's configuration such as the wattage of the power supply, the sequence of the supplied power as well as the number of peripheral devices connected to the system. Due to this reason, we strongly recommend that you wait for the Standby Power LED (refer to the "LEDs" section in this chapter for the location of the Standby Power LED) to lit off.

2. After the Standby Power LED has lit off, wait for 6 seconds before powering on the PC.

   If the system board is already enclosed in a chassis which apparently will not make the Standby Power LED visible, wait for 15 seconds before you restore power connections. 15 seconds is approximately the time that will take the LED to lit off and the time needed before restoring power.

The above will ensure protection and prevent damage to the motherboard and components.

Front Panel Connectors
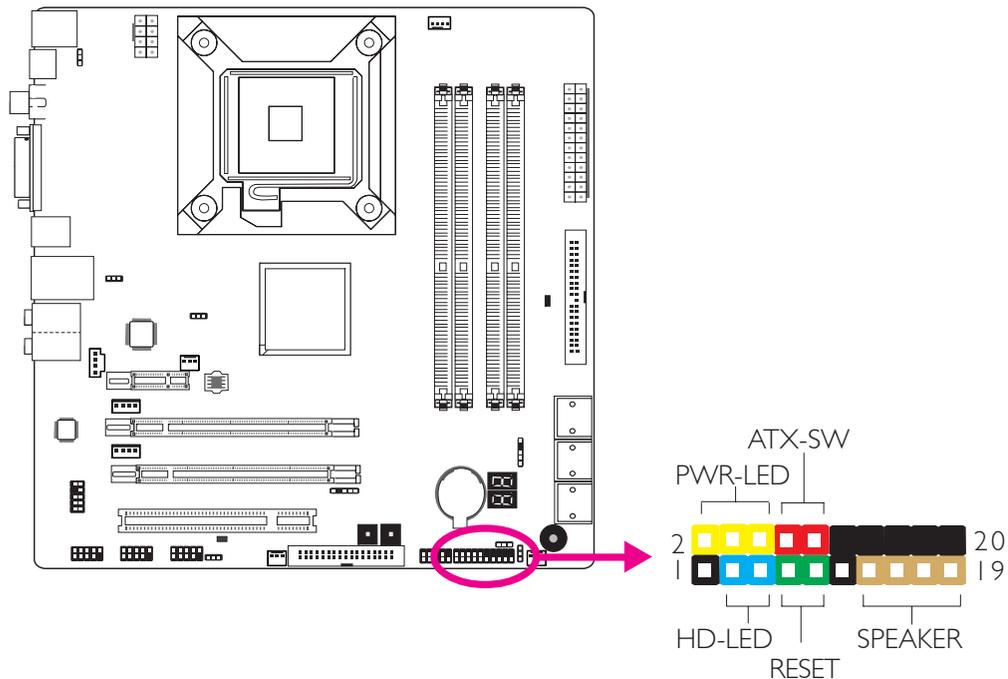
HD-LED: Primary/Secondary IDE LED
This LED will light when the hard drive is being accessed.

RESET: Reset Switch
This switch allows you to reboot without having to power off the system thus prolonging the life of the power supply or system.

SPEAKER: Speaker Connector
This connects to the speaker installed in the system chassis.

ATX-SW: ATX Power Switch
Depending on the setting in the BIOS setup, this switch is a "dual function power button" that will allow your system to enter the Soft-Off or Suspend mode.

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) or S3 (STR - Suspend To RAM) state, it will blink every second.

> **Note:**
> *If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.*

	Pin	Pin Assignment
HD-LED (Primary/Secondary IDE LED)	3 5	HDD LED Power HDD
Reserved	14 16	N. C. N. C.
ATX-SW (ATX power switch)	8 10	PWRBT+ PWRBT-
Reserved	18 20	N. C. N. C.
RESET (Reset switch)	7 9	Ground H/W Reset
SPEAKER (Speaker connector)	13 15 17 19	Speaker Data N. C. Ground Speaker Power
PWR-LED (Power/Standby LED)	2 4 6	LED Power (+) LED Power (+) LED Power (-) or Standby Signal

Expansion Slots

PCI Express x1

PCI Express x16

PCI Express x16

PCI
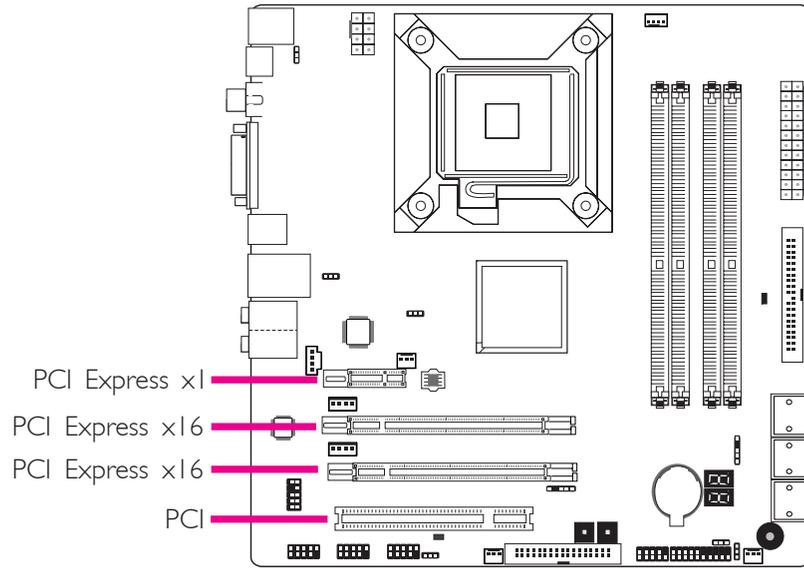
Smart Connectors

The Smart Connectors (USB, IEEE 1394 and Front Panel) serve as extended connectors allowing you to easily connect cables to the connectors that are on the system board. This is specially advantageous when using the front panel connectors as this will prevent wrong cable connection.
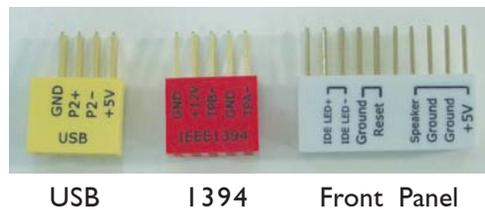
USB   1394   Front Panel

Front Panel Connectors

1. Connect all front panel cables from the chassis to the front panel smart connector. Connect according to the pin definition shown on the smart connector.
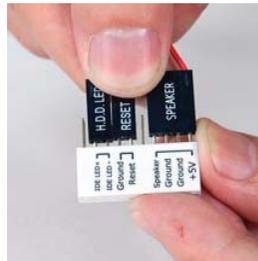
2. Connect the front panel smart connector to the front panel connector on the system board.
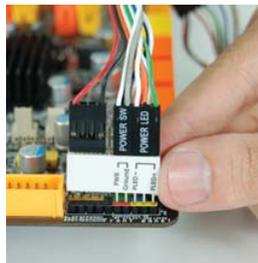
USB and IEEE 1394 Connectors

1. Connect your USB/1394 port cable to the USB/1394 smart connector. Connect according to the pin definition shown on the smart connector.

2. Connect the USB/1394 smart connector to the respective connectors on the system board.

Chapter 3 - BIOS Setup

Switchable Modes for Overclocking

Aimed to provide convenience and superb overclockability, the Genie BIOS Setting submenu comes available in Easy mode (default mode) and Advance mode.

Easy Mode

Easy mode displays fields commonly used by users.

Advance Mode

If you intend to tweak your PC or boost its overclock feature, you can switch the Genie BIOS Setting submenu from Easy mode to Advance mode by simply pressing <F9> in the main menu of the Award BIOS utility then pressing <Y> to select Advance Mode. The Advance mode will display a wide range of fields useful in overclocking the board.

```
               Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features              ▶ Genie BIOS Setting
  ▶ Advanced BIOS Features              ▶ CMOS Reloaded
  ▶ Advanced Chipset Features              Load Optimized Defaults
  ▶ Integrated Peripher                              Password
  ▶ Power Management      Y:Advance Mode; N:Easy Mode (Y/N)? Y    word
  ▶ PnP/PCI Configurations                          etup
  ▶ PC Health Status                       Exit Without Saving

  Esc  :  Quit                      ↑ ↓ → ← : Select Item
  F10  :  Save & Exit Setup

                  Time, Date, Hard Disk Type...
```

Award BIOS Setup Utility

The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the following message will appear on the screen:

<p align="center">Press DEL to enter setup</p>

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.

When you press <Del>, the main menu screen will appear.

```
              Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ Genie BIOS Setting

   ▶ Advanced BIOS Features          ▶ CMOS Reloaded

   ▶ Advanced Chipset Features          Load Optimized Defaults

   ▶ Integrated Peripherals             Set Supervisor Password

   ▶ Power Management Setup             Set User Password

   ▶ PnP/PCI Configurations            Save & Exit Setup

   ▶ PC Health Status                  Exit Without Saving

   Esc  :  Quit                  ↑ ↓ → ← : Select Item
   F10  :  Save & Exit Setup

              Time, Date, Hard Disk Type...
```

Standard CMOS Features

Use the arrow keys to highlight "Standard CMOS Features" then press <Enter>. A screen similar to the one below will appear.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                            Standard CMOS Features

      Date  <mm:dd:yy>              Wed, Feb 4 2009              Item  Help
      Time  <hh:mm:ss>              20 : 20 : 30
                                                            Menu Level    ▶
   ▶  Primary  IDE  Master         None
   ▶  Primary  IDE  Slave          None                   Change the day, month,
   ▶  Secondary  IDE  Master       None                   year  and  century
   ▶  Secondary  IDE  Slave        None
   ▶  Internal Phy SATA 1          WDC  WD1600AAJS-00B4A
   ▶  Internal Phy SATA 3          PIONEER  DVD-ROM  DVD-
   ▶  Internal Phy SATA 2          None
   ▶  Internal Phy SATA 4          None

      Drive A                      1.44M, 3.5 in.
      Halt On                      All, But keyboard

      Base  Memory                       640K
      Extended  Memory             2096128K
      Total  Memory                2097152K



   ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
       F5: Previous Values              F6: Fail-Safe Defaults     F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

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 1994 to 2079.

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.

Primary IDE Master to Internal Phy SATA 4

Primary IDE Master/Slave
Secondary IDE Master/Slave   Used to configure Parallel ATA drives

Internal Phy SATA 1
Internal Phy SATA 3
Internal Phy SATA 2   Used to configure Serial ATA drives
Internal Phy SATA 4

Note:

The fields for configuring Serial ATA drives will appear only if the Serial ATA function is Enabled. Enable this function in the Integrated Peripherals submenu of the BIOS.

Primary IDE Master to Secondary IDE Slave

To configure IDE drives, move the cursor to a field then press <Enter>. The following screen will appear.
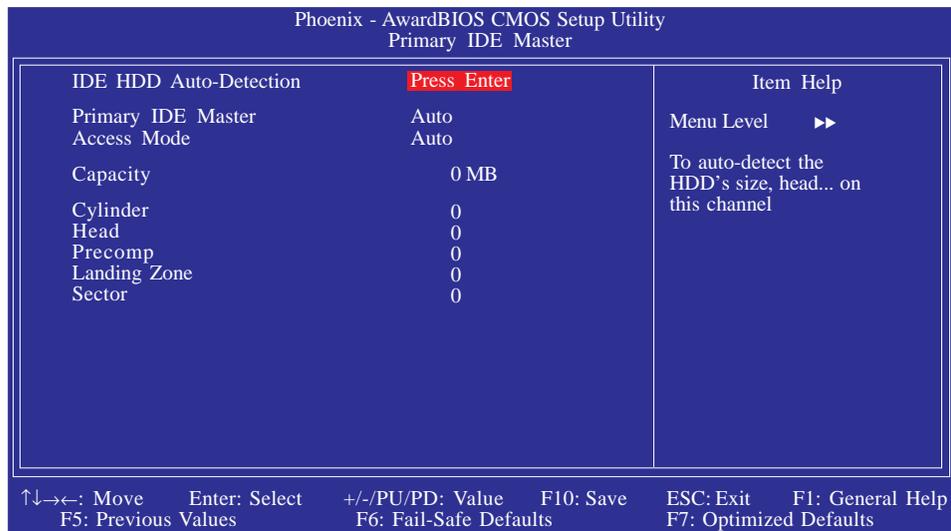
```
                   Phoenix - AwardBIOS CMOS Setup Utility
                            Primary IDE Master

     IDE HDD Auto-Detection        Press Enter              Item Help

     Primary IDE Master            Auto            Menu Level    ▶▶
     Access Mode                   Auto
                                                   To auto-detect the
     Capacity                      0 MB            HDD's size, head... on
                                                   this channel
     Cylinder                      0
     Head                          0
     Precomp                       0
     Landing Zone                  0
     Sector                        0




   ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous Values              F6: Fail-Safe Defaults        F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

IDE HDD Auto-Detection

Detects the parameters of the drive. The parameters will automatically be shown on the screen.

Primary IDE Master to Secondary IDE Slave

The drive type information should be included in the documentation from your hard disk vendor. If you select "Auto", the BIOS will auto-detect the HDD & CD-ROM drive at the POST stage and show the IDE for the HDD & CD-ROM drive. If a hard disk has not been installed, select "None".

Access Mode

For hard drives larger than 528MB, you would typically select the LBA type. Certain operating systems require that you select CHS or Large. Please check your operating system's manual or Help desk on which one to select.

Capacity

Displays the approximate capacity of the disk drive. Usually the size is slightly greater than the size of a formatted disk given by a disk checking program.

Cylinder

This field displays the number of cylinders.

Head

This field displays the number of read/write heads.

Precomp

This field displays the number of cylinders at which to change the write timing.

Landing Zone

This field displays the number of cylinders specified as the landing zone for the read/write heads.

Sector

This field displays the number sectors per track.

Internal Phy SATA 1 to Internal Phy SATA 4

Move the cursor to a field then press <Enter>. The following screen will appear.
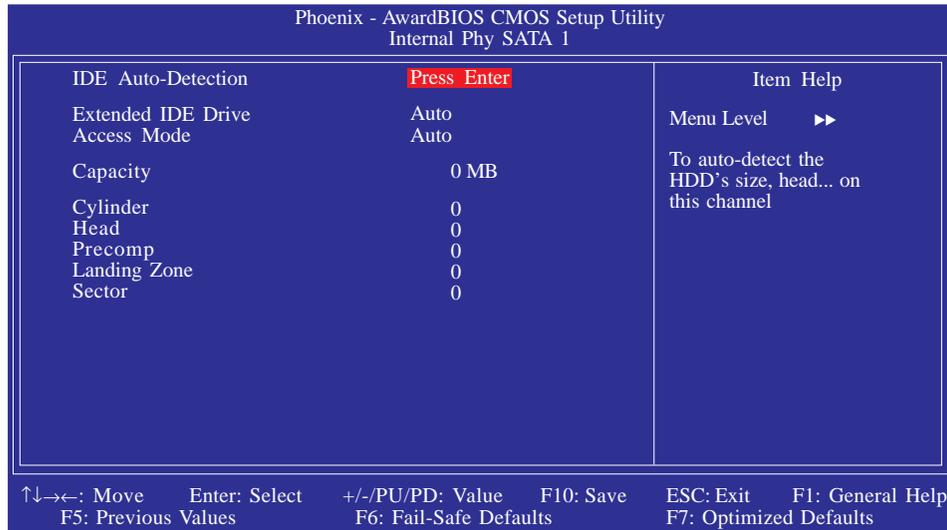
```
                  Phoenix - AwardBIOS CMOS Setup Utility
                           Internal Phy SATA 1

    IDE  Auto-Detection            Press  Enter              Item  Help

    Extended IDE Drive             Auto             Menu Level      ►►
    Access  Mode                   Auto
                                                    To auto-detect the
    Capacity                       0 MB             HDD's size, head... on
                                                    this channel
    Cylinder                       0
    Head                           0
    Precomp                        0
    Landing Zone                   0
    Sector                         0




 ↑↓→←: Move      Enter: Select      +/-/PU/PD: Value    F10: Save     ESC: Exit     F1: General Help
    F5: Previous Values             F6: Fail-Safe Defaults            F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Drive A

This field identifies the type of floppy disk drive installed.

