



**790FXB-M3H5**

**System Board  
User's Manual**

## Copyright

This publication contains information that is protected by copyright. No part of it may be reproduced in any form or by any means or used to make any transformation/adaptation without the prior written permission from the copyright holders.

This publication is provided for informational purposes only. The manufacturer makes no representations or warranties with respect to the contents or use of this manual and specifically disclaims any express or implied warranties of merchantability or fitness for any particular purpose. The user will assume the entire risk of the use or the results of the use of this document. Further, the manufacturer reserves the right to revise this publication and make changes to its contents at any time, without obligation to notify any person or entity of such revisions or changes.

© 2009. All Rights Reserved.

## Trademarks

Windows® 2000 and Windows® XP are registered trademarks of Microsoft Corporation. Award is a registered trademark of Award Software, Inc. Other trademarks and registered trademarks of products appearing in this manual are the properties of their respective holders.

## 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.....	5
Static Electricity Precaution.....	6
Safety Measures.....	6
About the Package.....	7
Before Using the System Board.....	7
<b>Chapter 1 - Introduction.....</b>	<b>8</b>
Specifications.....	8
Features.....	10
<b>Chapter 2 - Hardware Installation.....</b>	<b>15</b>
System Board Layout .....	15
System Memory.....	16
CPU.....	22
Northbridge Heat Sink.....	28
Jumper Settings.....	29
Rear Panel I/O Ports.....	33
Internal I/O Connectors.....	37
<b>Chapter 3 - BIOS Setup.....</b>	<b>49</b>
Switchable Modes for Overclocking.....	49
Award BIOS Setup Utility.....	50
RAID BIOS.....	103
Updating the BIOS.....	104
<b>Chapter 4 - Supported Software.....</b>	<b>106</b>
<b>Chapter 5 - RAID.....</b>	<b>134</b>
<b>Chapter 6 - ATI CrossFireX Technology.....</b>	<b>137</b>
<b>Chapter 7 - Cool'n'Quiet Technology.....</b>	<b>143</b>
<b>Appendix A - ABS.....</b>	<b>145</b>
<b>Appendix B - System Error Message.....</b>	<b>153</b>
<b>Appendix C - Troubleshooting.....</b>	<b>155</b>
<b>Appendix D -Debug LED POST and Troubleshooting .....</b>	<b>159</b>

## 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 consequential 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
- ☑ Four Serial ATA data cables
- ☑ Power cable with 2 Serial ATA power connectors (2 pcs)
- ☑ Smart connectors
- ☑ One I/O shield
- ☑ One DVD
- ☑ 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 I - Introduction

---

## Specifications

<b>Processor</b>	<ul style="list-style-type: none"><li>• AMD® Phenom™ II processor</li><li>• HyperTransport 3.0 (5200MT/s) HyperTransport 1.0 (2000/1600MT/s)</li><li>• AMD OverDrive provides tuning options using the new “Advanced Clock Calibration” overclocking feature.</li><li>• Socket 938 AM3 45nm</li></ul>
<b>Chipset</b>	<ul style="list-style-type: none"><li>• AMD chipset<ul style="list-style-type: none"><li>- Northbridge: AMD 790FX</li><li>- Southbridge: AMD SB750</li></ul></li></ul>
<b>System Memory</b>	<ul style="list-style-type: none"><li>• Four 240-pin DDR3 DIMM sockets</li><li>• Supports DDR3 1600(O.C.)/1333/1066 MHz</li><li>• Delivers up to 21Gb/s bandwidth at 1333MHz</li><li>• Supports dual channel (128-bit wide) memory interface</li><li>• Supports non-ECC unbuffered DIMMs</li><li>• Supports up to 16GB system memory</li><li>• Windows® 32-bit operating system is unable to accurately detect more than 4GB system memory. Therefore, if you are using this operating system, we strongly recommend that you install a less than 3GB system memory.</li></ul>
<b>Expansion Slots</b>	<ul style="list-style-type: none"><li>• 3 PCI Express (Gen 2) x16 slots<ul style="list-style-type: none"><li>- 2-way CrossFire at x16/x16 or x16/x4 bandwidth</li><li>- 3-way CrossFire at x16/x16/x4 bandwidth</li></ul></li><li>• 3 PCI slots</li></ul>
<b>BIOS</b>	<ul style="list-style-type: none"><li>• Award BIOS</li><li>• CMOS Reloaded</li><li>• CPU/DRAM overclocking</li><li>• CPU/DRAM/Chipset overvoltage</li><li>• 8Mbit SPI flash memory</li></ul>
<b>Audio</b>	<ul style="list-style-type: none"><li>• Realtek ALC885 8-channel HD Audio Codec</li><li>• High-performance DACs with 106dB dynamic range (A-Weight), ADCs with 101dB dynamic range (A-Weight)</li></ul>
<b>LAN</b>	<ul style="list-style-type: none"><li>• Marvell 88E8056 PCIE Gigabit LAN controller</li><li>• Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards</li></ul>
<b>IDE</b>	<ul style="list-style-type: none"><li>• One IDE connector allows connecting up to two UltraDMA 133Mbps hard drives</li></ul>

<b>Serial ATA with RAID</b>	<ul style="list-style-type: none"> <li>• Supports up to 6 SATA devices</li> <li>• SATA speed up to 3Gb/s</li> <li>• RAID 0/1/0+1(10)/5/JBOD/AHCI</li> </ul>
<b>Rear Panel I/O</b>	<ul style="list-style-type: none"> <li>• 1 mini-DIN-6 PS/2 mouse port</li> <li>• 1 mini-DIN-6 PS/2 keyboard port</li> <li>• 1 optical S/PDIF-out port</li> <li>• 1 coaxial RCA S/PDIF-out port</li> <li>• 6 USB 2.0/1.1 ports</li> <li>• 1 RJ45 LAN port</li> <li>• Center/subwoofer, rear R/L and side R/L jacks</li> <li>• Line-in, line-out (front R/L) and mic-in jacks</li> </ul>
<b>Internal I/O</b>	<ul style="list-style-type: none"> <li>• 3 connectors for 6 additional external USB 2.0 ports</li> <li>• 1 connector for an external COM port</li> <li>• 1 front audio connector</li> <li>• 1 CD-in connector</li> <li>• 1 IrDA connector</li> <li>• 1 CIR connector</li> <li>• 6 Serial ATA connectors</li> <li>• 1 40-pin IDE connector</li> <li>• 1 floppy connector</li> <li>• 1 24-pin ATX power connector</li> <li>• 1 8-pin 12V power connector</li> <li>• 2 4-pin 5V/12V power connectors (FDD type)</li> <li>• 1 front panel connector</li> <li>• 6 fan connectors</li> <li>• 1 diagnostic LED</li> <li>• EZ touch switches (power switch and reset switch)</li> </ul>
<b>Power Management</b>	<ul style="list-style-type: none"> <li>• ACPI and OS Directed Power Management</li> <li>• ACPI STR (Suspend to RAM) function</li> <li>• Wake-On-PS/2 Keyboard/Mouse</li> <li>• Wake-On-USB Keyboard/Mouse</li> <li>• Wake-On-Ring</li> <li>• Wake-On-LAN</li> <li>• RTC timer to power-on the system</li> <li>• AC power failure recovery</li> </ul>
<b>Hardware Monitor</b>	<ul style="list-style-type: none"> <li>• Monitors CPU/system/chipset temperature</li> <li>• Monitors 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip voltages</li> <li>• Monitors the speed of the cooling fans</li> <li>• CPU Overheat Protection function monitors CPU temperature during system boot-up</li> </ul>
<b>PCB</b>	<ul style="list-style-type: none"> <li>• ATX form factor</li> <li>• 24.5cm (9.64") × 30.5cm (12")</li> </ul>

## Features



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



ATI's CrossFire™ technology drives your PC to a new peak of performance by combining multiple GPUs in a single system. By connecting a Radeon CrossFire Edition graphics card and a standard PCI Express graphics card, the power of the dual GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Aside from dual GPU for 3D rendering, CrossFire's new feature - asymmetric processing technology, allows adding another dedicated GPU for physics processing. The 3 GPUs simultaneously handle Data Parallel Processing (DPP) computing tasks such as game rendering and physics in a single system. This provides more realistic cutting edge 3D graphics to run at high resolutions.



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.



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 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.



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.



The system board allows configuring RAID on Serial ATA devices. It supports RAID 0/1/0+1(10)/5/JBOD/AHCI.



The Marvell 88E8056 PCI Express Gigabit LAN chip 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.



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 shut-down. This preventive measure has been added to protect the CPU from damage and insure a safe computing environment.



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.



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.



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  $\geq 720\text{mA}$ .*

**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  $\geq 720\text{mA}$ .*

**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  $\geq 720\text{mA}$ .*

**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  $\geq 1.5\text{A}$ . For 3 or more USB ports, the 5VSB power source of your power supply must support  $\geq 2\text{A}$ .*

**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:**

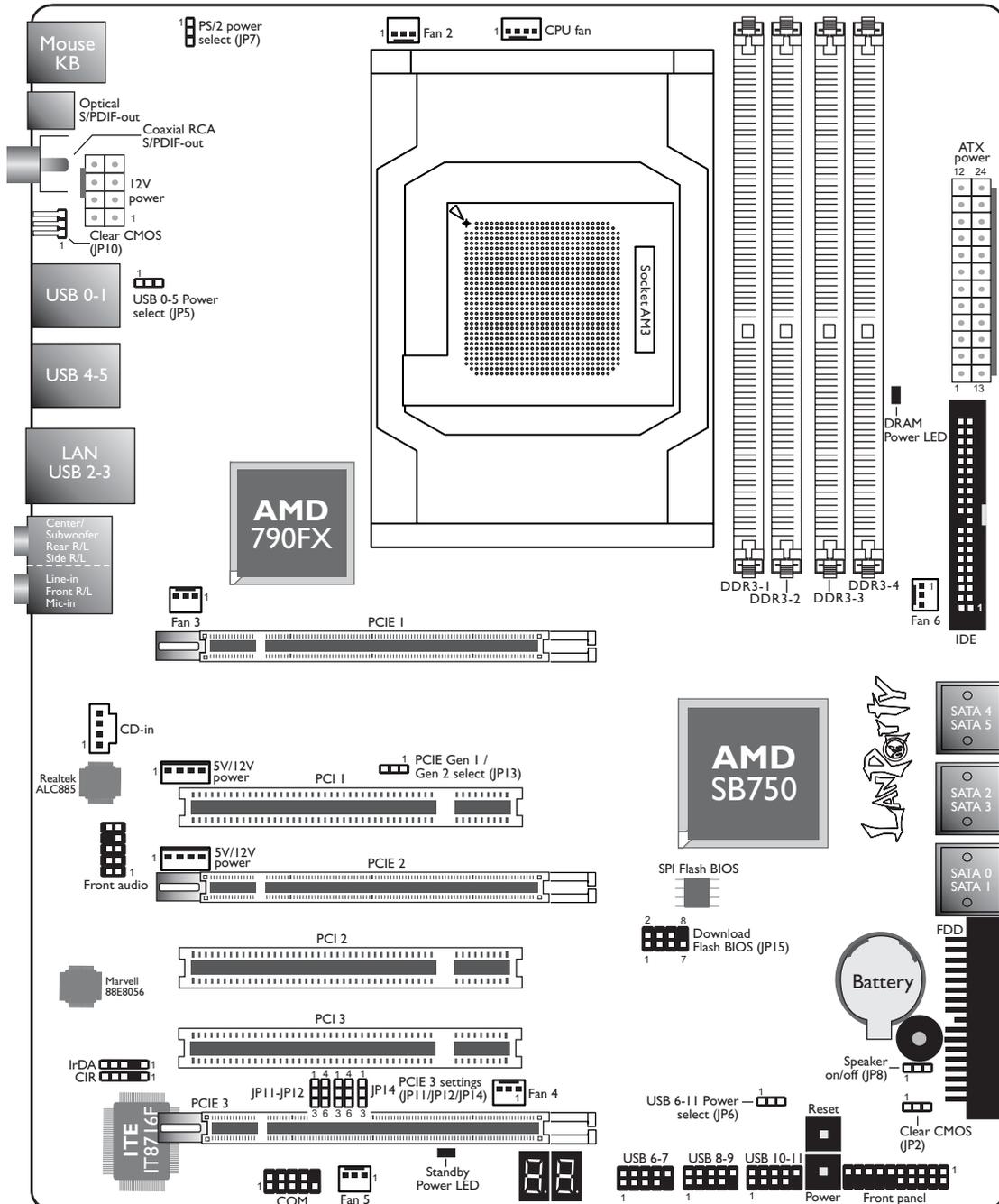
*The 5VSB power source of your power supply must support  $\geq 1A$ .*

**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



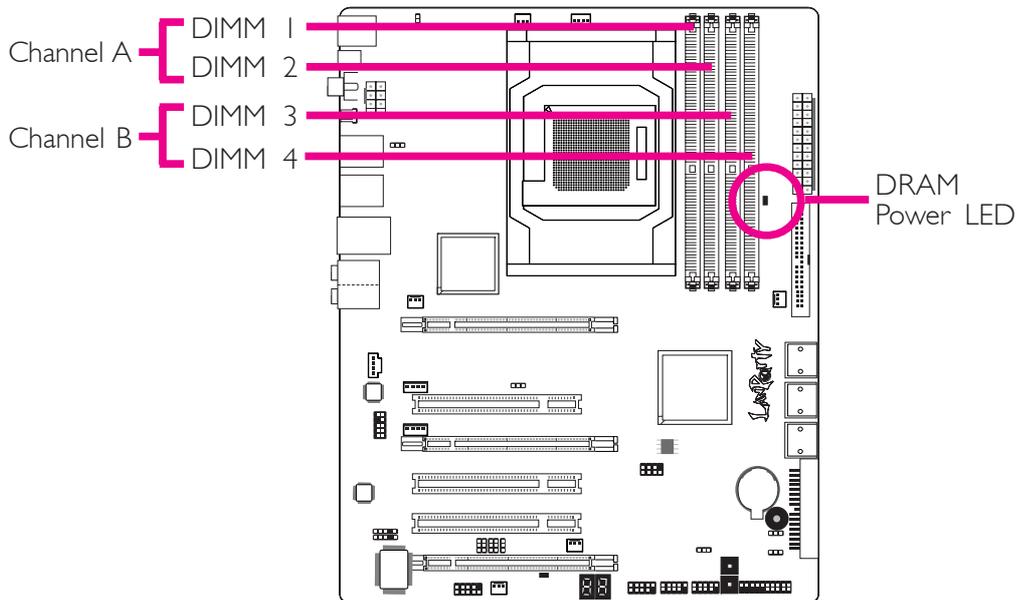
**Warning:**

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 are divided into 2 channels:

Channel A - DIMM 1 and DIMM 2

Channel B - DIMM 3 and DIMM 4

The system board supports the following memory interface.

### Single Channel (SC)

Data will be accessed in chunks of 64 bits (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.

<b>Single Channel</b>	DIMMs are on the same channel. DIMMs in a channel can be identical or completely different. Not all slots need to be populated.
<b>Virtual Single Channel</b>	DIMMs of different memory configurations are on different channels. Odd number of slots can be populated.
<b>Dual Channel</b>	DIMMs of the same memory configuration are on different channels.
<b>Dynamic Mode Addressing</b>	In single channel, requires even number of 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 BIOS.

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 DIM 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



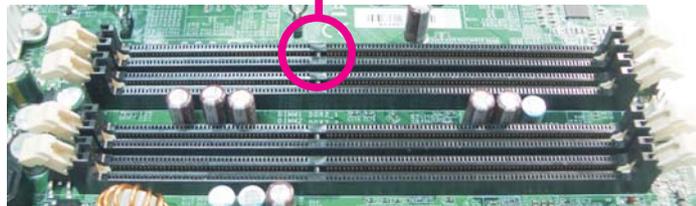
Ejector  
tab

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

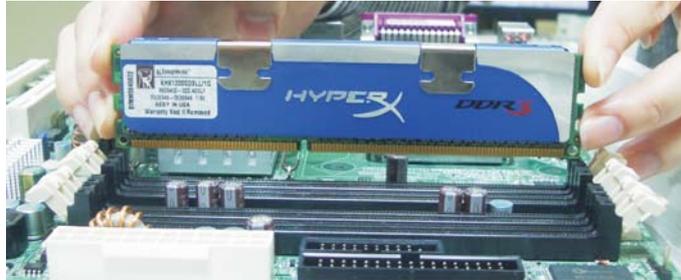


Notch

Key



- 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.



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



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



## BIOS Setting

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

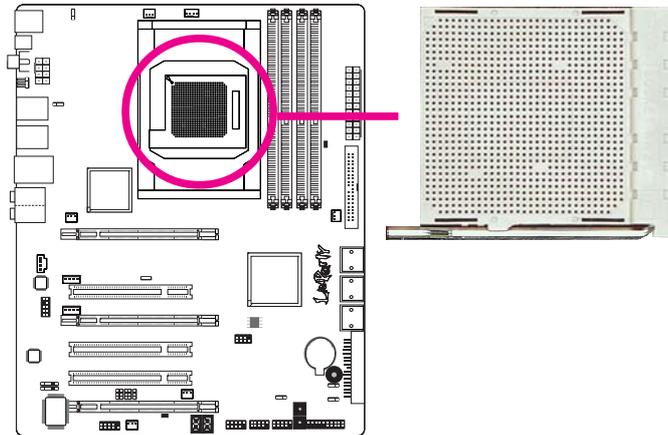
## CPU

### Overview

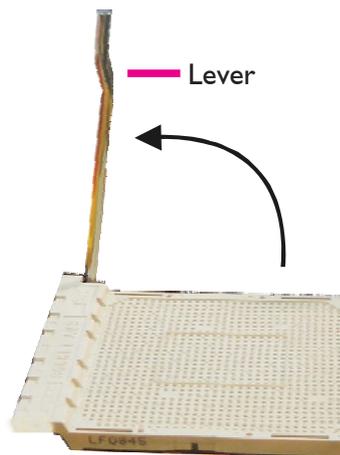
The system board is equipped with Socket AM3 for installing an AMD CPU designed for this socket.

### 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 Socket AM3 on the system board.



4. Unlock the socket by pushing the lever side-ways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.

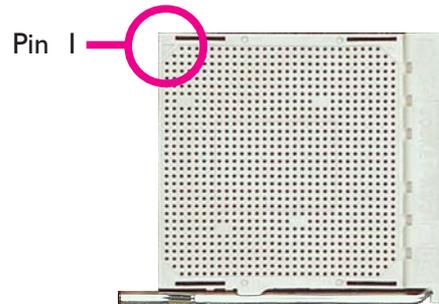


5. Position the CPU above the socket. The gold mark on the CPU must align with pin 1 of the CPU socket.

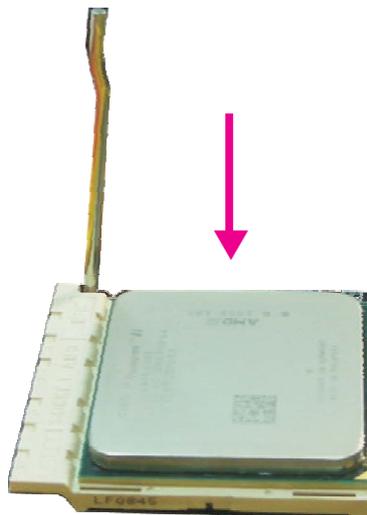


**Important:**

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



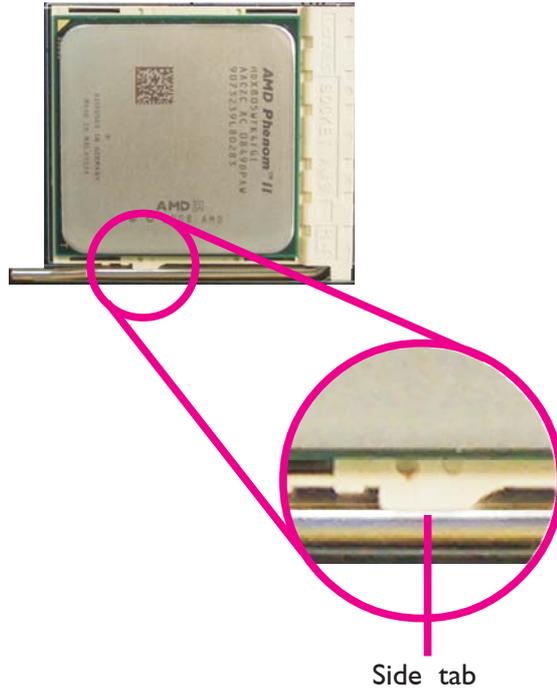
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.



**Important:**

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

7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.



## 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 over-heat damaging both the CPU and system board.

The fan / heat sink assembly must provide airflow adequate to ensure appropriate internal temperature and cooling of the components in the system. Failure to use the appropriate cooling system may result in reduced performance or, in some instances, damage to the system board.



### Note:

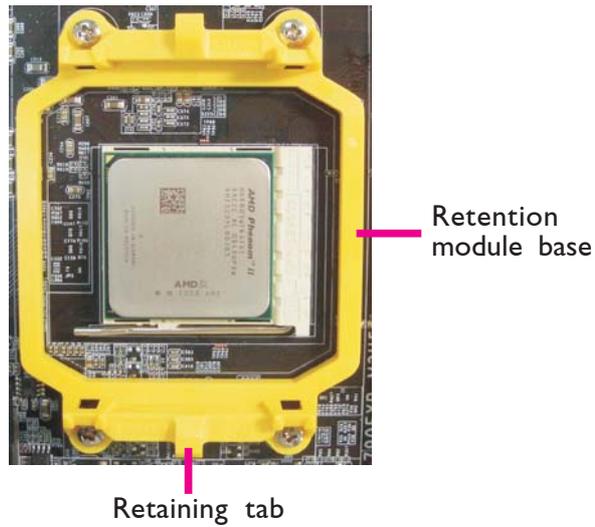
- Use only certified fan and heat sink.
- The fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.

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.

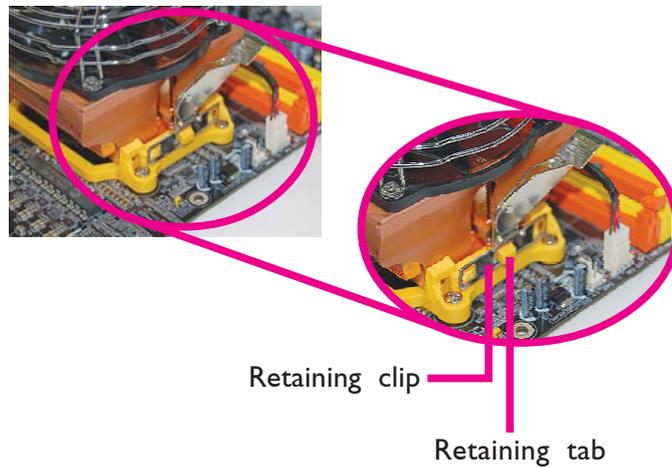
Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.



- The system board comes with the retention module base already installed.



- Place the heat sink on top of the CPU. Now hook one side of the retention clip onto the retention module base by fitting the hole(s) on the retention clip into the retaining tab(s) of the retention module base. Hook the other side of the retention clip so that the hole(s) on the retention clip also fit into the retaining tab(s) of the retention module base.



4. Move the retention lever to its opposite side then push it down to lock the fan and heat sink assembly to the retention module base.



Retention  
lever

**Note:**

- You will not be able to secure the fan and heat sink assembly in place if it did not fit properly onto the retention module base.
  - Make sure there is sufficient air circulation across the CPU fan and heat sink.
5. Connect the CPU fan's cable connector to the CPU fan connector on the system board.

## Northbridge Heat Sink

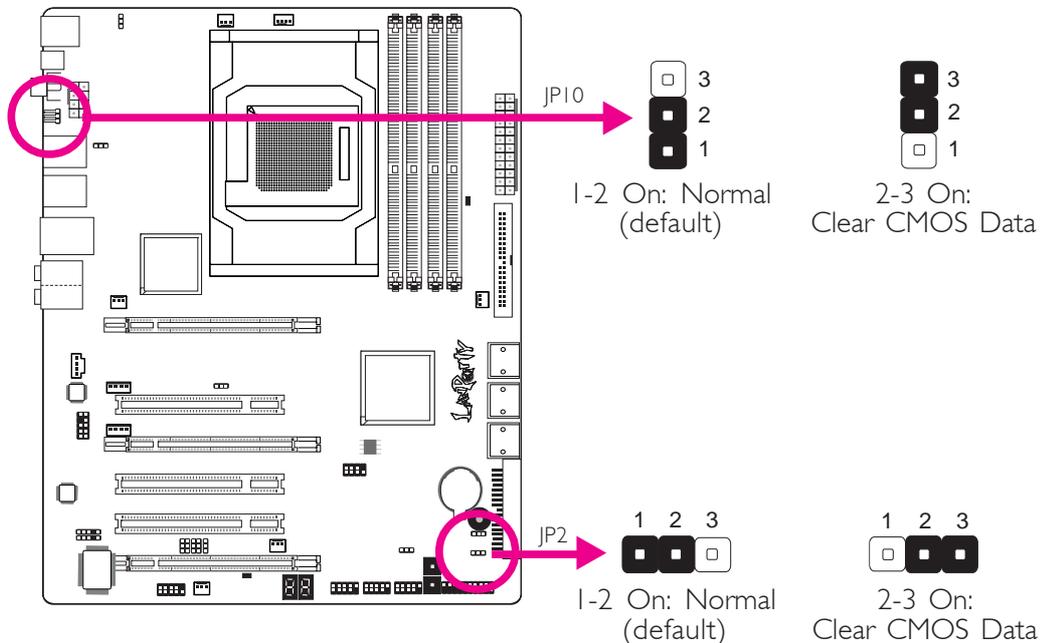
The Northbridge must be kept cool by using a heat sink. The heat sink will dissipate heat generated by the Northbridge. Without the heat sink, the Northbridge will overheat damaging both the Northbridge and the system board.

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



If you encounter the following,

- CMOS data becomes corrupted.*
- You forgot the supervisor or user password.*
- The overclocked settings in the BIOS resulted to the system's instability or caused system boot up problems.*

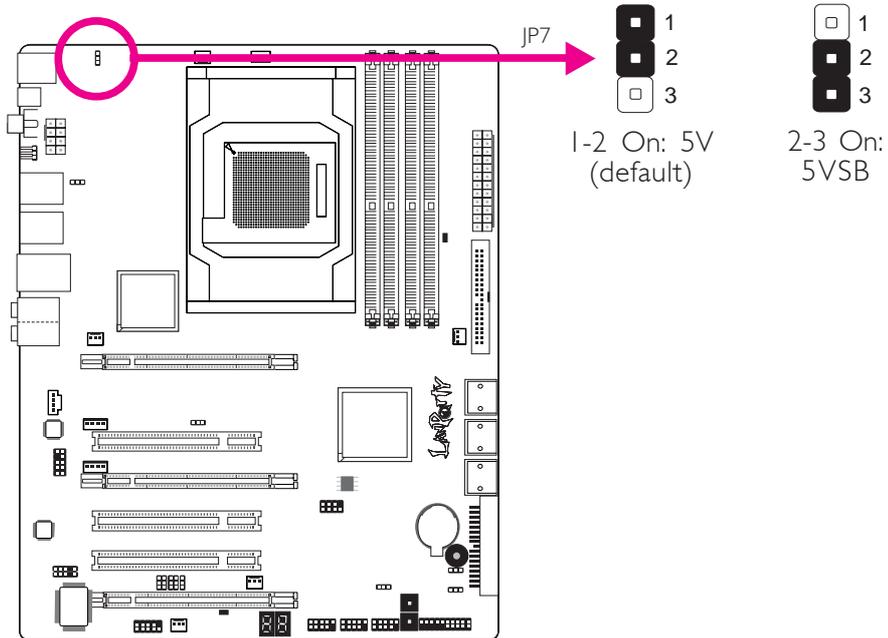
you can reconfigure the system with the default values stored in the ROM BIOS.

JP10 is accessible from the rear panel of the system. This provides convenience by allowing you to clear the CMOS without having to remove the chassis cover.

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

- Power-off the system then unplug the power cord.
- Set JP2 or JP10 pins 2 and 3 to On. Wait for a few seconds and set JP2 or JP10 back to its default setting, pins 1 and 2 On.
- Now plug the power cord then power-on the system.

