System Board
User's Manual

935-CF3201-000G
92820729

Copyright

Trademarks

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

About this Manual

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

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

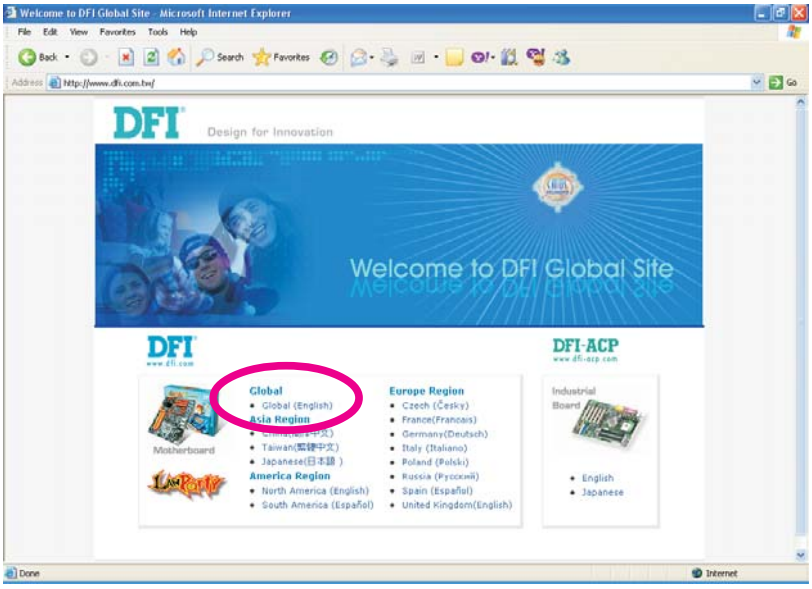
3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

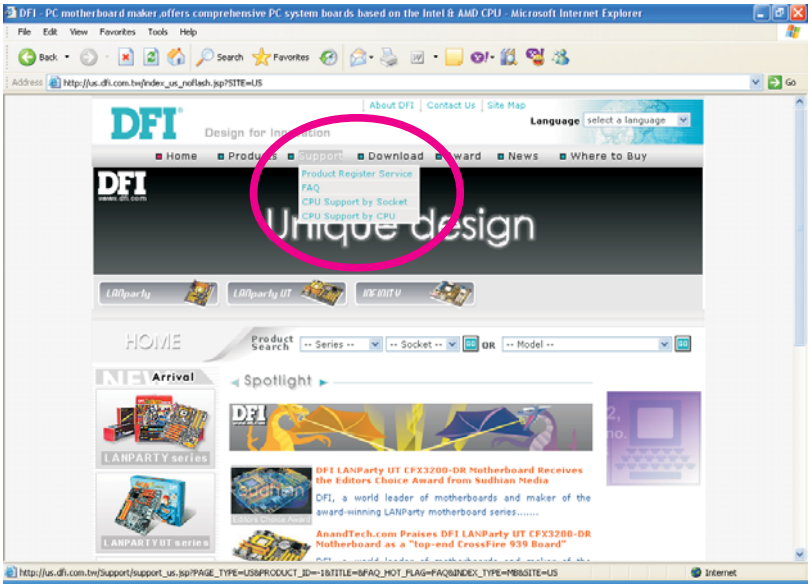
Registering the Product

We encourage you to register your DFI product online. DFI's product registration service entitles you to notifications about product updates, special discounts and/or promotional offers; and puts your licensing information on file so that we may efficiently assist you if in any case needed. Please follow the steps below to access the product registration page.

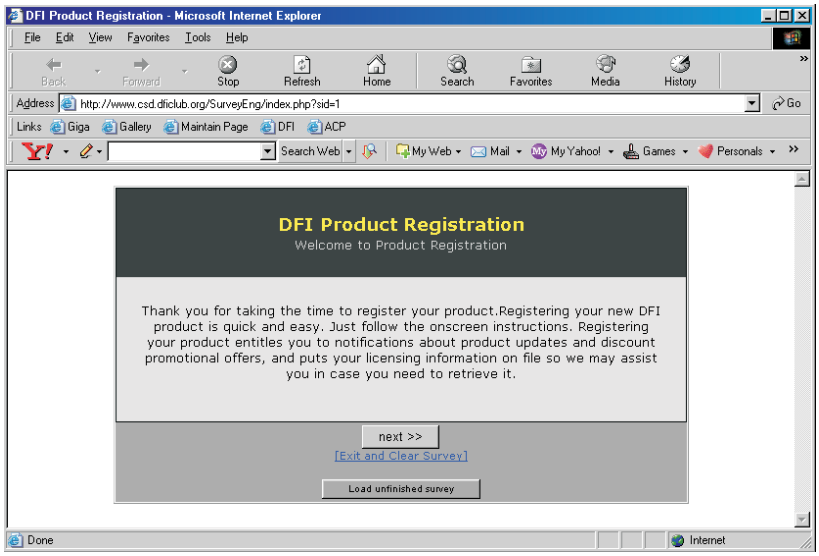
1. Run Internet Explorer then type www.dfi.com.tw in the Address bar. On DFI's homepage, click Global or the language of your choice.



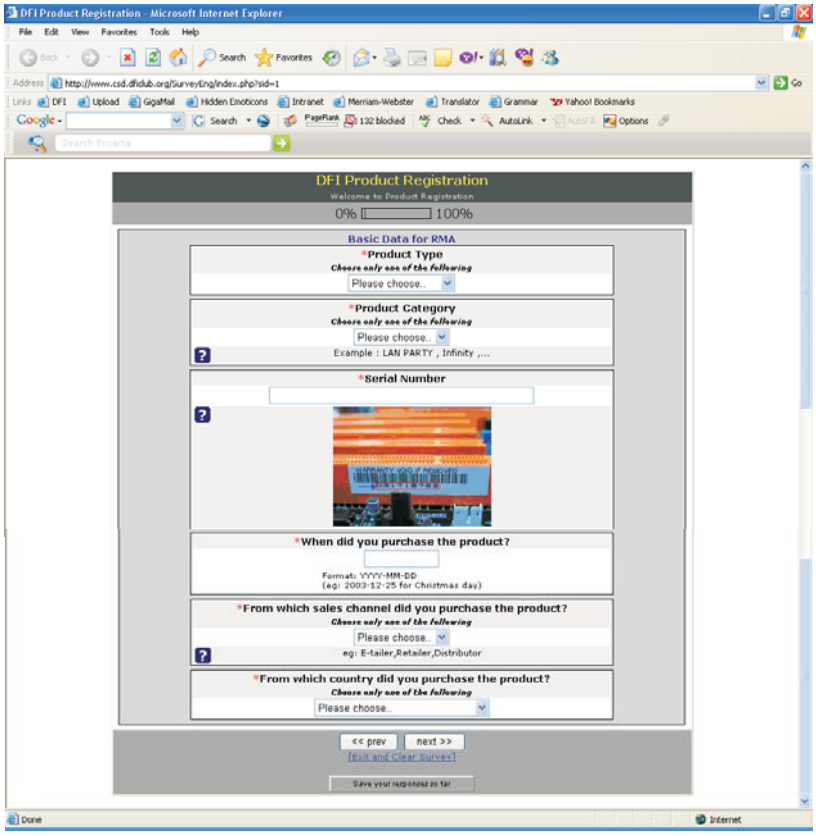
2. Click the Support menu then select Product Register Service.