None   No floppy drive is installed
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

Halt On

This field determines whether the system will stop if an error is detected during power up. The default setting is All Errors.

No Errors	The system boot will not stop for any errors detected.
All Errors	The system boot will stop whenever the BIOS detects a non-fatal error.
All, But Keyboard	The system boot will not stop for a keyboard error; it will stop for all other errors.
All, But Diskette	The system boot will not stop for a disk error; it will stop for all other errors.
All, But Disk/Key	The system boot will not stop for a disk or keyboard error; it will stop for all other errors.

Base Memory

Displays the amount of base (or conventional) memory installed in the system. The value of the base memory is typically 512K for systems with 512K memory installed on the motherboard or 640K for systems with 640K or more memory installed on the motherboard.

Extended Memory

Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

The Advanced BIOS Features 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.

```
                   Phoenix - AwardBIOS CMOS Setup Utility
                          Advanced BIOS Features

  ▶ Removable Device Priority      Press Enter          Item Help
  ▶ Hard Disk Boot Priority        Press Enter
    Virus Warning                  Disabled        Menu Level     ▶
    CPU L3 Cache                   Enabled
    Quick Power On Self Test       Enabled         Select Hard Disk Boot
    First Boot Device              CDROM           Device Priority
    Second Boot Device             Removable
    Third Boot Device              Hard Disk
    Boot Other Device              Enabled
    Boot Up Floppy Seek            Disabled
    Boot Up Numlock Status         On
    Security Option                Setup
    MPS Version Control For OS      1.4
    OS Select For DRAM > 64MB      Non-OS2
    HDD S.M.A.R.T Capability       Disabled
    Delay For HDD (Secs)           0
    Full Screen LOGO Show          Disabled


  ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
    F5: Previous Values          F6: Fail-Safe Defaults         F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Removable Device Priority

This field is used to select the boot sequence of the removable devices. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                         Removable  Device  Priority

  1. Floppy Disks                                          Item  Help

                                                    Menu Level      ▶▶

                                                    Use <↑> or <↓> to
                                                    select a device, then
                                                    press <+> to move it up,
                                                    or <-> to move it down
                                                    the list. Press <ESC> to
                                                    exit this menu.




  ↑↓: Move          PU/PD/+/-:  Change  Priority        F10: Save          ESC: Exit
     F5: Previous Values          F6: Fail-Safe Defaults          F7: Optimized Defaults
```
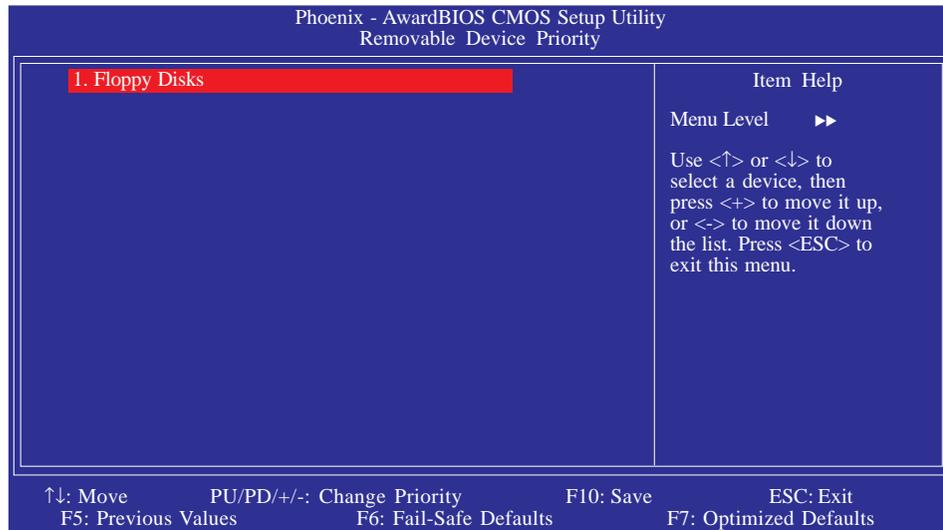
The settings on the screen are for reference only. Your version may not be identical to this one.

Hard Disk Boot Priority

This field is used to select the boot sequence of the hard drives. Move the cursor to this field then press <Enter>. Use the Up or Down arrow keys to select a device then press <+> to move it up or <-> to move it down the list.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          Hard Disk Boot Priority

   1. Bootable Add-in Cards                              Item  Help

                                                   Menu Level    ▶▶

                                                   Use <↑> or <↓> to
                                                   select a device, then
                                                   press <+> to move it up,
                                                   or <-> to move it down
                                                   the list. Press <ESC> to
                                                   exit this menu.




   ↑↓: Move          PU/PD/+/-: Change Priority       F10: Save          ESC: Exit
     F5: Previous Values           F6: Fail-Safe Defaults       F7: Optimized Defaults
```
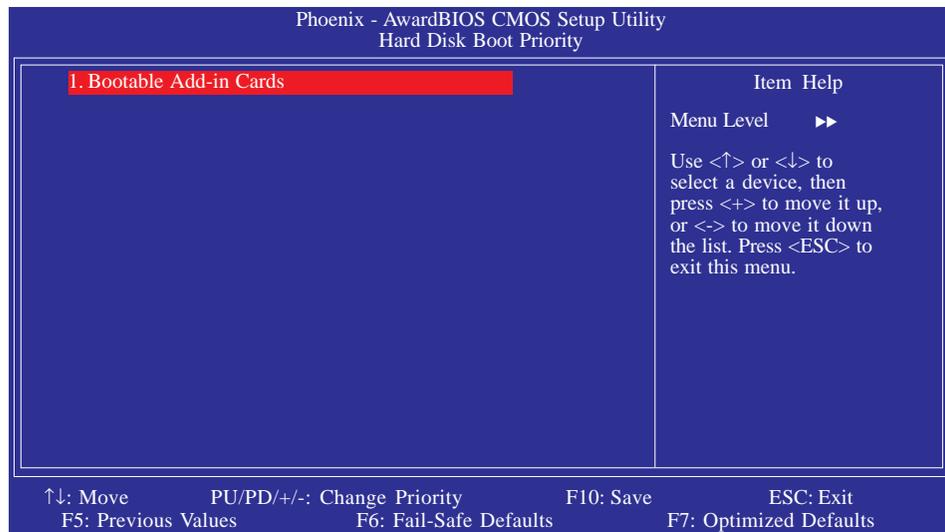
The settings on the screen are for reference only. Your version may not be identical to this one.

Virus Warning

This field protects the boot sector and partition table of your hard disk drive. When this field is enabled, the Award BIOS will monitor the boot sector and partition table of the hard disk drive. If an attempt is made to write to the boot sector or partition table of the hard disk drive, the BIOS will halt the system and an error message will appear.

After seeing the error message, if necessary, you will be able to run an anti-virus program to locate and remove the problem before any damage is done.

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field.

CPU L3 Cache

This field is used to enable or disable the CPU's L3 cache.

Quick Power On Self Test

This field speeds up Power On Self Test (POST) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Fast".

First Boot Device, Second Boot Device, Third Boot Device and Boot Other Device

Select the drive to boot first, second and third in the "First Boot Device" "Second Boot Device" and "Third Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected. Set "Boot Other Device" to Enabled if you wish to boot from another device.

Boot Up Floppy Seek

When enabled, the BIOS will check whether the floppy disk drive installed is 40 or 80 tracks. Note that the BIOS cannot distinguish between 720K, 1.2M, 1.44M and 2.88M drive types as they are all 80 tracks. When disabled, the BIOS will not search for the type of floppy disk drive by track number. Note that there will not be any warning message if the drive installed is 360KB.

Boot Up NumLock Status

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.

Security Option

This field determines when the system will prompt for the password-everytime the system boots or only when you enter the BIOS setup. Set the password in the Set Supervisor/User Password submenu.

System   The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt.

Setup   The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.

MPS Version Control for OS

This field is used to select the MPS version that the system board is using.

OS Select for DRAM > 64MB

Select the "OS2" option only if the system that is running an OS/2 operating system has greater than 64MB RAM.

HDD S.M.A.R.T. Capability

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.

Delay for HDD (Secs)

This field is used to select the time that would delay the HDD controller's initial time. This is specially useful for some HDDs which will not be ready at first boot when you power-on the system.

Full Screen Logo Show

This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled   The logo will appear in full screen during system boot-up.

Disabled   The logo will not appear during system boot-up.

Advanced Chipset Features
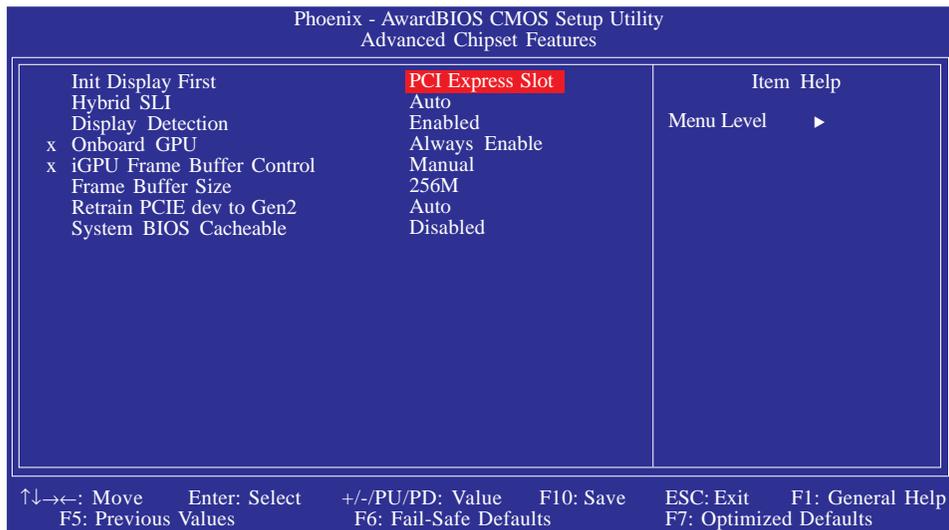
```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Advanced Chipset Features

      Init Display First          PCI Express Slot            Item  Help
      Hybrid  SLI                 Auto
      Display  Detection          Enabled            Menu Level      ▶
    x  Onboard  GPU               Always  Enable
    x  iGPU  Frame  Buffer  Control  Manual
      Frame  Buffer  Size         256M
      Retrain  PCIE  dev  to  Gen2   Auto
      System  BIOS  Cacheable      Disabled




    ↑↓→←: Move      Enter: Select     +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
        F5: Previous  Values              F6: Fail-Safe Defaults          F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

This section gives you functions to configure the system based on the specific features of the chipset. The chipset manages bus speeds and access to system memory resources. **These items should not be altered unless necessary.** The default settings have been chosen because they provide the best operating conditions for your system. The only time you might consider making any changes would be if you discovered some incompatibility or that data was being lost while using your system.

Init Display First

PCI Express Slot   When the system boots, it will first initialize the PCI Express graphics card.

Onboard   When the system boots, it will first initialize the onboard VGA.

Hybrid SLI

The options are Auto and Disabled. Set this field to Disabled if you intend to use the onboard GPU only.

Display Detection

When this field is enabled, it will allow SMBUS to search for the monitor connected to the system; that is, if boot pref (BGPU) does not have a monitor connected.

Onboard GPU

This field is used to enable the onboard GPU. If you are using the onboard GPU only, select the "Enable If No Ext GPU" field.

iGPU Frame Buffer Control

The options are Auto and Manual.

Frame Buffer Size

This field is used to select the total amount of system memory locked by the BIOS for video. A larger frame buffer size should result in higher video performance.

Retrain PCIE Dev to Gen2

By default, all devices installed in the PCEe slots will run according to the Gen2 speed. To use the Gen1 speed, set this field to Disabled.

System BIOS Cacheable

When this field is enabled, accesses to the system BIOS ROM addressed at F0000H-FFFFFH are cached, provided that the cache controller is enabled. The larger the range of the Cache RAM, the higher the efficiency of the system.

Integrated Peripherals
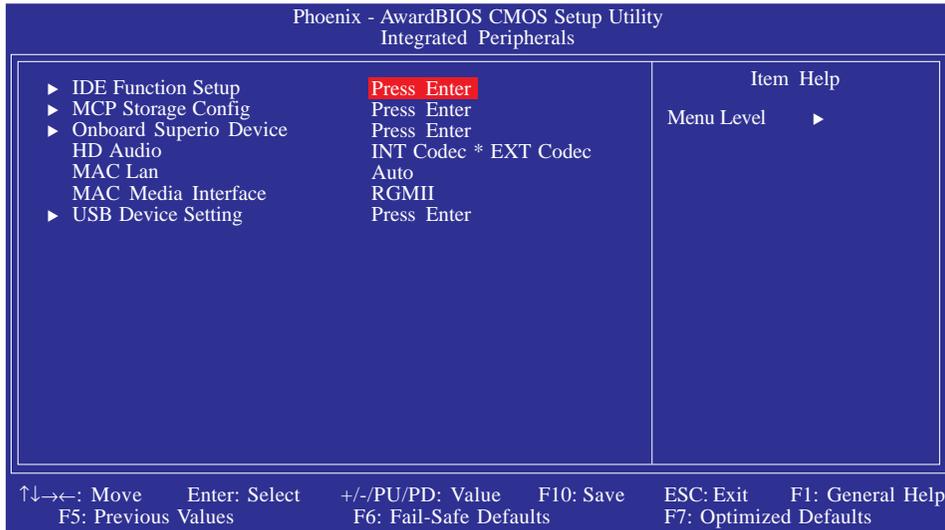
```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Integrated  Peripherals

   ▶ IDE Function Setup          Press  Enter            Item  Help
   ▶ MCP Storage Config          Press  Enter
   ▶ Onboard  Superio  Device    Press  Enter       Menu Level      ▶
     HD  Audio                   INT  Codec * EXT Codec
     MAC Lan                     Auto
     MAC  Media  Interface       RGMII
   ▶ USB Device Setting          Press  Enter








   ↑↓→←: Move      Enter: Select    +/-/PU/PD:  Value    F10: Save    ESC: Exit    F1:  General  Help
      F5: Previous  Values             F6: Fail-Safe Defaults         F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

IDE Function Setup

MCP Storage Config

Onboard Superio Device

Refer to the following pages for more information on these submenus

HD Audio

The options are Disabled, Internal Codec, External Codec and INT Codec + EXT Codec.

MAC Lan

The options are Auto and Disabled.

MAC Media Interface

The options are MII and RGMII.

USB Device Setting

Refer to the following pages for more information on this submenu.

IDE Function Setup

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                            IDE Function Setup

      IDE DMA Transfer Access        Enabled          Item  Help
      IDE Prefetch Mode              Enabled
      IDE HDD Block Mode             Enabled       Menu Level    ▶












 ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous Values            F6: Fail-Safe Defaults      F7: Optimized Defaults
```
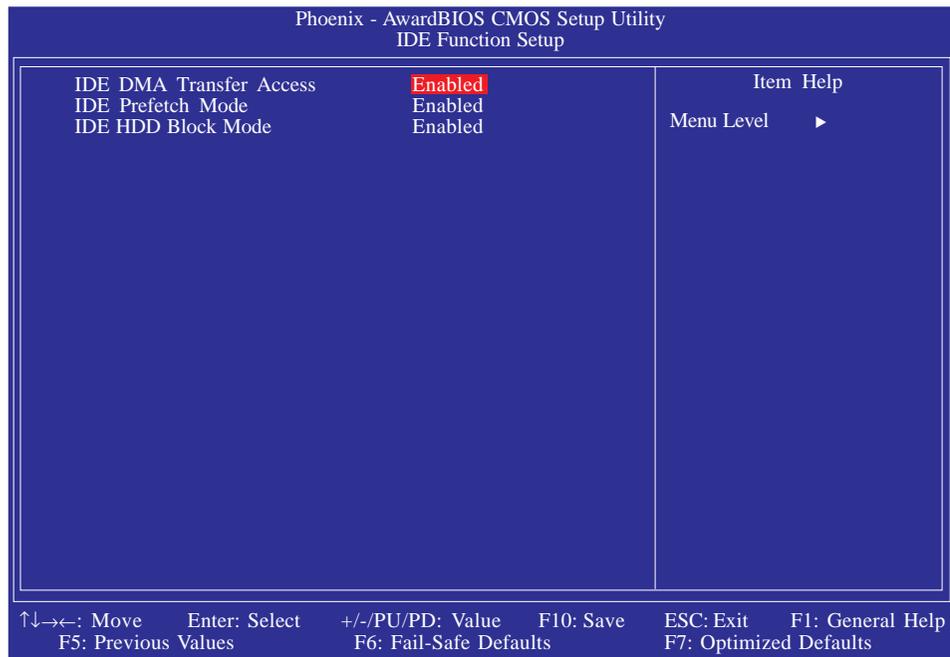
The settings on the screen are for reference only. Your version may not be identical to this one.