## PS/2 Power Select

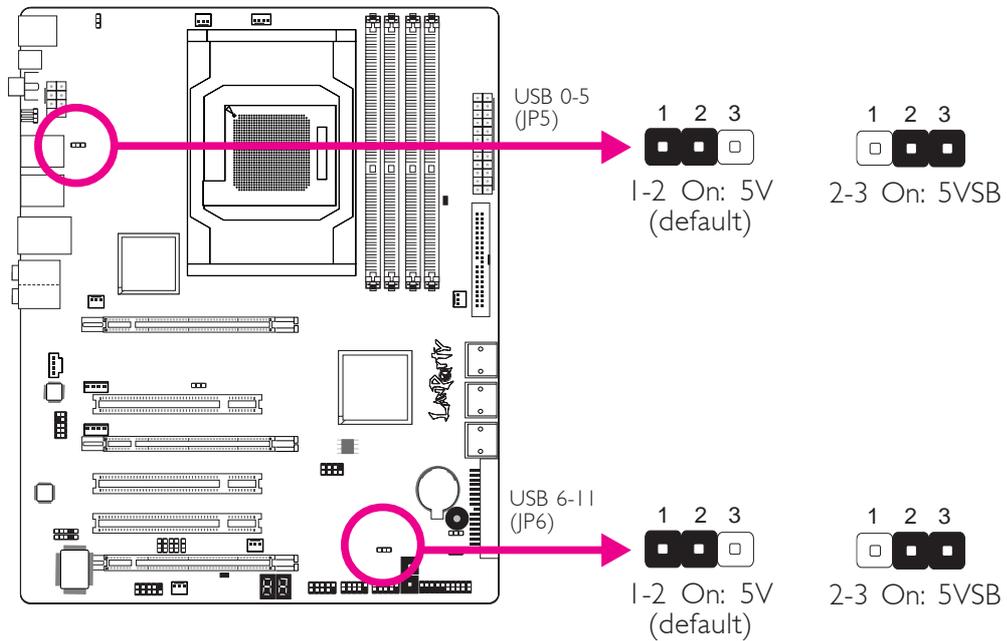


Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

**Important:**

The 5VSB power source of your power supply must support  $\geq 720\text{mA}$ .

## USB Power Select

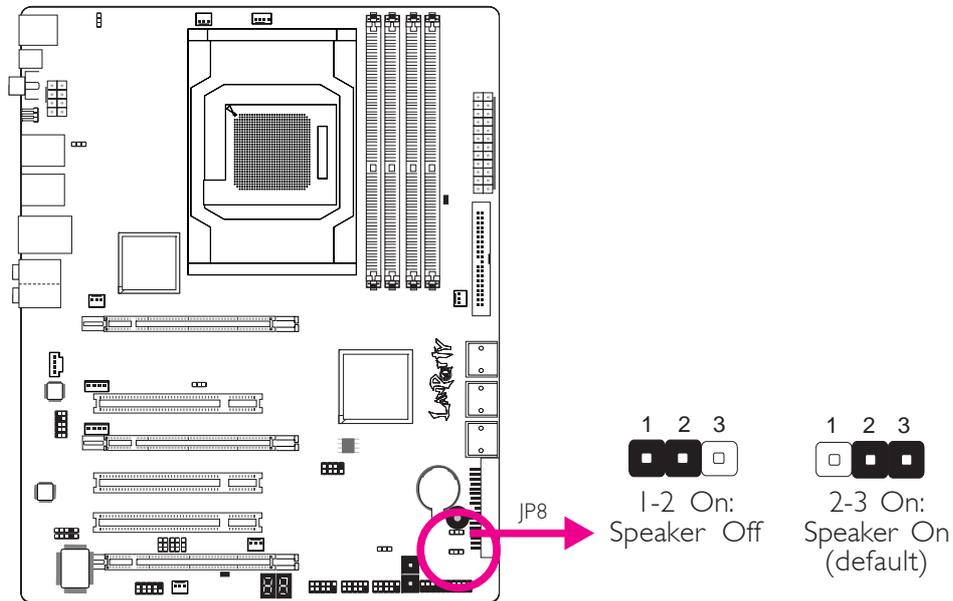


Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system..

**Important:**

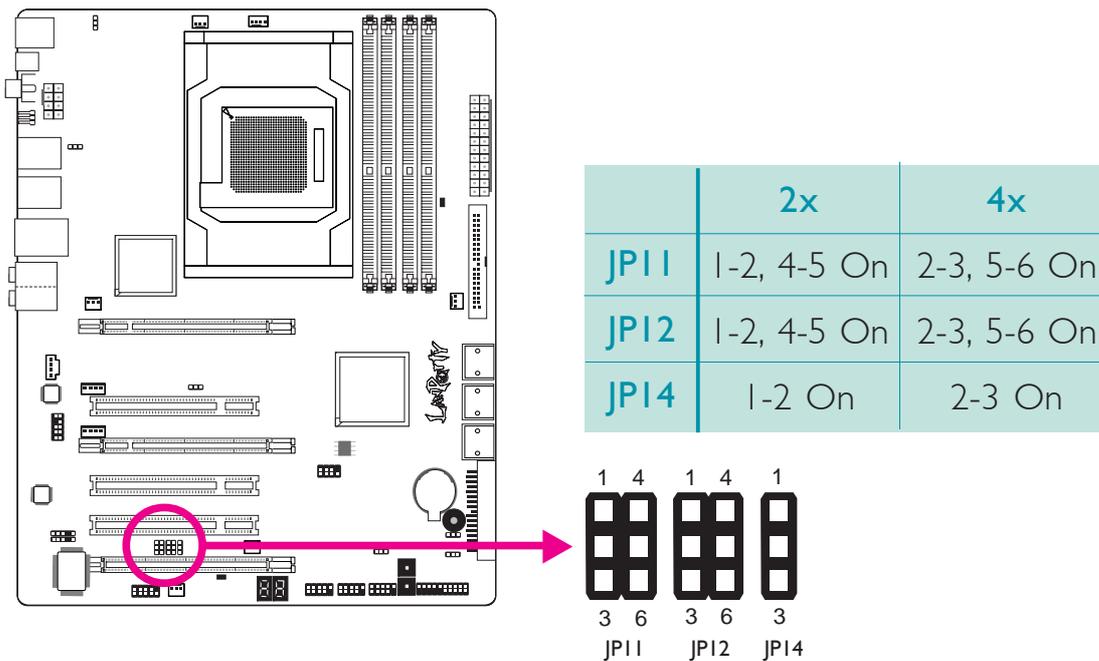
The 5VSB power source of your power supply must support  $\geq 1.5A$  (2 devices) or  $\geq 2A$  (3 or more devices).

## Speaker On/Off Select

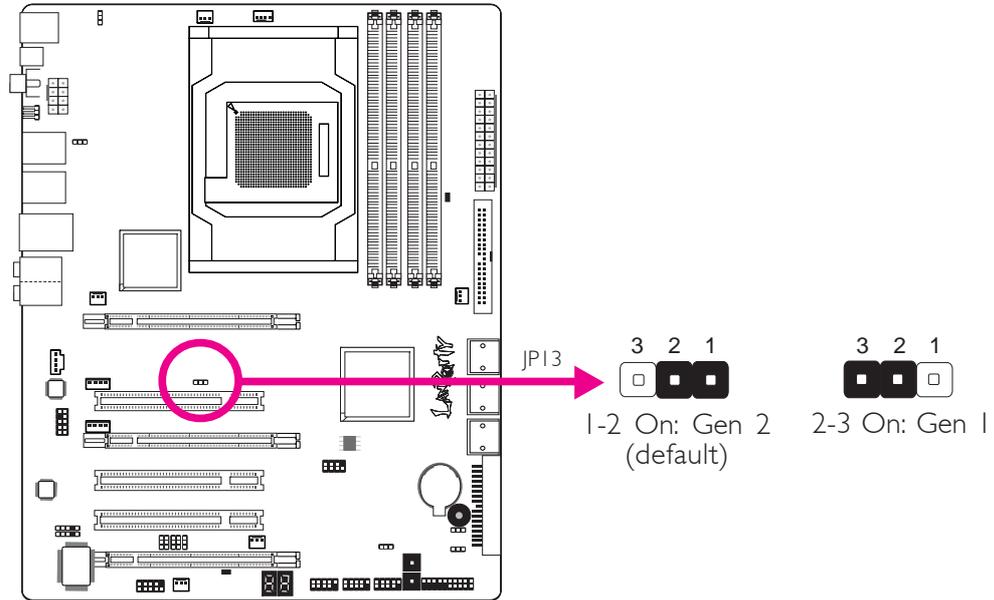


The system board is equipped with a buzzer which serves as the PC's speaker. By default the buzzer is "on" allowing you to hear the system's beep messages and warnings. If you intend to use an external speaker, turn this function off by setting JP8 pins 1 and 2 to On.

## PCIe 3 Setting

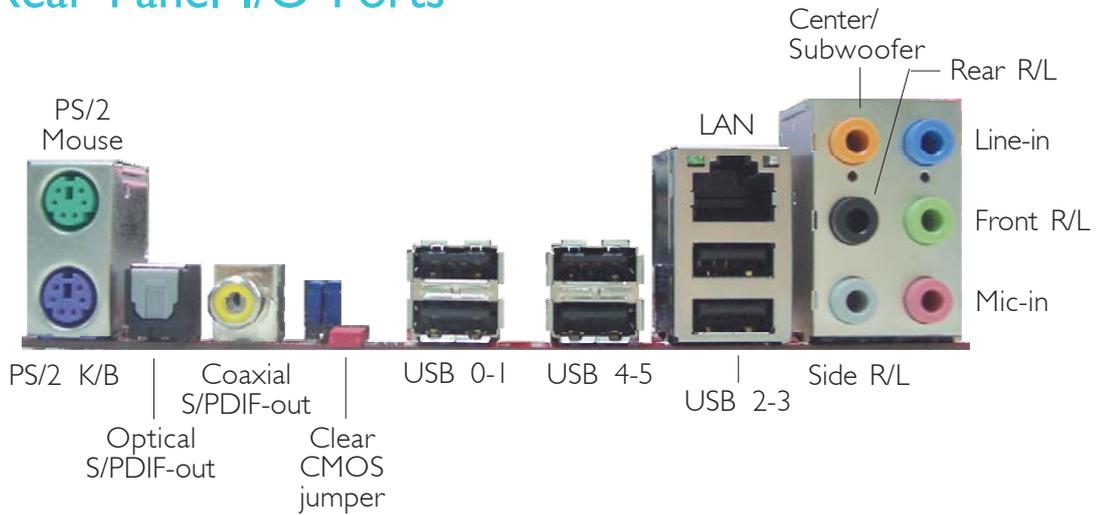


## PCIe Gen 1 / Gen 2 Select

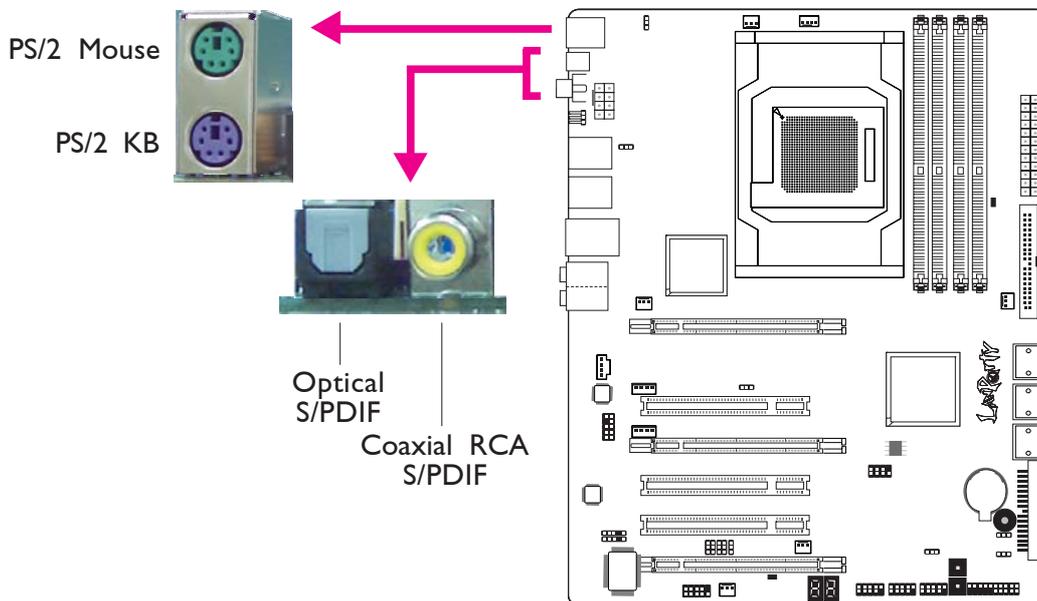


Set this jumper according to the type of PCI Express card that you are using.

## 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 keyboard.

### 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

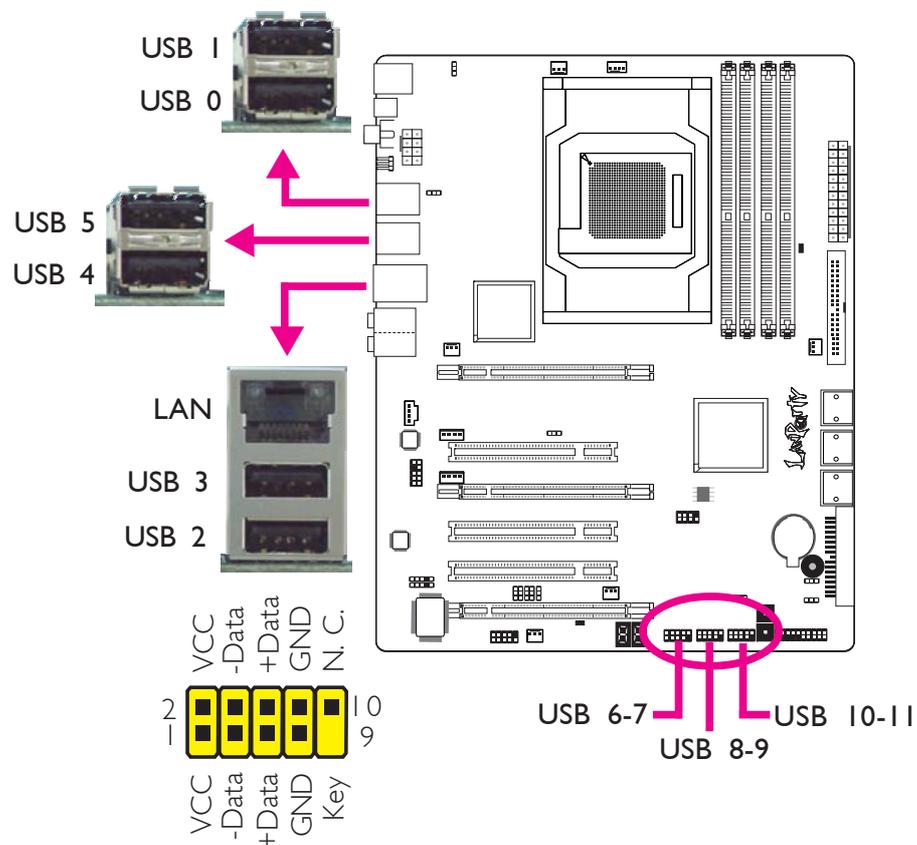
The coaxial RCA S/PDIF jack is used to connect an external audio output device using a coaxial S/PDIF cable.



#### **Important:**

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

## USB and LAN Ports



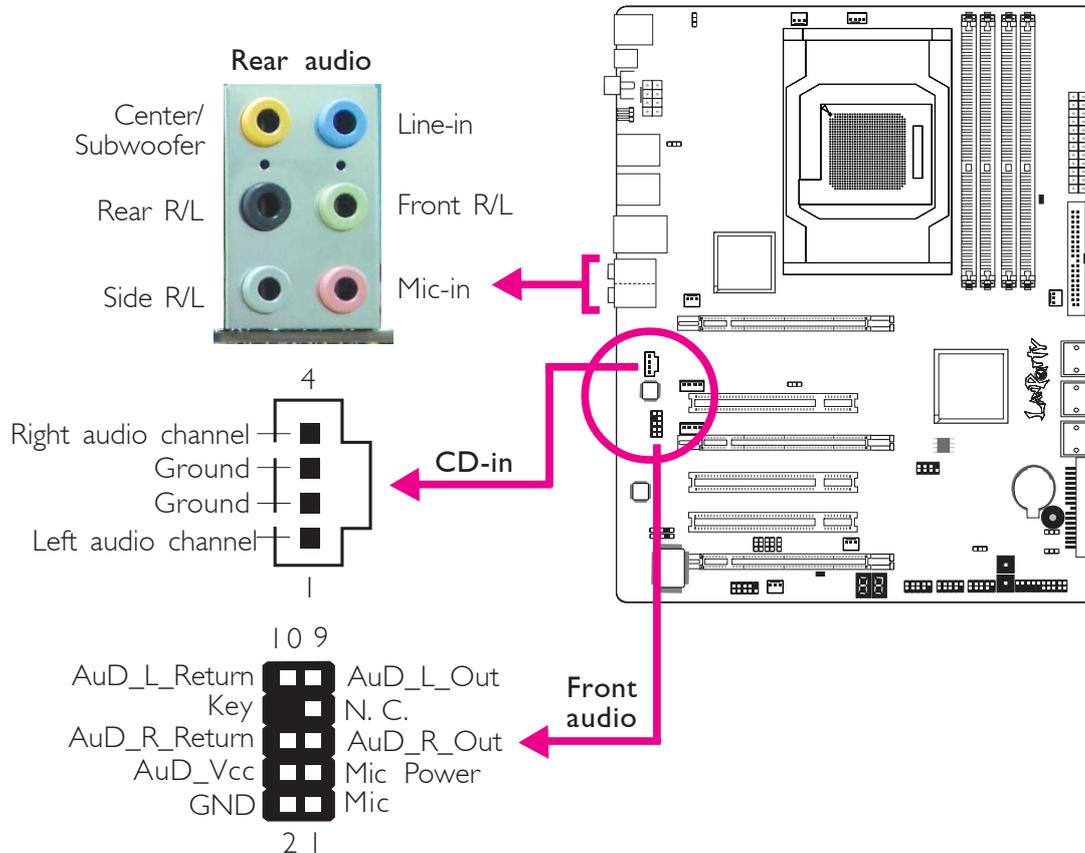
### USB

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



## 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

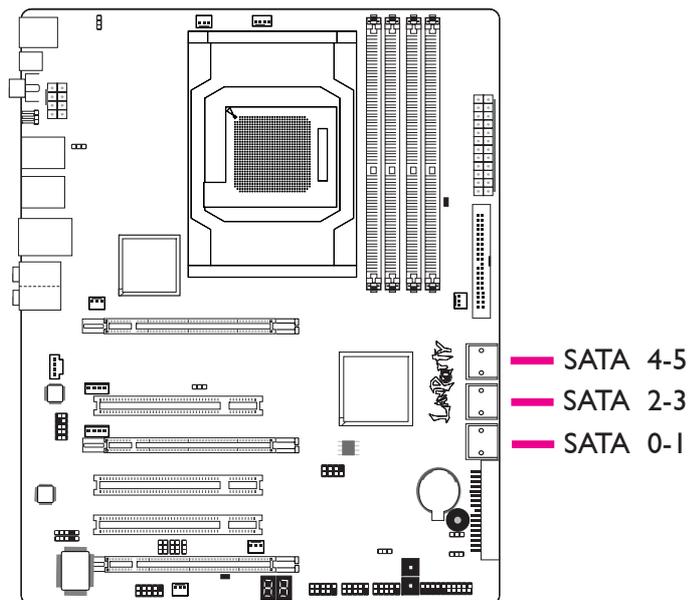
The front audio connector is used to connect to the line-out and mic-in jacks that are at the front panel of your system.

### 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

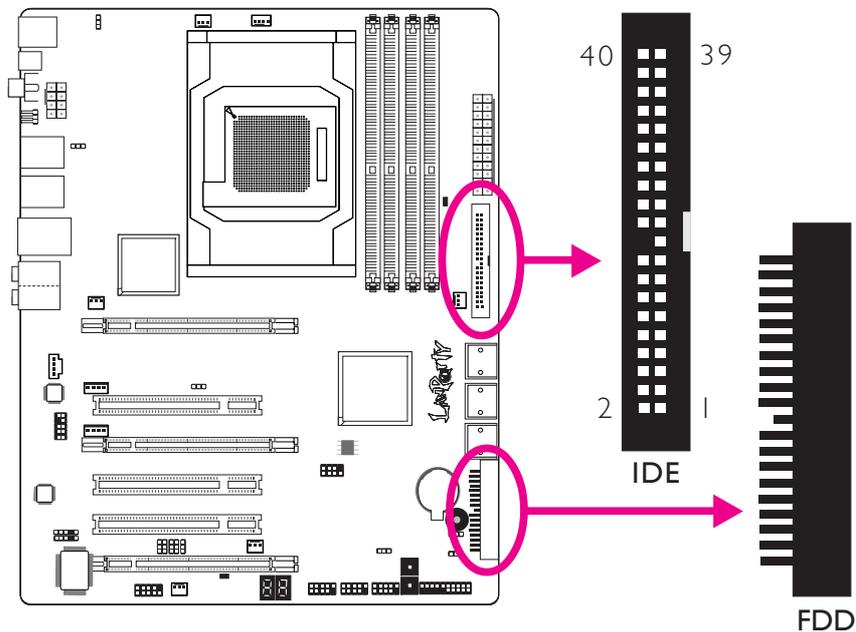


The Serial ATA (SATA) connectors are used to connect Serial ATA drives. Connect one end of the Serial ATA cable to a Serial ATA connector and the other end to your Serial ATA device.

### 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



### 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

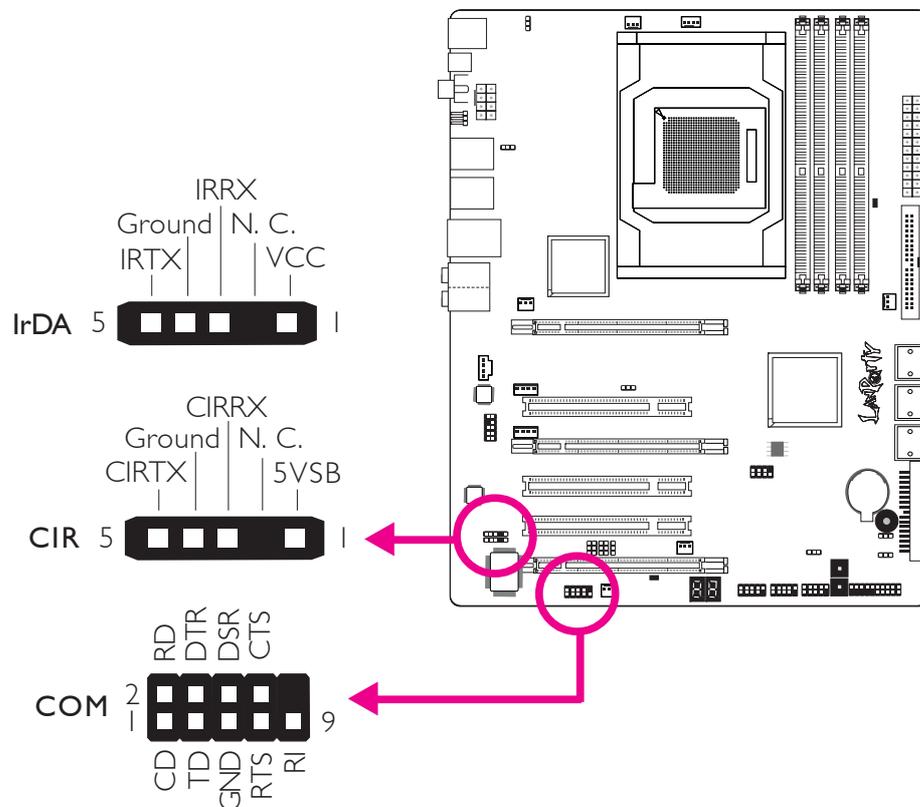
The IDE disk drive connector is used to connect 2 IDE disk drives. An IDE cable has 3 connectors on them, one that plugs into this connector and the other 2 connect to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave 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 Connectors

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

#### Note:



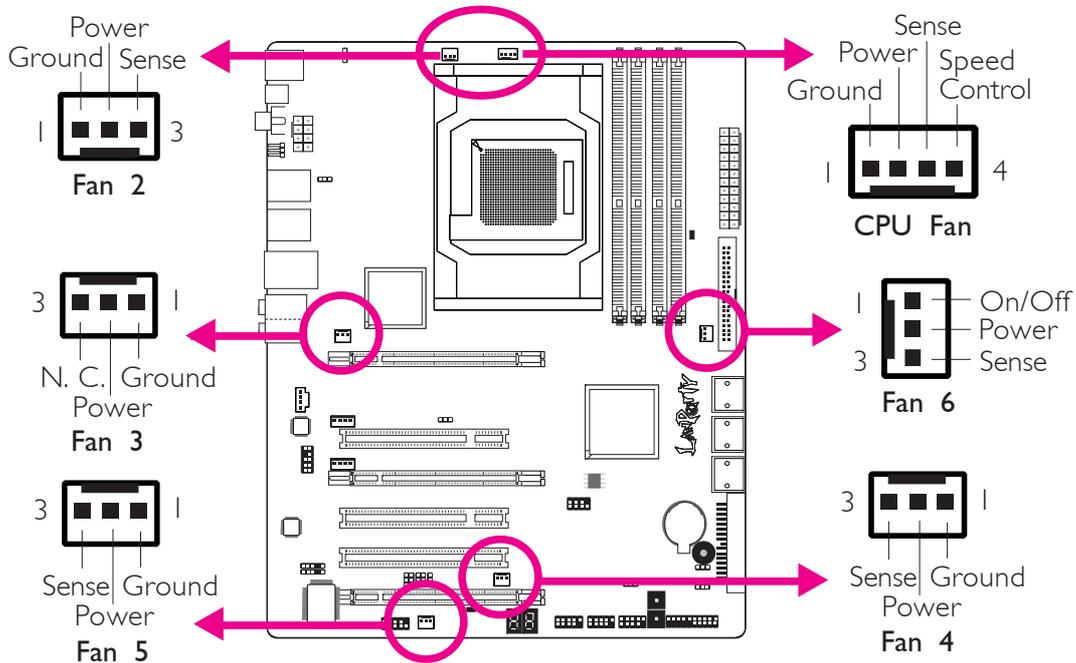
*The sequence of the pin functions on some IrDA/CIR cable may be reversed from the pin function defined on the system board. Make sure to connect the cable connector to the IrDA/CIR connector according to their pin functions.*

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) Connector

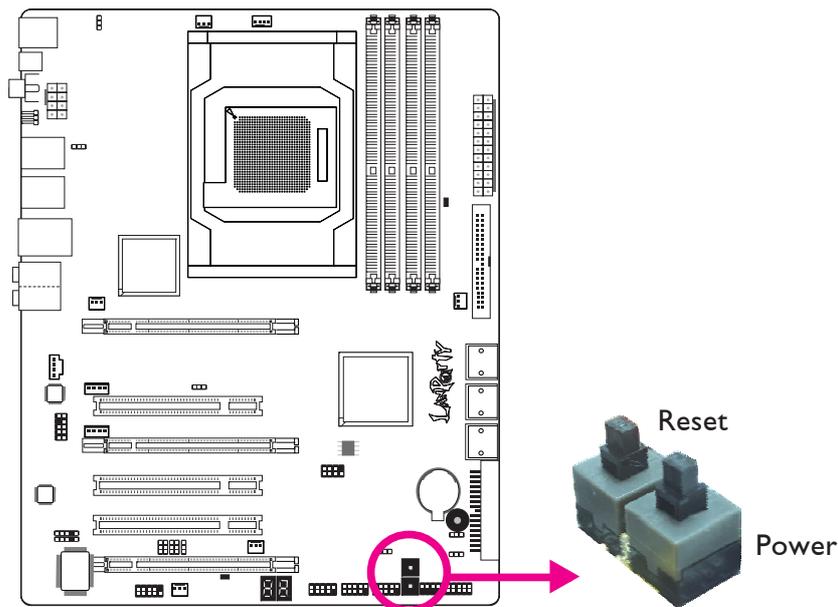
The serial (COM) connector is used to connect modems, serial printers, remote display terminals, or other serial devices. Your COM port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the serial port cable to this connector. The colored edge of the cable should align with pin 1 of this connector.