3. The DFI Product Registration page will appear. Click Next to continue.



4. Select or fill in the necessary information to complete the registration.



5. Thank you for registering your DFI product.

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 the battery manufacturer's instructions.

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.

- ☑ The system board
- ☑ A user's manual
- ☑ One IDE cable
- ☑ One FDD cable
- ☑ Two Serial ATA data cables
- ☑ One Serial ATA power cable
- ☑ One RAID floppy diskette
- ☑ One I/O shield
- ☑ One "Mainboard Utility" CD

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

Before Using the System Board

Before using the system board, prepare basic system components.

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

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

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

Chapter 1 - Introduction

Specifications

Processor	• AMD® Athlon™ 64 FX / Athlon™ 64 X2 / Athlon™ 64 • Socket AM2
HyperTransport	• 2000MT/s HyperTransport interface
Chipset	• ATI® chipset - Northbridge: ATI® CrossFire Xpress 3200 - Southbridge: ATI® SB600
System Memory	• Four 240-pin DDR2 DIMM sockets • Supports DDR2 533 and DDR2 667 DIMMs • Supports dual channel (128-bit wide) memory interface • Supports up to 4GB system memory • Supports non-ECC x8 and x16 unbuffered DIMMs
Expansion Slots	• 2 PCI Express x16 slots - CrossFire mode: Each x16 slot operates at x16 bandwidth. - Normal mode: Each x16 slot operates at x16 bandwidth. • 1 PCI Express x1 slot • 3 PCI slots
BIOS	• Award BIOS • 4Mbit flash memory
Power Management	• ACPI and OS Directed Power Management • ACPI STR (Suspend to RAM) function • Wake-On-PS/2 Keyboard/Mouse • Wake-On-USB Keyboard/Mouse • Wake-On-LAN • RTC timer to power-on the system • AC power failure recovery
Hardware Monitor	• Monitors CPU / system / northbridge temperature and overheat alarm • Monitors 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip voltages • Monitors the speed of the cooling fans • CPU Overheat Protection function monitors CPU temperature and fan during system boot-up - automatic shutdown upon system overheat
Audio	• Realtek ALC882 High Definition audio CODEC • 8-channel audio output • S/PDIF interface

LAN	• Realtek RTL8110SB PCIE Gigabit LAN • Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards
IDE	• Supports one IDE connector that allows connecting up to two UltraDMA 133Mbps hard drives
Serial ATA	• ATI chipset supports: - Four SATA ports - SATA speed up to 3Gb/s - RAID 0, RAID 1 and RAID 0+1 • JMB360 chip supports: - One eSATA (external SATA) port - SATA speed up to 3Gb/s
IEEE 1394	• VIA VT6307 • Supports two 100/200/400 Mb/sec ports
Rear Panel I/O	• 1 mini-DIN-6 PS/2 mouse port • 1 mini-DIN-6 PS/2 keyboard port • 1 parallel port • 1 optical S/PDIF-out port • 1 RCA S/PDIF-out port • 1 eSATA port • 1 IEEE 1394 port • 1 RJ45 LAN port • 4 USB 2.0/1.1 ports • Line-in, line-out (front R/L) and mic-in jacks • Center/subwoofer, rear R/L and side R/L jacks
Internal I/O	• 3 connectors for 6 additional external USB 2.0 ports • 1 connector for 1 external IEEE 1394 port • 2 connectors for 2 external serial ports • 1 front audio connector for line-out and mic-in jacks • 1 CD-in internal audio connector • 1 connector for IrDA interface • 4 Serial ATA connectors • 1 40-pin IDE connector • 1 90° floppy connector • 1 24-pin ATX power connector • 1 8-pin 12V power connector • 1 4-pin 5V/12V power connector (FDD type) • 1 front panel connector • 3 fan connectors
PCB	• ATX form factor • 24.4cm (9.6") x 30.5cm (12")

Features

The system board supports the AMD Athlon™ 64 FX / Athlon 64 X2 / Athlon™ 64 processor for Socket AM2. AMD Athlon™ 64 provides superior computing for many software applications by allowing both 32-bit and 64-bit applications to run simultaneously on the same platform. The operating system and software are able to process more data and access a tremendous amount of memory which improves the overall system performance.

2T timing which provides better system stability is supported in CG or later revisions of the AMD Athlon™ 64 processor. You can select the memory timing in the Genie BIOS Setting submenu ("DRAM Timing and Config" section) of the BIOS.

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.

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

PCI Express is a high bandwidth I/O infrastructure that possesses the ability to scale speeds by forming multiple lanes. The system board currently supports the physical layer of x1 and x16 lane widths. The x1 PCI Express lane supports transfer rate of 2.5 Gigabytes (250MBbps) per second. The PCI Express architecture also provides a high performance graphics infrastructure by enhancing the capability of a x16 PCI Express lane to provide 4 Gigabytes per second transfer rate.

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

DDR2 is a higher performance DDR technology whose data transfer rate delivers bandwidth of 4.3 GB per second and beyond. That is twice the speed of the conventional DDR without increasing its power consumption. DDR2 SDRAM modules work at 1.8V supply compared to 2.6V memory voltage for DDR modules. DDR2 also incorporates new innovations such as the On-Die Termination (ODT) as well as larger 4-bit pre-fetch against DDR which fetches 2 bits per clock cycle.