IDE DMA Transfer Access

This field is used to enable or disable the DMA transfer function of an IDE hard drive.

IDE Prefetch Mode

This allows data and addresses to be stored in the internal buffer of the chip, thus reducing access time. Enable this field to achieve better performance.

IDE HDD Block Mode

Enabled   The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block read/write per sector the system can transfer. The block size will depend on the type of hard disk drive.

Disabled   The IDE HDD uses the standard mode.

MCP Storage Config
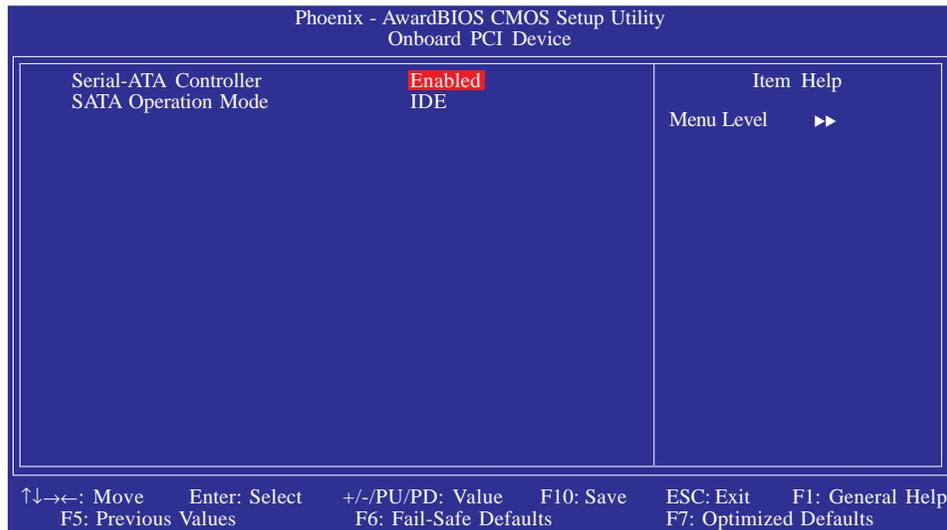
```
                      Phoenix - AwardBIOS CMOS Setup Utility
                              Onboard  PCI  Device

        Serial-ATA  Controller          Enabled               Item  Help
        SATA Operation Mode             IDE
                                                        Menu Level    ▶▶










   ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous  Values             F6: Fail-Safe Defaults        F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Serial-ATA Controller

This field is used to enable or disable the Serial ATA controller.

SATA Operation Mode

This field is used to configure SATA devices.

IDE	This option configures the Serial ATA drives as Parallel ATA storage devices.
RAID	This option allows you to create RAID configuration on Serial ATA devices.
AHCI	This option allows the Serial ATA devices to use AHCI (Advanced Host Controller Interface).
Linux AHCI	This option allows the Serial ATA devices to use Linux AHCI.

Onboard Super IO Device

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                        Onboard Super IO Device

     Power On Function           Button Only              Item Help
  x  KB Power On Password        Enter
  x  Hot Key Power On            Ctrl-F1            Menu Level    ▶▶
     Onboard FDC Controller      Enabled
     Onboard Serial Port         3F8/IRQ4
     Onboard IRDA Select         Disabled
  x  IR Mode Select              IrDA
  x  UR2 Duplex Mode             Half
     PWRON After PWR-Fail        Off




 ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
    F5: Previous Values             F6: Fail-Safe Defaults    F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Power On Function

This field allows you to use the keyboard or PS/2 mouse to power-on the system.

Button only	Default setting. Uses the power button to power on the system.
Password	When this option is selected, set the password you would like to use to power-on the system in the "KB Power On Password" field.
Hot Key	When this option is selected, select the function key you would like to use to power-on the system in the "Hot Key Power On" field.
Mouse Move	Move the PS/2 mouse to wake up the system.
Mouse Click	Click the PS/2 mouse to wake up the system.
Any Key	Press any key to power-on the system.
Keyboard 98	When this option is selected, press the "wake up" key of the Windows 98 compatible keyboard to power-on the system.

KB Power On Password

Move the cursor to this field and press <Enter>. Enter your password. You can enter up to 5 characters. Type in exactly the same password to confirm, then press <Enter>.

The power button will not function once a keyboard password has been set in this field. You must type the correct password to power-on the system. If you forgot the password, power-off the system and remove the battery. Wait for a few seconds and install it back before powering-on the system.

Hot Key Power On

This field is used to select a function key that you would like to use to power-on the system.

Onboard FDC Controller

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

Onboard Serial Port

Auto   The system will automatically select an I/O address for the onboard serial port.
3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3   Allows you to manually select an I/O address for the onboard serial port.
Disabled   Disables the onboard serial port.

Onboard IRDA Select

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3   Allows you to manually select an I/O address for the onboard IrDA.
Disabled   Disables the onboard IrDA.

IR Mode Select

This field is used to select the type of IrDA standard supported by your IrDA device. For better transmission of data, your IrDA peripheral device must be within a 30° angle and within a distance of 1 meter.

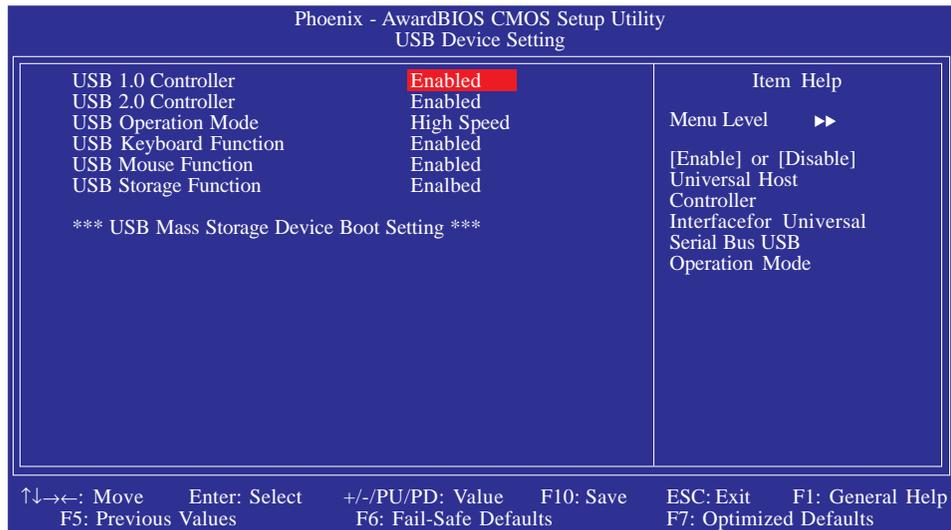## UR2 Duplex Mode

Half　　　　　　Data is completely transmitted before receiving data.

Full　　　　　　Transmits and receives data simultaneously.

PWRON After PWR-Fail

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.

USB Device Setting

```
                        Phoenix - AwardBIOS CMOS Setup Utility
                                 USB Device Setting

      USB 1.0 Controller              Enabled                   Item  Help
      USB 2.0 Controller              Enabled
      USB Operation Mode              High Speed         Menu Level      ▶▶
      USB Keyboard Function           Enabled
      USB Mouse Function              Enabled            [Enable] or [Disable]
      USB Storage Function            Enalbed            Universal Host
                                                         Controller
      *** USB Mass Storage Device Boot Setting ***      Interfacefor  Universal
                                                         Serial Bus USB
                                                         Operation  Mode








  ↑↓→←: Move      Enter: Select     +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
     F5: Previous Values             F6: Fail-Safe Defaults          F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

USB 1.0 Controller

This field is used to enable or disable the Universal Host Controller Interface (USB 1.0).

USB 2.0 Controller

This field is used to enable or disable the Enhanced Host Controller Interface (USB 2.0).

USB Operation Mode

This field is used to select the USB's operation mode.

High Speed	If the USB device is a high speed device, it will operate in high speed mode. If it is a full/low speed device, it will operate in full/low speed mode.
Full/Low Speed	Regardless of the speed of the USB device, it will always operate in full/low speed mode.

USB Keyboard Function

Due to the limited space of the BIOS ROM, the support for legacy USB keyboard (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

If a PS/2 keyboard is not available and you need to use a USB keyboard to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Mouse Function

Due to the limited space of the BIOS ROM, the support for legacy USB mouse (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.
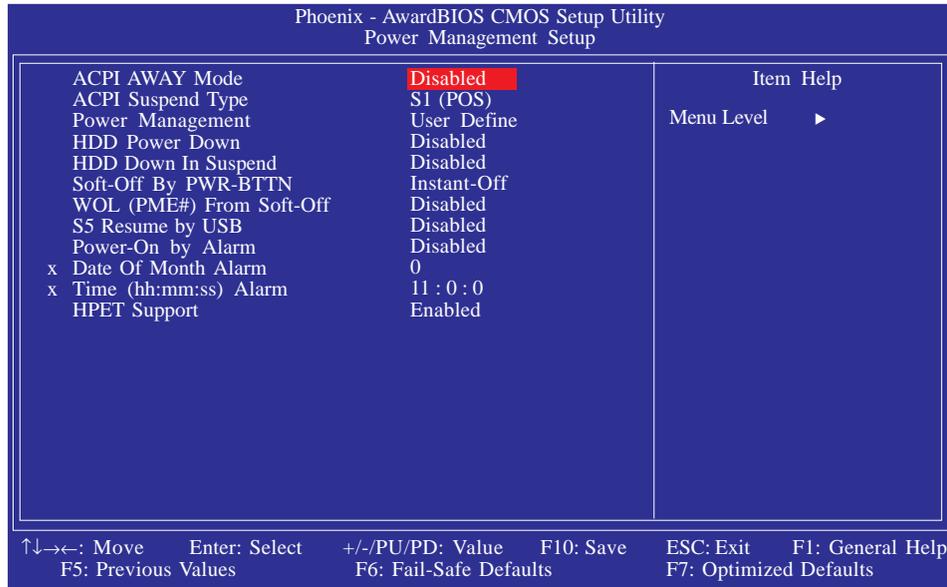
If a PS/2 mouse is not available and you need to use a USB mouse to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

USB Storage Function

This field is used to enable or disable the support for legacy USB mass storage.

Power Management Setup

The Power Management Setup allows you to configure your system to most effectively save energy.

```
              Phoenix - AwardBIOS CMOS Setup Utility
                    Power Management Setup
┌─────────────────────────────────────────────┬──────────────────┐
│  ACPI AWAY Mode            Disabled          │    Item  Help    │
│  ACPI Suspend Type         S1 (POS)          │                  │
│  Power  Management         User  Define      │  Menu Level    ▶ │
│  HDD Power Down            Disabled          │                  │
│  HDD Down In Suspend       Disabled          │                  │
│  Soft-Off By PWR-BTTN      Instant-Off       │                  │
│  WOL (PME#) From Soft-Off  Disabled          │                  │
│  S5 Resume by USB          Disabled          │                  │
│  Power-On by Alarm         Disabled          │                  │
│ x Date Of Month Alarm      0                 │                  │
│ x Time (hh:mm:ss) Alarm    11 : 0 : 0        │                  │
│  HPET Support              Enabled           │                  │
│                                              │                  │
│                                              │                  │
│                                              │                  │
│                                              │                  │
│                                              │                  │
│                                              │                  │
├─────────────────────────────────────────────┴──────────────────┤
│ ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value   F10: Save    ESC: Exit    F1: General Help │
│    F5: Previous Values          F6: Fail-Safe Defaults           F7: Optimized Defaults │
└─────────────────────────────────────────────────────────────────┘
```

The settings on the screen are for reference only. Your version may not be identical to this one.

ACPI Away Mode

When enabled, this new feature of WinXP MCE 2005 allows the computer to appear off to the user while it continues to perform tasks that do not require user input.

ACPI Suspend Type

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.

Power Management

This field allows you to select the type (or degree) of power saving by changing the length of idle time that elapses before the Suspend mode and HDD Power Down fields are activated.

Min Saving	Minimum power saving time for the Suspend Mode (1 hour) and HDD Power Down (15 min.)
Max Saving	Maximum power saving time for the. Suspend Mode and HDD Power Down = 1 min.
User Define	Allows you to set the power saving time in the "Suspend Mode" and "HDD Power Down" fields.

HDD Power Down

This is configurable only when the Power Management field is set to User Define. When the system enters the power saving time set in this field, the hard disk drive will be powered down while all other devices remain active.

HDD Down in Suspend

The default setting is Disabled. When enabled, the hard drive will be powered off once the system enters the Suspend mode.

Soft-Off by PWR-BTTN

This field allows you to select the method of powering off your system.

Delay 4 Sec.	Regardless of whether the Power Management function is enabled or disabled, if the power button is pushed and released in less than 4 sec, the system enters the Suspend mode. The purpose of this function is to prevent the system from powering off in case you accidentally "hit" or pushed the power button. Push and release again in less than 4 sec to restore. Pushing the power button for more than 4 seconds will power off the system.
Instant-Off	Pressing and then releasing the power button at once will immediately power off your system.

WOL (PME#) From Soft-Off

Set this field to Enabled to wake up the system via the onboard LAN or via a LAN card that uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card will cause the system to wake up. Refer to the card's documentation for more information.

S5 Resume By USB

This field, when enabled, allows you to use a USB device to wake up a system that is in the S5 state.

Power On By Alarm

Enabled	When Enabled, you can set the time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Time (dd:hh:mm) of Alarm" field. However, if the system is being accessed by incoming calls or the network prior to the time set in the field, the system will give priority to the incoming calls or network.
Disabled	Disables the automatic power-on function. (default).

Day (of Month) Alarm

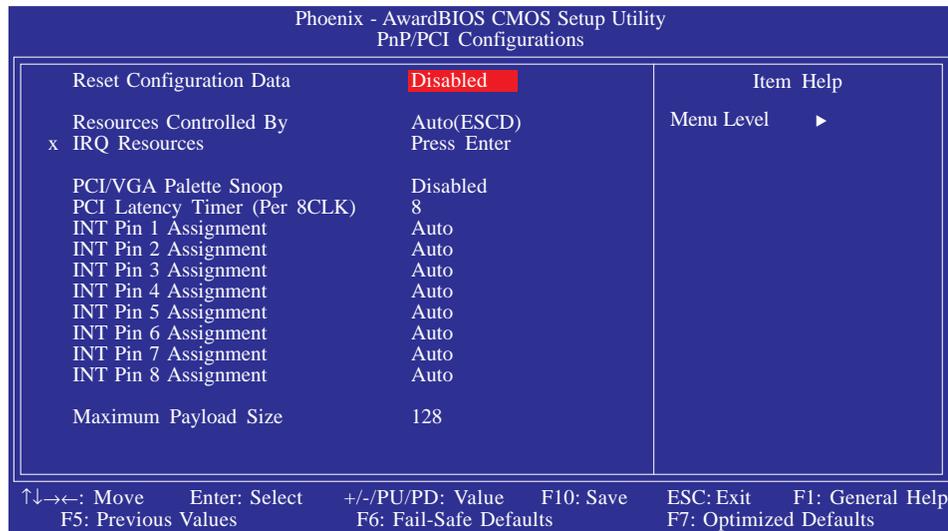|	
0	The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.
1-31	Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

Time (hh:mm:ss) of Alarm

This is used to set the time you would like the system to power-on.