## Cooling Fan Connectors



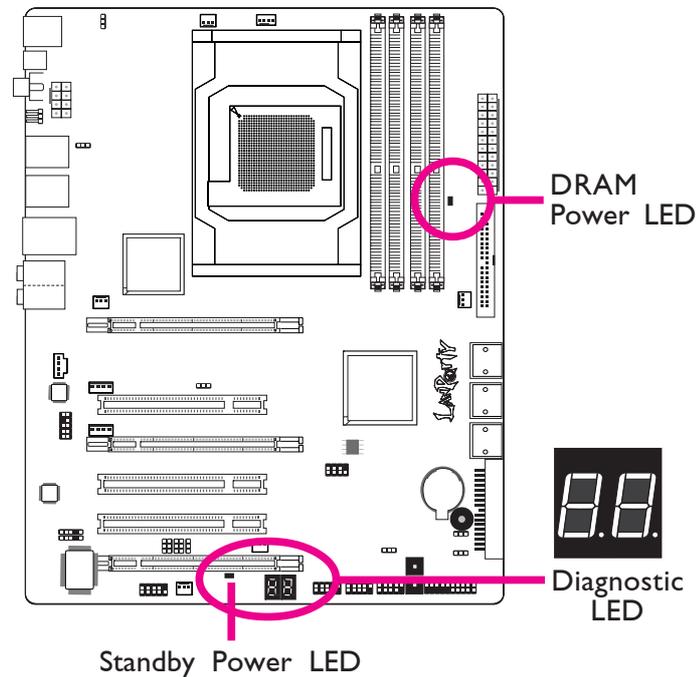
These fan connectors are used to connect cooling fans. Cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

## EZ Touch Switches



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

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.

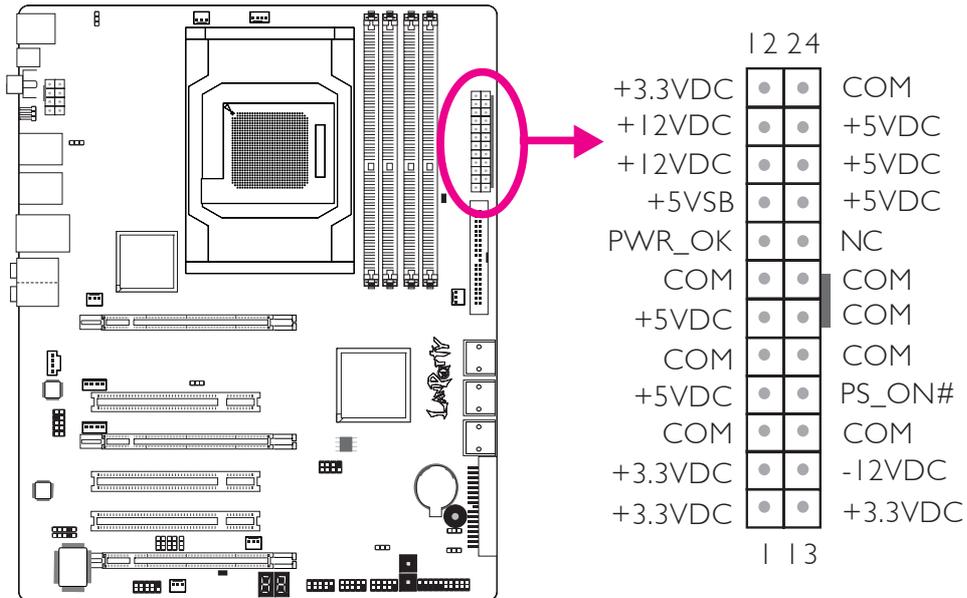


#### **Warning:**

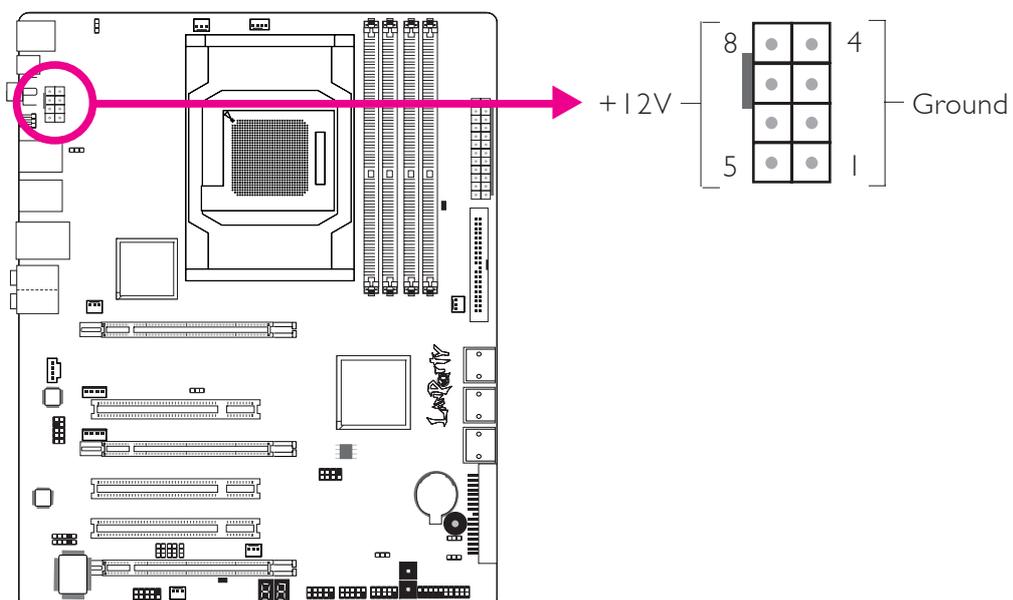
*When the DRAM Power LED and/or Standby Power LED lit red, it indicates that power is present on the DIMM sockets and/or PCI slots. Power-off the PC then unplug the power cord prior to installing any memory modules or add-in cards. Failure to do so will cause severe damage to the motherboard and components.*

## 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:

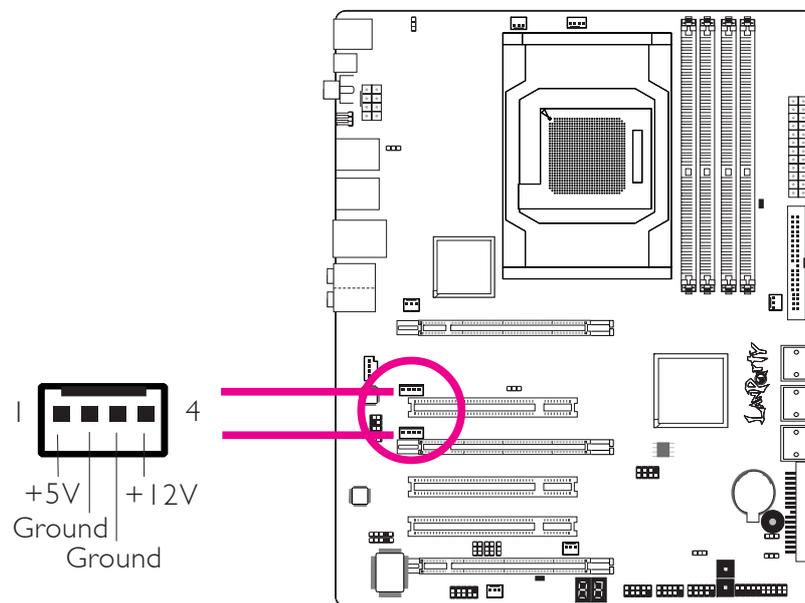


Your power supply unit may come with an 8-pin or 4-pin +12V power connector. The +12V power enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). If available, it is preferable to use the 8-pin power; otherwise connect a 4-pin power to this connector:



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

The FDD-type power connectors are additional power connectors. If you are using more than one graphics cards, we recommend that you plug a power cable from your 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).

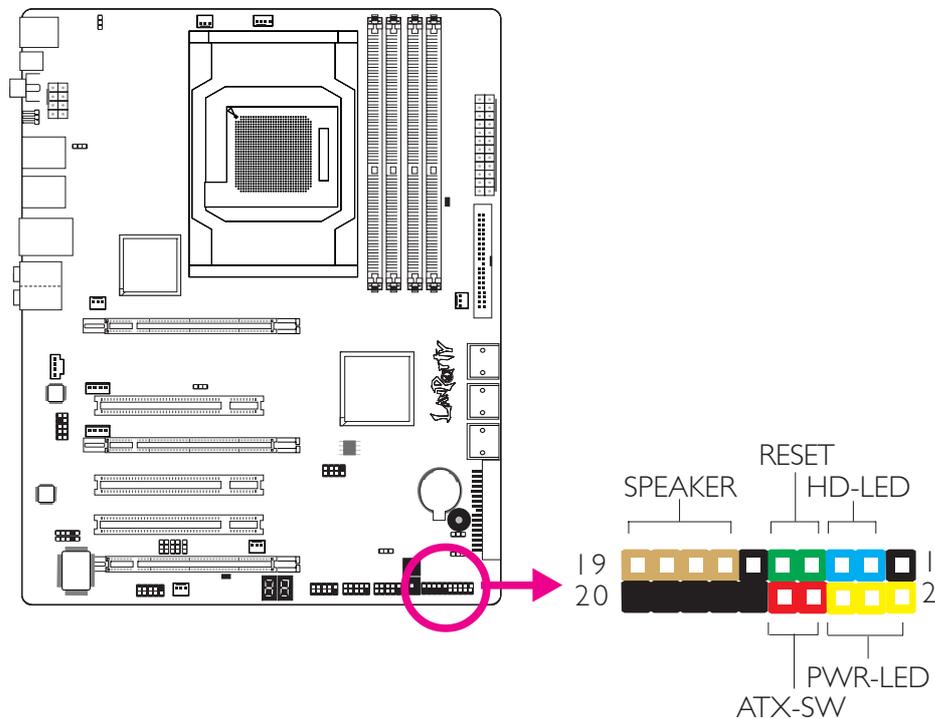
If for some reasons you need to totally cut off the power supplied to the PC, switch off the power supply or unplug the power cord. Take note though that if you intend to restart it at once, please strictly follow the steps below.

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.

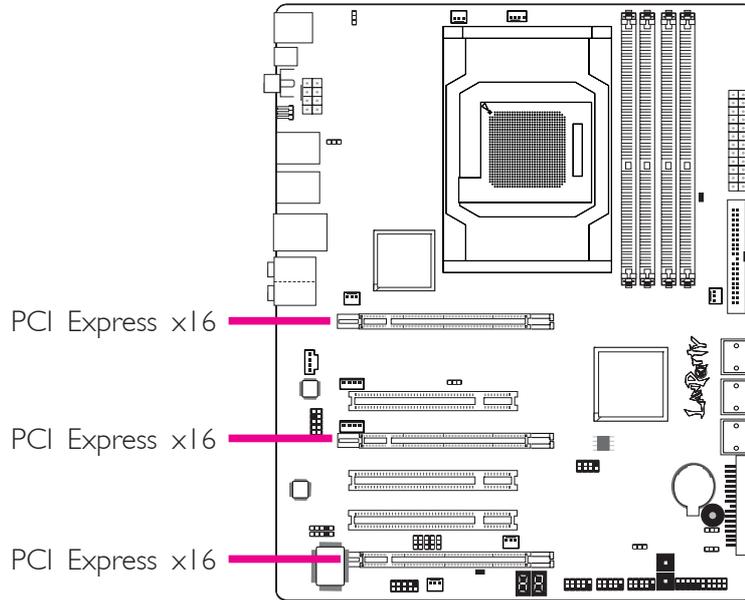


#### Note:

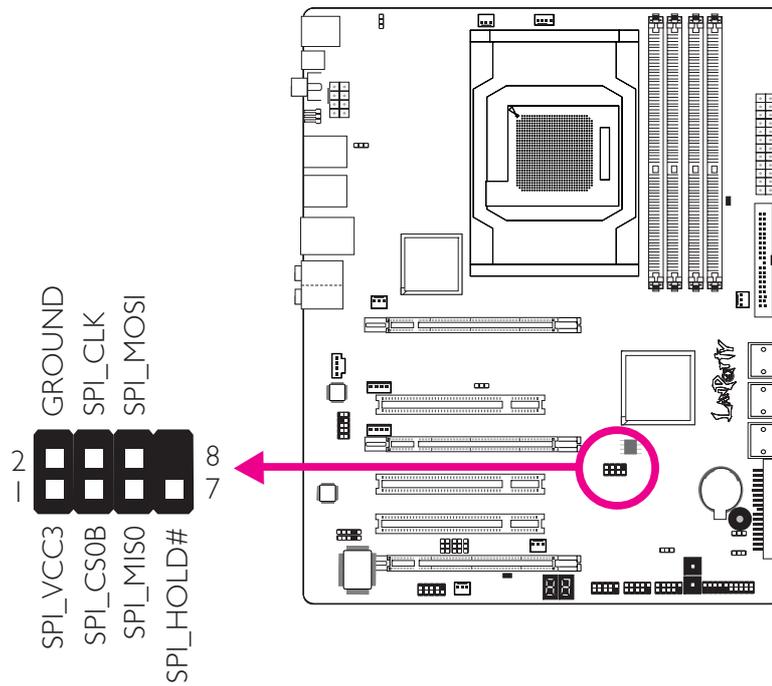
*If a system did not boot-up and the Power/Standby LED did not light after it was powered-on, it may indicate that the CPU or memory module was not installed properly. Please make sure they are properly inserted into their corresponding socket.*

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

## PCI Express Slots

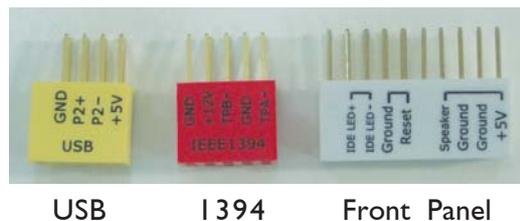


## Download Flash BIOS Connector



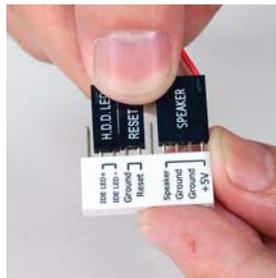
## Smart Connectors

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.

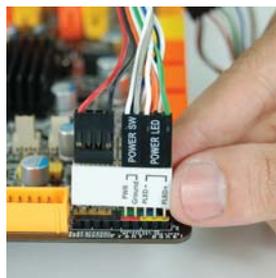


## Front Panel Connectors

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 / 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.

## Award BIOS Setup Utility

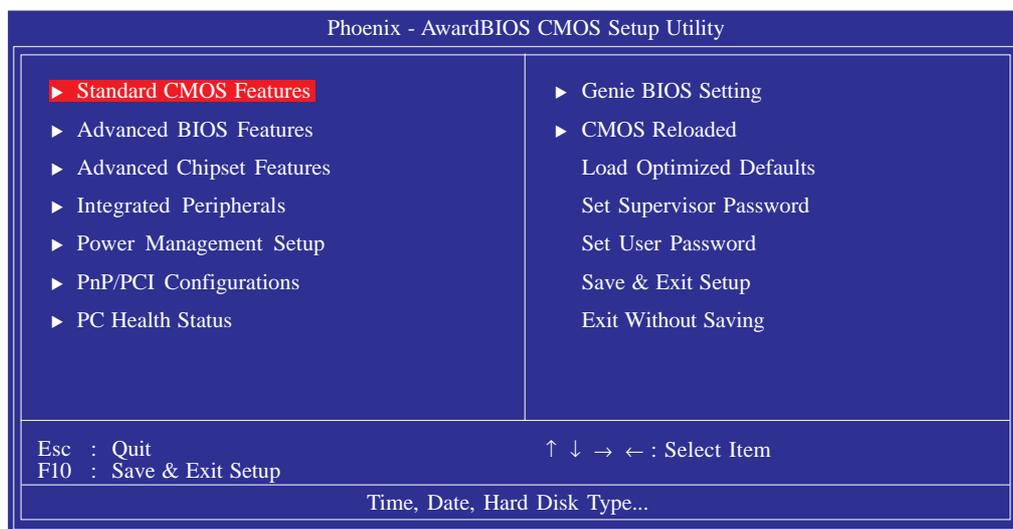
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

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:

Press DEL to enter setup

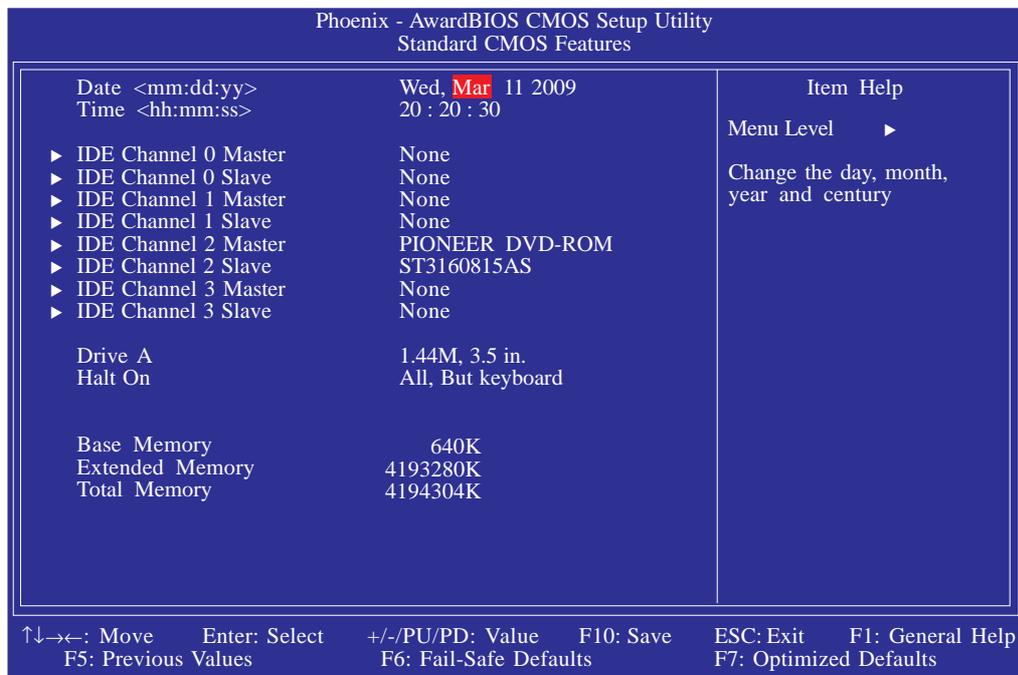
If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

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



## Standard CMOS Features

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



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

### Date

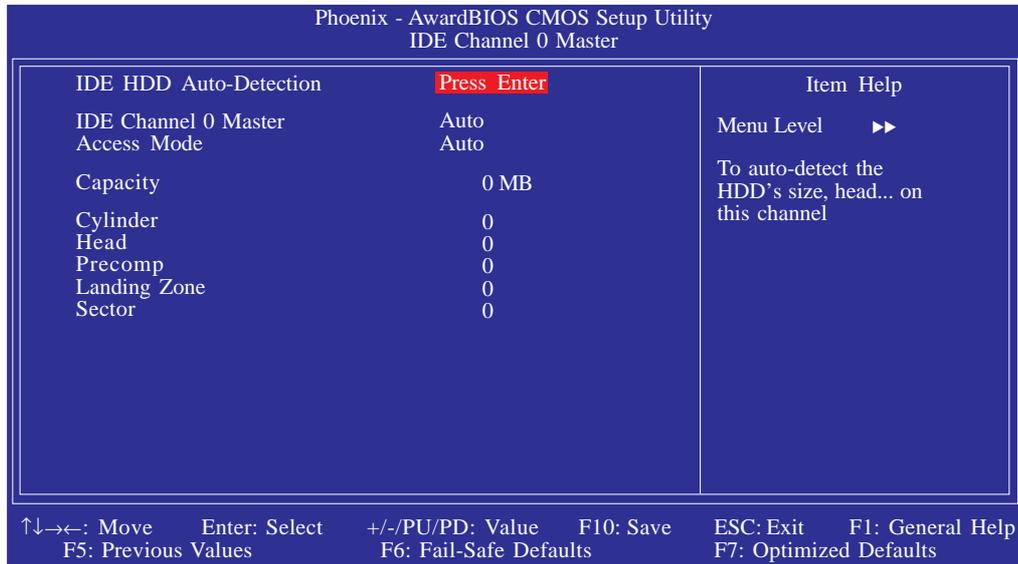
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

### 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.

## IDE Channel 0 Master to IDE Channel 3 Slave

To configure IDE drives, move the cursor to a field then press <Enter>. The following screen will appear:



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.

### IDE Channel 0 Master to IDE Channel 3 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.

## Drive A

This field identifies the type of floppy disk drive installed.

<i>None</i>	No floppy drive is installed
<i>360K, 5.25 in.</i>	5-1/4 in. standard drive; 360KB capacity
<i>1.2M, 5.25 in.</i>	5-1/4 in. AT-type high-density drive; 1.2MB capacity
<i>720K, 3.5 in.</i>	3-1/2 in. double-sided drive; 720KB capacity
<i>1.44M, 3.5 in.</i>	3-1/2 in. double-sided drive; 1.44MB capacity
<i>2.88M, 3.5 in.</i>	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.

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

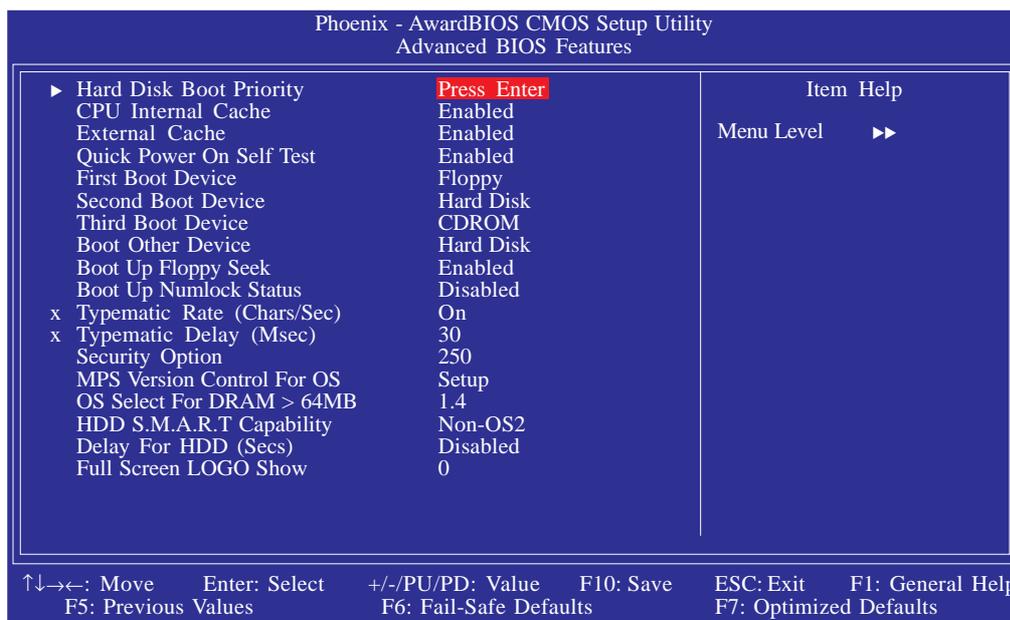
Displays the amount of extended memory detected during boot-up.

### 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.



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

### Hard Disk Boot Priority

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

### CPU Internal Cache and External Cache

These fields speed up the memory access. The default is Enabled, which provides better performance by enabling 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.

### Typematic Rate (Chars/Sec)

This field allows you to select the rate at which the keys are accelerated.

### Typematic Delay (Msec)

This field allows you to select the delay between when the key was first depressed and when the acceleration begins.

## 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

This field allows you to access the memory that is over 64MB in OS/2.

## 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

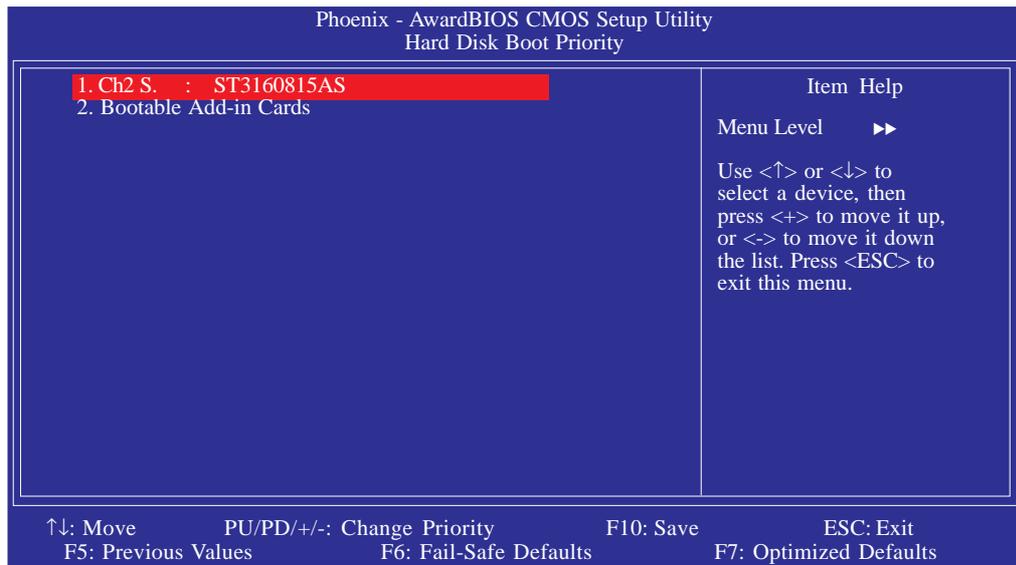
This field is applicable only if you want a particular logo to appear during system boot-up.

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

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

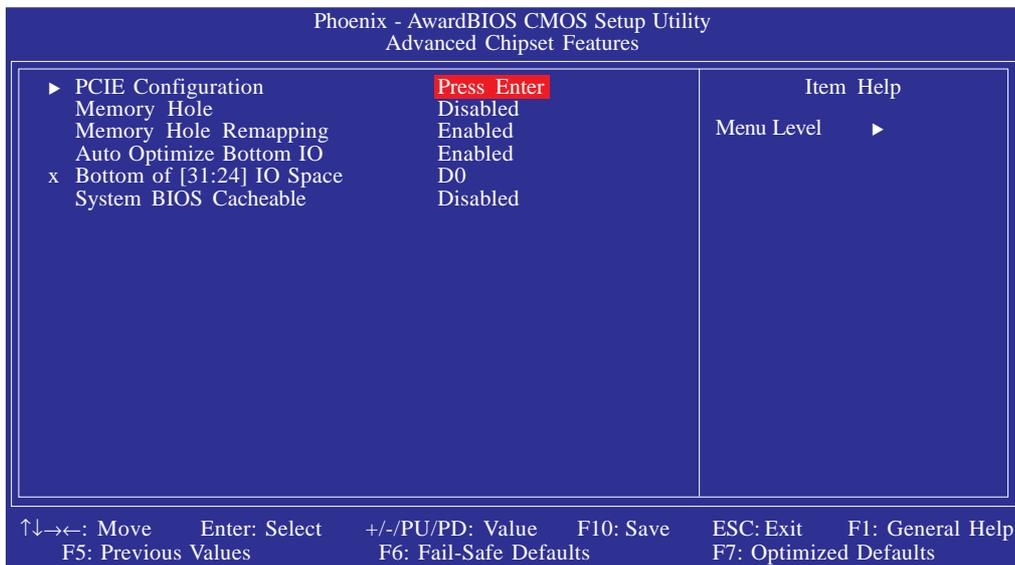
## Hard Disk Boot Priority

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.



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

## Advanced Chipset Features



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.

### PCI-E Configuration

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

### Memory Hole

In order to improve system performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. When enabled, the CPU assumes the 15-16MB memory range is allocated to the hidden ISA address range instead of the actual system DRAM. When disabled, the CPU assumes the 15-16MB address range actually contains DRAM memory. If more than 16MB of system memory is installed, this field must be disabled to provide contiguous system memory.

### Memory Hole Remapping

The options are Enabled and Disabled.

### Auto Optimize Bottom IO

When Enabled, the system automatically optimizes the maximum DRAM size after the kernel has assigned PCI resources.