The onboard Realtek ALC882 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. ALC882 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 connector on the system board sends surround sound and 3D audio signal outputs to amplifiers and speakers and to digital recording devices like CD recorders.

eSATA The JMB360 chip supports eSATA (External Serial ATA). eSATA is a hot pluggable interface that allows connecting an external Serial ATA device. It is up to 6 times faster than existing external storage solutions like USB 2.0 and/or 1394 devices. The system board supports one eSATA port with speed of up to 3Gb/s.

SATA 3Gb/s Serial ATA is a storage interface that is compliant with SATA 1.0 specification. The ATI chip supports 4 Serial ATA ports with speed of up to 3Gb/s. Serial ATA improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

RAID The ATI chipset allows configuring RAID on the Serial ATA drives. It supports RAID 0, RAID 1 and RAID 0+1.

GIGABIT LAN The Realtek RTL8110SB PCI Express Gigabit LAN chip supports up to 1Gbps data rate.

IEEE 1394 IEEE 1394 is fully compliant with the 1394 OHCI (Open Host Controller Interface) 1.1 specification. It supports up to 63 devices that can run simultaneously on a system. 1394 is a fast external bus standard that supports data transfer rates of up to 400Mbps. In addition to its high speed, it also supports isochronous data transfer which is ideal for video devices that need to transfer high levels of data in real-time. 1394 supports both Plug-and-Play and hot plugging.

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

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

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

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

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

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

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

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.

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

STR The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. Currently, only Windows® 2000/XP supports the ACPI function. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting "Standby" when you shut down Windows® 2000/XP without having to go through the sometimes tiresome process of closing files, applications and operating system. This is because the system is capable of storing all programs and data files during the entire operating session into RAM (Random Access Memory) when it powers-off. The operating session will resume exactly where you left off the next time you power-on the system.

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

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

Français

Processeur	• AMD® Athlon™ 64 FX / Athlon™ 64 X2 / Athlon™ 64 • Socket AM2 • Interface HyperTransport 2000MT/s
Chipset	• ATI® chipset - Pont nord: ATI® CrossFire Xpress 3200 - Pont sud: ATI® SB600
Mémoire Système	• 4 sockets DIMM DDR2 240-pin • Supporte les modules DIMM DDR2 533 et DDR2 667 • Supporte l'interface de mémoire deux canaux (128-bit) • Supporte jusqu'à 4GB de mémoire système • Supporte exclusivement les modules DIMM non-ECC x8 et x16 • Supporte les DIMM non-tamponnés
Logements d'Extension	• 2 slots PCI Express x16 - Mode CrossFire: Chaque slot x16 fonctionne à la bande passante x16. - Mode Normale: Chaque slot x16 fonctionne à la bande passante x16. • 1 slot PCI Express x1 • 3 slots PCI
BIOS	• Award BIOS • Mémoire Flash 4Mbit
Gestion de Puissance	• ACPI et OS Directed Power Management • ACPI STR (Suspend to RAM) fonction • Réveil-Sur-PS/2 Clavier/Souris • Réveil-Sur-USB Clavier/Souris • Eveil Sonnerie • Minuterie RTC pour allumer le système • Récupération après Défaillance d'Alimentation CA
Fonctions de Moniteur de Matériel	• Gère l'alarme de température et de surchauffe de CPU / système / pont nord • Gère l'alarme de voltage et d'échec de 12V/5V/3.3V/Vcore/ Vbat/5Vsb/Vdimm/Vchip • Gère la vitesse de ventilateur du ventilateur • Protection du CPU - supporte la mise hors circuit automatique en cas de surchauffage du système
Audio	• Realtek ALC882 8-canaux Définition Élevée audio CODEC • Interface entrée/sortie S/PDIF

LAN	• Realtek RTL8110SB PCIE Gigabit LAN • Entièrement conforme IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) et 802.3ab (1000BASE-T) standard
IDE	• Supporte des disques durs jusqu'à UltraDMA 133Mbps
Serial ATA	• Le jeu de puces d'ATI soutient: - 4 ports de Série ATA - Vitesse SATA jusqu'à 3Gb/s - RAID 0, RAID 1 et RAID 0+1 • Le jeu de puces d'JMB360 soutient: - 1 port de eSATA - Vitesse SATA jusqu'à 3Gb/s
IEEE 1394	• VIA VT6307 • Supporte 2 100/200/400 Mb/sec ports
Panneau Arrière I/O	• 1 port souris PS/2 • 1 port clavier PS/2 • 1 port parallèle DB-25 • 1 port optique S/PDIF • 1 port RCA S/PDIF • 1 port eSATA • 1 port IEEE 1394 • 1 port RJ45 LAN • 4 ports USB 2.0/1.1 • Line-in, line-out et mic-in prises audio • Center/subwoofer, rear R/L et side R/L prises audio
Interne I/O	• 3 connecteurs pour 6 ports USB 2.0 supplémentaires • 1 connecteur pour 1 IEEE 1394 • 2 connecteurs pour 2 série • 1 connecteur audio de l'avant pour la sortie ligne/l'entrée micro • 1 connecteur CD-in audio internes • 1 connecteur IrDA • 4 connecteurs Serial ATA • 1 connecteur IDE • 1 connecteur de 90° FDD • 1 connecteur d'alimentation ATX 24-pin • 1 connecteur d'alimentation ATX 8-pin 12V • 1 prises d'alimentation 4-broches 5V/12V (type-FDD) • 1 connecteur devant panneau • 3 connecteurs de ventilateurs
PCB	• Facteur de forme de ATX • 24.4cm (9.6") x 30.5cm (12")