HPET Support

This field is used to enable or disable HPET.

PnP/PCI Configurations

This section describes configuring the PCI bus system. It covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          PnP/PCI  Configurations

     Reset Configuration Data          Disabled              Item  Help

     Resources Controlled By           Auto(ESCD)        Menu Level     ▶
   x IRQ Resources                     Press  Enter

     PCI/VGA Palette Snoop             Disabled
     PCI Latency Timer (Per 8CLK)      8
     INT Pin 1 Assignment              Auto
     INT Pin 2 Assignment              Auto
     INT Pin 3 Assignment              Auto
     INT Pin 4 Assignment              Auto
     INT Pin 5 Assignment              Auto
     INT Pin 6 Assignment              Auto
     INT Pin 7 Assignment              Auto
     INT Pin 8 Assignment              Auto

     Maximum  Payload  Size            128


  ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
      F5: Previous Values             F6: Fail-Safe Defaults        F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Reset Configuration Data

Enabled	The BIOS will automatically reset the Extended System Configuration Data (ESCD) once. It will then recreate a new set of configuration data.
Disabled	The BIOS will not reset the configuration data.

Resources Controlled By
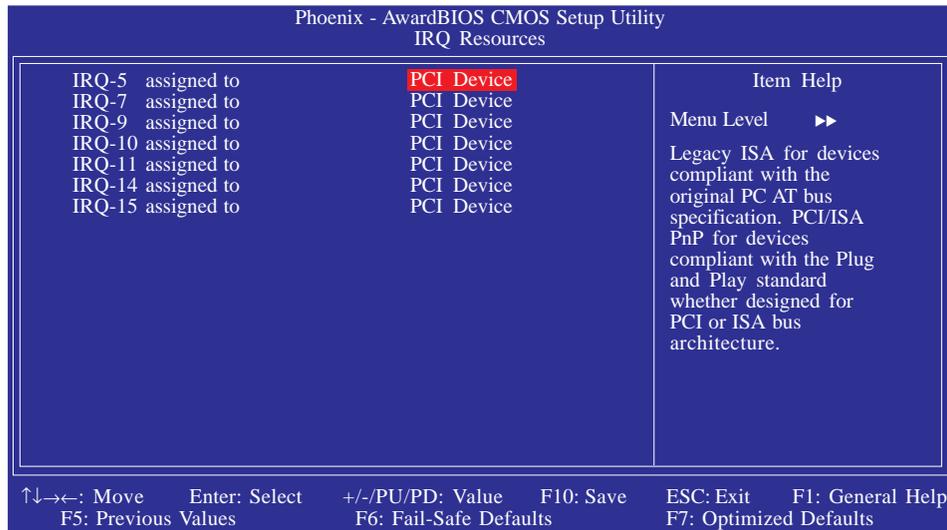
The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

Auto(ESCD)	The system will automatically detect the settings for you.
Manual	Choose the specific IRQ in the "IRQ Resources" field.

IRQ Resources

Move the cursor to this field and press <Enter>. This field is used to set each system interrupt to either Reserved or PCI Device.

```
                Phoenix - AwardBIOS CMOS Setup Utility
                             IRQ  Resources

    IRQ-5   assigned to        PCI  Device              Item  Help
    IRQ-7   assigned to        PCI  Device
    IRQ-9   assigned to        PCI  Device        Menu Level      ▶▶
    IRQ-10 assigned to         PCI  Device
    IRQ-11 assigned to         PCI  Device        Legacy  ISA  for  devices
    IRQ-14 assigned to         PCI  Device        compliant  with  the
    IRQ-15 assigned to         PCI  Device        original  PC  AT  bus
                                                  specification.  PCI/ISA
                                                  PnP  for  devices
                                                  compliant with the Plug
                                                  and  Play  standard
                                                  whether designed  for
                                                  PCI or ISA  bus
                                                  architecture.



  ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
     F5: Previous Values             F6: Fail-Safe Defaults          F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

PCI/VGA Palette Snoop

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not.

Enabled   MPEG ISA/VESA VGA cards work with PCI/VGA.

Disabled   MPEG ISA/VESA VGA cards does not work with PCI/ VGA.

PCI Latency Timer (Per 8CLK)

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.

INT Pin 1 Assignment to INT Pin 8 Assignment

By default, a device is automatically assigned to each INT. You can also manually assign an INT for each device.

Maximum Payload Size

This field is used to select the maximum TLP payload size of the PCI Express devices. The unit is byte.

PC Health Status

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                              PC Health Status

   Shutdown  Temperature          85ºC/185ºF              Item  Help
   CPUFan  Fully  On  If  CPUTemp   > 50ºC
   CPUFan  Turn  OFF  if  CPUTemp   < 25ºC               Menu Level      ▶
   ATX +3.3V  Voltage              3.24V
   ATX +5.0V  Voltage              4.83V
   ATX +12V  Voltage               12.35V
   DRAM  Voltage                   1.95V
   +5V  Dual  Voltage              4.97V
   Battery  Voltage                3.20V
   CPU  CORE  Temperature          50ºC
   PWM  AREA  Temperature          39ºC
   CHIPSET  Temperature            45ºC
   CPU  FAN  Fan  Speed            2700 RPM
   SYSTEM  Fan  Speed              0 RPM
   CHIPSET  Fan  Speed             0 RPM




↑↓→←: Move       Enter: Select      +/-/PU/PD: Value     F10: Save     ESC: Exit     F1: General Help
      F5: Previous Values              F6: Fail-Safe Defaults          F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Shutdown Temperature

You can prevent the system from overheating by selecting a temperature at which the system will shutdown. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

CPUFan Fully On If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at full speed.

CPUFan Turn Off If CPUTemp

This field is used to select the CPU's temperature at which the CPU fan will rotate at a start speed which is the slowest speed.

Note:
1. *If the CPU temperature runs between the highest (set in the "CPUFan Fully On If CPUTemp" field) and lowest (set in the "CPUFan Turn Off If CPUTemp" field) temperature, the system will automatically adjust the CPU fan's speed according to the temperature.*
2. *If you want to reduce the CPU fan's noise or prevent CPU overheat, select a lower temperature in the "CPUFan Fully On If CPUTemp" field to allow the CPU fan to rotate full speed at the selected lower temperature.*

ATX +3.3V Voltage to CHIPSET Fan Speed

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

Genie BIOS Setting

```
              Phoenix - AwardBIOS CMOS Setup Utility
                       Genie BIOS Setting

  ▶ FSB & Memory Config          Press Enter          Item  Help
  ▶ Memory Timing Setting        Press Enter
  ▶ CPU Feature                  Press Enter       Menu Level    ▶
    O.C. Fail Retry Counter      1
    O.C. Fail CMOS Reload        Disabled
    CPU VID Special Add          Auto
    DRAM Voltage Control         1.925V
    HT Voltage Control           1.20V
    Core Aux +1.2V Dual          1.19
    Core VDD Voltage             1.199

    GTLVREF Lane 0               Auto
    GTLVREF Lane 1               Auto
    GTLVREF Lane 2               Auto
    GTLVREF Lane 3               Auto
    CPU Clock Ratio              9X

    CPU Core Voltage             1.28V
    HT +1.2V Voltage             1.18V
    VDD SB Voltage               1.18V

 ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
     F5: Previous Values          F6: Fail-Safe Defaults      F7: Optimized Defaults
```

The screen above list all the fields available in the Genie BIOS Setting submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

FSB & Memory Config

Memory Timing Setting

CPU Feature

Refer to the following pages for more information on these submenus.

O.C. Fail Retry Counter

The options are 1, 2 and 3.

O.C. Fail CMOS Reload

The options are Disabled, Bank 1, Bank 2, Bank 3 and Bank 4.

CPU VID Special Add

This field is used to select the voltage of the CPU.

DRAM Voltage Control

This field allows you to manually select higher voltage supplied to the DRAM.

HT Voltage Control

This field allows you to manually select higher voltage supplied to the chipset.

Core Aux +1.2V Dual

This field is used to select the core aux +1.2V dual voltage.

Core VDD Voltage

This field is used to select the core VDD voltage.

GTLVREF Lane 0 to GTLVREF Lane 3

This field is used to add extra voltage or reduce voltage from the CPU GTLREF Lane voltage level.

CPU Clock Ratio

This field is used to select the CPU's frequency ratio.

CPU Core Voltage

This field will show the CPU's current voltage.

HT +1.2V Voltage

This field will show the HT +1.2V's current voltage.

VDD SB Voltage

This field will show the VDD SB's current voltage.

FSB & Memory Config

Move the cursor to this field and press <Enter>. The following screen will appear:

```
              Phoenix - AwardBIOS CMOS Setup Utility
                        FSB & Memory Config

    Parameters              Setting      Current  Value        Item  Help

    Current CPU Freq, MHz    1800.0      1800.0            Menu Level    ▶▶
    FSB - Memory Clock Mode  Auto
x   FSB - Memory Ratio       Auto
x   FSB (QDR), MHz           Auto        800.0
      Actual FSB (QDR), MHz   800.0
x   MEM (DDR), MHz           Auto        800.0
      Actual MEM (DDR), MHz   800.0
    MEM Power Features       Disabled

    Advance  Path
x   ADSTB                    Auto
x   Budget                   Auto
                             Auto




↑↓→←: Move     Enter: Select     +/-/PU/PD: Value    F10: Save    ESC: Exit    F1: General Help
    F5: Previous Values             F6: Fail-Safe Defaults        F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Current CPU Freq, MHz

This field will show the detected frequency of the CPU.

FSB - Memory Clock Mode

This field is used to select the system clock mode.

> *Auto*   The system will automatically select the FSB and memory speed.
>
> *Linked*   Allows you to manually select the FSB speed. The memory speed will change proportionally.
>
> *Unlinked* Allows you to manually select the FSB and memory speed.

FSB - Memory Ratio

This field is used to select the memory ratio.

FSB (QDR), MHz

This field is used to select the CPU FSB frequency. To adjust, enter a new value or use the +/- keys. Note that the Actual FSB (QDR) reflects the actual frequency that will take effect on a reboot.

MEM (DDR), MHz

This field is used to select the memory frequency. To adjust, enter a new value or use the +/- keys. Note that the Actual MEM (DDR) reflects the actual frequency that will take effect on a reboot.

MEM Power Features

The options are Enabled and Disabled.

Advance Path

The options are Auto, Enabled and Disabled.

ADSTB

The options are Auto, 0, 1, 2 and 3.

Budget

The options are Auto, 1.50ns to 3.75 ns.

Memory Timing Setting

Move the cursor to this field and press <Enter>. The following screen will appear.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Memory Timing Setting

        Parameters                Setting        Current Value        Item Help

        Memory Timing Setting     Optimal                         Menu Level    ▶▶
    x   tCL (CAS Latency)         Auto            5
    x   tRCD                      Auto            5
    x   tRP                       Auto            5
    x   tRAS                      Auto            15
    x   Command Per Clock (CMD)   Auto            2T

        ** Advanced Memory Settings **
    x   tRRD                      Auto            3
    x   tRC                       Auto            23
    x   tWR                       Auto            6
    x   tWTR                      Auto            11
    x   tREF                      Auto            7.6uS




 ↑↓→←: Move      Enter: Select      +/-/PU/PD: Value      F10: Save      ESC: Exit      F1: General Help
    F5: Previous Values              F6: Fail-Safe Defaults              F7: Optimized Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Memory Timing Setting

Expert   Allows you to enter the timings manually.
Optimal   Select this option to use the value recommended by the DIMM manufacturer.

tCL (CAS Latency)

This field is used to select the clock cycle of the SDRAM CAS latency time. The option selected specifies the time before SDRAM starts a read command after receiving it.

tRCD

This field is used to select the RAS# to CAS# delay time when reading and writing to the same bank.

tRP

This field is used to select the row precharge time, precharge to active or auto-refresh of the same bank.

tRAS

This field is used to select the minimum RAS# active time.

Command Per Clock (CMD)

This field is used to select the command timing setting (per clock unit).

tRRD

This field is used to select the row to row delay time of different banks.

tRC

This field is used to select the RAS# to RAS# or auto refresh time of the same bank.

tWR

This field is used to select the write recovery time when the DRAM safely registers the last write data. This is the time from the last write data to precharge.

tWTR

The options are Auto, 1 to 15.

tREF

This field is used to select the number of clock cycles between each refresh.

CPU Feature

Move the cursor to this field and press <Enter>, the following screen will appear:
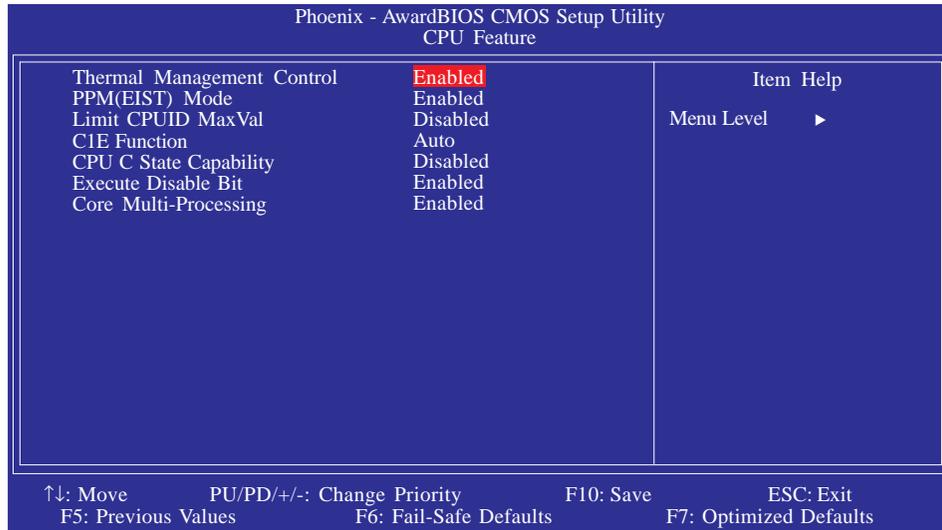
```
                     Phoenix - AwardBIOS CMOS Setup Utility
                                    CPU Feature

    Thermal  Management  Control       Enabled               Item  Help
    PPM(EIST)  Mode                    Enabled
    Limit  CPUID  MaxVal               Disabled          Menu Level    ▶
    C1E Function                       Auto
    CPU C State Capability             Disabled
    Execute Disable Bit                Enabled
    Core  Multi-Processing             Enabled




    ↑↓: Move         PU/PD/+/-: Change  Priority        F10: Save            ESC: Exit
       F5: Previous  Values              F6:  Fail-Safe  Defaults         F7:  Optimized  Defaults
```

The settings on the screen are for reference only. Your version may not be identical to this one.

Thermal Management Control

This field is used to enable or disable thermal management.

PPM (EIST) Mode

The EIST Native mode fully support operating systems that support ACPI such as Windows XP and Windows Vista. EIST SMM mode is for legacy OS like Windows 2000.

Limit CPUID MaxVal

The CPUID instruction of some newer CPUs will return a value greater than 3. Problems will occur only in certain operating systems. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid tihs problem, enable this field to limit the return value to 3 or lesser than 3.

C1E Function

This field is used to enable the CPU C1E function. The options are Auto and Disabled.

CPU C State Capability

This field allows you to select the lowest supported C state based on the CPU and motherboard.

Execute Disable Bit

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

Core Multi-Processing

The options are Enabled and Disabled.