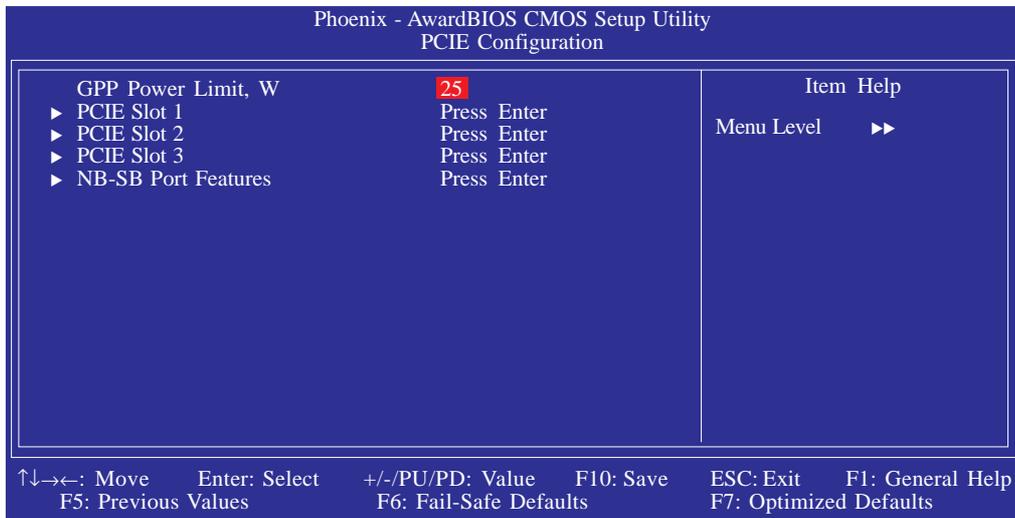
### Bottom of [31:24] IO Space

This field is used to enter the memory that will be remapped to another address. The minimum is 0000 and the maximum is 00FF.

### System BIOS Cacheable

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

## PCIe Configuration



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

### GPP Power Limit, W

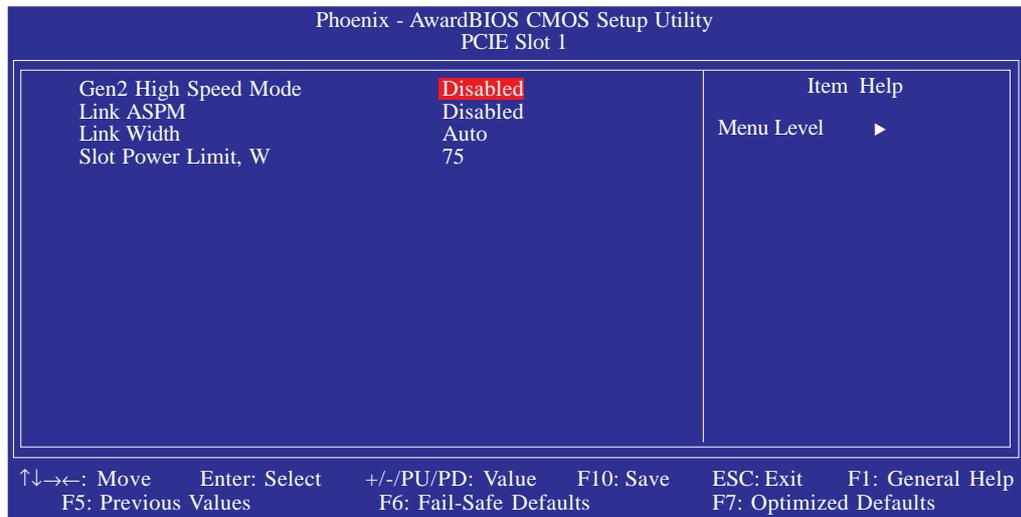
This field is used to enter the GPP's power limit. The minimum is 0 and the maximum is 255.

### PCIE Slot 1 to PCIE Slot 3

### NB-SB Port Features

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

## PCIe Slot 1 to PCIe Slot 3



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

### Gen2 High Speed Mode

The options are Auto, Disabled, Software Switch and Autonomous Switch.

### Link ASPM

The options are Disabled, L0s, L1, and L0s & L1.

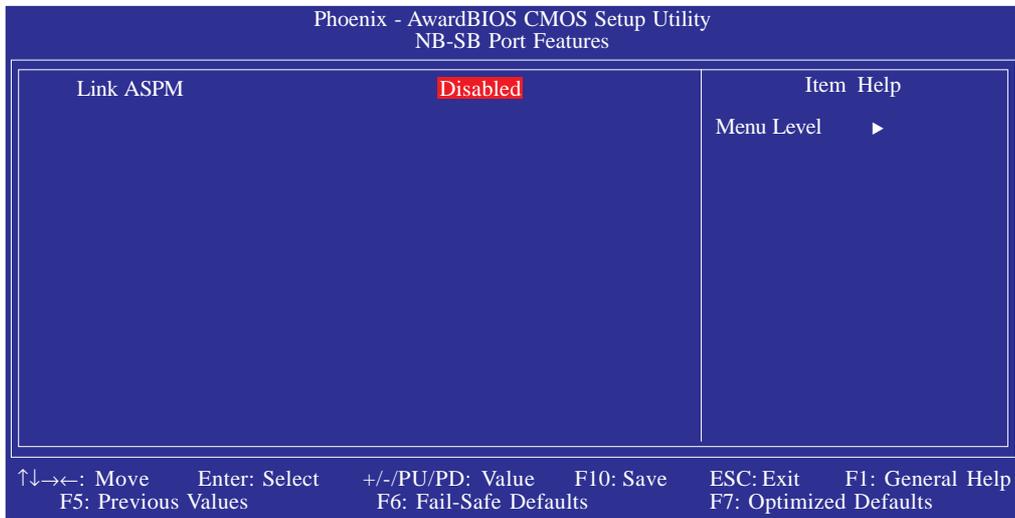
### Link Width

The options are Auto, x1, x2, x4, x8 and x16.

### Slot Power Limit,W

This field is used to enter the slot's power limit. The minimum is 0 and the maximum is 255.

## NB-SB Port Features

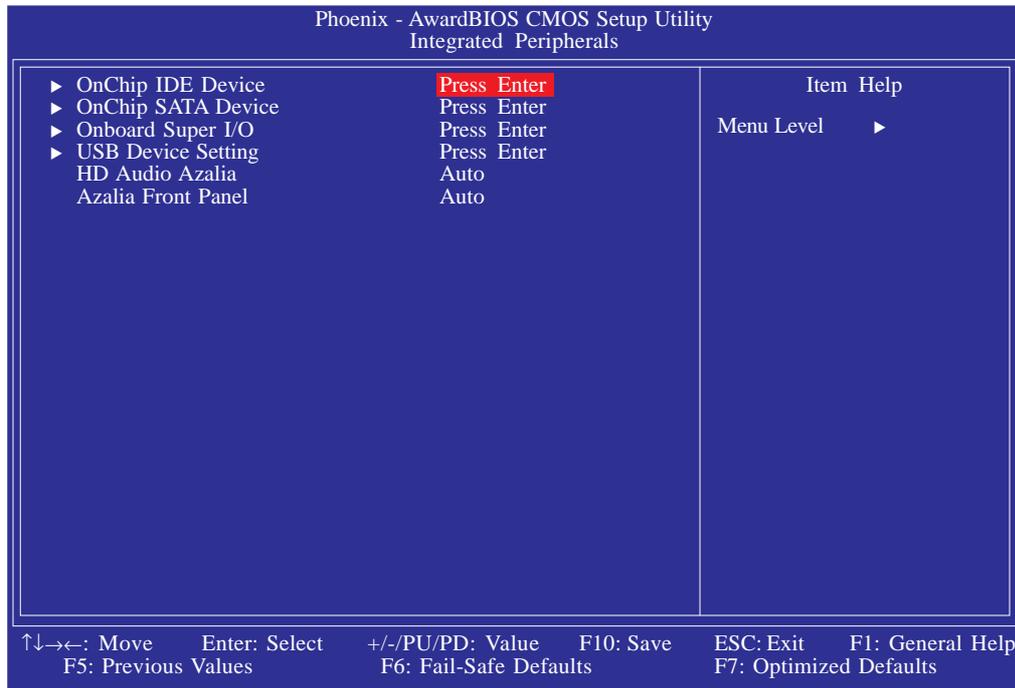


The settings on the screen are for reference only. Your version may not be identical to this one.

### Link ASPM

The options are Disabled and LI.

## Integrated Peripherals



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

### OnChip IDE Device

### OnChip SATA Device

### Onboard Super I/O

### USB Device Setting

### HD Audio Azalia

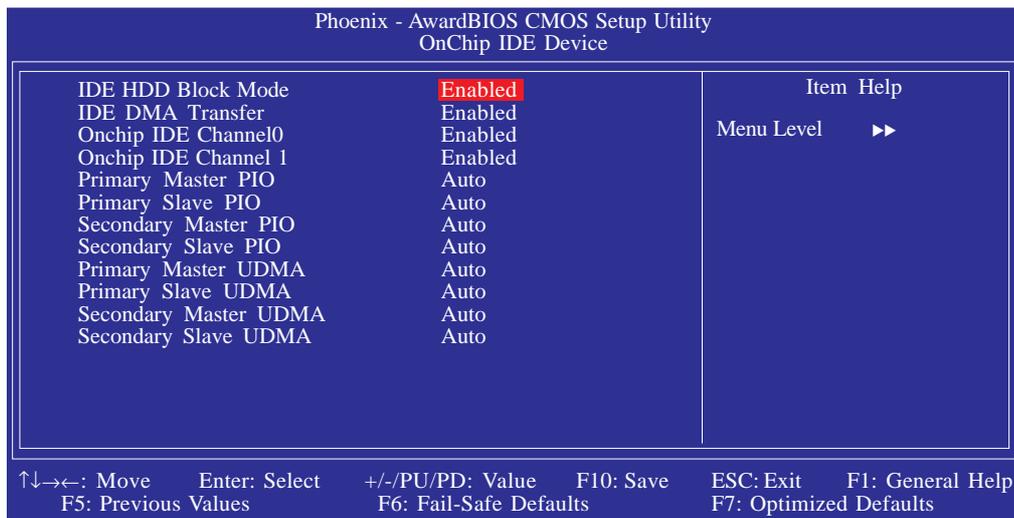
Refer to the following pages for more information on these submenus.

This field is used to enable or disable the onboard HD audio.

### Azalia Front Panel

This field is used to enable or disable the Azalia front panel audio.

## OnChip IDE Device



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

## 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 size the system can transfer. The block size will depend on the type of hard disk drive.

*Disabled* The IDE HDD uses the standard mode.

## IDE DMA Transfer

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

*Disabled* The IDE HDD uses the standard mode.

## OnChip IDE Channel 0 and OnChip IDE Channel 1

These fields allow you to enable or disable the primary and secondary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

### Primary Master/Slave PIO to Secondary Master/Slave PIO

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

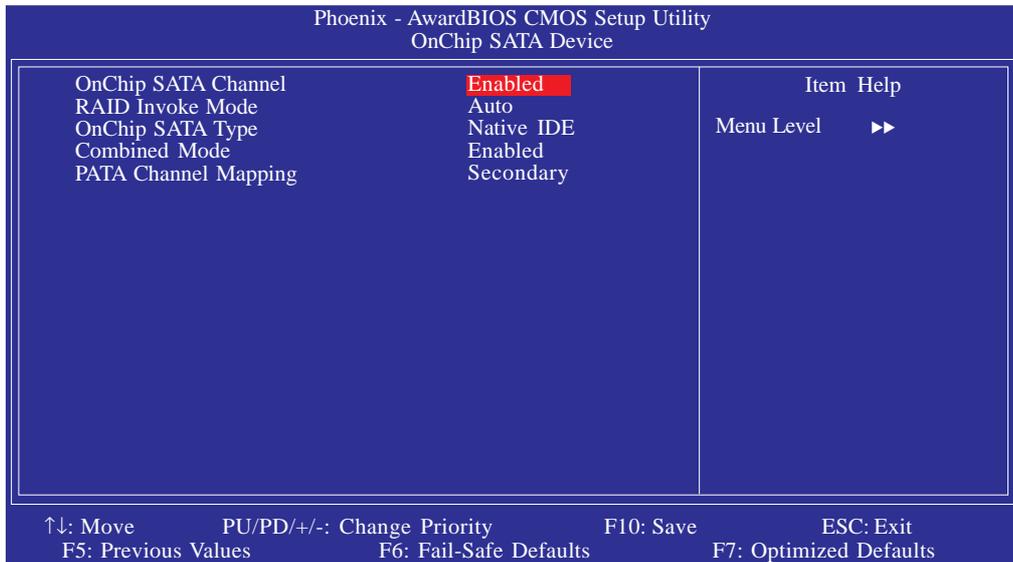
- |                 |  |
|-----------------|--|
| <i>Auto</i>     | The BIOS will automatically set the system according to your hard disk drive's timing.   |
| <i>Mode 0-4</i> | You can select a mode that matches your hard disk drive's timing. Caution: Do not use the wrong setting or you will have drive errors. |

### Primary Master/Slave UDMA to Secondary Master/Slave UDMA

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

- |                 |  |
|-----------------|--|
| <i>Auto</i>     | The BIOS will automatically detect the settings for you. |
| <i>Disabled</i> | The BIOS will not detect these categories.               |

## OnChip SATA Device



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

### OnChip SATA Channel

This field is used to enable or disable the onboard SATA.

### RAID Invoke Mode

The options are Auto, Biggest First and Smallest First.

### OnChip SATA Type

This field is used to configure the SATA devices supported by the southbridge.

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

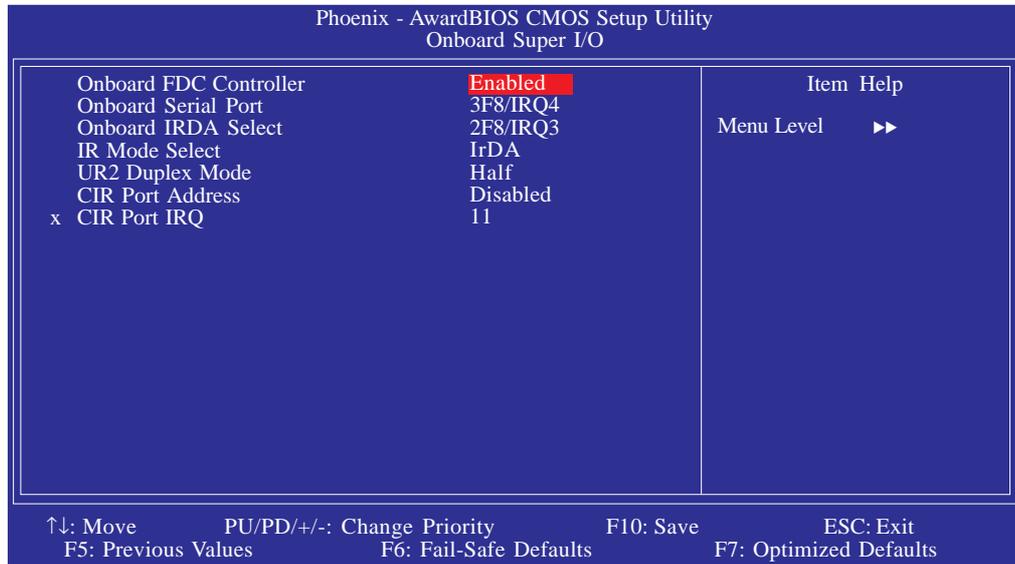
### Combined Mode

This field is used to enable or disable the combined mode.

### PATA Channel Mapping

The options are Primary and Secondary.

## Onboard Super I/O



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

## 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

<i>Half</i>	Data is completely transmitted before receiving data.
<i>Full</i>	Transmits and receives data simultaneously.

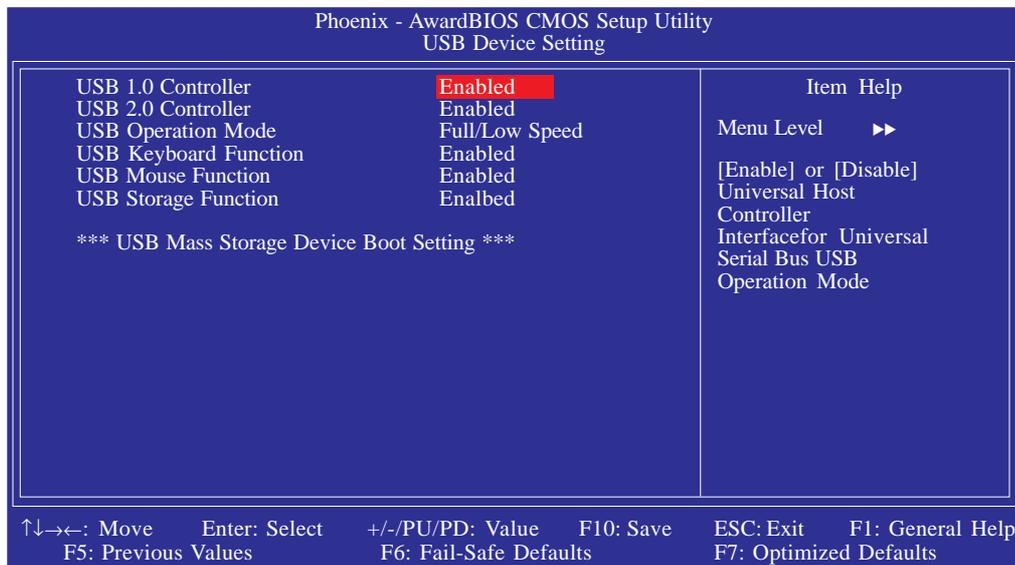
### CIR Port Address

This field is used to select an I/O address for the CIR device.

### CIR Port IRQ

This field is used to select an IRQ for the CIR device.

## USB Device Setting



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

*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.

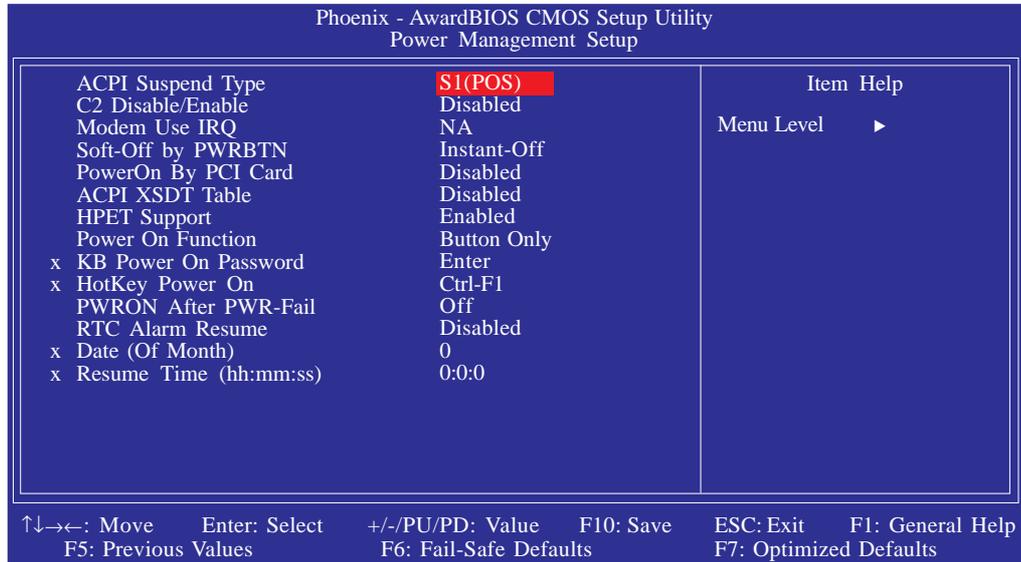
If a PS/2 mouse is not available and you need to use a USB mouse to install Windows (installation is performed in DOS mode) or run any program under DOS, set this field to Enabled.

### 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.



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

### 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.

### C2 Disable/Enable

The options are Enabled and Disabled.

### MODEM Use IRQ

This field is used to set an IRQ channel for the modem installed in your system.

### Soft-Off by PWRBTN

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.

### PowerOn By PCI Card

- Enabled* This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.
- Disabled* The system will not wake up despite access to the PCI card.

### ACPI XSDT Table

Enable the ACPI XSDT table only when using a 64-bit mode OS. The table does not support 32-bit mode OS such as Windows 2000 and Windows XP.

### HPET Support

The options are Enabled and Disabled.

### Power On Function

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

<i>Button only</i>	Default setting. Uses the power button to power on the system.
<i>Password</i>	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.
<i>Hot Key</i>	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.
<i>MS Move&amp;Click</i>	When this option is selected, move or click the mouse to power-on the system.
<i>Any Key</i>	Press any key to power-on the system.
<i>Keyboard 98</i>	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.

### PWRON After PWR-Fail

<i>Off</i>	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.
<i>On</i>	When power returns after an AC power failure, the system will automatically power-on.
<i>Former-Sts</i>	When power returns after an AC power failure, the system will return to the state where you left off before power failure occurs. If the system's power is off when AC power failure occurs, it will remain off when power returns. If the system's power is on when AC power failure occurs, the system will power-on when power returns.

### RTC Alarm Resume

<i>Enabled</i>	When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Date (of Month)" and "Resume Time" fields. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these fields, the system will give priority to the incoming calls or network.
<i>Disabled</i>	Disables the automatic power-on function. (default).

### Date (of Month)

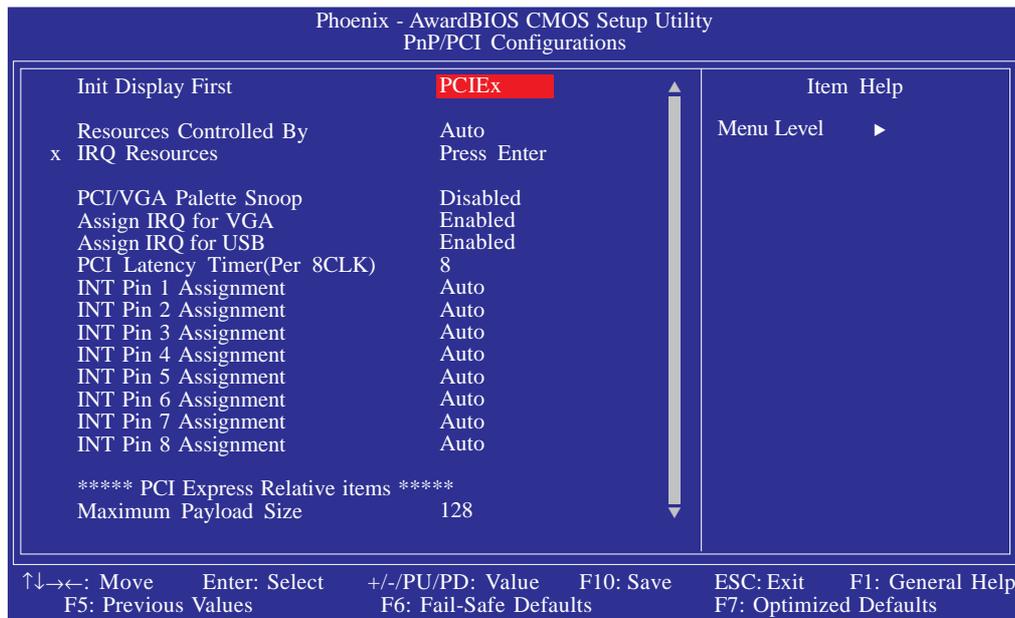
<i>0</i>	The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.
<i>1-31</i>	Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the "Time (hh:mm:ss) Alarm" field.

### Resume Time (hh:mm:ss)

This is used to set the time you would like the system to power-on. If you want the system to power-on everyday as set in the "Date (of Month) " field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

## 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.



The screen above list all the fields available in the PnP/PCI Configurations 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.

### Init Display First

- PCIEx* When the system boots, it will first initialize PCI Express.
- PCI Slot* When the system boots, it will first initialize PCI.

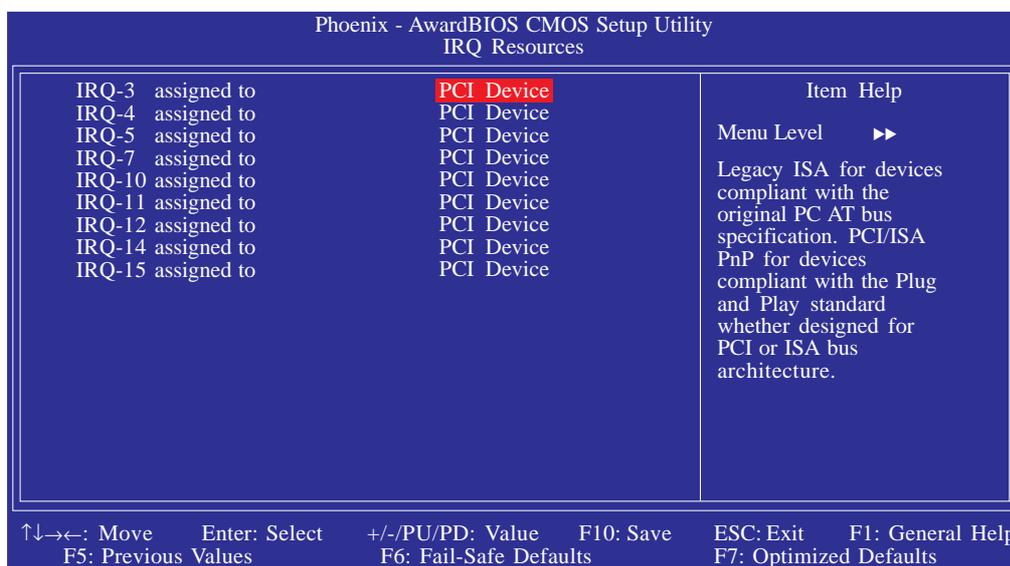
### Resources Controlled By

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.



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. The default value is Disabled.

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

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

## Assign IRQ for VGA

When Enabled, the system automatically assigns an IRQ for the VGA card installed. Your VGA card will need an IRQ only when using the video capture function of the card. If you are not using this function and a new device requires an IRQ, you can set this field to Disabled. The IRQ (previously occupied by the VGA card) will be available for your new device.

### Assign IRQ for USB

When Enabled, the system automatically assigns an IRQ for the USB device connected to your system. However, if you are not using USB devices and an ISA slot requires an IRQ, set this field to Disabled. The IRQ previously occupied by the USB device will be available for the ISA slot.

### 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.

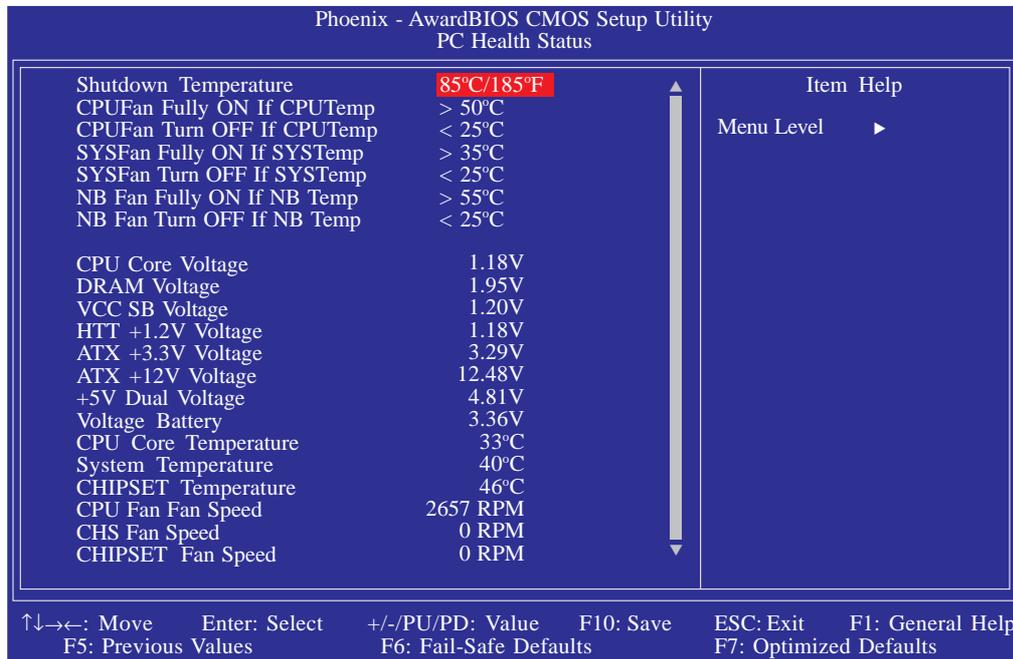
### INT Pin 1 Assignment to INT Pin 8 Assignment

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



The screen above list all the fields available in the PC Health Status 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.

### 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:

- 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 CPU Temp" field to allow the CPU fan to rotate full speed at the selected lower temperature.

### SYSFan Fully On If SYSTemp

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

### SYSFan Turn Off If SYSTemp

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



**Note:**

If the system's temperature runs between the highest (set in the "SYSFan Fully On If SYSTemp" field) and lowest (set in the "SYSFan Turn Off If SYSTemp" field) temperature, the system will automatically adjust the chassis fan's speed according to the temperature.