Deutsch

Prozessor	• AMD® Athlon™ 64 FX / Athlon™ 64 X2 / Athlon™ 64 • Socket AM2 • Interface HyperTransport 2000MT/s
Chipset	• ATI® chipset - Nordbrücke: ATI® CrossFire Xpress 3200 - Südbrücke: ATI® SB600
Systemspeicher	• 4 240-pin-Steckplätze DDR2 DIMM • Unterhält die Moduln DDR2 533 und DDR2 667 DIMMs • Unterhält 128-bit – Speiher mit den zwei Kanälen • Unterhält bis zum 4GB-Systemspeicher • Unterhält nur DIMMs ohne Dämpfer non-ECC x8 und x16 DIMMs
Expansion Schlitz	• 2 PCI Express x16-Einbauplätzen - CrossFire Modus: Beide x16 Steckplätze arbeiten mit x16 Bandbreite. - Normaler Modus: Beide x16 Steckplätze arbeiten mit x16 Bandbreite. • 1 PCI Express x1-Einbauplätzen • 3 PCI-Einbauplätzen
BIOS	• Award BIOS • Flash-Speicher 4Mbit
Energie Management	• ACPI und OS Directed Power Management • ACPI STR (Suspend to RAM) funktion • Wecken bei Betätigung der PS/2 Tastatur/Maus • Wecken bei USB-Tastatur/Maus • Wecken des Systems durch das Netzwerk • RTC-Taktgeber zum Einschalten des Systems • Wiederherstellung der Wechselstromversorgung nach einem Ausfall
Kleinteilmonitor	• Überwachung der Temperatur des CPU / Systems / Nordbrücke sowie Warnsignal bei Überhitzung • Überwachung der Spannungen des 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip • Überwachung der Geschwindigkeit des Ventilators • Prozessor-Shutz - Die Ausschaltung bei der Überhitzung – die automatische Ausschaltung des Computers bei der Überhitzung
Audio	• Realtek ALC882 8-Kanal-Hohe-Definition-audio-CODEC • S/PDIF-In/Aus-Schnittstelle

LAN	•Realtek RTL8110SB PCIE Gigabit LAN • Völlig gefällig zu IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) und 802.3ab (1000BASE-T) standards
IDE	• Unterstützung der Festplatten bis zum UltraDMA 133Mbps
Serial ATA	• ATI chipset stützt: - 4 serielle Serial ATA-Ports - SATA bis zu 3Gb/s schnell - RAID 0, RAID 1 und RAID 0+1 •JMB360 chipset stützt: - 1 eSATA-Port - SATA bis zu 3Gb/s schnell
IEEE 1394	• VIA VT6307 • Unterstützt 2 100/200/400 Mb/sec porte
Porte an der Rückwand	• 1 Mini-DIN-6-Anschluß für eine PS/2-Maus • 1 Mini-DIN-6-Anschluß für eine PS/2-Tastatur • 1 DB-25-Parallelanschluß • 1 S/PDIF optischen-Anschlüsse • 1 S/PDIF RCA-Anschlüsse • 1 eSATA-Anschlüsse • 1 IEEE-1394-Anschlüsse • 1 RJ45 LAN-Anschlüsse • 4 USB 2.0/1.1-Anschlüsse • Line-in, line-out und mic-in Audio-Anschlußbuchsen • Center/subwoofer, rear R/L und side R/LAudio-Anschlußbuchsen
Internes I/O	• 3 Anschlußfassung für 6 zusätzliche externe USB 2.0-Anschlüsse • 1 Anschluß für eine externe IEEE 1394 Schnittstelle • 2 Anschluß für 2 externe serieller Schnittstelle • 1 Frontaudioanschluß für die externe Ausgangsleitung und den Mikrofoneingang • 1 interne Audioanschlüsse (CD-in) • 1 IrDA-Anschluß • 4 Serial-ATA-Anschlüsse • 1 IDE-Anschlüsse • 1 90° Floppy-Anschlüsse • 1 Anschlußstecker für das ATX-Netzgerät 24-pin • 1 Anschlußstecker für das ATX-Netzgerät 8-pin 12V • 1 4-polige 5V/12V Netzstecker (für FDD) • 1 Frontabdeckung Stecker • 3-ventilator-Anschlüsse
PCB	• ATX Formfaktor • 24.4cm (9.6") x 30.5cm (12")

Español

Procesador	• AMD® Athlon™ 64 FX / Athlon™ 64 X2 / Athlon™ 64 • Socket AM2 • Interface de HyperTransport 2000MT/s
Chipset	• ATI® chipset - Puente norte: ATI® CrossFire Xpress 3200 - Puente sur: ATI® SB600
Memoria de Sistema	• 4 240-pin mortajas DDR2 DIMM • Soporta los módulos DIMM DDR2 533 y DDR2 667 • Soporta memoria de dos canales (128-bit) • Soporta hasta 4GB de memoria sistémica • Soporta sólo unbuffered non-ECC x8 y x16 DIMM
Ranuras de Expansión	• 2 slots PCI Express x16 - Modo CrossFire: Los slots x16 operan con un ancho de banda x16. - Modo Normal: Los slots x16 operan con un ancho de banda x16. • 1 slot PCI Express x1 • 3 slots PCI
BIOS	• Award BIOS • Memoria instante 4Mbit
Gerencia de la Energía	• ACPI y OS Directed Power Management • ACPI STR (Suspend to RAM) función • PS/2 Teclado/Ratón de Wake-On • USB Teclado/Ratón de Wake-On • Wake-On-LAN • Temporizador de RTC para encender el sistema • Recuperación de Fracaso de Energía AC
Monitor del Hardware	• Monitores de los CPU / sistema / Puente norte temperaturas y alarma acalorada. • Monitores de voltajes de 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip • Vigila la velocidad del abanico del abanido • Protección del procesador - Desconección en caso de recalentamiento –el ordenador se desconecta automáticamente en caso de recalentamiento
Audio	• Realtek ALC882 8-canal Alta Definición audio CODEC • Interfáz de S/PDIF-in/out