CMOS Reloaded

The CMOS Reloaded submenu allows you to save different configurations and when needed, allows you to conveniently restore one of these previously saved configurations. Highlight CMOS Reloaded in the main menu then press <Enter>.

```
                    Phoenix - AwardBIOS CMOS Setup Utility
                                CMOS Reloaded

    Auto Save Bootable Setting        Enabled              Item  Help
    Load Last Bootable Setting        Load
                                                      Menu Level    ▶▶
    Save Setting to Bank with      Last Saved CMOS
    ═══════ User Defined Setting Bank #1 ═══════       This item will
    ┌─────── Description ──────┐    ┌─── Options ───    immediately  decide
                                    Bank description    which setting will be
                                    Save to this bank   saved to User Defined
                                    Load from this bank Setting Banks. The option
                                    Hotkey => 1         is one of following:
    └─────── Description ──────┘    └─── Options        1. Current BIOS setting
    ═══════ User Defined Setting Bank #2 ═══════        2. Last BIOS setting
    ┌─────── Description ──────┐    ┌─── Options ───    which already exists in
                                    Bank description    CMOS.
                                    Save to this bank
                                    Load from this bank
                                    Hotkey => 1
    └─────── Description ──────┘    └─── Options
    ═══════ User Defined Setting Bank #3 ═══════
    ┌─────── Description ──────┐    ┌─── Options ───
                                    Bank description
                                    Save to this bank
                                    Load from this bank
                                    Hotkey => 1
    └─────── Description ──────┘    └─── Options
    ═══════ User Defined Setting Bank #4 ═══════
    ┌─────── Description ──────┐    ┌─── Options ───
                                    Bank description
                                    Save to this bank
                                    Load from this bank
                                    Hotkey => 1
    └─────── Description ──────┘    └─── Options

    ↑↓→←: Move    Enter: Select   +/-/PU/PD: Value   F10: Save    ESC: Exit    F1: General Help
        F5: Previous Values         F6: Fail-Safe Defaults        F7: Optimized Defaults
```

The screen above list all the fields available in the CMOS Reloaded submenu, for ease of reference in this manual. In the actual CMOS setup, you have to use the scroll bar to view the fields. The settings on the screen are for reference only. Your version may not be identical to this one.

CMOS Reloaded is especially helpful to overclockers who often go through the tiresome trial and error process of repeatedly changing the BIOS settings to come up with the most ideal overclocked setting. By being able to save and load the settings, it eliminates the tedious job of remembering several settings and/or repeatedly resetting settings during the trial process. The settings are stored in the SEEPROM. SEEPROM is divided into 5 banks - the backup bank and the 4 user defined banks.

Auto Save Bootable Setting

This field is used to automatically save the last bootable setting from CMOS to an area in the SEEPROM referred to as the backup bank. To use this function:

1. Set this field to Enabled.
2. Select "Save & Exit Setup" in the main menu then press <Enter>.
3. Type <Y> then press <Enter>.

If the changes to the setting allowed the system to boot, the setting will be stored in the SEEPROM. In other words, if the system did not boot up, the setting will not be stored. You may then follow the steps in the next section to load the last bootable setting.

Load Last Bootable Setting

If, during the trial and error process, the setting resulted to the system's instability or worse yet, not being able to boot up the system, please follow the steps below to use the Load function.

> **Note:**
> *You can use the Load function only if you have set the "Auto Save Bootable Setting" to Enabled.*

1. If the system did not boot up properly but you were able to enter the BIOS utility:
    a. Select "CMOS Reloaded" in the main menu then press <Enter>.
    b. Move the cursor to "Load Last Bootable Setting" then press "Load".
    c. Press <Y> to load the last bootable setting that was stored in the backup bank.
2. If you cannot enter the BIOS utility:
    a. Use the Clear CMOS jumper to clear the CMOS. Refer to chapter 2 for more information about clearing CMOS.
    b. Enter the BIOS utility then perform steps 1a to 1c.

Saving, Loading and Naming BIOS Settings

For overclockers who require different sets of settings for various system environments or operating systems, CMOS Reloaded allows you to save, load and name up to four sets of BIOS settings - in the "User Defined Setting Bank #1" to "User Defined Setting Bank #4" fields.

Save Setting to Bank With

This field is used to select the type of setting you would like saved to a User Defined Setting Bank when you use the "Save to this Bank" function of that bank.

Current BIOS Setting   This option will save the current BIOS setting to the User Defined Setting Bank.

Last BIOS Setting   This option will save the last saved BIOS setting to the User Defined Setting Bank.

User Defined Setting Bank #1/2/3/4

Bank Description
To name the BIOS setting, move the cursor to "Bank Description" then press <Enter>. You can enter up to 60 characters. Providing a name to the BIOS setting will allow you to easily remember the settings in the bank.

Save to this Bank
To save the BIOS setting, move the cursor to "Save to this Bank" then press <Enter>. Type <Y> then press <Enter>. This will save the current setting or the last saved setting to this bank; depending on the option selected in the "Save Setting to Bank With" field.

If you want to immediately reboot to use the new settings, make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Load from this Bank

To load the setting saved in the bank, move the cursor to "Load from this Bank" then press <Enter>. The setting in this bank will replace the current setting. Make sure to save before you exit the BIOS setup utility by selecting "Y" in the "Save & Exit Setup" submenu.

Hotkey

You can now load a BIOS setting during system boot up; bypassing the lengthy process of entering the BIOS utility to load a setting. Move the cursor to "Hotkey" then press <Enter>. Select the key you would like to use to load the settings from the bank. When the system boots up, press the key to load the setting.

Load Optimized Defaults

The "Load Optimized Defaults" option loads optimized settings from the BIOS ROM. Use the default values as standard values for your system. Highlight this option in the main menu and press <Enter>.

```
                  Phoenix - AwardBIOS CMOS Setup Utility

    ▶  Standard CMOS Features            ▶  Genie BIOS Setting
    ▶  Advanced BIOS Features            ▶  CMOS Reloaded
    ▶  Advanced Chipset Features            Load Optimized Defaults
    ▶  Integrated Peripherals               Set Supervisor Password
    ▶  Power Management                                       word
    ▶  PnP/PCI Configurat    Load Optimized Defaults (Y/N)?   etup
    ▶  PC Health Status                                      aving


    Esc  :  Quit                      ↑ ↓ → ← : Select Item
    F10  :  Save & Exit Setup
                       Load Fail-Safe Defaults
```

Type <Y> and press <Enter> to load the Setup default values.

Set Supervisor Password

If you want to protect your system and setup from unauthorized entry, set a supervisor's password with the "System" option selected in the Advanced BIOS Features. If you want to protect access to setup only, but not your system, set a supervisor's password with the "Setup" option selected in the Advanced BIOS Features. You will not be prompted for a password when you cold boot the system.

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.
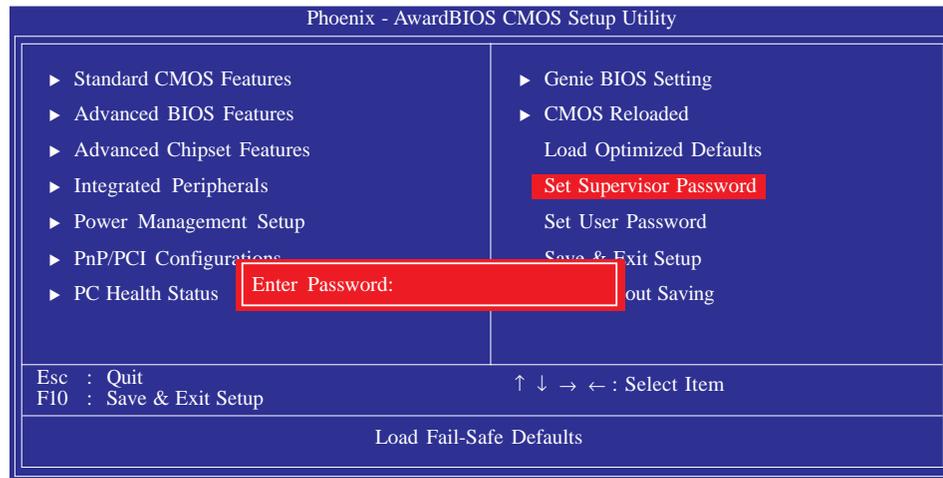
```
                  Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features            ▶ Genie BIOS Setting
  ▶ Advanced BIOS Features            ▶ CMOS Reloaded
  ▶ Advanced Chipset Features           Load Optimized Defaults
  ▶ Integrated  Peripherals           Set Supervisor Password
  ▶ Power  Management  Setup          Set User Password
  ▶ PnP/PCI Configurations            Save & Exit Setup
  ▶ PC Health Status    Enter  Password:              out Saving


  Esc  :  Quit                     ↑ ↓ → ← : Select Item
  F10  :  Save & Exit Setup
                  Load Fail-Safe Defaults
```

Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Set User Password

If you want another user to have access only to your system but not to setup, set a user's password with the "System" option selected in the Advanced BIOS Features. If you want a user to enter a password when trying to access setup, set a user's password with the "Setup" option selected in the Advanced BIOS Features.

Using user's password to enter Setup allows a user to access only "Set User Password" that appears in the main menu screen. Access to all other options is denied.

Use the arrow keys to highlight "Set User Password" and press <Enter>.
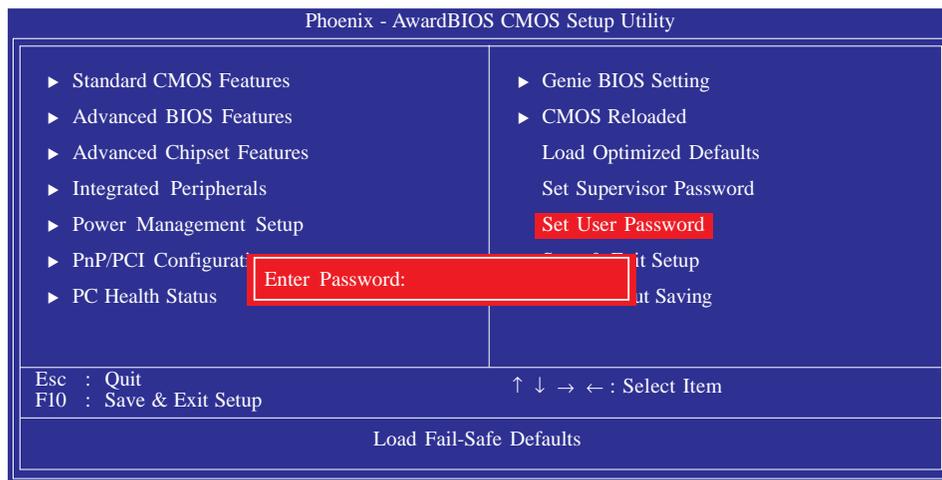
```
                 Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features            ▶ Genie BIOS Setting
  ▶ Advanced BIOS Features            ▶ CMOS Reloaded
  ▶ Advanced Chipset Features            Load Optimized Defaults
  ▶ Integrated Peripherals              Set Supervisor Password
  ▶ Power Management Setup              Set User Password
  ▶ PnP/PCI Configurat┌──────────────────────────┐it Setup
  ▶ PC Health Status   │ Enter Password:          │t Saving
                       └──────────────────────────┘

  Esc : Quit                         ↑ ↓ → ← : Select Item
  F10 : Save & Exit Setup

                    Load Fail-Safe Defaults
```

Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set User Password" and press <Enter>, instead of typing in a new password. Press the <Esc> key to return to the main menu.

Save & Exit Setup

When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>.

```
                    Phoenix - AwardBIOS CMOS Setup Utility

    ▶ Standard CMOS Features              ▶ Genie BIOS Setting
    ▶ Advanced BIOS Features              ▶ CMOS Reloaded
    ▶ Advanced Chipset Features              Load Optimized Defaults
    ▶ Integrated Peripherals                 Set Supervisor Password
    ▶ Power Management Setup                  Set User Password
    ▶ PnP/PCI Configurati┌──────────────────────────┐etup
    ▶ PC Health Status    │ SAVE to CMOS and EXIT (Y/N)? │aving
                          └──────────────────────────┘

    Esc  :  Quit                            ↑ ↓ → ← : Select Item
    F10  :  Save & Exit Setup
                         Load Fail-Safe Defaults
```

Type "Y" and press <Enter>. The modifications you have made will be written into the CMOS memory, and the system will reboot. You will once again see the initial diagnostics on the screen. If you wish to make additional changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

Exit Without Saving

When you do not want to save the changes you have made, high-light "Exit Without Saving" and press <Enter>.

```
                    Phoenix - AwardBIOS CMOS Setup Utility

  ▶ Standard CMOS Features           ▶ Genie BIOS Setting
  ▶ Advanced BIOS Features           ▶ CMOS Reloaded
  ▶ Advanced Chipset Features           Load Optimized Defaults
  ▶ Integrated Peripherals              Set Supervisor Password
  ▶ Power Management Setup              Set User Password
  ▶ PnP/PCI Configurati                    Setup
  ▶ PC Health Status        Quit Without Saving (Y/N)? N    Saving

  Esc  :  Quit                            ↑ ↓ → ← : Select Item
  F10  :  Save & Exit Setup
                      Load Fail-Safe Defaults
```

Type "Y" and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simulta-neously or <Del> after memory testing is done.

RAID BIOS

The RAID BIOS utility is used to configure and manage RAID on Serial ATA drives.

When the system powers-up and all drives have been detected, the RAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

> **Important:**
> *Before creating RAID, 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.*

Refer to chapter 5 for steps in configuring RAID.

Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.

2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to "Floppy".

3. Save the setting and reboot the system.

4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear.

```
              Award BIOS Flash Utility V.8.15B
         (C) Phoenix Technologies Ltd. All Rights Reserved.

     (The current BIOS information will appear in this area.)

     File Name to Program :
```
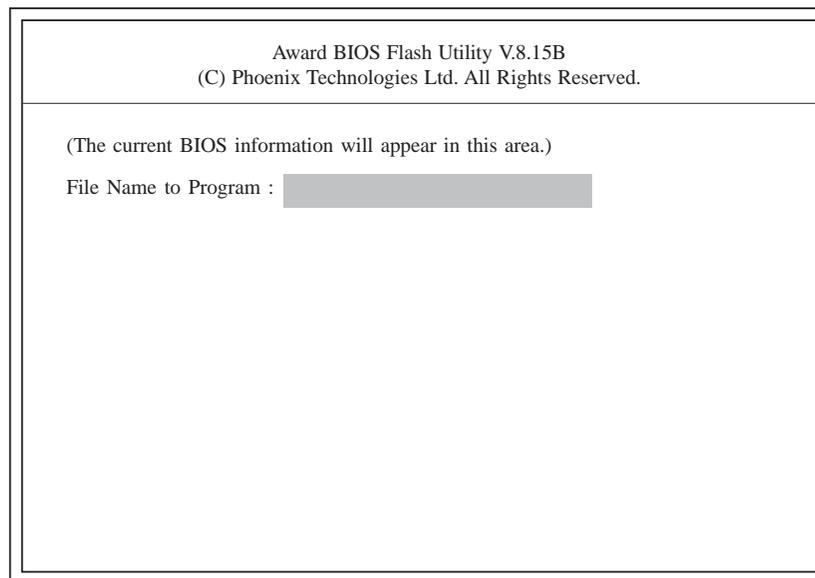
5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear.

    Do You Want to Save BIOS (Y/N)

    This question refers to the current existing BIOS in your system. We recommend that you save the current BIOS and its flash utility; just in case you need to reinstall the BIOS. To save the current BIOS, press <Y> then enter the file name of the current BIOS. Otherwise, press <N>.

7. The following will then appear.

    Press "Y" to Program or "N" to Exit

8. Press <Y> to flash the new BIOS.

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

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

Insert the DVD into an optical drive. The screen shown below will appear. If after inserting the DVD, "Autorun" did not automatically start, please go directly to the root directory of the DVD and double-click "Setup".

nVidia GForce9400 System Drivers

On the top row of the screen, click the 1st icon to open the Chipset Driver menu.