### NB Fan Fully On If NB Temp

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

### NB Fan Turn Off If NB Temp

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



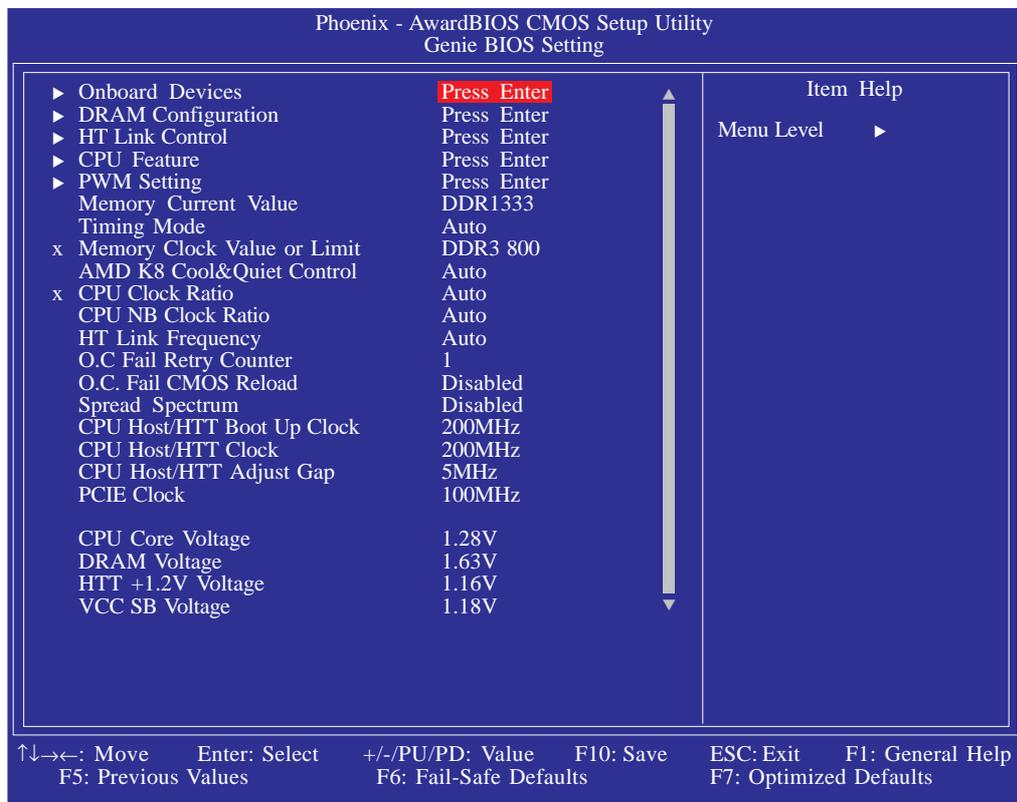
**Note:**

If the Northbridge chip's temperature runs between the highest (set in the "NB Fan Fully On If NB Temp" field) and lowest (set in the "NB Fan Turn Off If NB Temp" field) temperature, the system will automatically adjust the fan speed of the Northbridge chip according to the temperature.

### CPU Core 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



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.

### Onboard Devices

### DRAM Configuration

### HT Link Control

### CPU Feature

### PWM Setting

### Memory Current Value

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

This field will show the current value of the system memory.

### Timing Mode

<i>Auto</i>	The BIOS will automatically detect all DRAM timing.
<i>Max</i>	<i>CLK</i> This option uses the maximum DRAM clock.
<i>Manual</i>	This option allows you to manually select the DRAM's clock speed.

### Memory Clock Value or Limit

This field will show the clock speed of the DIMM.

### AMD K8 Cool&Quiet Control

<i>Auto</i>	Enables AMD's Cool'n'Quiet technology. This function allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by changing its CPU speed and voltage, subsequently decreasing its noise level.
<i>Disabled</i>	Disables AMD's Cool'n'Quiet technology.

### CPU Clock Ratio

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

### CPU NB Clock Ratio

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

### HT Link Frequency

The options are Auto, 200MHz, 400MHz, 600MHz, 800MHz and 1GHz.

### O.C. Fail Retry Counter

The options are 0, 1, 2 and 3.

### O.C. Fail CMOS Reload

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

### Spread Spectrum

Leave this field in its default setting. Do not alter this setting unless advised by an engineer or technician.

### CPU Host/HTT Boot Up Clock

This field is used to enter the CPU Host/HTT boot up clock value. The minimum is 200 and the maximum is 700.

### CPU Host/HTT Clock

This field is used to enter the CPU Host/HTT Clock value. The minimum is 200 and the maximum is 700.

### CPU Host/HTT Adjust Gap

This field is used to configure the CPU Host/HTT Adjust Gap.

### PCIE Clock

This field is used to enter the PCIE clock. The minimum is 100 and the maximum is 250.

### CPU Core Voltage

This field will show the CPU's current voltage.

### DRAM Voltage

This field will show the DRAM's current voltage.

### HTT +1.2 Voltage

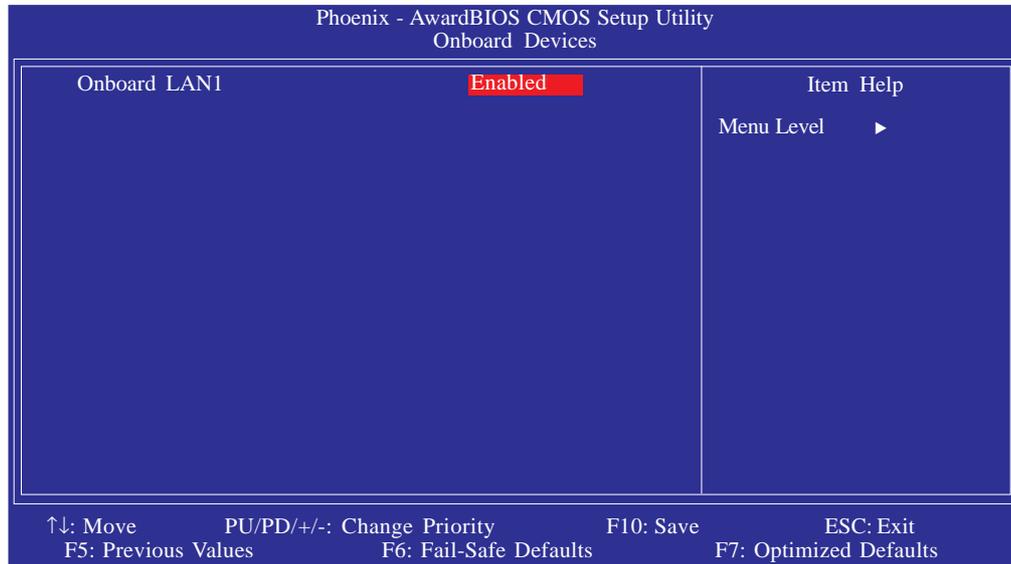
This field will show the HTT's current voltage.

### VCC SB Voltage

This field will show the Southbridge's current voltage.

## Onboard Devices

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



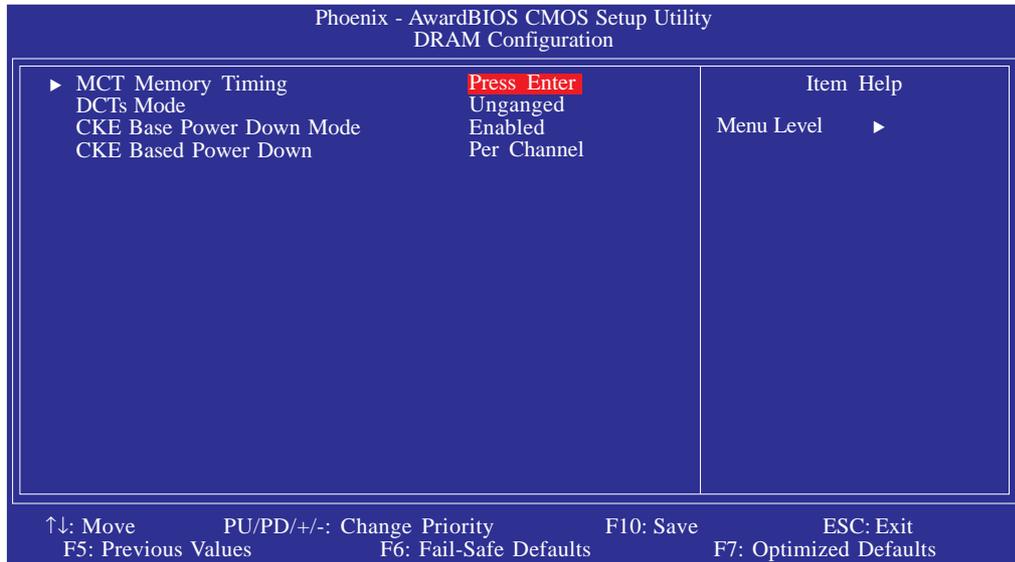
The settings on the screen are for reference only. Your version may not be identical to this one.

### Onboard LAN 1

This field is used to enable or disable the onboard LAN.

## DRAM Configuration

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



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

### MCT Memory Timing

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

### DCTs Mode

The options are Ganged (128-bit) and Unganged (64 bit).

### CKE Base Power Down Mode

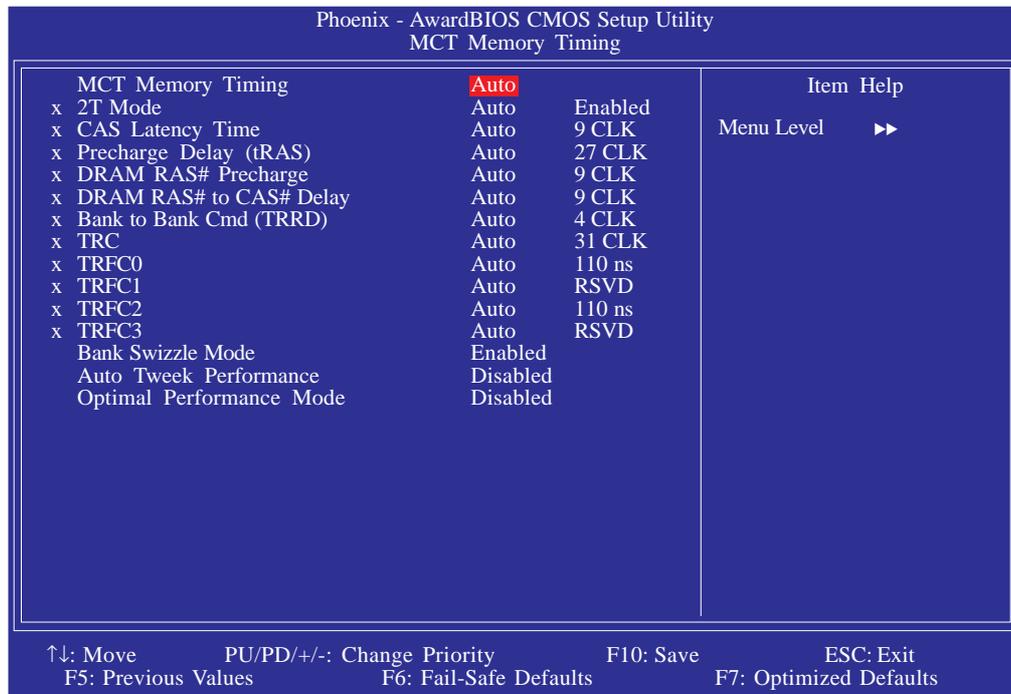
The options are Enabled and Disabled.

### CKE Based Power Down

The options are Per Channel and Per CS.

## MCT Memory Timing

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



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

## MCT Memory Timing

*Auto*      The BIOS will automatically detect all the MCT memory timing.

*Manual*      This option allows you to manually configure the MCT memory timing on the following fields.

### 2T Mode

This field is used to configure the 2T mode.

### CAS Latency Time

This field is used to select the clock cycles for the CAS latency.

### Precharge Delay (tRAS)

The options are Auto, Vt16, Vt17, Vt18 and 4 to 15.

### DRAM RAS# Precharge

This field is used to select the idle clocks after issuing a precharge command to the DRAM.

### DRAM RAS# to CAS# Delay

This field is used to select the latency between the DRAM active command and the read/write command. The options are 2 and 3.

### Bank to Bank Cmd (TRRD)

The options are Auto, 1 to 15.

### TRC

Row-Cycle delay. Set the "System Performance" field to Optimal if you want to use the delay time recommended by the DIMM manufacturer.

### TRFC0 to TRFC3

These fields are used to select the auto refresh cycle time.

### Bank Swizzle Mode

The options are Enabled and Disabled.

### Auto Tweak Performance

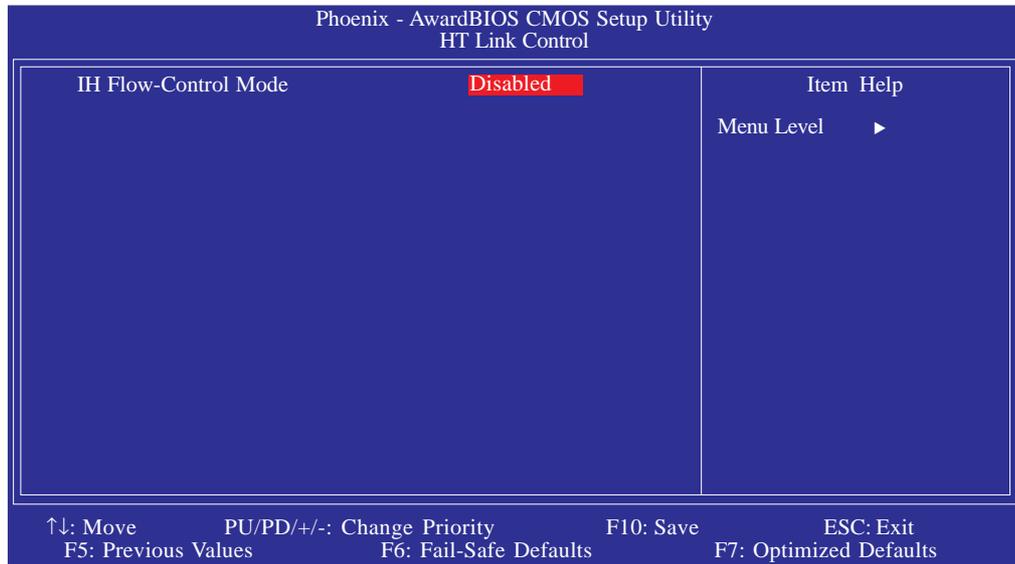
The field enables or disables the performance tweaks of all high speed DIMMs.

### Optimal Performance Mode

This field enables or disables the performance mode of DIMMs with SPD function.

## HT Link Control

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



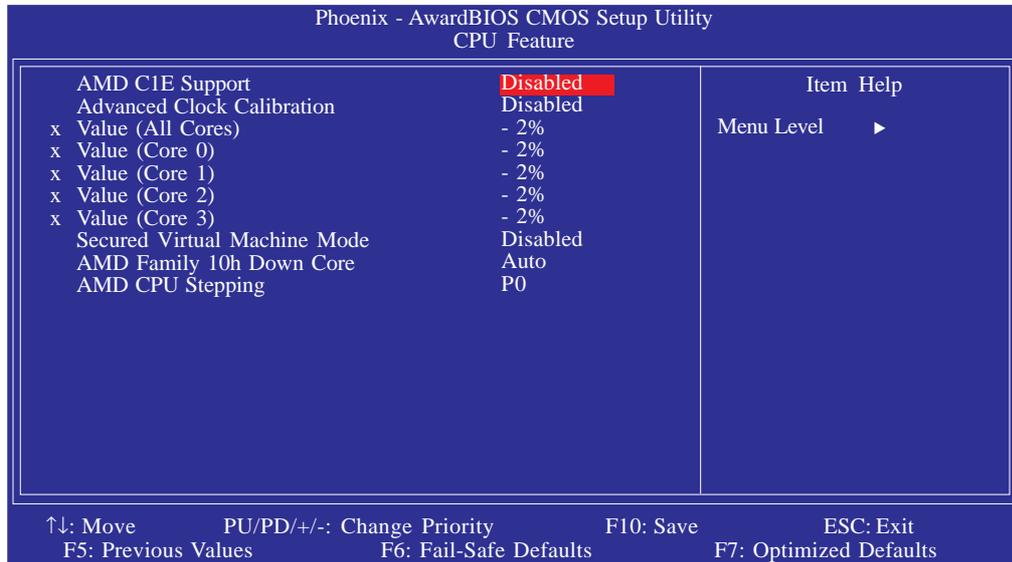
The settings on the screen are for reference only. Your version may not be identical to this one.

## IH Flow-Control Mode

This field enables or disables the isochronous flow control mode.

## CPU Feature

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



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

### AMD CIE Support

The options are Disabled and SoftWare SMI.

### Advanced Clock Calibration

This field is used to configure the advanced clock calibration. The options are Disabled, Auto, All Cores and Per Core.

### Value (All Cores) to Value (Core 3)

These fields are used to select the core value.

### Secure Virtual Machine Mode

The options are Enabled and Disabled.

### AMD Family 10h Down Core

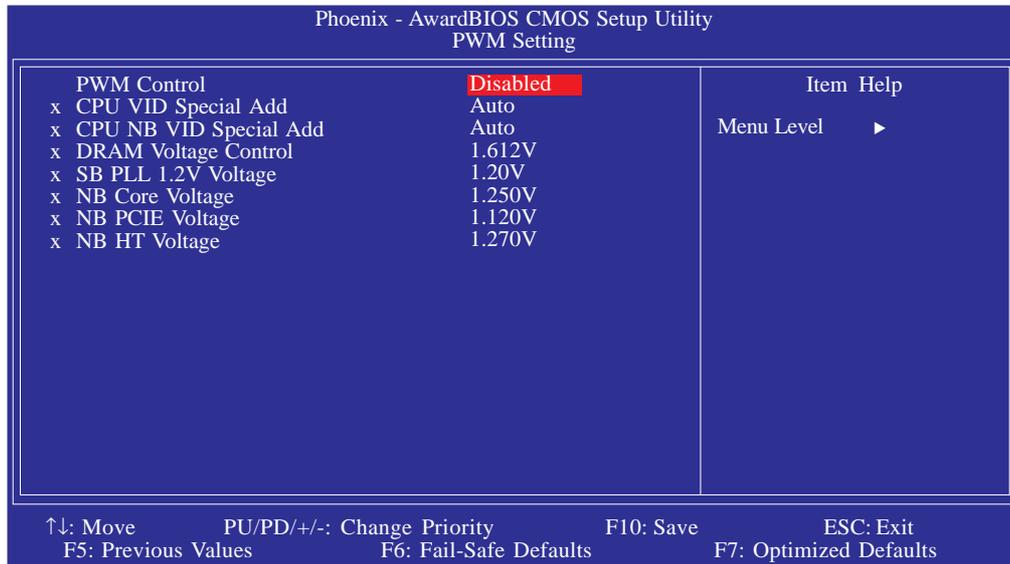
The options are Auto, Single Core, Dual Core, Tri Core and Quad Core.

### AMD CPU Stepping

The options are P0, P1, P2 and P3.

## PWM Setting

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



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

### PWM Control

The options are Enabled and Disabled.

### CPU VID Special Add

This field provides more options to further adjust the voltage of the CPU.

### CPU NB VID Special Add

This field provides options to adjust the NB voltage.

### DRAM Voltage Control

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

### SB PLL 1.2V Voltage

This field allows you to manually select the Southbridge's core voltage.

### NB Core Voltage

This field allows you to manually select the Northbridge's core voltage.

### NB PCIE Voltage

The options are 1.120V to 1.500V.

### NB HT Voltage

The options are 1.040V to 1.500V.

## 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>.



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***

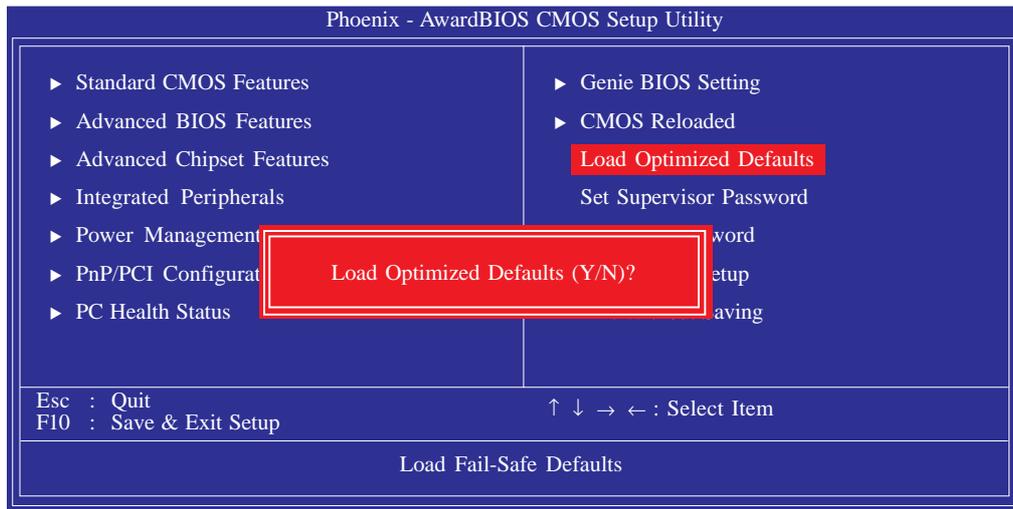
To load the setting saved in the bank, move the cursor to “Load from this Bank” then press <Enter>. The setting in this bank will replace the current setting. Make sure to save before you exit the BIOS setup utility by selecting “Y” in the “Save & Exit Setup” submenu.

***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>.

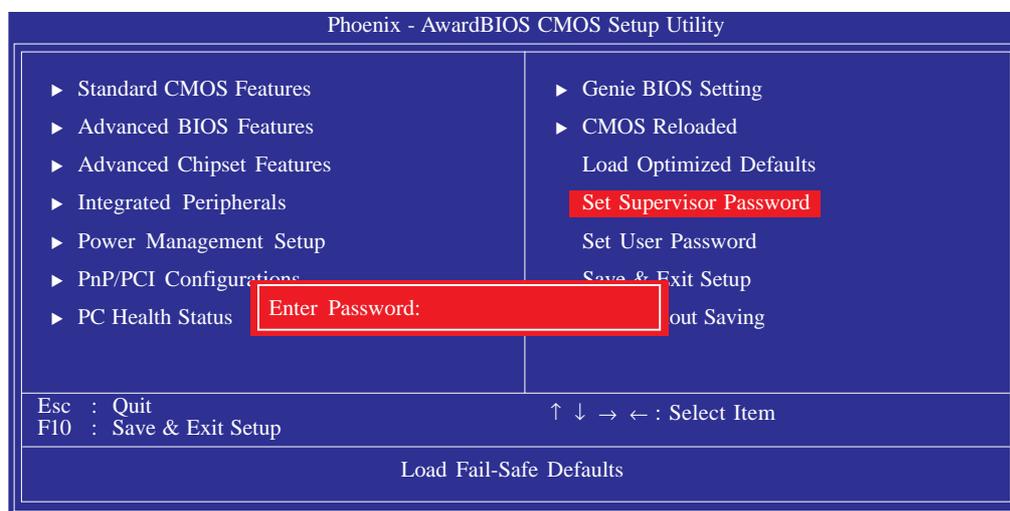


Type <Y> and press <Enter> to load the Setup default values.

## 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>.



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

Confirm Password:

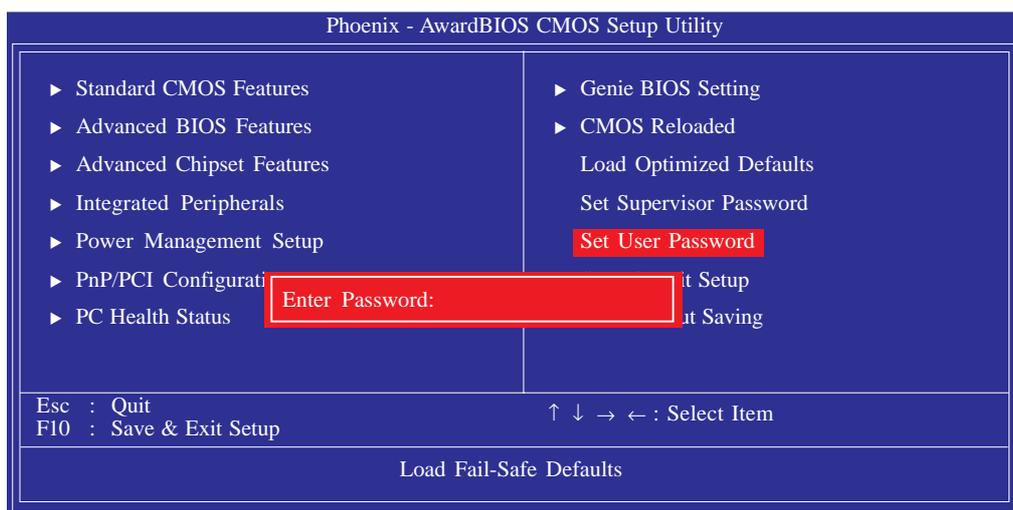
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press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



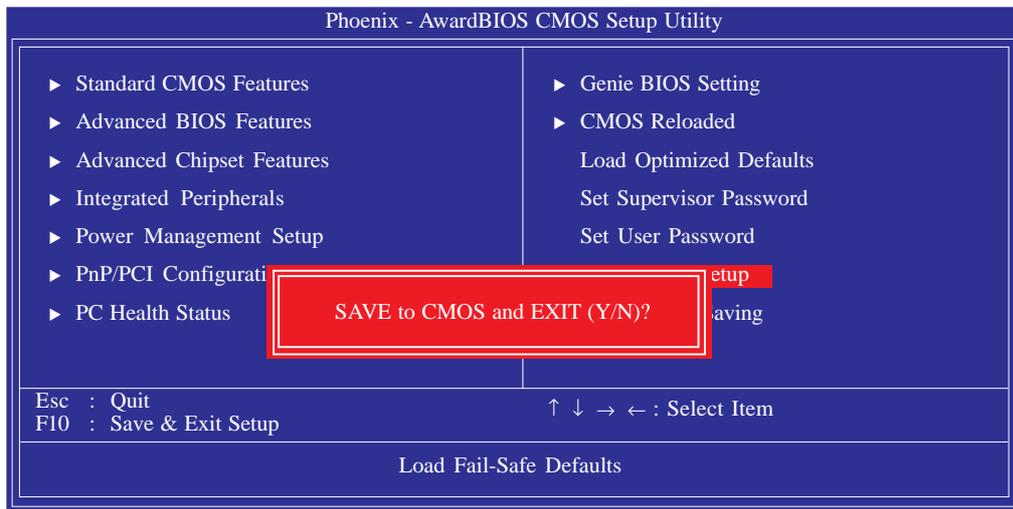
Type in the password. You are limited to eight characters. When done, the message below will appear:

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

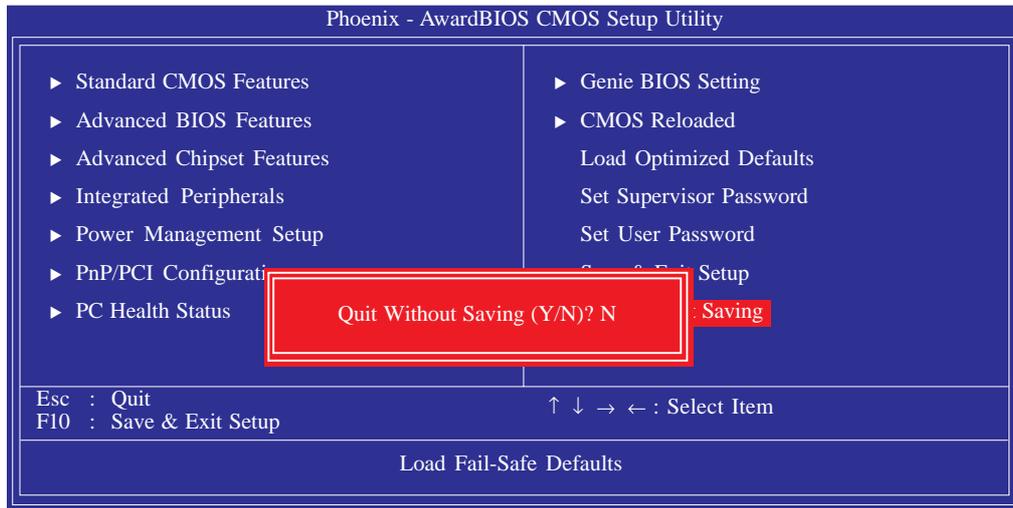
When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>.



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> <Del> simultaneously after memory testing is done.

## Exit Without Saving

When you do not want to save the changes you have made, highlight “Exit Without Saving” and press <Enter>.