LAN	• Realtek RTL8110SB PCIE Gigabit LAN • Completamente a IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) y 802.3ab (1000BASE-T) estándar
IDE	• Soporta las unidades duras hasta de UltraDMA 133Mbps
Serial ATA	• El chipset de ATI apoya: - 4 puertos de Serial ATA - SATA se acelera a 3Gb/s - RAID 0, RAID 1 y RAID 0+1 • El chipset de JMB360 apoya: - 1 puerto eSATA - SATA se acelera a 3Gb/s
IEEE 1394	• VIA VT6307 • Soporta 2 ports 100/200/400 Mb/sec
Panel Trasero I/O	• 1 puerto de ratón mini-DIN-6 PS/2 • 1 puerto de teclado mini-DIN-6 PS/2 • 1 puerto paralelo de DB-25 • 1 puerto de S/PDIF óptico • 1 puerto de S/PDIF RCA • 1 puerto eSATA • 1 puerto de IEEE 1394 • 1 puerto de RJ45 LAN • 4 puertos de USB 2.0/1.1 • Line-in, line-out (front R/L) y mic-in enchufes de audio • Center/subwoofer, rear R/L y side R/L enchufes de audio
Conectador Interno	• 3 conectors para 6 puertos de USB 2.0/1.1 externo adicional • 1 conector para un puerto de IEEE 1394 • 2 conectors para 2 puertos de serie • 1 conectador audio delantero para la salida extrema de linea y el micro • 1 conector de CD-in audio interno • 1 conector de IrDA • 4 conectores de Serial ATA • 1 conector de IDE • 1 conector de 90° FDD • 1 conectore de 24-pin fuente de alimentación de ATX • 1 conectore de 8-pin 12V fuente de alimentación de ATX • 1 4-fichas conectadores de energía de 5V/12V (FDD-tipo) • 1 conector de conectador del panel delantero • 3 conectores de abanicos
PCB	• ATX forme el factor • 24.4cm (9.6") x 30.5cm (12")

Русский язык

Процессор	• AMD® Athlon™ 64 FX / Athlon™ 64 X2 / Athlon™ 64 • Socket AM2 • Интерфейс системной шины 2000MT/s
Чипсет	• ATI® Чипсет - Северный мост: ATI® CrossFire Xpress 3200 - Южный мост: ATI® SB600
Оперативная Память	• 4 240-pin гнезда DDR2 DIMM • Поддерживает модули DIMM DDR2 533 и DDR2 667 • Поддерживает двухканальную память (128-бит) • Поддерживает до 4ГБ системной памяти • Поддерживает только небуфф non-ECC x8 и x16 DIMM
Слоты	• 2 PCI Express x16 слотов - CrossFire Режим: Каждый слот x16 работает с пропускной способностью x16. - Нормальный режим – Каждый слот x16 работает с пропускной способностью x16. • 1 PCI Express x1 слотов • 3 PCI слотов
BIOS	• Award BIOS • 4Mbit внезапная память
управление силы	• ACPI и OS Directed Power Management • ACPI STR (Suspend to RAM) • Активизация На Движение Мыши • Активизация На Нажатие Кнопки USB Клавиатуры • Активизация На Сетевое Событие • RTC Таймер для Включения Системы • Скачки Напряжения
монитор оборудования	• Мониторинг температуры процессора / системы / Северный мост • Мониторинг напряжений 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip • Мониторинг скорости вращения вентилятора • Защита процессора - Выключение при перегреве – автоматическое выключение компьютера при перегреве
тональнозвуково	• Realtek ALC882 8-канал Высокое Определение CODEC • интерфейса S/PDIF-in и S/PDIF-out

LAN	• Realtek RTL8110SB PCIE Gigabit LAN • Поддерживает IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) и 802.3ab (1000BASE-T)
IDE	• Поддерживает жесткие диски до UltraDMA 133Mbps
Serial ATA	• Chipset ATI поддерживает - 4 SATA порта - Скорость SATA до 3 ГБ/с - RAID 0, RAID 1 и RAID 0+1 • Chipset JMB360 поддерживает - 1 eSATA порта - Скорость SATA до 3 ГБ/с
IEEE 1394	• VIA VT6307 • Поддерживает 2 100/200/400 Mb/sec порта
задняя панель I/O	• 1 мини-DIN-6 PS/2 порт для мыши • 1 мини-DIN-6 PS/2 порт для клавиатуры • 1 DB-25 параллельный порт • 1 S/PDIF оптического порт • 1 S/PDIF RCA порт • 1 eSATA порт • 1 IEEE 1394 порта • 1 RJ45 LAN порт • 4 USB 2.0/1.1 порта • Mic-in, line-in и line-out гнезда для звука • Center/subwoofer, rear R/L и side R/L гнезда для звука
внутренне I/O	• 3 разъем для 6-х дополнительных внешних USB 2.0 портов • 1 разъем для внешнего IEEE 1394 порта • 2 разъем для 2 внешнего серийный порт • 1 передний аудио разъем для внешнего линейного выхода и микрофона • 1 внутренних звуковых разъема (CD-in) • 1 разъем для интерфейса IrDA • 4 Serial ATA разъема • 1 IDE разъема • 1 разъем 90° FDD • 1 разъема питания ATX 24-pin • 1 разъема питания ATX 8-pin 12V • 1 4-штырьковых разъемов питания 5V/12V (типа FDD) • 1 Фронт панель разъем • 3 Разъемы для вентилятора
PCB	• фактор формы ATX • 24.4cm (9.6") x 30.5cm (12")