1. Click "nVidia GForce9400 System Drivers".

2. Setup is preparing the installation wizard which will guide you through the rest of the setup process.
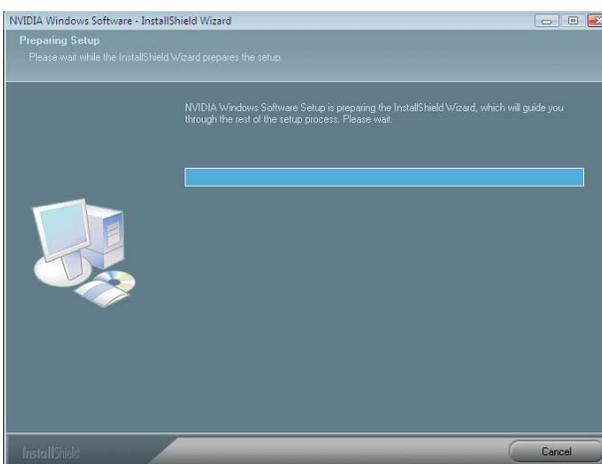
3. Click Next to begin the installation.

4. The software comes with several useful features. Select the ones you want to install then click Next .
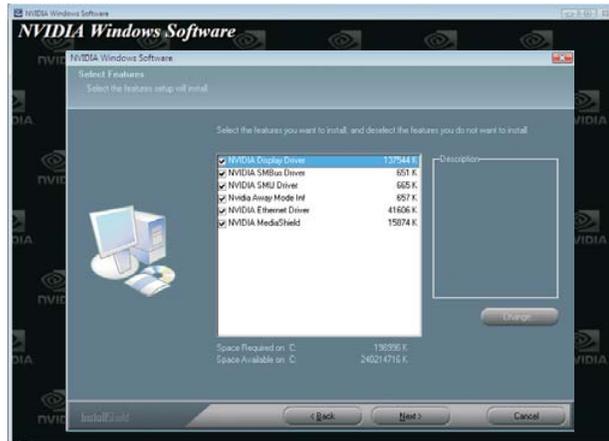
5. Setup is now installing the components.

6. Read the information about the NVIDIA IDE software driver then click Next.
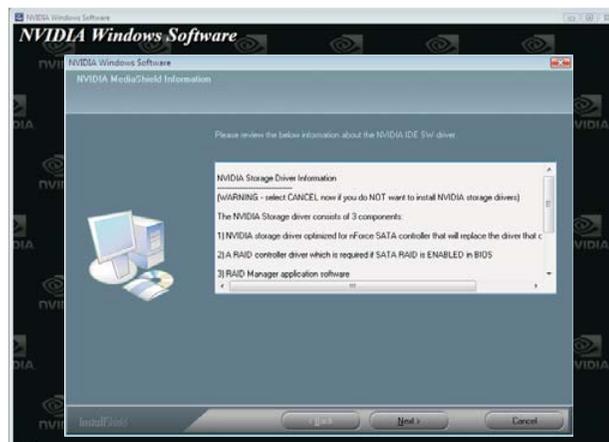
7. Click Yes to install the NVIDIA and ForceWare Network Access Manager.
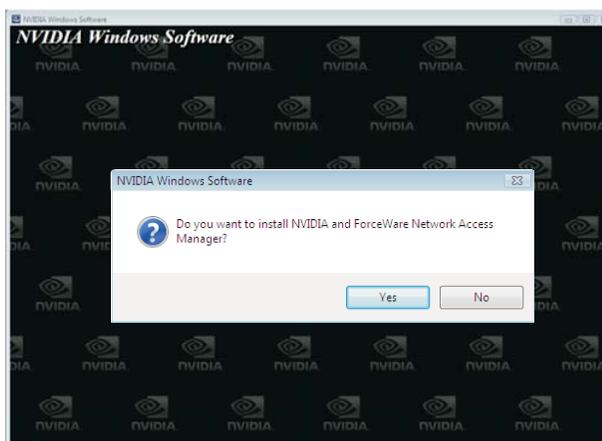
8. Setup is preparing the installation wizard which will guide you through the rest of the setup process.
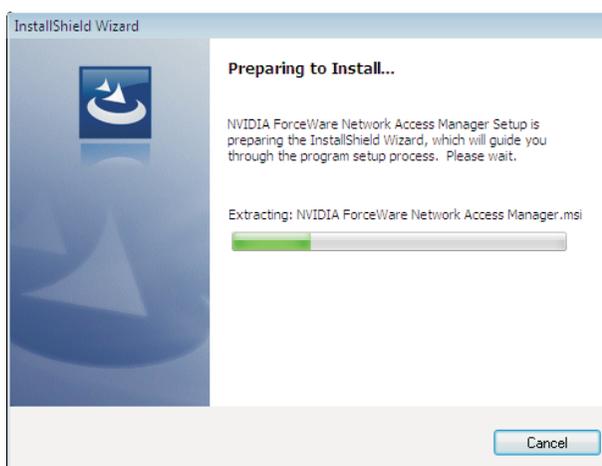
9. Click Next to install.
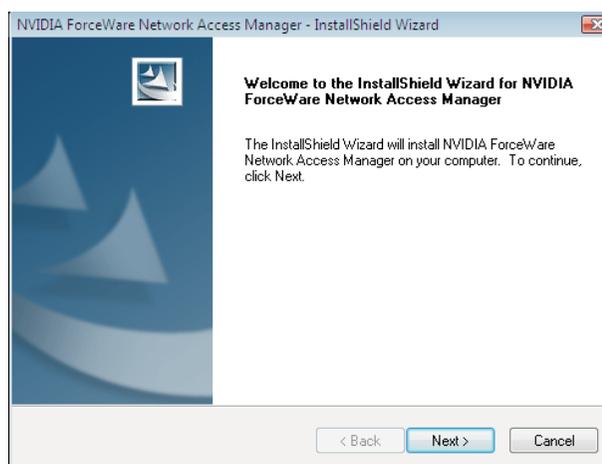
10. Click Next to install to the destination folder or click Browse to select another folder.
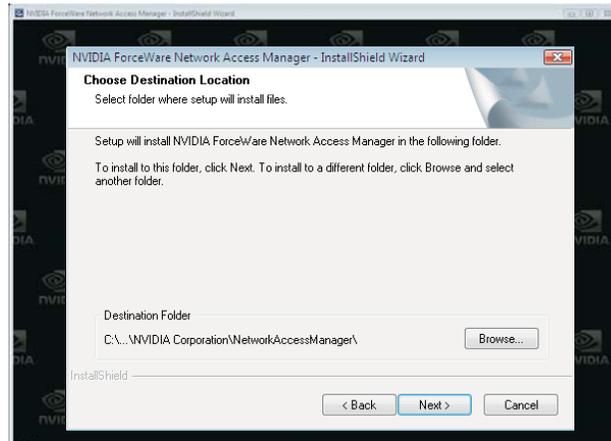
11. Setup is currently configuring the new software installation.
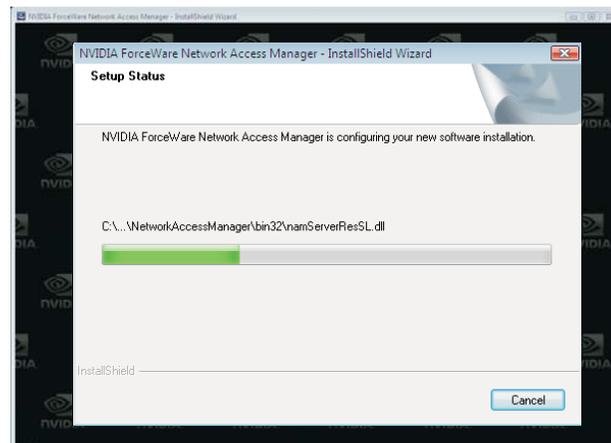
12. Click "Yes, I want to restart my computer now." then click Finish.

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

4
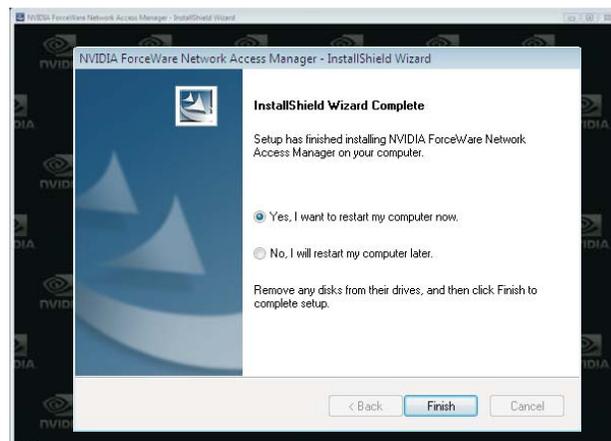
nVidia GForce9400 HD Audio Drivers

On the top row of the screen, click the 1st icon to open the Chipset Driver menu.

1. Click "nVidia GForce9400 HD Audio Drivers".

2. Setup is now extracting the files needed to install the driver.
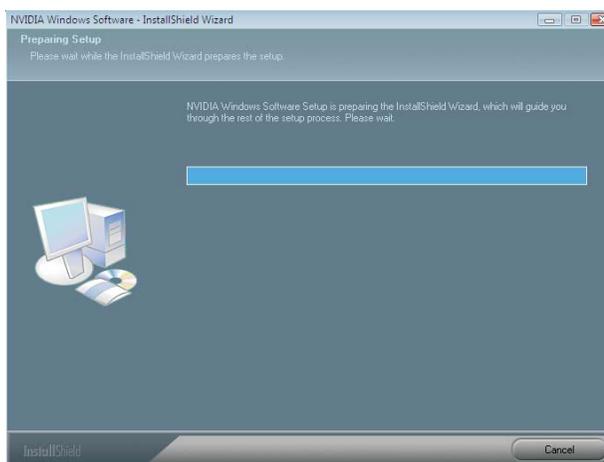
3. Click Next to install.

4. Select "NVIDIA HD Audio Driver" then click Next.
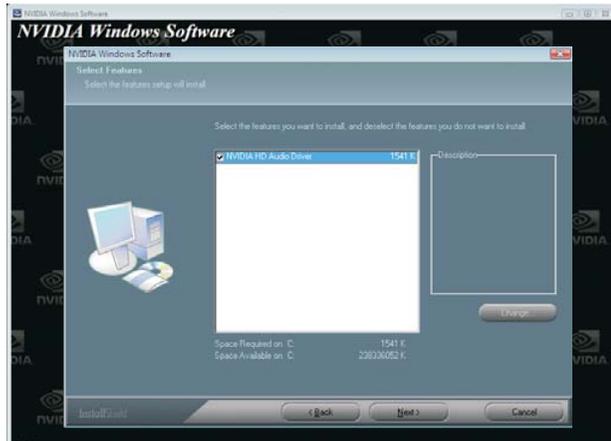
5. Setup is currently installing the components.

6. Click Finish to exit installation.
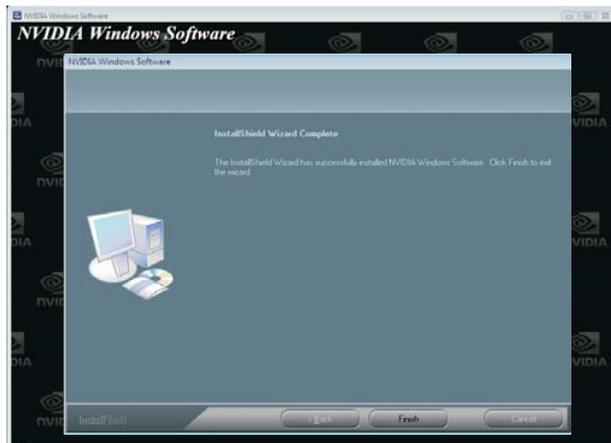
Realtek Audio Driver

On the top row of the screen, click the 3rd icon to open the Audio Driver menu.

1. Click "Realtek Audio Driver".

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

3. The setup program is currently installing the driver.

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

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

Smart Guardian

The Smart Guardian utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

On the top row of the screen, click the 6th icon to open the Utility menu.

1. Click "Smart Guardian".

2. Setup is now ready to install the utility. Click Next.
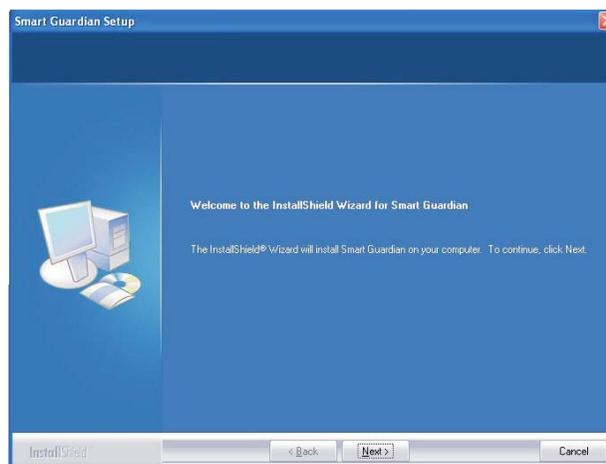
3. Enter the necessary information then click Next.
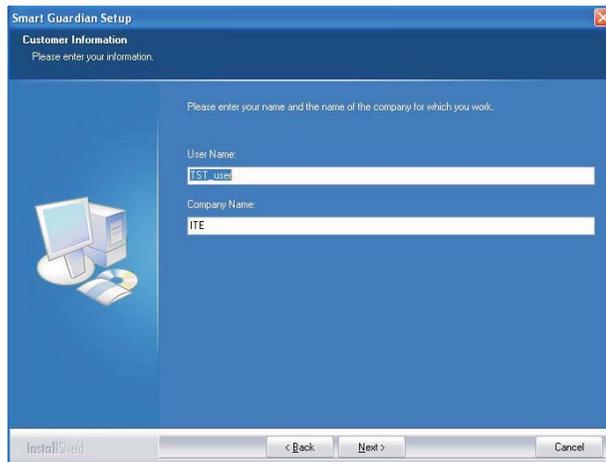
4. Click Next to install to the designated folder or click Browse to select another folder.
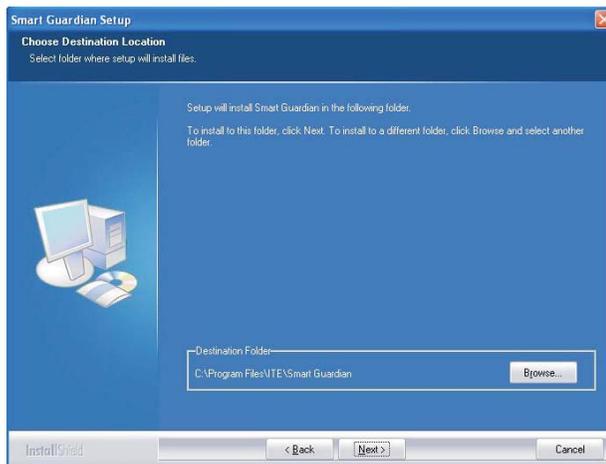
5. Click Next to add the program icon to the Program Folder.
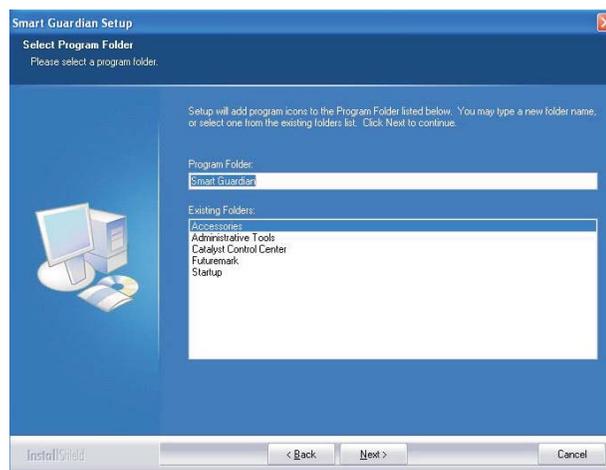
6. Select the option in accordance to the operating system that you are using then click Next.
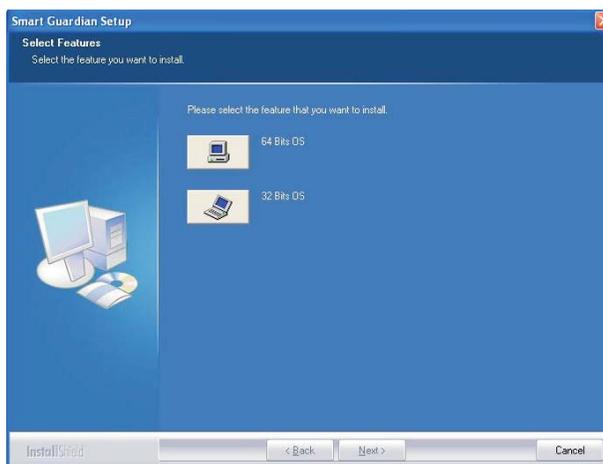
7. Click Finish. Reboot the system for the driver to take effect.
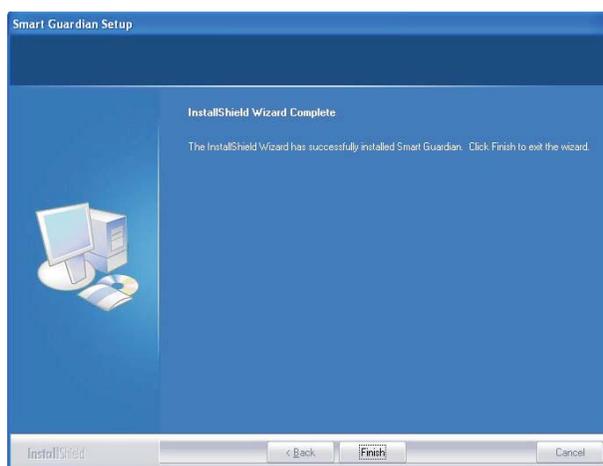
8.. After rebooting the system, you will find the Smart Guardian icon displayed on the screen. Double-click the icon the run the utility.
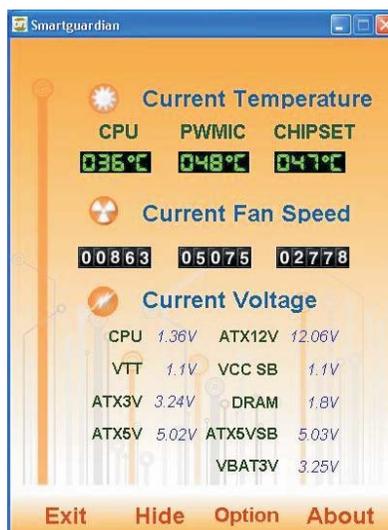
Installation Notes