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> <Del> simultaneously after memory testing is done.

## RAID BIOS

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

After you power up the system and all drives have been detected, the AMD BIOS status message screen will appear. Press the <F4> key to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.



**Important:**

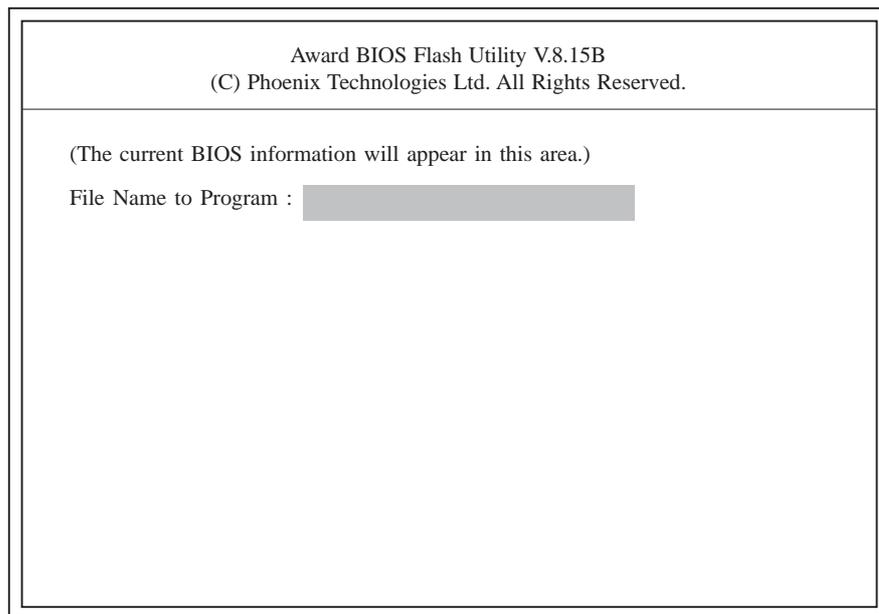
*Before creating RAID, make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the RAID BIOS utility.*

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:



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

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



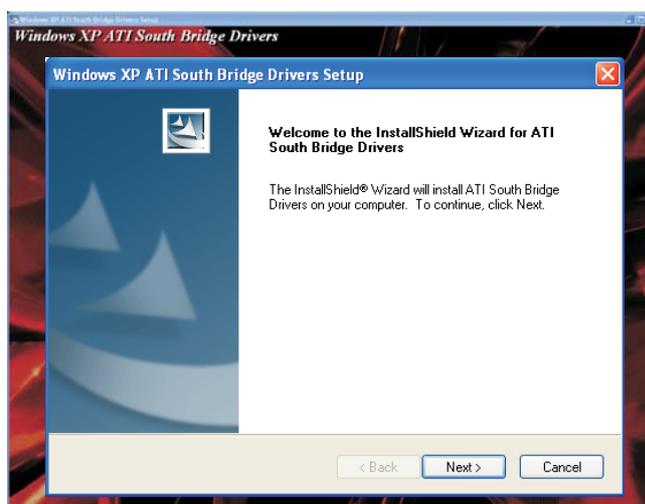
## AMD SB750 Drivers

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

1. Click “AMD SB750 Drivers”.



2. Setup is now ready to install the driver. Click Next.

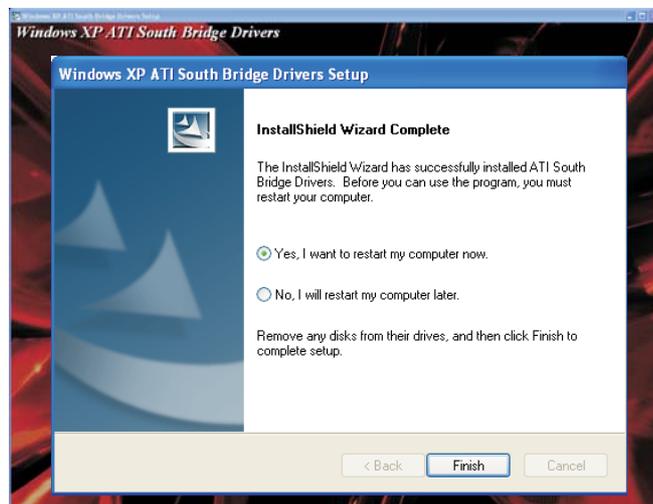


3. Read the license agreement then click Yes.



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.



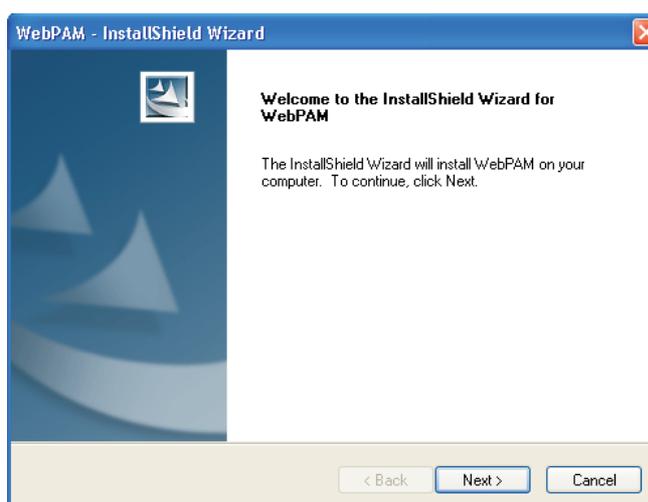
## WebPAM Utility

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

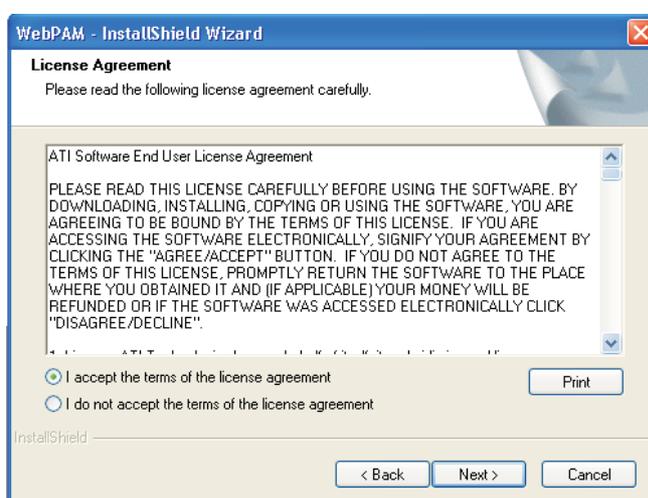
1. Click "WebPAM Utility".



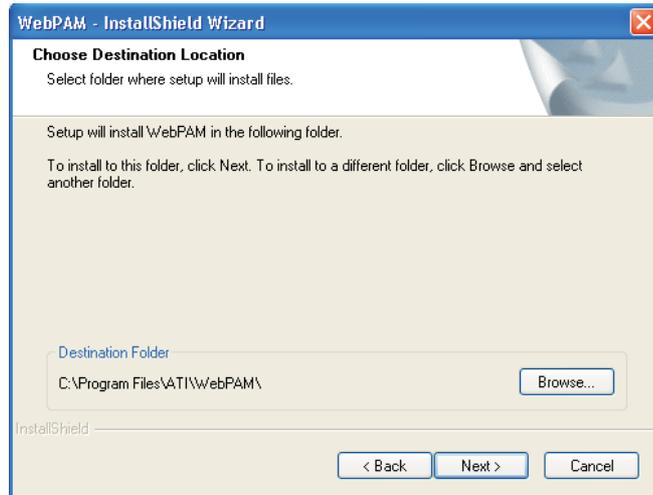
2. You are now ready to install the driver. Click Next.



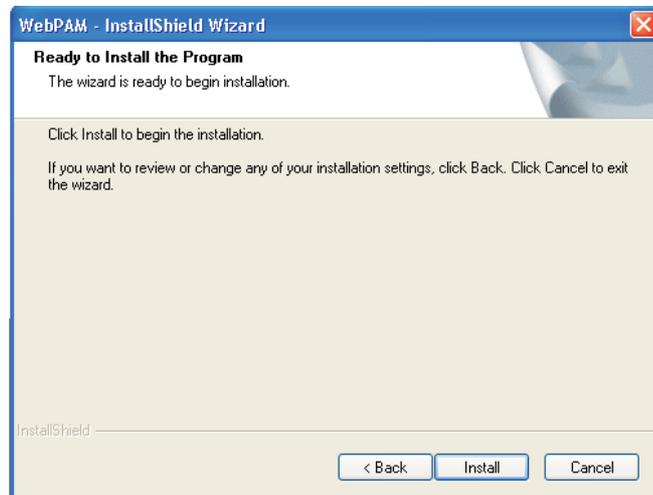
3. Read the license agreement then click "I accept the terms of the license agreement". Click Next.



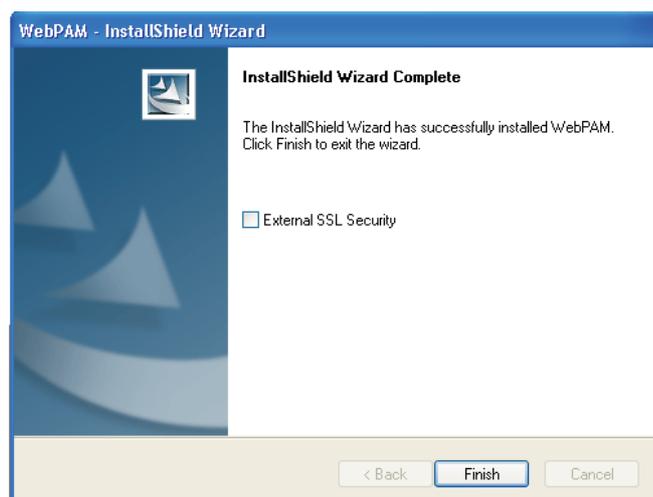
- Click Next to install to the destination folder or click Browse to select another folder.



- Click Next to begin installation.



- Click Finish.



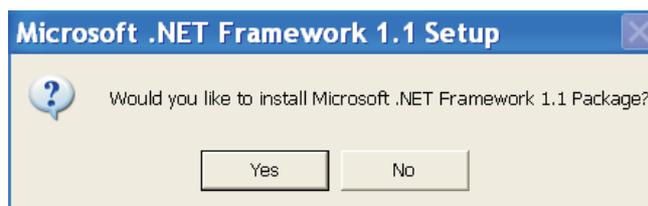
## Microsoft .NET Framework

On the top row of the screen, click the 2nd icon to open the Graphics Driver menu.

1. Click "Microsoft .NET Framework".



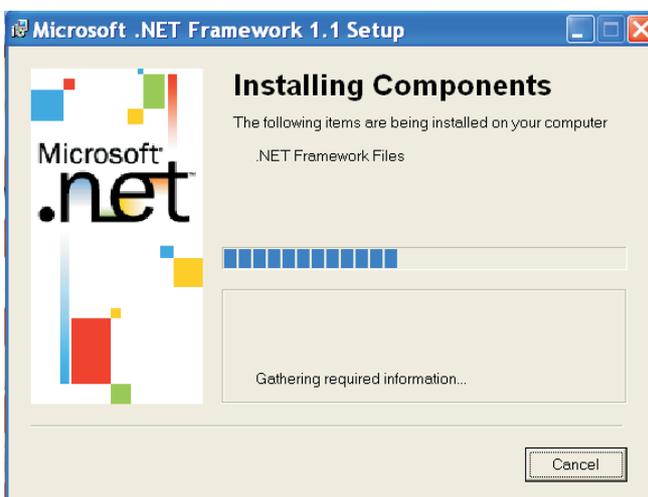
2. Click "Yes" to install the Framework package.



3. Setup is currently installing the files onto your computer.

Follow the prompts on the screen to complete installation.

Restart the system to allow the new driver installation to take effect.



## Graphics Drivers

On the top row of the screen, click the 2nd icon to open the Graphics Driver menu.

The CD provides both ATI and nVidia drivers. Select the driver according to the graphics card you are using.

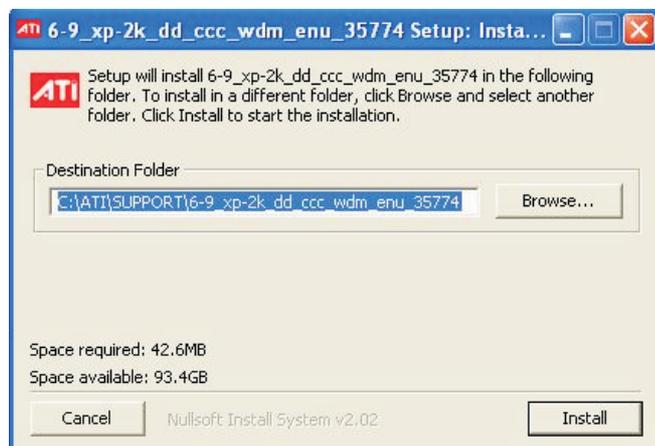


## ATI Radeon Drivers

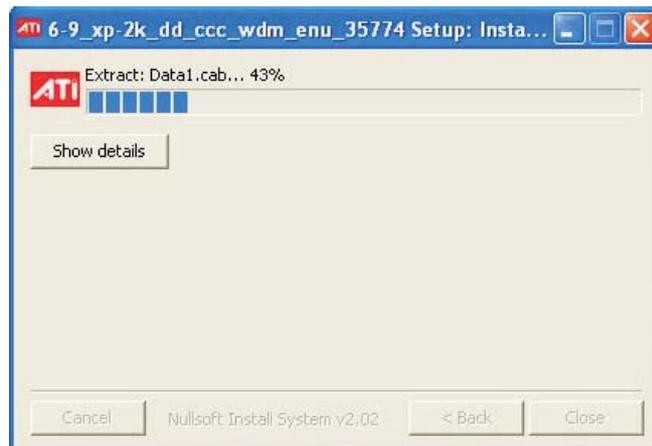
1. Click "ATI Radeon Drivers".



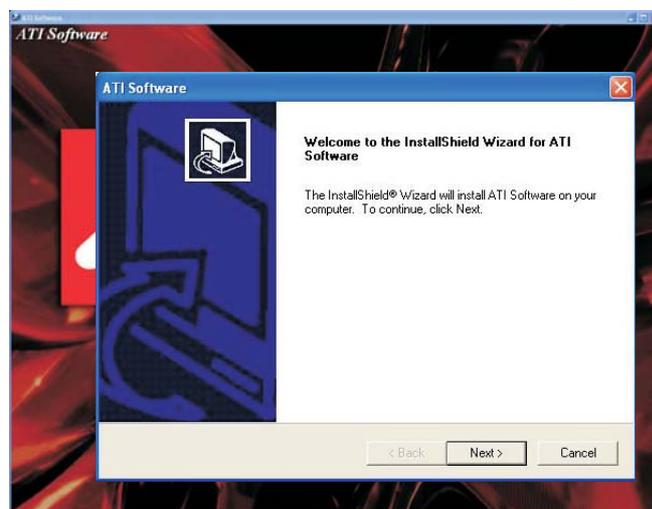
2. Click Install to install to the destination folder or click Browse to select another folder.



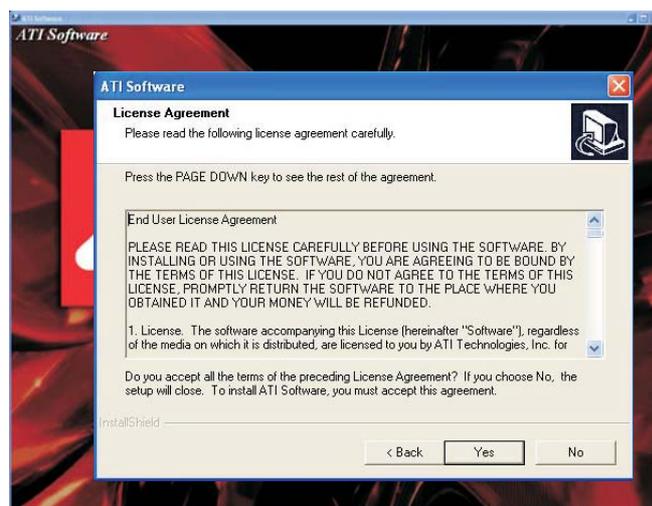
- The installation wizard will extract the files needed to install the driver:



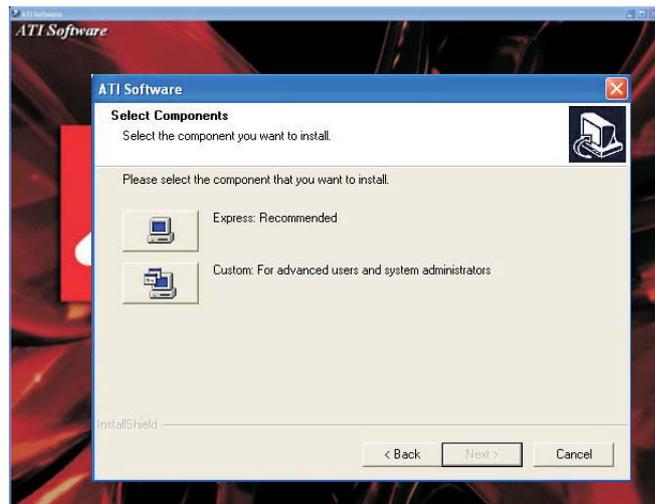
- Setup is now ready to install the driver. Click Next.



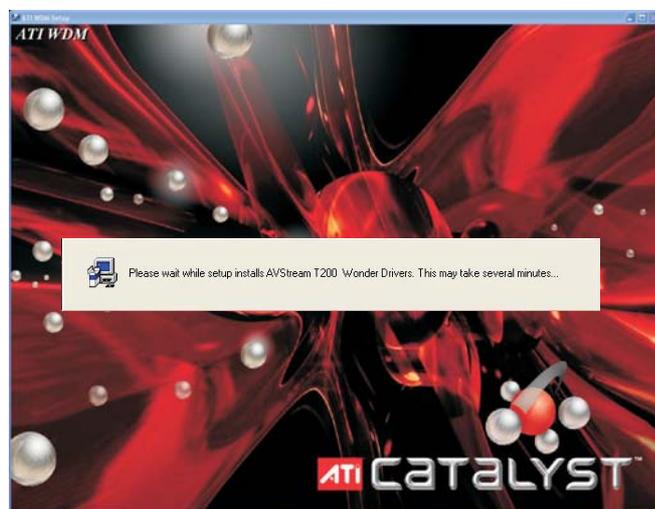
- Read the license agreement then click Yes.



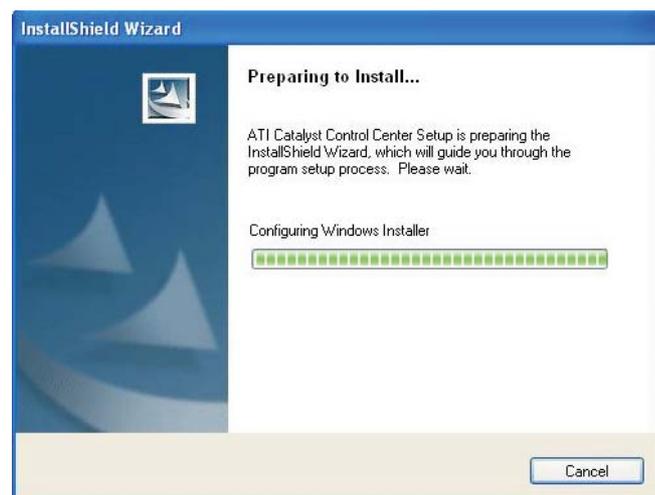
6. Select the component you want to install then click Next.



7. Setup is preparing to install the driver.

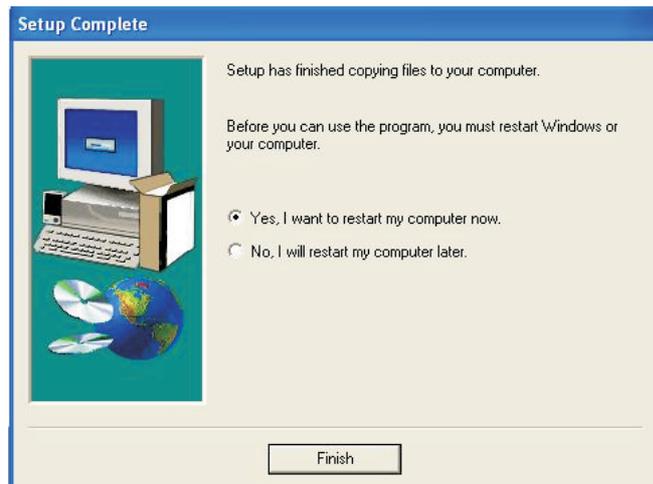


8. Setup is currently installing the driver. Follow the remainder of the steps shown on the screen; clicking "next" each time you finish a step.



- Click “Yes, I want to restart my computer now” then click Finish.

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

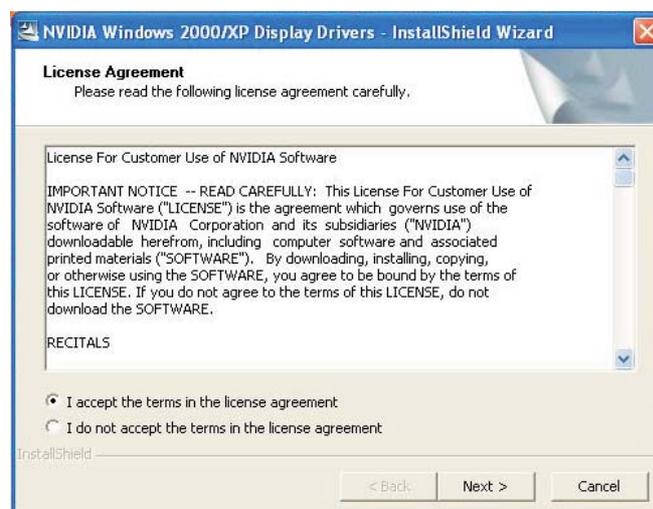


## nVidia GeForce 8 Series Drivers

- Click “nVidia GeForce 8 Series Drivers”.



- Read the license agreement then click “I accept the terms in the license agreement”. Click Next.



3. The installation wizard will extract the files needed to install the driver. After all files have been extracted, click Next.
4. Follow the remainder of the steps shown on the screen; clicking “next” each time you finish a step.
5. Reboot the system for the driver to take effect.



## 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 files needed to install Realtek HD Audio are being extracted. After all files have been extracted, click Next.



3. Setup is now ready to install the driver. Click Next to continue.



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.



## Marvell LAN Drivers

On the top row of the screen, click the 4th icon to open the Network Driver menu.

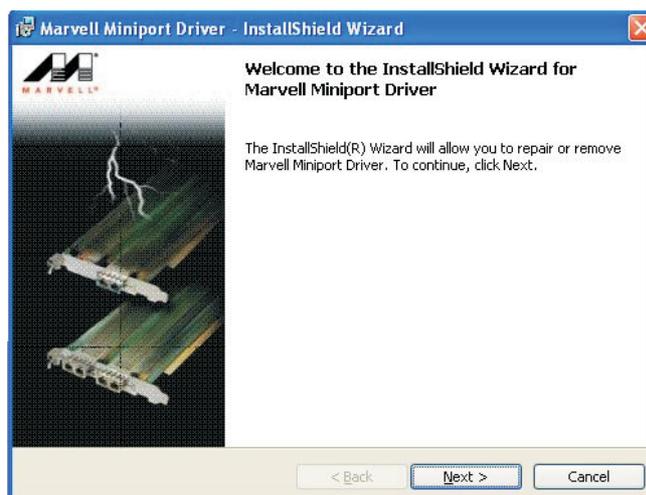
1. Click “Marvell LAN Drivers”.



2. Setup is preparing the installation wizard.



3. Setup will now install the driver. Click Next.



4. Click Finish.
5. Reboot the system for the driver to take effect.



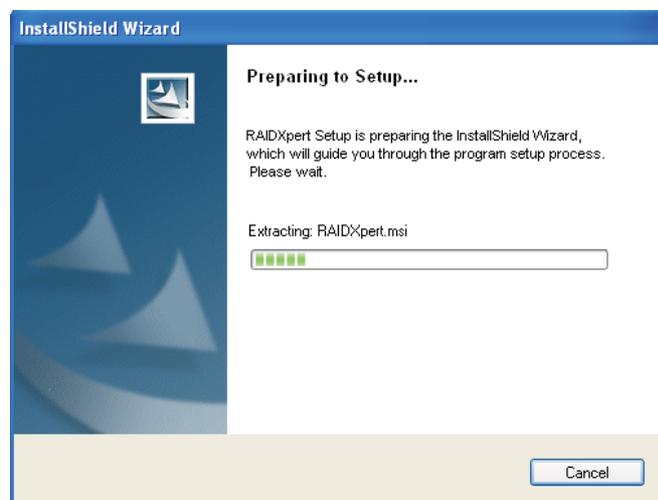
## RAIDXpert

On the top row of the screen, click the 5th icon to open the RAID Driver menu.

1. Select the language for this installation then click OK.



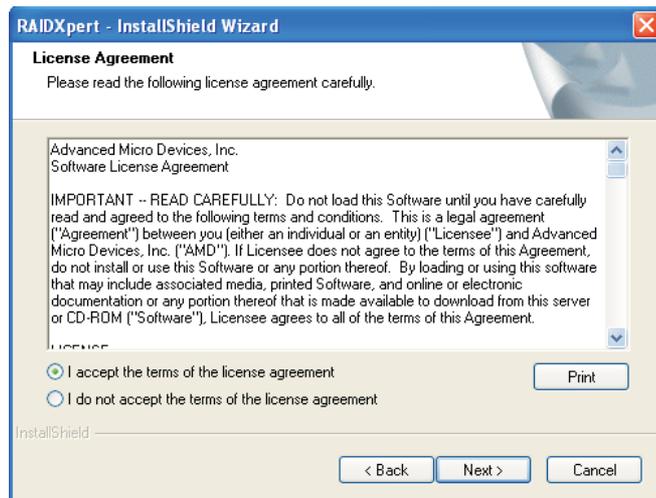
2. Setup is now preparing the wizard.



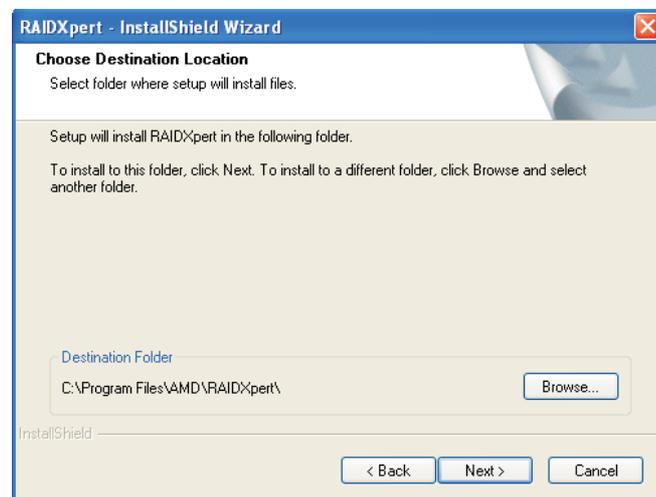
3. You are now ready to install the driver. Click Next.



- Go through the License Agreement and select “I accept the terms of the license agreement”. Click Next.



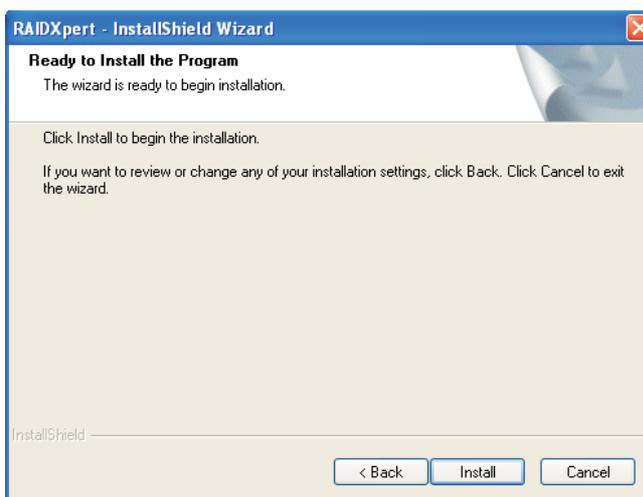
- Click Next to install or click Browse to select another folder.