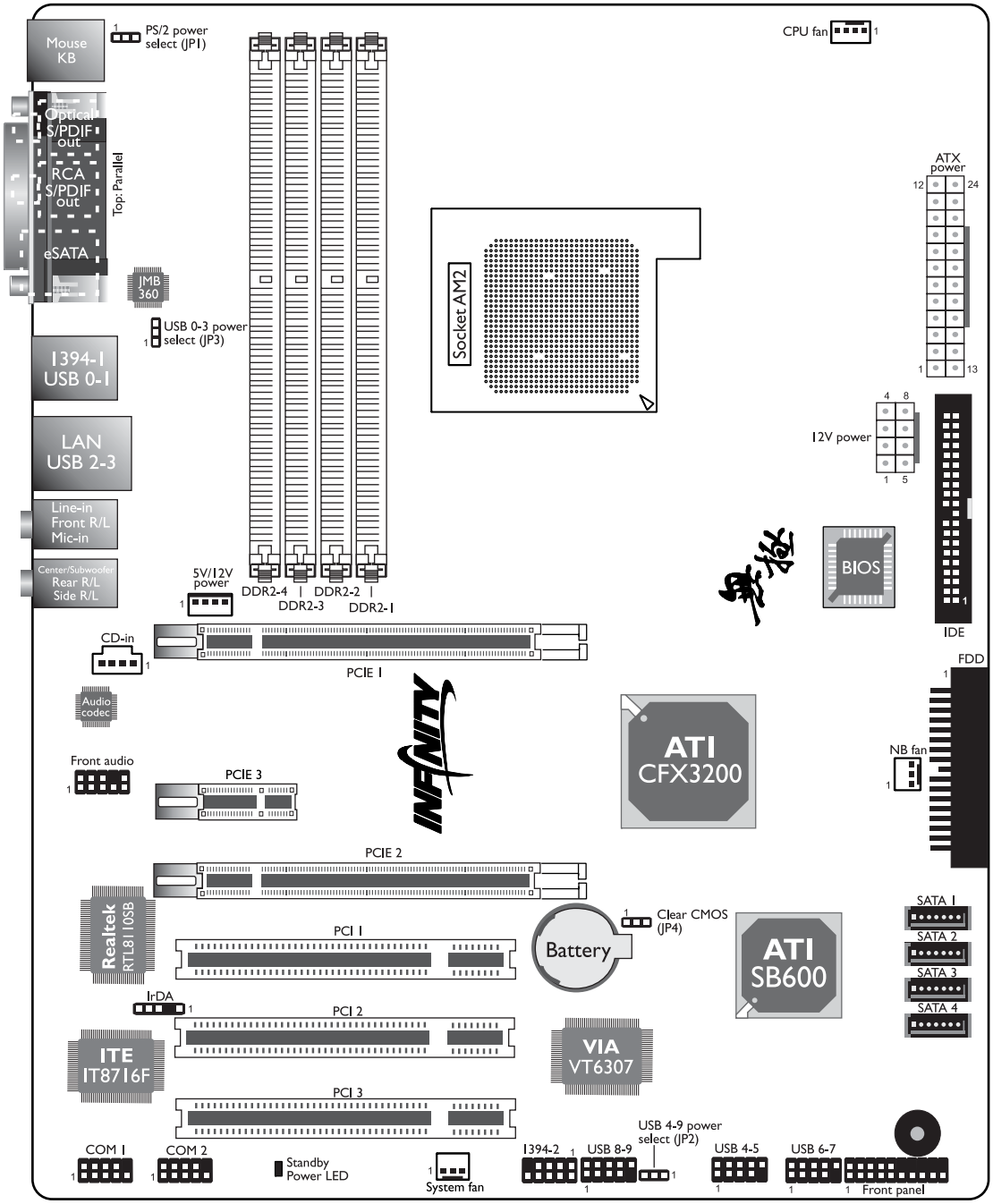
日本語

プロセッサ	▪ AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron ▪ ソケットAM2
フロントサイドバス (FSB)	▪ 2000MT/s HyperTransport インターフェース
チップセット	▪ ATI®チップセット －ノースブリッジ: ATI® CrossFire Xpress 3200 －サウスブリッジ: ATI® SB600
システムメモリ	▪ 240ピンDDR2 DIMM ソケット x 4 ▪ サポート DDR2 533 または DDR2 667 DIMM ▪ デュアルチャネル (128ビット幅) メモリインターフェース対応 ▪ 最大 4GB までのシステムメモリに対応 ▪ x8と16x、non-ECC unbuffered DIMM
拡張スロット	▪ PCI Express x16 スロット x 2 －CrossFire モード: それぞれの x16 スロットが x16 の帯域で動作 －シングル VGA モード: それぞれの x16 スロットが x16 の帯域で動作 ▪ PCI Express x1 スロット x 1 ▪ PCIスロット x 3
BIOS	▪ Award BIOS ▪ 4Mビット フラッシュメモリ
電源管理機能	▪ ACPIおよびOS自主電源管理 ▪ ACPI STR (サスペンド・トゥ・ラム) 機能 ▪ ウェイクオンPS/2キーボード/マウス ▪ ウェイクオンUSB キーボード/マウス ▪ ウェイクオンLAN (WOL) ▪ システムパワーオン用RTCタイマー ▪ AC電源問題発生時のリカバリ機能
ハードウェアモニタ	▪ CPU/システム/ノースブリッジ温度のモニタリング ▪ 12V/5V/3.3V/Vcore/Vbat/5Vsb/Vdimm/Vchip 電圧のモニタリング ▪ 冷却ファン速度のモニタリング ▪ CPUオーバーヒート保護機能によるシステムブートアップ中のCPU温度モニタリング
オーディオ	▪ Realtek ALC882 8チャネルオーディオCODEC ▪ S/PDIF-入力/出力インターフェース

LAN	▪ Realtek RTL8110SB ギガビットイーサネットコントローラ ▪ IEEE 802.3 (10BASE-T)、802.3u (100BASE-TX)および802.3ab (1000BASE-T)基準に完全準拠
IDE	▪ UltraDMA 133Mbpsまでのハードドライブをサポート
シリアルATA (SATA)	▪ ATI チップセット －4つのSATAポートをサポート －SATA速度は最大 3Gb/s －RAID 0, RAID 1 および RAID 0+1 ▪ JMB360 チップセット －1つの eSATAポートをサポート －SATA速度は最大 3Gb/s
IEEE 1394	▪ VIA VT6307 ▪ 2つの100/200/400 Mb/秒ポートをサポート
リアパネルI/O	▪ mini-DIN-6 PS/2マウスポート x 1 ▪ mini-DIN-6 PS/2キーボードポート x 1 ▪ パラレルポート x 1 ▪ 光学 S/PDIF x 1 ▪ RCA S/PDIF x 1 ▪ eSATA ポート x 1 ▪ IEEE 1394 ポート x 1 ▪ RJ45 LAN ポート x 1 ▪ USB 2.0/1.1 ポート x 4 ▪ ライン入力、ライン出力 (フロントR/L) およびマイク入力端子 ▪ センタ/サブウーファ、リアR/LおよびサイドR/L端子
内部I/O	▪ 6ポート外部USB2.0ポート用コネクタ x 3 ▪ IEEE 1394 コネクタ x 1 ▪ 外部シリアルポート用コネクタ x 2 ▪ ライン出力およびマイク入力端子用フロントオーディオコネクタ x 1 ▪ CD入力内部オーディオコネクタ x 1 ▪ IrDAインターフェース用コネクタ x 1 ▪ SATAコネクタ x 4 ▪ 40ピンIDEコネクタ x 1 ▪ フロッピーコネクタ x 1 ▪ 24ピンATX電源コネクタ x 1 ▪ 8ピン12V ATX電源コネクタ x 1 ▪ 4-ピン 5V/12V 電源コネクタ x 1 (FDD タイプ) ▪ フロントパネルコネクタ x 1 ▪ ファンコネクタ x 3
PCB	ATX フォームファクタ 24.4 cm (9.6") x 30.5 cm (12")