1. "Autorun" ONLY supports the Windows® XP and Windows® Vista operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

2. All steps or procedures to install software drivers are subject to change without notice as the softwares are occassionally updated. Please go to DFI's web site at "http://www.dfi.com/support1/download2.asp" for the latest version of the drivers or software applications.

Chapter 5 - RAID

The NVIDIA GeForce 9400 chip alows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1, RAID 0+1 and RAID 5.

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 1 (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 0+1 (Striping and Mirroring)

RAID 0+1 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.

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.

Settings

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

1. Connect the Serial ATA drives.
2. Configure Serial ATA in the Award BIOS.
3. Configure RAID in the RAID BIOS.
4. Install the RAID driver during OS installation.

Step 1: Connect the Serial ATA Drives

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

> **Important:**
> 1. *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 Award BIOS

1. Power-on the system then press <Del> to enter the main menu of the Award BIOS.
2. Configure Serial ATA in the appropriate fields.
3. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" then press <Enter>.
4. Type <Y> and press <Enter>.
5. Reboot the system.

Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the RAID BIOS status message screen will appear. Press the <F10> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Step 4: Install the RAID Driver During OS Installation

The RAID driver must be installed during the Windows® XP 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.   Insert a floppy disk containing the RAID driver.
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.

Chapter 6 - NVIDIA SLI Technology

The NVIDIA® SLI™ (Scalable Link Interface) technology connects identical SLI-ready graphics cards in a single and scalable system. Using the SLI bridge to connect the graphics cards will provide extreme performance allowing you to enjoy games with the most visual effects and the most graphics demanding multimedia utilities. Dual GPUs provide increased 3D graphics and doubles graphics performance.

NVIDIA SLI Setup

> **Note:**
> • *Uninstall all existing graphics card drivers before installing the NVIDIA SLI graphics cards.*
> • *Use identical NVIDIA SLI graphics cards.*
> • *The system board used in the following illustrations may not resemble the actual board. These illustrations are for reference only.*

1. Power-off the system and monitor then unplug the power cord.

2. Remove the screw of the bracket that is opposite the PCIE 2 and PCIE 3 slots then remove the brackets.
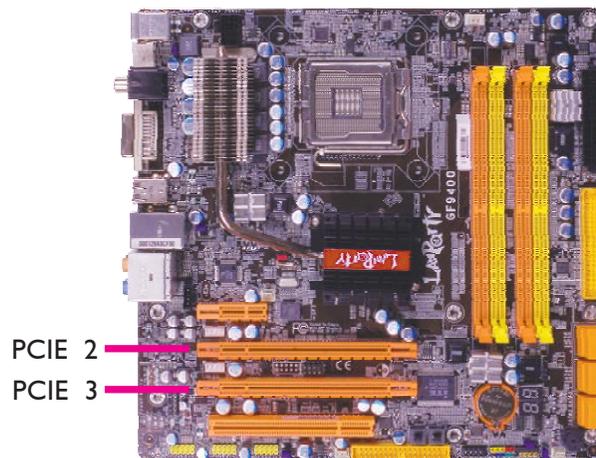
PCIE 2
PCIE 3

3. Align the NVIDIA SLI graphics cards above the PCIE 2 and PCIE 3 slots then press them down firmly until they are completely seated in the slot.

Graphics card
on the PCIE slot

Graphics card
on the PCIE slot
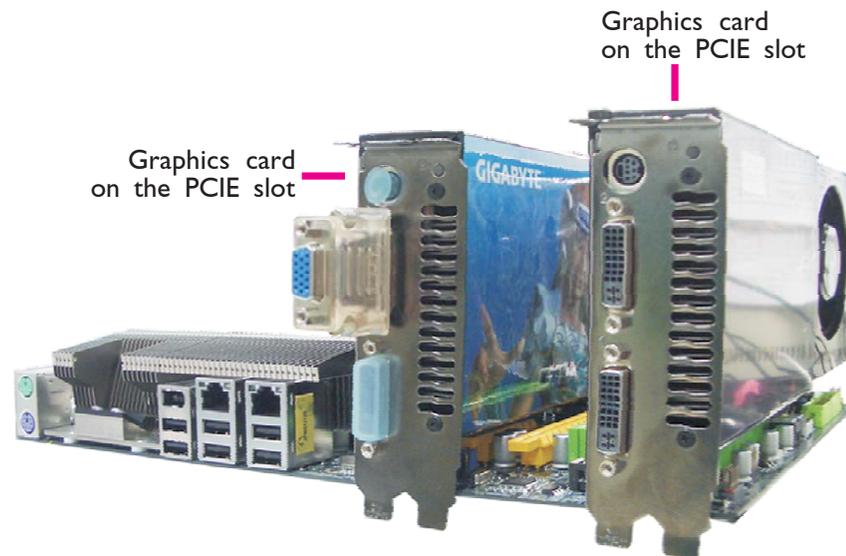
4. Secure the graphics cards with the screws you removed in step 2.

5. Connect the graphics cards by using an SLI bridge.

SLI bridge
Side view

SLI bridge
Bottom view

6. Connect auxiliary power source from the power supply unit to the graphics cards.

7. Connect the display device's VGA or DVI cable to the graphics card.

8. Make sure you have installed the nVidia GForce9400 System Drivers. Refer to chapter 4 of this manual for more information.

9. Install the graphics cards' drivers. Refer to the user's manual or documentation that came with the graphics cards for instructions on installing the drivers.

10. After restarting the system, right-click on the Windows desktop then select NVIDIA Control Panel.

11. Follow the remainder of the steps shown on the screen to enable and configure SLI.

Note:
Visit NVIDIA's website for the latest certified graphics cards.

6

Hybrid SLI®

Based on the NVIDIA SLI® multi-GPU technology, the NVIDIA Hybrid SLI® takes gaming experience to the next level. Hybrid SLI® is a combination of the integrated graphics and a discrete graphics card delivering high quality gaming images and improved performance. Its multi-GPU performance capabilities enhance gaming performance, productivity and platform power efficiency to the mainstream PC.

Basic Requirements

1. Windows® Vista operating system.
2. A Hybrid-SLI®-supported discrete graphics card.
3. Minimum of 1GB system memory.
4. 256MB onboard graphics RAM.

Hybrid SLI® Setup

1. Configure the BIOS.
    Set the "Hybrid SLI" field to Auto.
    Set the "Frame Buffer Size" field to 256MB.

    Refer to the Advanced Chipset Features submenu of the Award BIOS in chapter 3 for more information.

2. Install the nVidia GForce9400 System Drivers then restart the system for the new driver to take effect.

    Refer to the "nVidia GForce9400 System Drivers" section in chapter 4 for more information.

3. Install a graphics card. Hybrid SLI® supports only one discrete graphics card to work with the integrated GPU.

4. Install the graphics card's driver. Refer to the user's manual or documentation that came with the graphics cards for instructions on installing the drivers.

Chapter 7 - GeForce 9400 Temperature

The system board uses the NVIDIA GeForce 9400 all-in-one chip. The single chip design integrates graphics features and all traditional northbridge, southbridge, RAID, etc. which easily causes overheat during its operation.

Please give special attention to the following and take precautionary measures by applying proper heat dissipation so as to maintain system stability and prolong the life span of the system board and its components.

Monitoring the Operating Temperature

Install and run the Smart Guardian utility (included in the provided CD) to monitor the operating temperature of the CPU, chipset and system (PWM).

When the CPU uses a water-coolant heat pipe, the CPU's load already reached 100%. Without any cooling fan to dissipate heat, the system (PWM)'s temperature reached 73°C which is beyond the normal temperature range (refer to the figure below). The operating temperature must be kept below 60°C.

Under such circumstance, you must install a cooling fan on the heat sink of the chipset or PWM to lower the operating temperature of the chipset and system (PWM). After installing the cooling fan, the temperature of both the CPU and chipset went back to normal. Refer to the figure below.
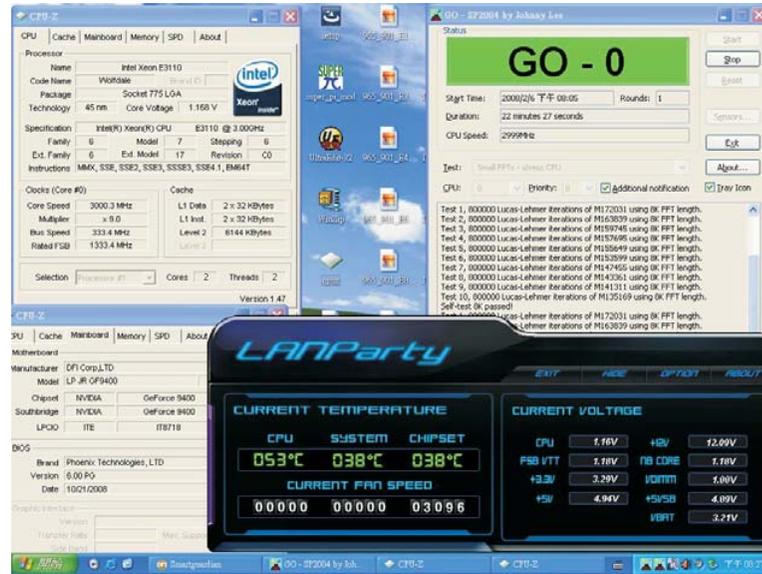
When the CPU uses a water-coolant heat pipe, the CPU's load is already 100%. However, this time, with a cooling fan to dissipate heat, the CPU, chipset and system (PWM)'s operating temperature is below 60°C. We strongly recommend using a CPU fan that provides good heat dissipation with fan speed of at least 2000 RPM (Rotation Per Minute).

Appendix A - ABS: Auto Boost System

The ABS (Auto Boost System) technology provides the convenience of saving and loading several OC settings. It allows you to use the best OC setting to optimize your system's performance. You can "Auto Boost" your system by simply pressing the <F1> key.

ABS provides the following functions that are easy for users to operate.

- Backup OC profile
- Load OC profile
- Exchange OC profile

Installing ABS

1. The ABS utility is included in the provided DVD. Insert the DVD into an optical drive. On the top row of the screen, click the 6th icon to open the Utility menu.

2. Click "Auto Boost System".

3. The installation wizard is extracting the files needed to install the utility. The wizard will lead you to complete the installation.
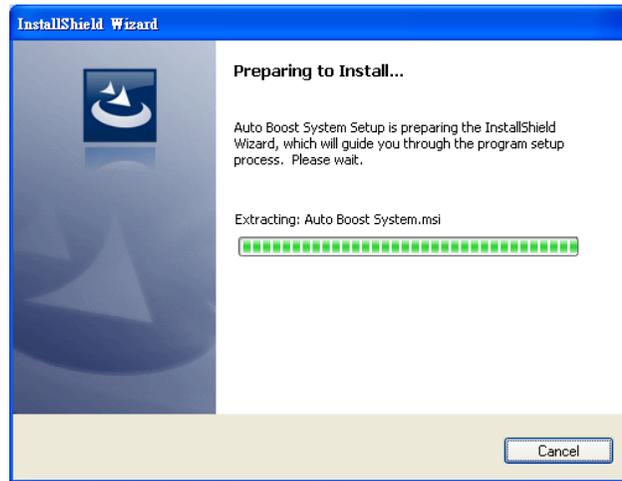
4. Setup is now ready to install the utility. Click Next.
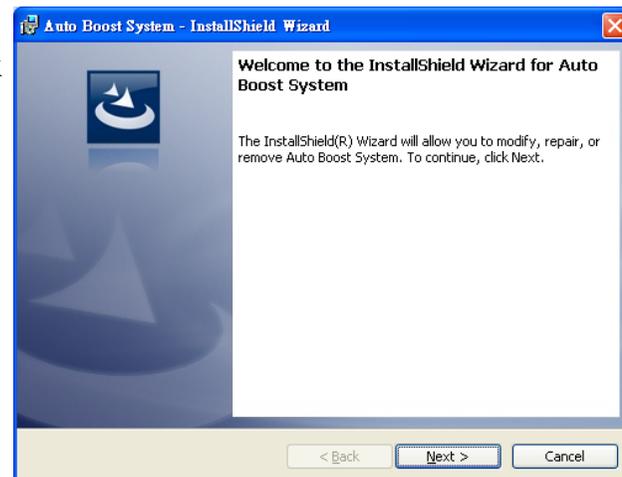
5. Click Next to install to the destination folder or click Change to select another folder.
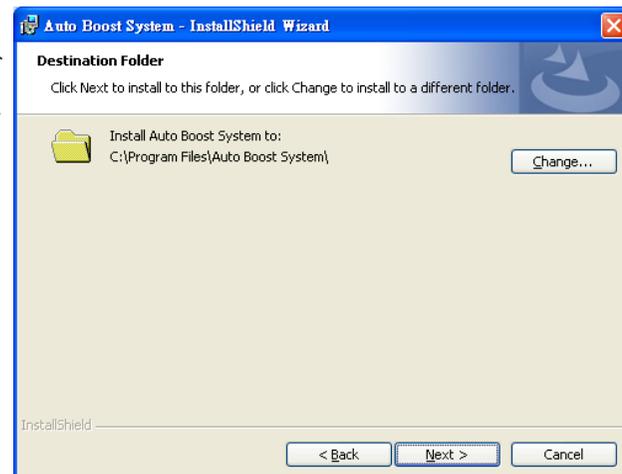
6. Click Install to begin the installation.
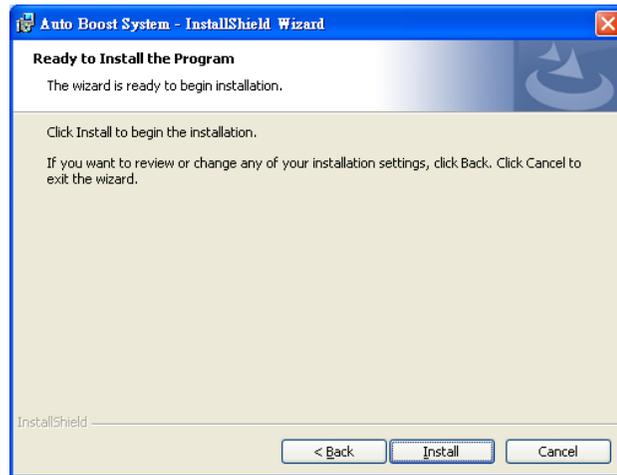
7. The installation wizard will copy all the necessary files and optimize the ABS features.
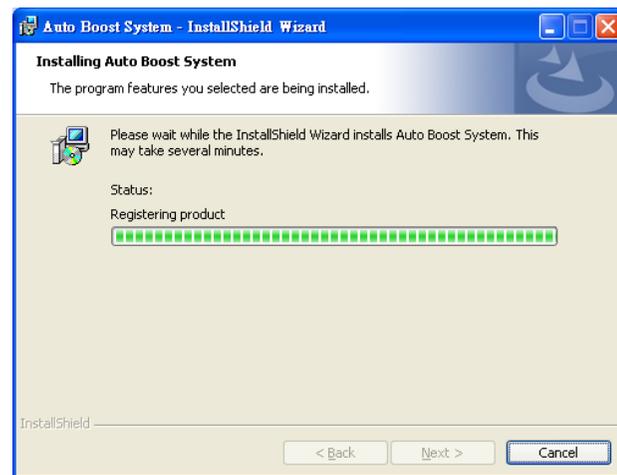
8. Click Finish to exit setup.
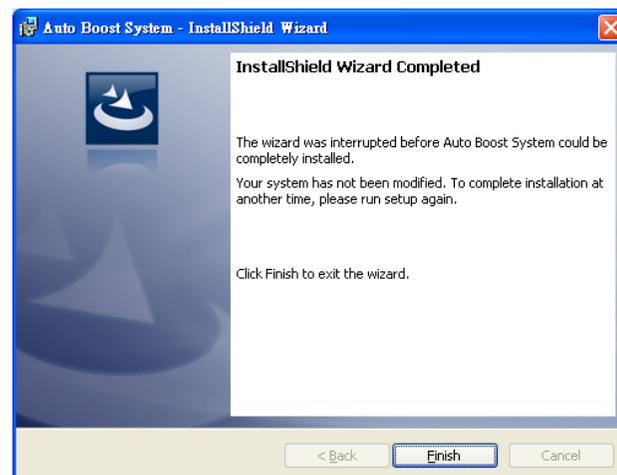
The ABS Utility