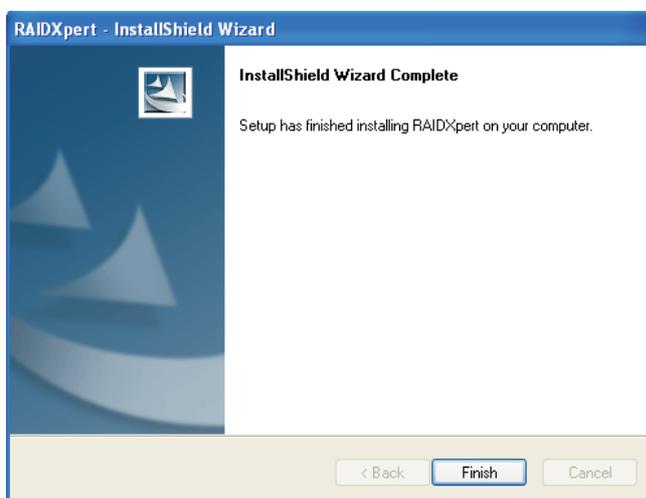
- Click “External Http Security” if needed.



- Click Install to begin the installation.



- After completing installation, click Finish.



## Smart Guardian

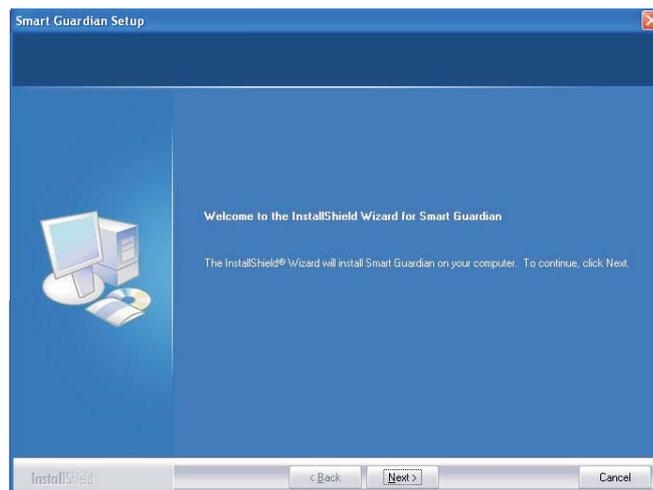
The Smart Guardian utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can 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.

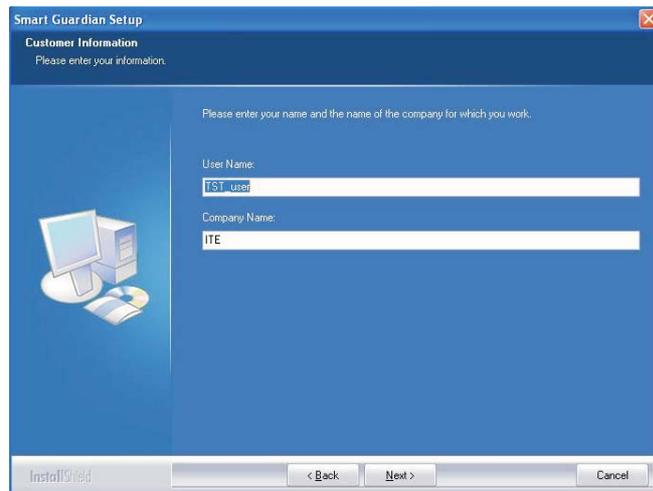
1. Click "Smart Guardian".



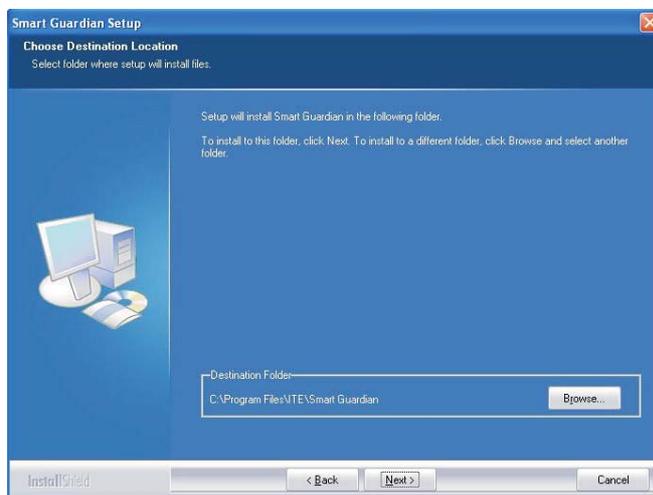
2. Setup is now ready to install the utility. Click Next.



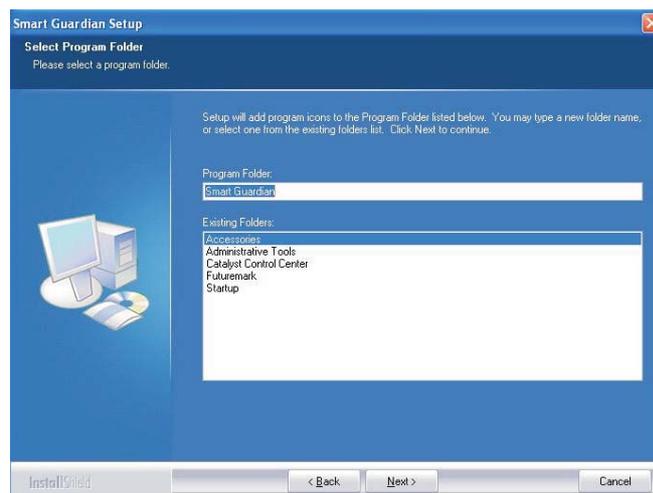
3. Enter the necessary information then click Next.



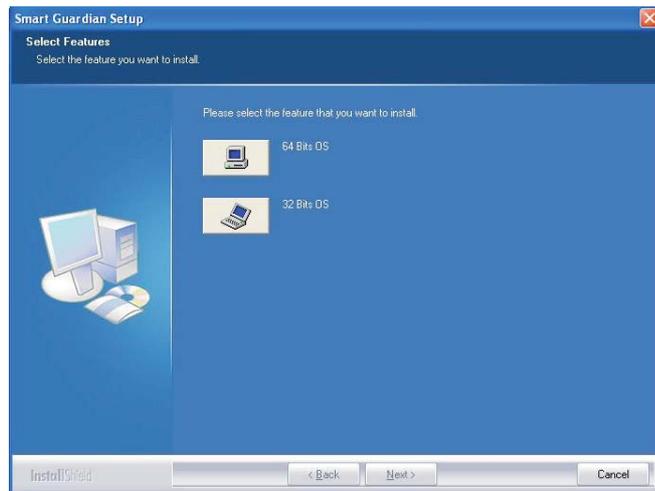
4. Click Next to install to the designated folder or click Browse to select another folder:



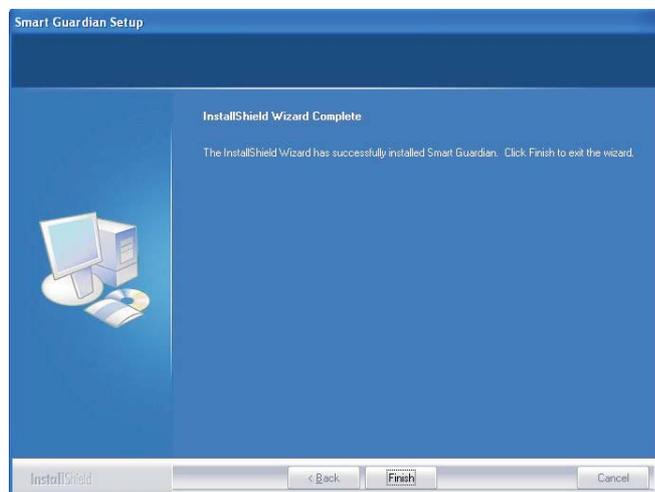
5. Click Next to add the program icon to the Program Folder:



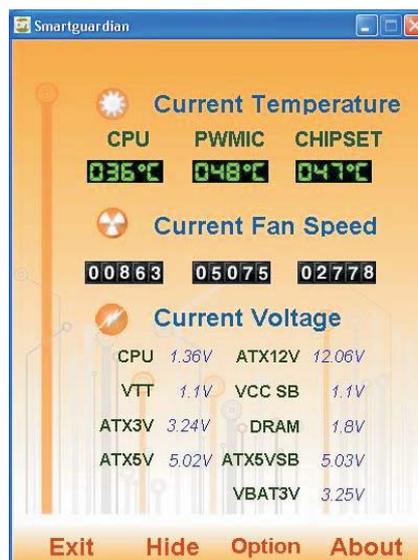
6. Select the option in accordance to the operating system that you are using then click Next.



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 to run the utility.



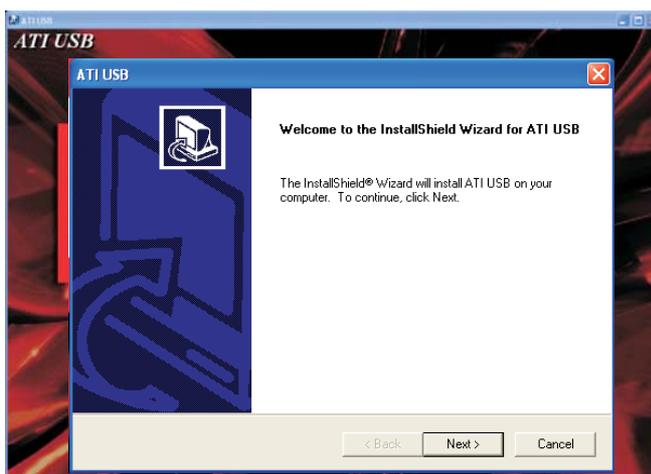
## ATI USB

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

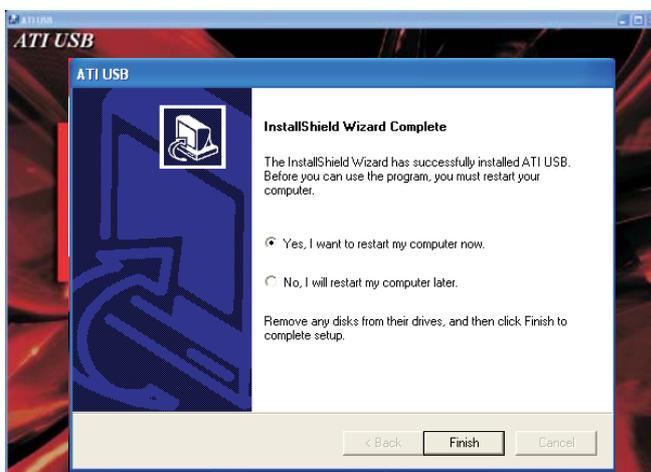
1. Click “ATI USB”.



2. Setup will now install the driver. Click Next.



3. Click “Yes, I want to restart my computer now”, then click Finish to exit the installation.



## AMD OverDrive

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

1. Click “AMD OverDrive”.



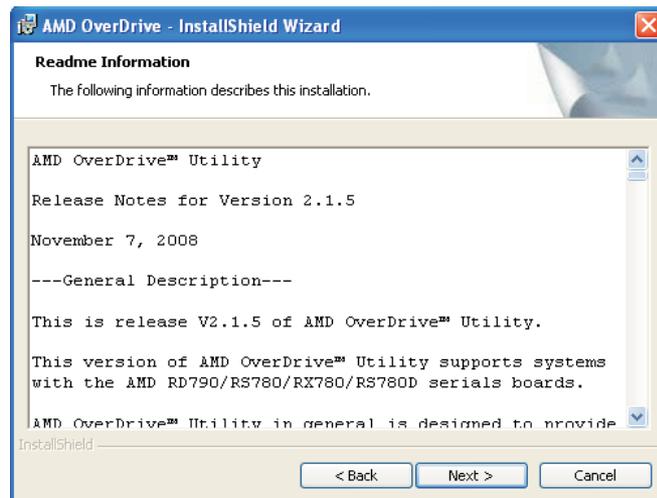
2. Click Next.



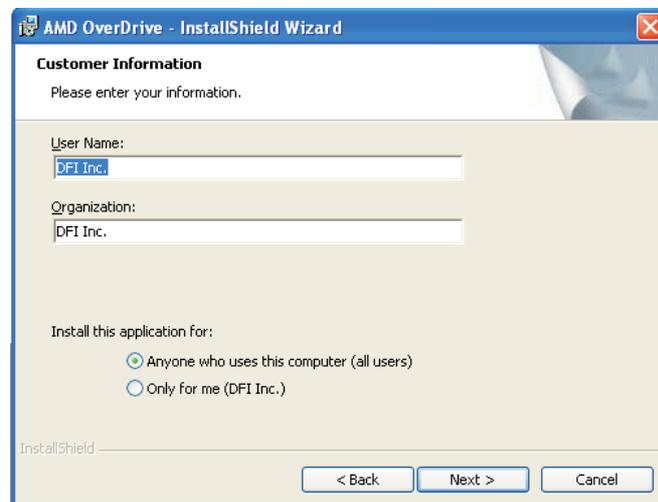
3. Click “ I accept the terms in the license agreement”, then click Next.



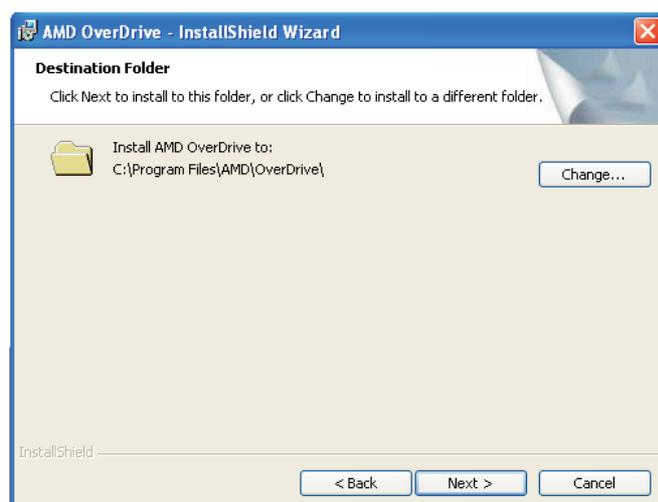
4. Go through the readme document for system requirements and installation tips then click Next.



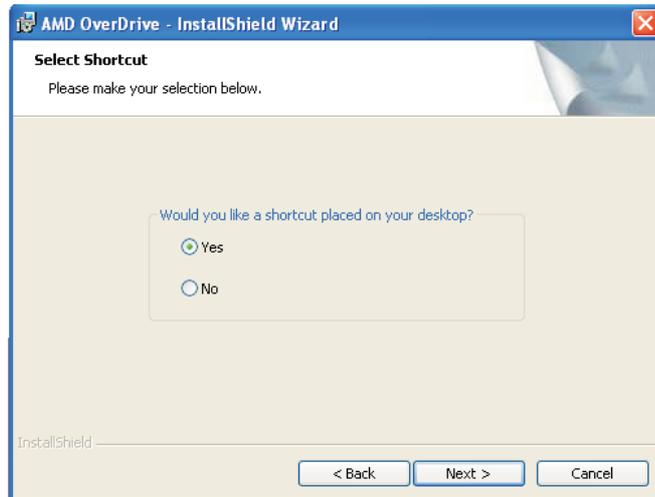
5. Enter the necessary information then click Next.



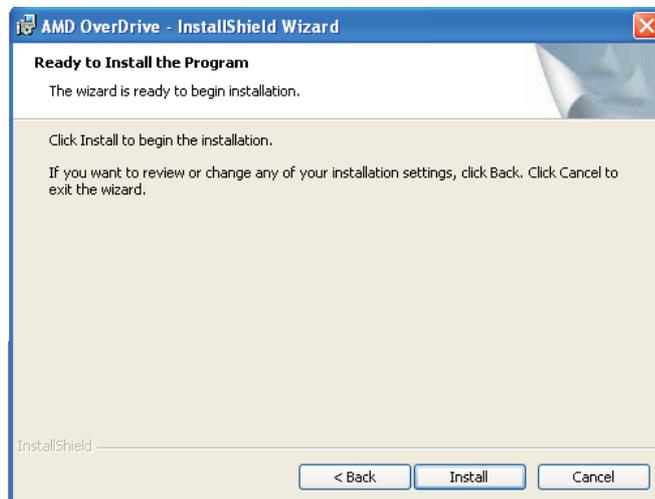
6. Click Next to install to the destination folder or click Change to select another folder.



7. Click Yes to create a shortcut on your desktop then click Next.



8. Click Install to begin the installation.



9. Click Finish.



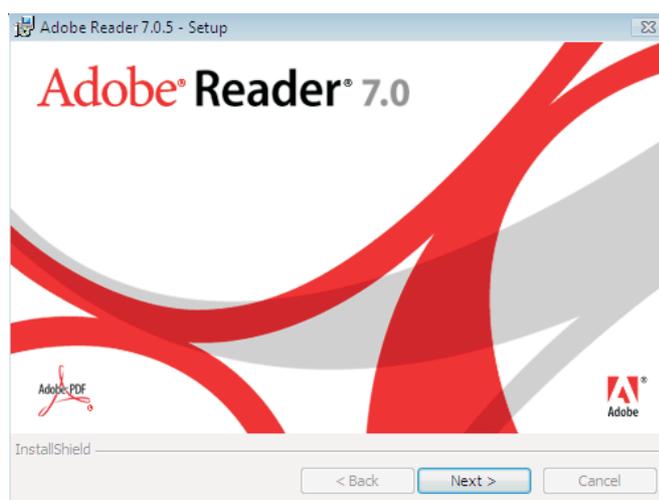
## Adobe Acrobat Reader 7.05

On the top row of the screen, click the last icon to open the Manuals menu.

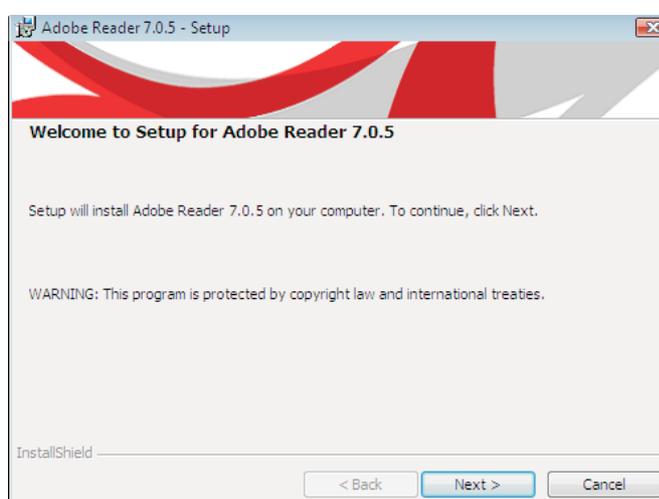
1. Click “Adobe Acrobat Reader 7.05”.



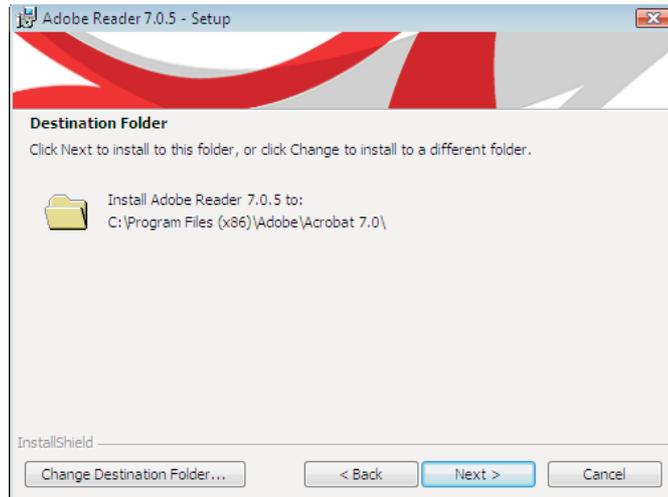
2. Click Next to continue.



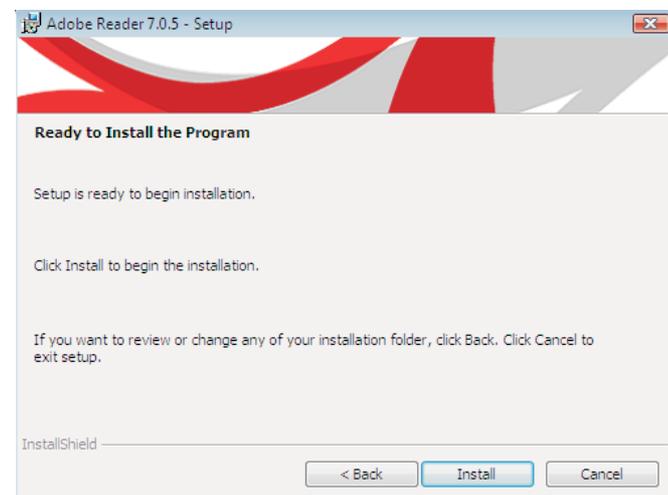
3. Setup is now ready to install. Click Next.



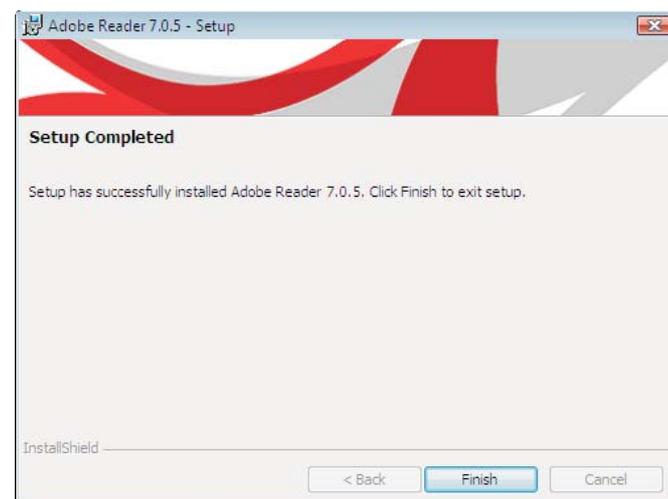
4. Click Next to install or click Change Destination Folder to select another folder:



5. Click Install to begin installation.



6. Click Finish to exit installation.



## 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 Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".
2. The drivers for Windows® 2000 are also included in the CD however "Autorun" is not supported for this operating system. Therefore you must manually install the drivers from the respective folders of each driver.
3. All steps or procedures to install software drivers are subject to change without notice as the softwares are occasionally updated. Please contact technical support or your sales representative for the latest version of the drivers or software applications.

## Chapter 5 - RAID

---

The AMD SB750 chip allows configuring RAID on Serial ATA drives. It supports RAID 0/1/0+1(10)/5/JBOD/AHCI.

### 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 lose 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 AMD BIOS status message screen will appear. Press the <F4> 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 or Windows® 2000 installation using the F6 installation method. This is required in order to install the operating system onto a hard drive or RAID volume when in RAID mode or onto a hard drive when in AHCI mode.

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

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

## Chapter 6 - ATI CrossFireX Technology

---

ATI's CrossFireX technology drives your PC to a new peak of performance. By connecting two ATI CrossFireX graphics cards, the power of these multiple GPUs (Graphics Processing Units) within the system will accelerate your gaming performance and improve image quality.

Aside from dual GPU for 3D rendering, CrossFire's new feature - asymmetric processing technology, allows adding another dedicated GPU for physics processing. The 3 GPUs simultaneously handle Data Parallel Processing (DPP) computing tasks such as game rendering and physics in a single system. This provides more realistic cutting edge 3D graphics to run at high resolutions.

### How CrossFire Works

CrossFire's key objective is to maximize the speed of a multi-GPU system. This is achieved by dividing the rendering workload to each of the two GPUs. When each GPU has completed its assigned tasks for a given frame, the Compositing Engine on the CrossFire Edition graphics card combines the results from each GPU (according to the selected operating mode) then sends the final frames out to the display device. The result will be a complete frame rendered at up to twice the performance of a single graphics card.

3D games are made up of a number of different tasks such as input processing, game state updating, artificial intelligence, physics, rendering, networking, audio, etc. The Data Parallel Processing (DPP) computing tasks simultaneously executes a common set of instructions across a large set of input data. Besides rendering, the detailed physics simulations allow these GPUs to take on an expanded role in game computing. Multiple GPUs can enhance a game by providing generous amounts of additional computing power for certain specific tasks.

## Features

Regardless of the type of operating mode used, the completed frames from both GPUs are sent to the Compositing Engine on the CrossFire Edition graphics card, which then sends them on to the display device.

- **Supertile Mode**

Supertiling divides your screen image into subsections like “tiles” in alternating tile pattern such that half of the tiles are assigned to each of the two GPUs.

- **Scissor Mode**

In Scissor mode, each frame is split into two sections, either horizontal or vertical, with each section being processed by one GPU.

- **Alternate Frame Rendering (AFR)**

In AFR mode, all even frames are rendered on one GPU, while all odd frames are rendered on the other.

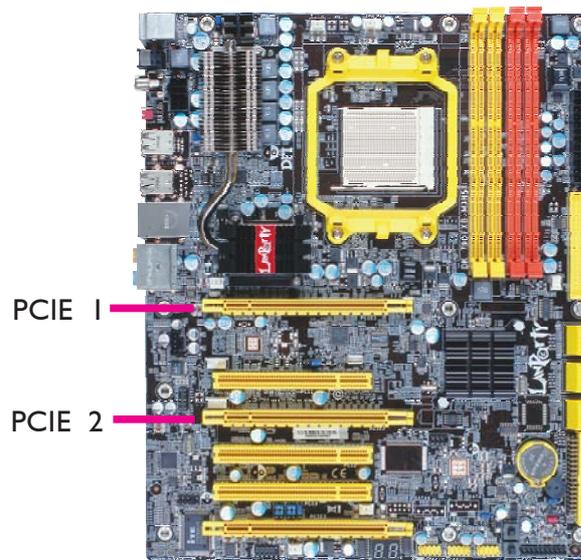
- **Super AA (Anti-Aliasing)**

The Super AA mode provides even higher quality anti-aliasing on multi-GPU systems. It works by having each GPU render the same frame with anti-aliasing enabled but using different sample locations for each. When both versions of the frame are completed, they are blended in the CrossFire Compositing engine. The resulting image is twice the number of samples, so 4x and 6x AA become 8x and 12x Super AA respectively.

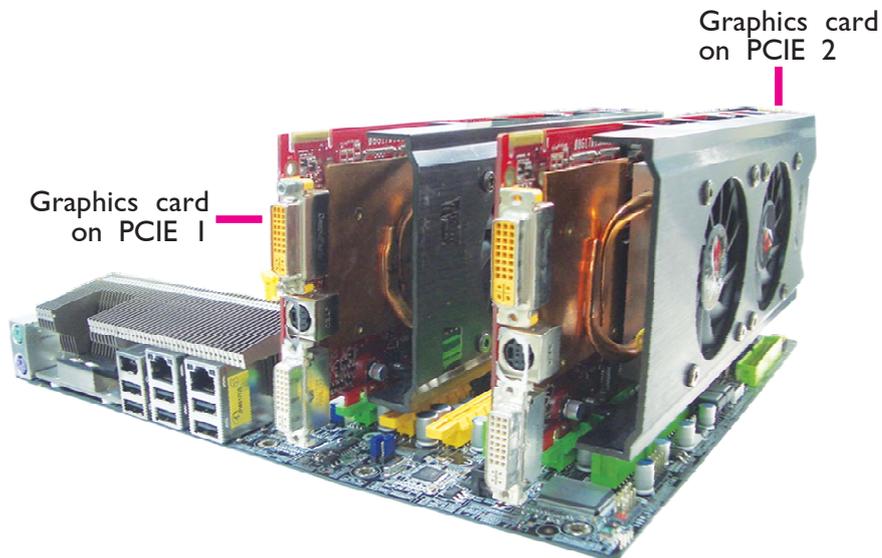
## CrossFireX Setup

**Note:**

- Uninstall all existing graphics card drivers before installing the ATI CrossFireX graphics cards.
  - Use identical ATI CrossFireX 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 1 and PCIE 2 slots then remove the brackets.



- Align the ATI CrossFireX graphics cards above the PCIE 1 and PCIE 2 slots then press them down firmly until they are completely seated in the slot.



- Secure the graphics cards with the screws you removed in step 2
- Connect the two graphics cards by using the provided CrossFireX bridge.