Chapter 2 - Hardware Installation

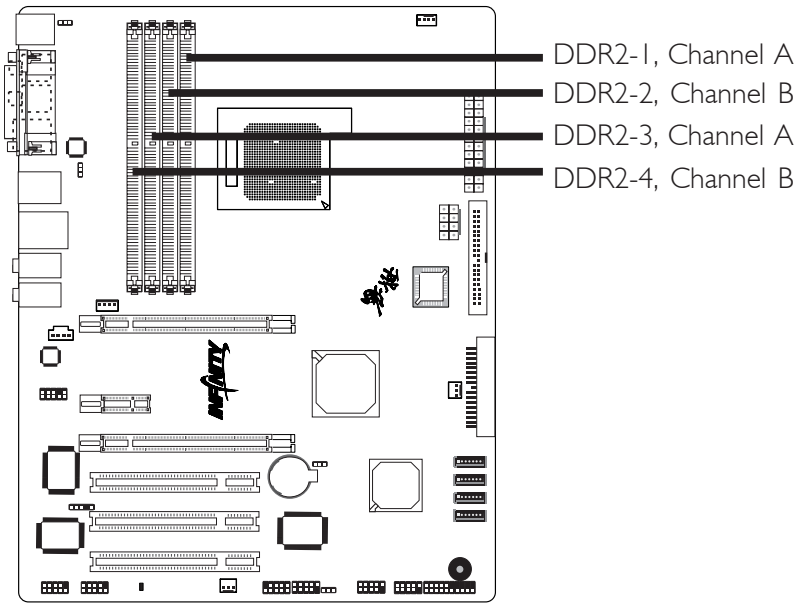
System Board Layout



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



The system board supports DDR2 SDRAM DIMM. The four DDR2 DIMM sockets on the system board are divided into 2 channels:

Channel A - DDR2-1 and DDR2-3
Channel B - DDR2-2 and DDR2-4

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.

Dual Channel (DC)

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

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

The table below shows the DIMM sockets that must be populated with DIMMs for single or dual channel interface. We strongly recommend that you strictly follow the memory configurations below. Installing DDR2 DIMMs other than the recommended configurations may cause system boot failure.

Dual Channel	DDR2-1	DDR2-2	-	-
Dual Channel	-	-	DDR2-3	DDR2-4
Dual Channel	DDR2-1	DDR2-2	DDR2-3	DDR2-4
Single Channel	DDR2-1	-	-	-
Single Channel	-	-	DDR2-3	-
Single Channel	DDR2-1	-	DDR2-3	-
Single Channel	-	DDR2-2	-	DDR2-4

BIOS Setting

Configure the system memory in the Genie BIOS Setting submenu ("DRAM Timing and Config" section) of the BIOS.

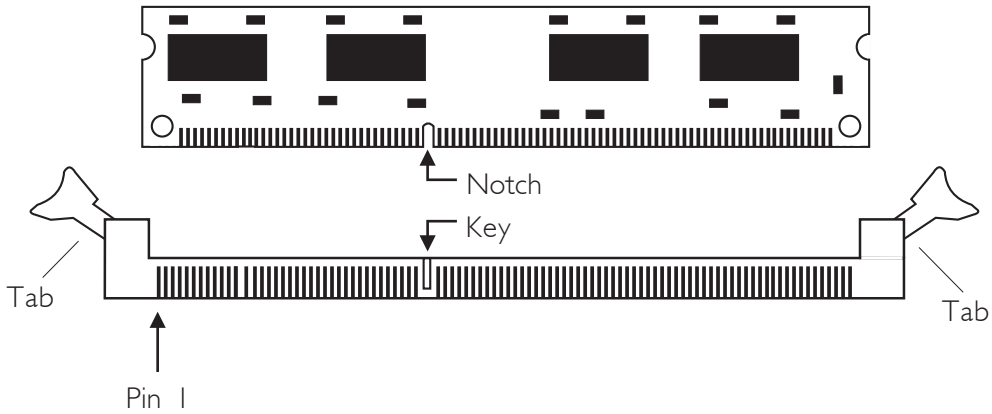
DDR2 Speed in Relation to the CPU's Core Multiplier

The DDR2 speed is highly relevant to the CPU's core multiplier. It varies in accordance to the DRAM speed set in the BIOS (Genie BIOS Setting) and the CPU's core multiplier.

Core Multiplier	Core Frequency	DDR2 400	DDR2 533	DDR2 667	DDR2 800
4x	800	DDR2 320	DDR2 320	DDR2 320	DDR2 320
5x	1000	DDR2 400	DDR2 400	DDR2 400	DDR2 400
6x	1200	DDR2 400	DDR2 480	DDR2 480	DDR2 480
7x	1400	DDR2 400	DDR2 466	DDR2 560	DDR2 560
8x	1600	DDR2 400	DDR2 534	DDR2 640	DDR2 640
9x	1800	DDR2 400	DDR2 514	DDR2 600	DDR2 720
10x	2000	DDR2 400	DDR2 500	DDR2 666	DDR2 800
11x	2200	DDR2 400	DDR2 488	DDR2 628	DDR2 734
12x	2400	DDR2 400	DDR2 534	DDR2 600	DDR2 800
13x	2600	DDR2 400	DDR2 520	DDR2 650	DDR2 742
14x	2800	DDR2 400	DDR2 510	DDR2 622	DDR2 800
15x	3000	DDR2 400	DDR2 500	DDR2 666	DDR2 750

Installing the DIMM

A DIMM simply snaps into a DIMM socket on the system board. Pin 1 of the DIMM must correspond with Pin 1 of the socket.