1. To run the ABS utility, power up your system then press F1. The screen will show the CPU upgrade information. Press "Any Key" to continue.
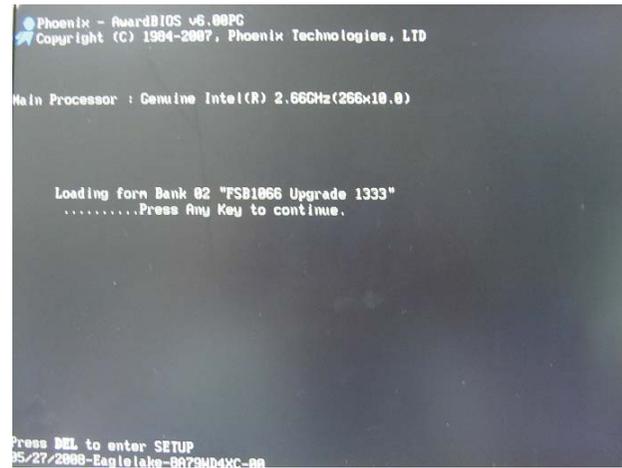
2. When the system enters the operating system, the ABS utility will appear and display the system's information. Click Auto Upgrade.

3. The screen on the right will appear.

4. Select the system board in use.

5. Click Confirm.

6. ABS supports Win Reloaded and Auto Upgrade features. Click Auto Upgrade.

7. Click Backup.

8. The default settings will appear on the screen. Click Save.

9. Enter a name for the default setting then click Save. You have just created a backup file of the board's default setting.
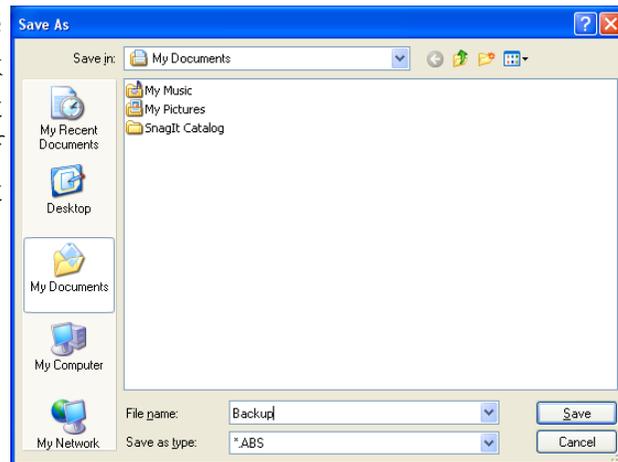
10. If in any case a new OC setting causes system instability, you can always retrieve the backup file saved earlier by clicking Reload.

11. Click Open.
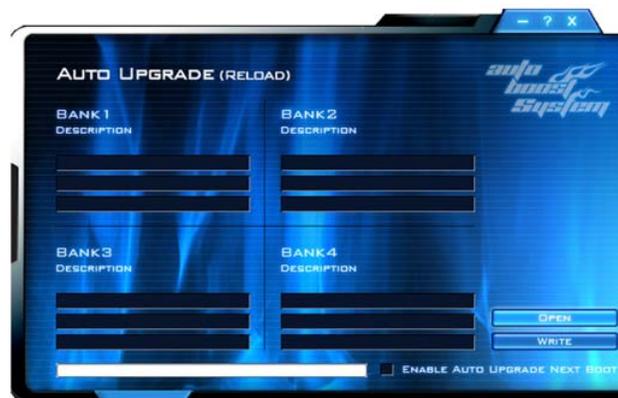
12. Select the backup file then click Open.
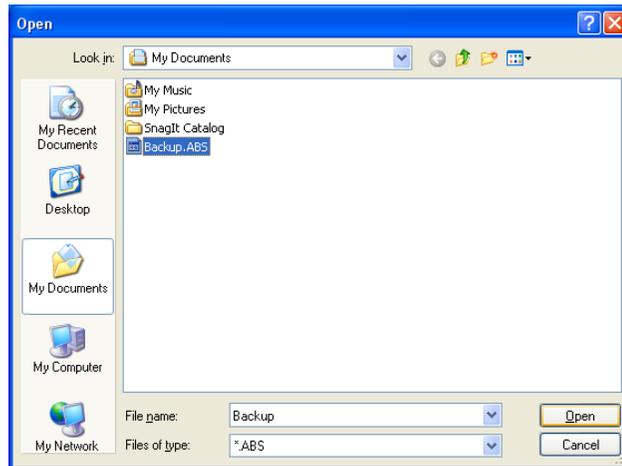
13. Click Write to load Banks 1-4 into the BIOS.

If you want the system to auto upgrade the setting the next time you boot the system, click "Enable Auto Upgrade Next Boot".

14. Click Yes to reboot.

Caution

Do you want to reboot system now?

Yes   No
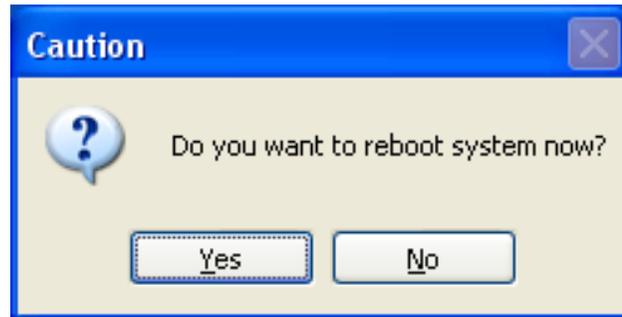
Important:
1. *We strongly recommend that you backup the default setting. If in any case your overclock setting causes system instability, you can always retrieve the default setting by reloading the backup file.*
2. *Everytime you change the BIOS settings, remember to always backup the file because the previous backup file will not match the new BIOS settings therefore it will not work.*

Appendix B - 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.
2. 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.
4. 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.
2. 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.
3. 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.

Parallel Port

The parallel printer doesn't respond when you try to print.

1. Make sure that your printer is turned on and that the printer is on-line.
2. Make sure your software is configured for the right type of printer attached.
3. Verify that the onboard LPT port's I/O address and IRQ settings are configured correctly.
4. Verify that the attached device works by attaching it to a parallel port that is working and configured correctly. If it works, the printer can be assumed to be in good condition. If the printer remains inoperative, replace the printer cable and try again.

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.

Appendix C - Debug LED Post and Troubleshooting

General Debug LED POST and Troubleshooting

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
Power on	None, blank	Nil	1. CMOS jumper is set at pins 2-3.	1. Set the CMOS jumper to pins 1-2 (default).
			2. 5Vsb of PSU is insufficient. (Minimum required - 2A)	2. Replace a suitable PSU.
00	Power on -> Stopped at **00**	BIOS program starts to set VID/FID to initialize CPU. (Boot Block area).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Defective CPU connection.	2. Remove and reinstall the CPU.
			3. Incompatible PSU.	3. Replace a suitable PSU.
			4. No CPU power.	4. Inspect the 12V connection.
			5. Reset button short-circuited.	5. Inspect the cable that connects the reset button to the front panel connector.
00	Power on -> **00** -> Reset -> Looping	CPU VID is incorrect.	PSU does not comply with the system's requirement.	Replace a PSU that will provide adequate power to the system.
A0	00 -> C1 -> Stopped at **A0**	A0~AF Definition: Initializing memory check code.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
			2. Mixed-up BIOS data.	2. Clear the CMOS data.
b8	00 -> C1 -> Stopped at **b8**	B0~BF Definition: Initializing memory/devices check code (registers).	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Incompatible PCI devices.	3. Remove and reconnect the PCI devices.
C0	00 -> Stopped at **C0**	Initializing memory.	1. Probing for failed memory devices.	1. Make sure the memory modules are installed properly in the slots.
			2. SPD value is lost or empty.	2. Replace the memory modules.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
C1	00 -> C0 -> Stopped at **C1** (00 -> C0 -> C1 -> Reset -> Looping)	Detecting memory.	1. Incompatible memory modules.	1. Remove and reinstall the memory modules.
		Detecting DRAM size and type. ECC auto-detection of L2 cache.	2. Overclocking issue (tight DRAM timing).	2. Clear the CMOS then load the default speed.
			3. One of the memory modules is defective.	3. Try installing a single module only.
C3/C5	C0 -> C1 -> Stopped at **C3/C5** (C0 -> C1 -> C3 -> Reset -> Looping)	Expanding compressed BIOS code to the DRAM.	1. Tight DRAM timing (system is unstable).	1. Clear the CMOS then load the default speed.
			2. Insufficient DRAM voltage.	2. Increase the DRAM's voltage.
			3. Overclocking issue.	3. Remove and reinstall the memory modules.
CF	Shutdown -> Stopped at **CF** (Shutdown -> CF -> Reset)	Resume on S1/S3 failed.	1. Insufficient DRAM voltage.	1. Increase the DRAM's voltage.
			2. Incompatible memory modules.	2. Remove and reinstall the memory modules.
			3. Overclocking issue (tight DRAM timing).	3. Load the default DRAM speed.
			4. BIOS issue.	4. Upgrade to the latest BIOS.
E0	C0 -> C1 -> Stopped at **E0**	E0-EF Definition: Initializing PCIE device check code.	1. Mixed-up BIOS data.	1. Clear the CMOS data.
			2. Incompatible PCI devices.	2. Remove and reinstall the PCI device.

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
25	00 -> C1 -> C3 -> Stopped at **25**	Enumerating PCI bus number. Assigning memory & I/O resource - searching for a valid VGA device & VGA BIOS then placing it in C000:0.	1. Incompatible PCI devices.	1. Remove all PCI/PCIE devices and leave only the graphics card to test first. Test the devices one at a time to determine the one with problem.
			2. Incompatible USB devices.	2. Remove all USB devices including the USB keyboard and instead use a PS/2 keyboard to test.
			3. Defective graphics card. (VGA BIOS did not initialize)	3. Replace the graphics card.
			4. The graphics card was not installed properly.	4. Remove and reinstall the graphics card.
26	00 -> C1 -> C3 -> Stopped at **26**	Initializing display card. Initializing onboard clock generator. Disabling respective clock resource to empty PCI & DIMM slots. Initializing onboard PWM3. Initializing onboard H/W monitor devices.	1. Defective graphics card.	1. Replace the graphics card.
			2. Initialized wrong BIOS process. (Clock-gen circuit / Super IO circuit)	2. Clear the CMOS data.
41	C3 -> 25 -> 26 -> Stopped at **41**	Initializing the FDD device.	Detected floppy error.	Unplug the FDD cable and check for errors or check the BIOS settings.
			* Mixed-up BIOS data could be one of the causes too.	* Replace a new BIOS chip.
50	Power on -> Stopped at **50**	Initializing USB devices.	1. USB failed to boot. (BBS issue)	1. Clear the CMOS data first.
			2. Incompatible USB devices.	2. Try connecting the device to another USB port.
				3. Test the USB devices one by one.
				4. Set the USB power source to 5V by means of the 5V/5Vsb select jumper.

C

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
75	Power on -> Stopped at **75**	Initializing storage devices. (Probing for IDE devices or SATA devices)	1. Lost power source of some devices.	1. Inspect the power cable connection.
			2. Incompatible SATA or PATA device.	2. Inspect the IDE cable connection or replace another PATA/ SATA device.
			3. CD-ROM's spin took too long.	3. Remove the disc, if present, from the CD-ROM device.
7F	Power on -> Stopped at **7F**	BIOS setup module in progress.	1. Checksum error occured. (Change/add devices such as CPU/ DRAM)	1. Load the optimized default setting of the BIOS.
	* Checksum error always appear after the BIOS' default has been loaded.	Reporting BIOS check errors.	2. Error occured after clearing the CMOS.	2. Alter or adjust the BIOS setting.
		Waiting for keys: DEL key to load the BIOS default. F1 key to continue.	3. Onboard battery is depleted.	3. Replace a new battery.
			4. Overclocking issue.	4. Decrease the overclock range.
			* The battery circuit of the MB is defective.	* RMA action required.
FF	Power on -> Run to **FF**	Boot attempt (INT 19h)	Normal Operation	Nil
	* Blank Screen	System booted normally.	* The graphics card was not connected properly or it is defective.	* Remove and reinstall the graphics card.

Abnormal Debug LED POST and Troubleshooting

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
79	Power on -> Prompt Stopped at **79**	There is no "79" definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data. 2. MB is defective. (NB chip may be defective.)	1. Clear the CMOS data. 2. RMA action required.
88	Power on -> Prompt Stopped at **88**	There is no "88" definition on the Award BIOS code. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data. 2. MB is defective. (NB chip may be defective.)	1. Clear the CMOS data. 2. RMA action required.
FF	Power on -> Prompt Stopped at **FF**	Definition: BIOS process completed. (BIOS program executed the wrong process therefore showing the wrong POST code.)	1. Mixed-up BIOS data. 2. MB is defective. (NB chip may be defective.)	1. Clear the CMOS data. 2. RMA action required.

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Clearing CMOS Data

1. Turn-off and unplug the AC power.

2. Move the jumper cap from pins 1-2 to pins 2-3.

3. Wait for 5 seconds then move the jumper cap back to pins 1-2.

1-2 On: Normal (default)

2-3 On: Clear CMOS Data

Battery

Totally Discharging the Motherboard

Unplug the AC power and remove the battery for 5 minutes then reinstall the battery and plug the AC power back on.