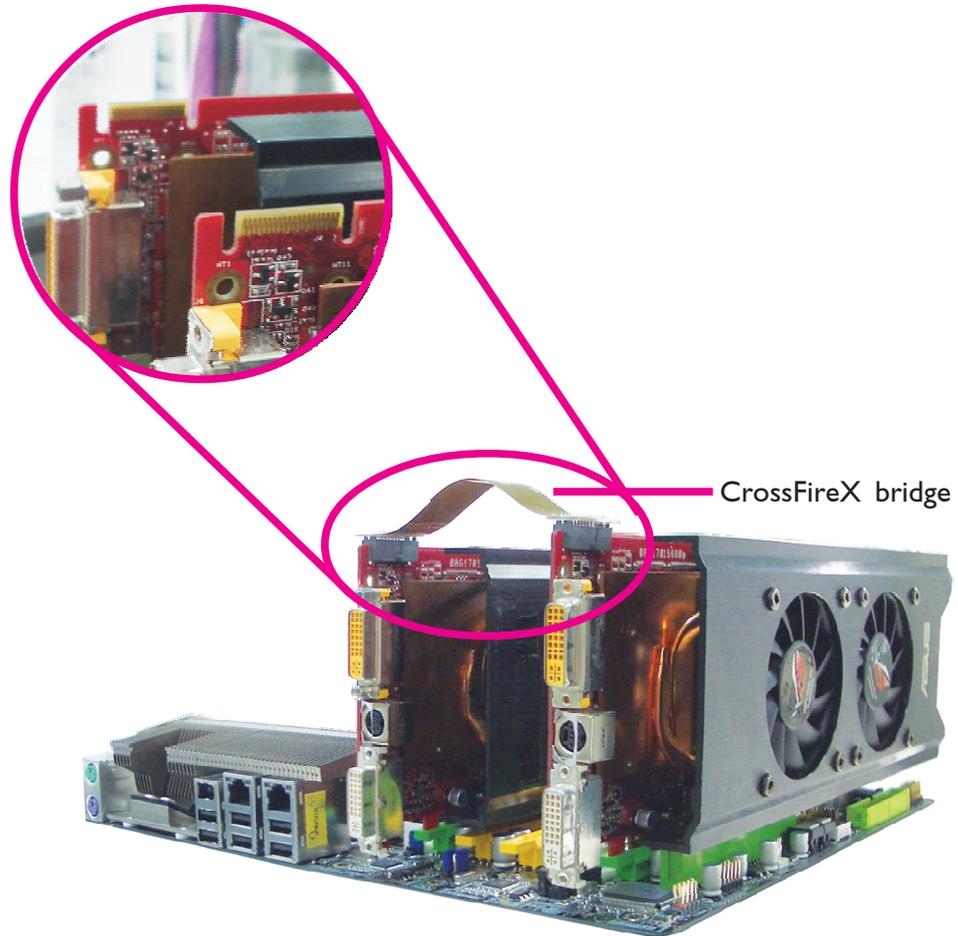


CrossFireX bridge  
Top view



CrossFireX bridge  
Side view

6. Insert the connectors that are at the ends of the cable to the connectors on top of the graphics cards.



7. Connect auxiliary power source from the power supply unit to the graphics cards.
8. Connect a display device's VGA or DVI cable to the graphics card.

9. Make sure you have installed the ATI Radeon drivers (ATI Catalyst Install Manager). Refer to chapter 4 of this manual for more information.
10. 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.
11. After restarting the system, you will notice the ATI Catalyst Control Center icon already added in the Windows notification area. Right-click this icon then select Catalyst Control Center:



You can also right-click on the Windows desktop then select Catalyst Control Center:

12. Follow the remainder of the steps shown on the screen to enable and configure CrossFireX.

# Chapter 7 - Cool'n'Quiet Technology

## Cool'n'Quiet Technology

The AMD Cool'n'Quiet™ technology allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by lowering its CPU speed and voltage, subsequently decreasing its noise level.

To enable the Cool'n'Quiet™ technology, the following settings are required.

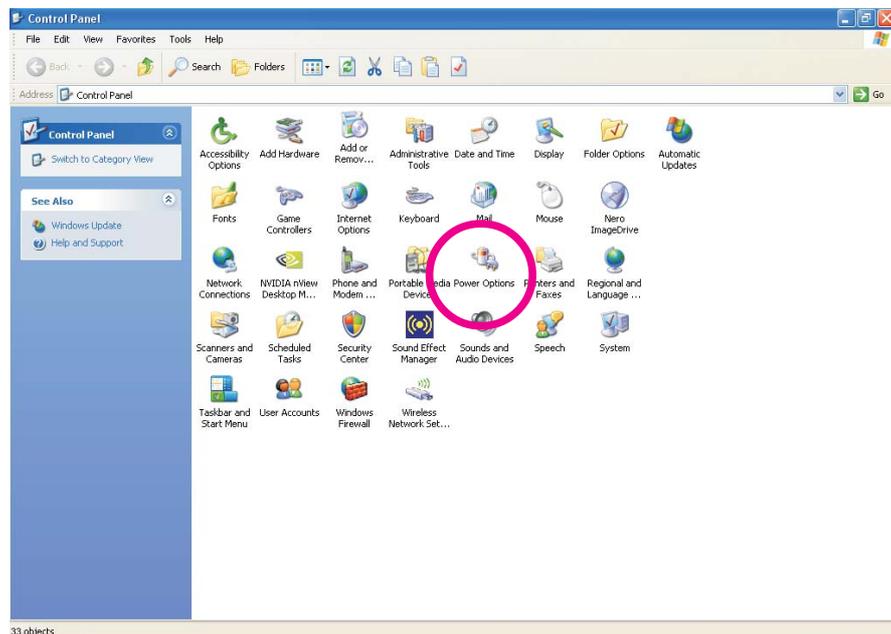
1. Install the Cool'n'Quiet™ driver.
2. Configure Power Management in Windows.

### Step 1: Install the Cool'n'Quiet™ Driver

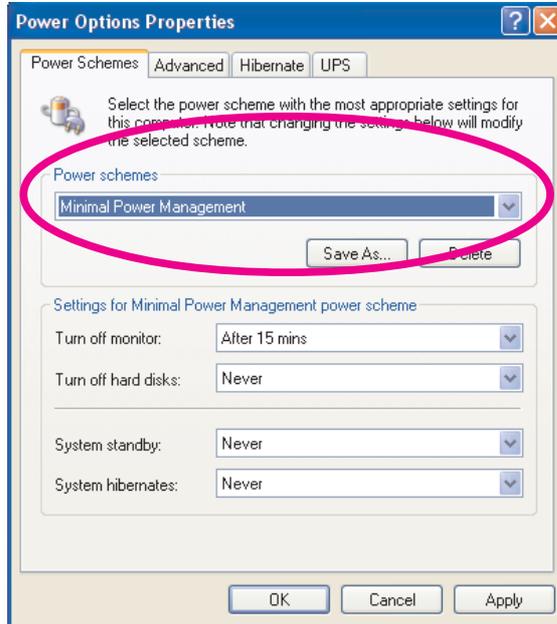
AMD's website provides free download of the Cool'n'Quiet™ driver. Make sure to install the appropriate driver for the CPU that you are using.

### Step 2: Configure Power Management in Windows

1. On the Windows desktop, click Start then select Control Panel.
2. In Control Panel, double-click the Power Options icon.



3. In the Power Schemes tab, select Minimal Power Management under the Power schemes section then click OK.



## 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.

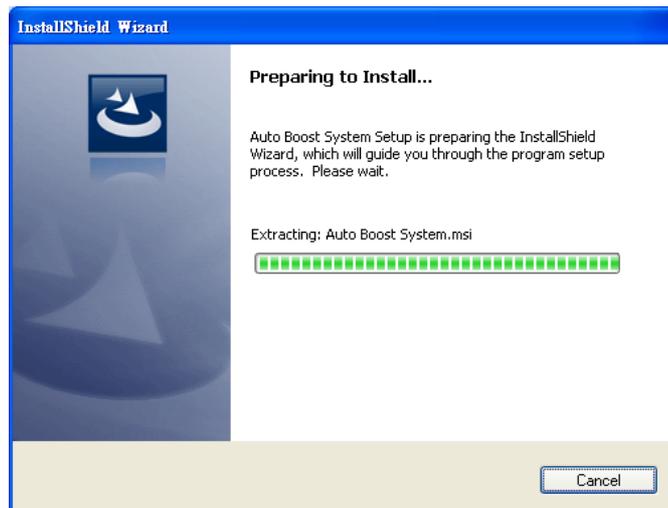
- Backup OC profile
- Load OC profile
- Exchange OC profile

### Installing ABS

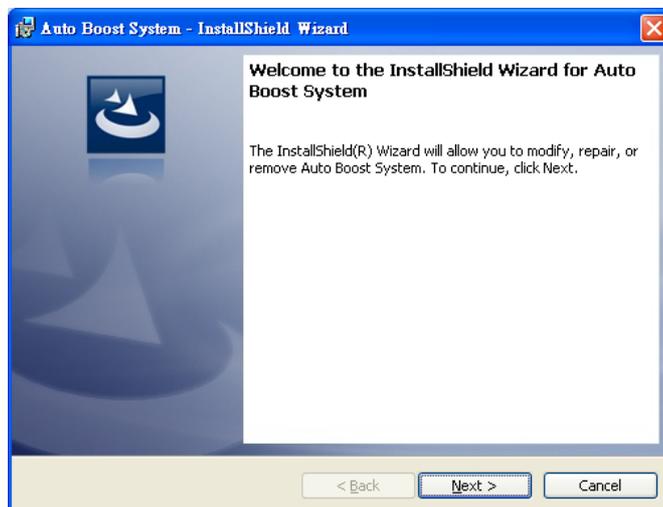
1. The ABS utility is included in the provided DVD. Insert the DVD into an optical drive. On the top row of the screen, click the 6th icon to open the Utility menu.
2. Click "Auto Boost System".



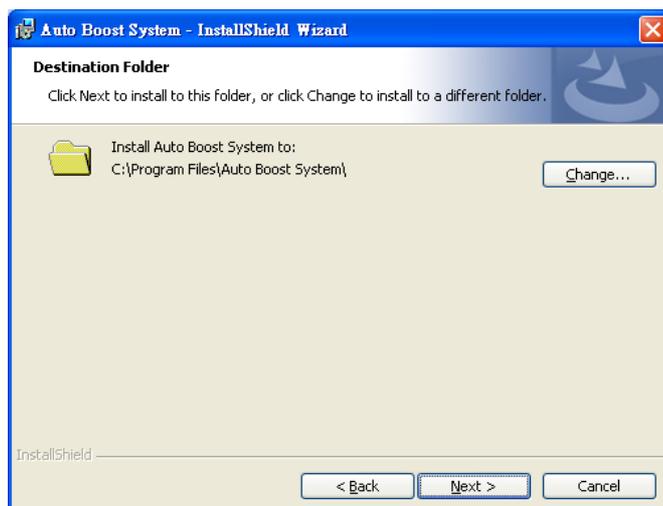
- The installation wizard is extracting the files needed to install the utility. The wizard will lead you to complete the installation.



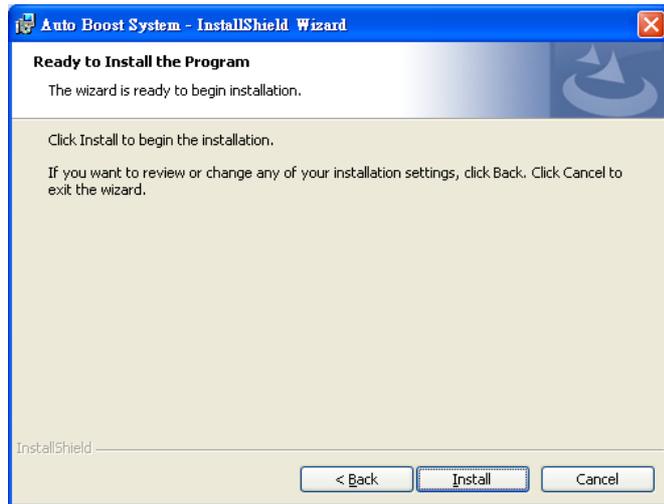
- Setup is now ready to install the utility. Click Next.



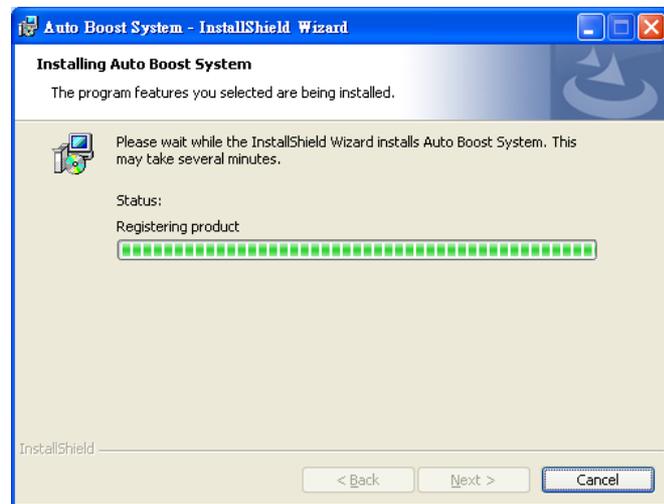
- Click Next to install to the destination folder or click Change to select another folder.



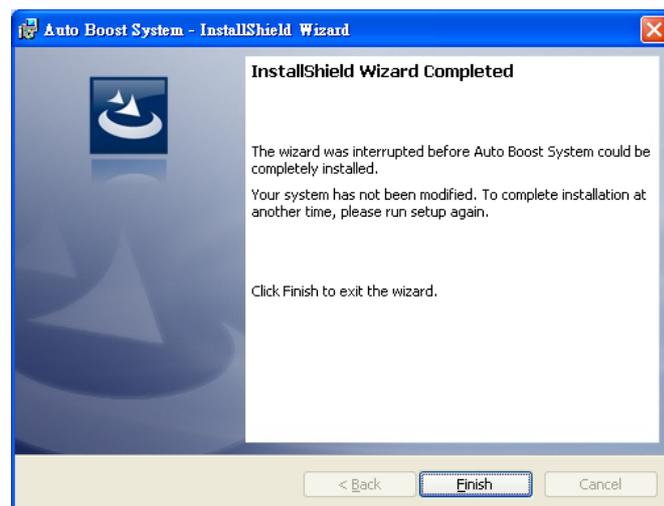
- Click Install to begin the installation.



- The installation wizard will copy all the necessary files and optimize the ABS features.

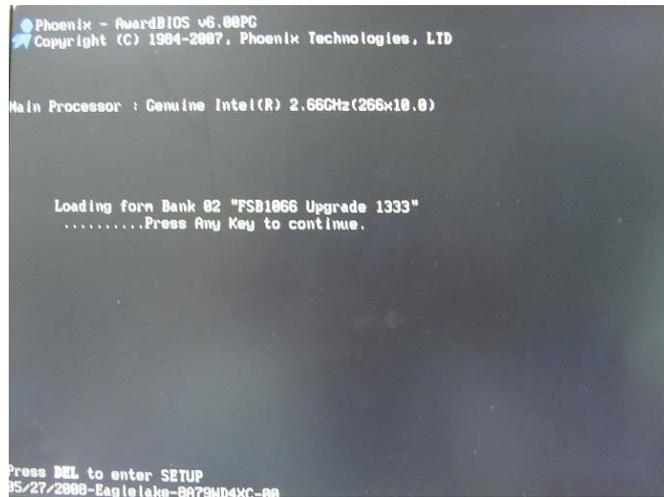


- Click Finish to exit setup.



### 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.



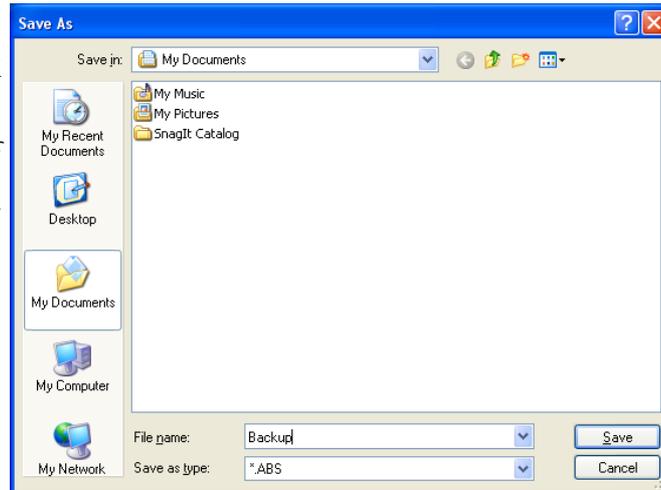
7. Click Backup.



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.



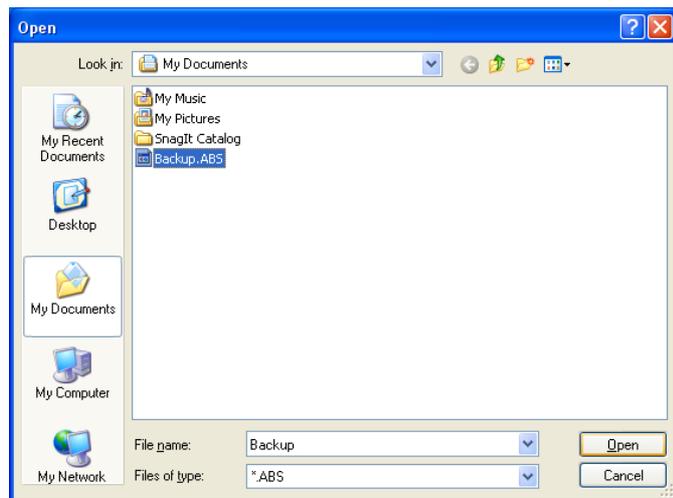
10. If in any case a new OC setting causes system instability, you can always retrieve the backup file saved earlier by clicking Reload.



11. Click Open.



12. Select the backup file then click Open.



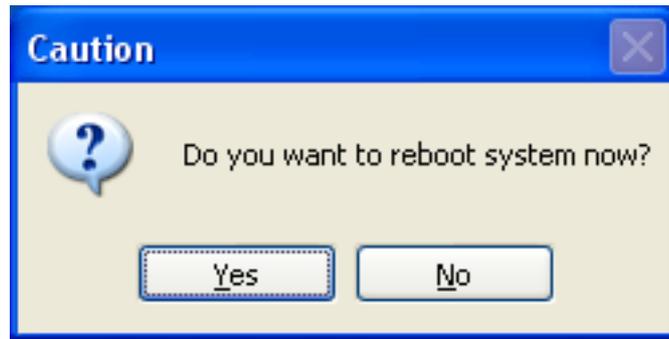
13. Click Write to load Banks 1-4 into the BIOS.



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.



**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 - System Error Message

---

When the BIOS encounters an error that requires the user to correct something, either a beep code will sound or a message will be displayed in a box in the middle of the screen and the message, PRESS F1 TO CONTINUE, CTRL-ALT-ESC or DEL TO ENTER SETUP, will be shown in the information box at the bottom. Enter Setup to correct the error.

### POST Beep

There are two kinds of beep codes in the BIOS. One code indicates that a video error has occurred and the BIOS cannot initialize the video screen to display any additional information. This beep code consists of a single long beep followed by three short beeps. The other code indicates that a DRAM error has occurred. This beep code consists of a single long beep.

### Error Messages

One or more of the following messages may be displayed if the BIOS detects an error during the POST. This list indicates the error messages for all Awards BIOSes:

#### CMOS BATTERY HAS FAILED

The CMOS battery is no longer functional. It should be replaced.



**Caution:**

*Danger of explosion if battery incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.*

#### CMOS CHECKSUM ERROR

Checksum of CMOS is incorrect. This can indicate that CMOS has become corrupt. This error may have been caused by a weak battery. Check the battery and replace if necessary.

#### DISPLAY SWITCH IS SET INCORRECTLY

The display switch on the motherboard can be set to either monochrome or color. This indicates the switch is set to a different

setting than indicated in Setup. Determine which setting is correct, either turn off the system and change the jumper or enter Setup and change the VIDEO selection.

**FLOPPY DISK(S) fail (80)**

Unable to reset floppy subsystem.

**FLOPPY DISK(S) fail (40)**

Floppy type mismatch.

**Hard Disk(s) fail (80)**

HDD reset failed.

**Hard Disk(s) fail (40)**

HDD controller diagnostics failed.

**Hard Disk(s) fail (20)**

HDD initialization error.

**Hard Disk(s) fail (10)**

Unable to recalibrate fixed disk.

**Hard Disk(s) fail (08)**

Sector Verify failed.

**Keyboard is locked out - Unlock the key**

The BIOS detects that the keyboard is locked. Keyboard controller is pulled low.

**Keyboard error or no keyboard present**

Cannot initialize the keyboard. Make sure the keyboard is attached correctly and no keys are being pressed during the boot.

**Manufacturing POST loop**

System will repeat POST procedure infinitely while the keyboard controller is pull low. This is also used for the M/B burn in test at the factory.

**BIOS ROM checksum error - System halted**

The checksum of ROM address F0000H-FFFFFFH is bad.

**Memory test fail**

The BIOS reports memory test fail if the memory has error(s).

## Appendix C - Troubleshooting

---

### Troubleshooting Checklist

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

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

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

### Monitor/Display

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

1. Make sure that the monitor's power switch is on.
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 D - 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	<ol style="list-style-type: none"> <li>CMOS jumper is set at pins 2-3.</li> <li>5Vsb of PSU is insufficient. (Minimum required - 2A)</li> </ol>	<ol style="list-style-type: none"> <li>Set the CMOS jumper to pins 1-2 (default).</li> <li>Replace a suitable PSU.</li> </ol>
00	Power on -> Stopped at <b>00</b>	BIOS program starts to set VID/FID to initialize CPU. (Boot Block area).	<ol style="list-style-type: none"> <li>Mixed-up BIOS data.</li> <li>Defective CPU connection.</li> <li>Incompatible PSU.</li> <li>No CPU power.</li> <li>Reset button short-circuited.</li> </ol>	<ol style="list-style-type: none"> <li>Clear the CMOS data.</li> <li>Remove and reinstall the CPU.</li> <li>Replace a suitable PSU.</li> <li>Inspect the 12V connection.</li> <li>Inspect the cable that connects the reset button to the front panel connector.</li> </ol>
00	Power on -> <b>00</b> -> 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 <b>A0</b>	A0~AF Definition: Initializing memory check code.	<ol style="list-style-type: none"> <li>Incompatible memory modules.</li> </ol>	<ol style="list-style-type: none"> <li>Remove and reinstall the memory modules.</li> </ol>
b8	00 -> C1 -> Stopped at <b>b8</b>	B0~BF Definition: Initializing memory/devices check code (registers).	<ol style="list-style-type: none"> <li>Mixed-up BIOS data.</li> <li>Mixed-up BIOS data.</li> <li>Incompatible memory modules.</li> <li>Incompatible PCI devices.</li> </ol>	<ol style="list-style-type: none"> <li>Clear the CMOS data.</li> <li>Clear the CMOS data.</li> <li>Remove and reinstall the memory modules.</li> <li>Remove and reconnect the PCI devices.</li> </ol>
C0	00 -> Stopped at <b>C0</b>	Initializing memory.	<ol style="list-style-type: none"> <li>Probing for failed memory devices.</li> <li>SPD value is lost or empty.</li> </ol>	<ol style="list-style-type: none"> <li>Make sure the memory modules are installed properly in the slots.</li> <li>Replace the memory modules.</li> </ol>

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
C1	00 -> C0 -> Stopped at C1 (00 -> C0 -> C1 -> Reset -> Looping)	Detecting memory. Detecting DRAM size and type. ECC auto-detection of L2 cache.	<ol style="list-style-type: none"> <li>1. Incompatible memory modules.</li> <li>2. Overclocking issue (tight DRAM timing).</li> <li>3. One of the memory modules is defective.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove and reinstall the memory modules.</li> <li>2. Clear the CMOS then load the default speed.</li> <li>3. Try installing a single module only.</li> </ol>
C3/C5	C0 -> C1 -> Stopped at C3/C5 (C0 -> C1 -> C3 -> Reset -> Looping)	Expanding compressed BIOS code to the DRAM.	<ol style="list-style-type: none"> <li>1. Tight DRAM timing (system is unstable).</li> <li>2. Insufficient DRAM voltage.</li> <li>3. Overclocking issue.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clear the CMOS then load the default speed.</li> <li>2. Increase the DRAM's voltage.</li> <li>3. Remove and reinstall the memory modules.</li> </ol>
CF	Shutdown -> Stopped at CF (Shutdown -> CF -> Reset)	Resume on S1/S3 failed.	<ol style="list-style-type: none"> <li>1. Insufficient DRAM voltage.</li> <li>2. Incompatible memory modules.</li> <li>3. Overclocking issue (tight DRAM timing).</li> <li>4. BIOS issue.</li> </ol>	<ol style="list-style-type: none"> <li>1. Increase the DRAM's voltage.</li> <li>2. Remove and reinstall the memory modules.</li> <li>3. Load the default DRAM speed.</li> <li>4. Upgrade to the latest BIOS.</li> </ol>
E0	C0 -> C1 -> Stopped at E0	E0-EF Definition: Initializing PCIE device check code.	<ol style="list-style-type: none"> <li>1. Mixed-up BIOS data.</li> <li>2. Incompatible PCI devices.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clear the CMOS data.</li> <li>2. Remove and reinstall the PCI device.</li> </ol>

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
25	00 -> C1 -> C3 -> Stopped at <b>25</b>	Enumerating PCI bus number. Assigning memory & I/O resource - searching for a valid VGA device & VGA BIOS then placing it in C000:0.	<ol style="list-style-type: none"> <li>1. Incompatible PCI devices.</li> <li>2. Incompatible USB devices.</li> <li>3. Defective graphics card. (VGA BIOS did not initialize)</li> <li>4. The graphics card was not installed properly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Remove all PCI/PCI-E devices and leave only the graphics card to test first. Test the devices one at a time to determine the one with problem.</li> <li>2. Remove all USB devices including the USB keyboard and instead use a PS/2 keyboard to test.</li> <li>3. Replace the graphics card.</li> <li>4. Remove and reinstall the graphics card.</li> </ol>
26	00 -> C1 -> C3 -> Stopped at <b>26</b>	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.	<ol style="list-style-type: none"> <li>1. Defective graphics card.</li> <li>2. Initialized wrong BIOS process. (Clock-gen circuit / Super IO circuit)</li> </ol>	<ol style="list-style-type: none"> <li>1. Replace the graphics card.</li> <li>2. Clear the CMOS data.</li> </ol>
41	C3 -> 25 -> 26 -> Stopped at <b>41</b>	Initializing the FDD device.	Detected floppy error.  * Mixed-up BIOS data could be one of the causes too.	Unplug the FDD cable and check for errors or check the BIOS settings.  * Replace a new BIOS chip.
50	Power on -> Stopped at <b>50</b>	Initializing USB devices.	<ol style="list-style-type: none"> <li>1. USB failed to boot. (BBS issue)</li> <li>2. Incompatible USB devices.</li> </ol>	<ol style="list-style-type: none"> <li>1. Clear the CMOS data first.</li> <li>2. Try connecting the device to another USB port.</li> <li>3. Test the USB devices one by one.</li> <li>4. Set the USB power source to 5V by means of the 5V/5Vsb select jumper.</li> </ol>

POST (hex)	Debug Code Action	BIOS Program Definition	Possible Cause	Solution
75	Power on -> Stopped at <b>75</b>	Initializing storage devices. (Probing for IDE devices or SATA devices)	<ol style="list-style-type: none"> <li>1. Lost power source of some devices.</li> <li>2. Incompatible SATA or PATA device.</li> <li>3. CD-ROM's spin took too long.</li> </ol>	<ol style="list-style-type: none"> <li>1. Inspect the power cable connection.</li> <li>2. Inspect the IDE cable connection or replace another PATA/ SATA device.</li> <li>3. Remove the disc, if present, from the CD-ROM device.</li> </ol>
7F	Power on -> Stopped at <b>7F</b> * Checksum error always appear after the BIOS default has been loaded.	BIOS setup module in progress. Reporting BIOS check errors. Waiting for keys: DEL key to load the BIOS default. F1 key to continue.	<ol style="list-style-type: none"> <li>1. Checksum error occurred. (Change/add devices such as CPU/ DRAM)</li> <li>2. Error occurred after clearing the CMOS.</li> <li>3. Onboard battery is depleted.</li> <li>4. Overclocking issue.</li> </ol> <p>* The battery circuit of the MB is defective.</p>	<ol style="list-style-type: none"> <li>1. Load the optimized default setting of the BIOS.</li> <li>2. Alter or adjust the BIOS setting.</li> <li>3. Replace a new battery.</li> <li>4. Decrease the overclock range.</li> </ol> <p>* RMA action required.</p>
FF	Power on -> Run to <b>FF</b> * Blank Screen	Boot attempt (INT 19h) System booted normally.	Normal Operation	Nil
			* 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 <b>79</b>	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 <b>88</b>	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 <b>FF</b>	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.

Index

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



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.