1. Pull the "tabs" which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the "notch" in the module aligned with the "key" on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

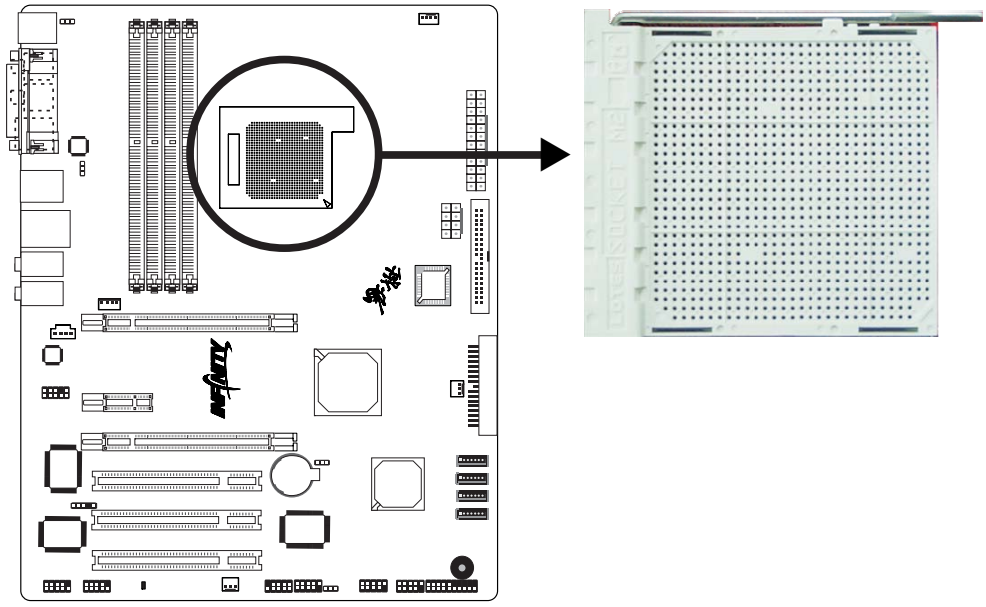
CPU

Overview

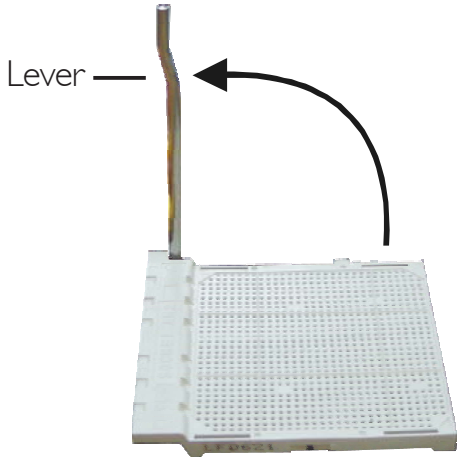
The system board is equipped with Socket AM2 for installing an AMD CPU designed for this socket.

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 AM2 on the system board.

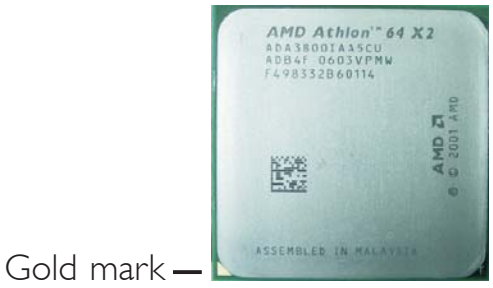


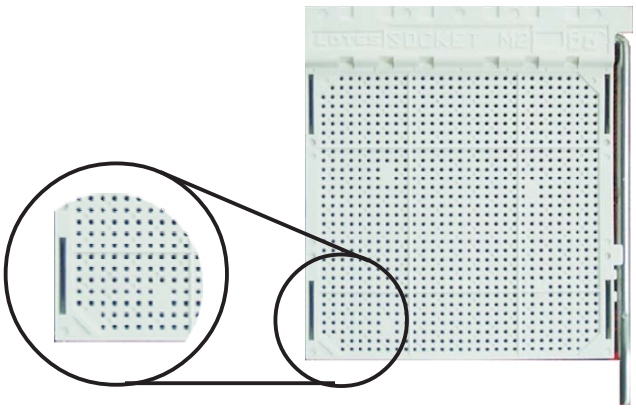
4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.



5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged image) shown below.

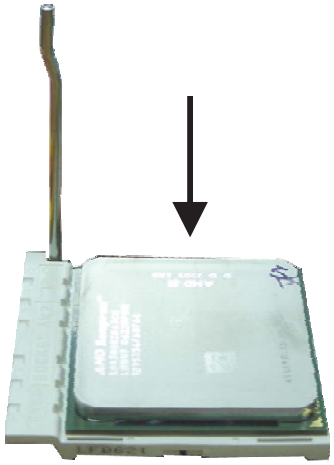
Important:
Handle the CPU by its edges and avoid touching the pins.



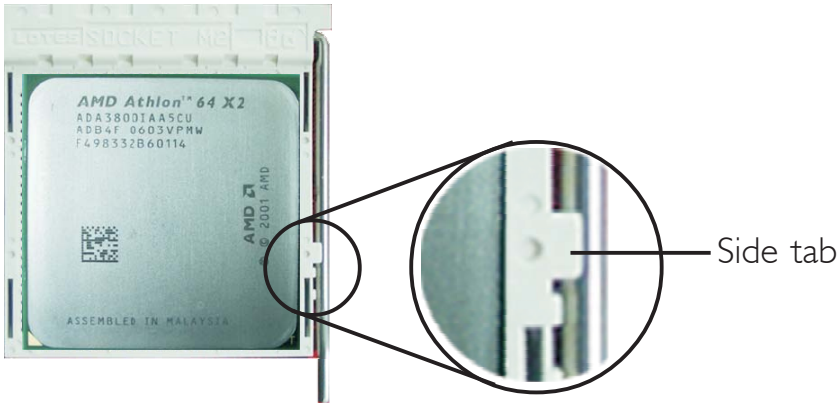


6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

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 overheat damaging both the CPU and system board.

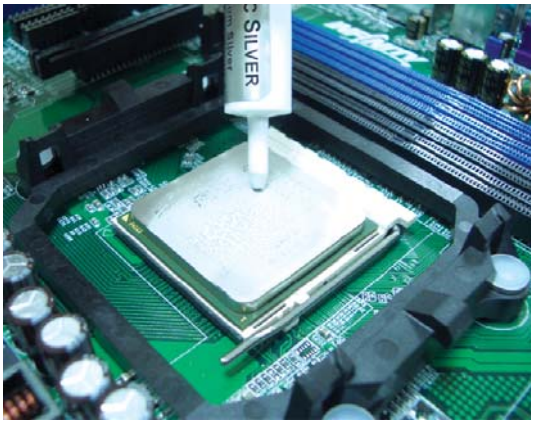
The fan / heat sink assembly must provide airflow adequate to ensure appropriate internal temperature and cooling of the components in the system. Failure to use the appropriate cooling system may result in reduced performance or, in some instances, damage to the system board.

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.*

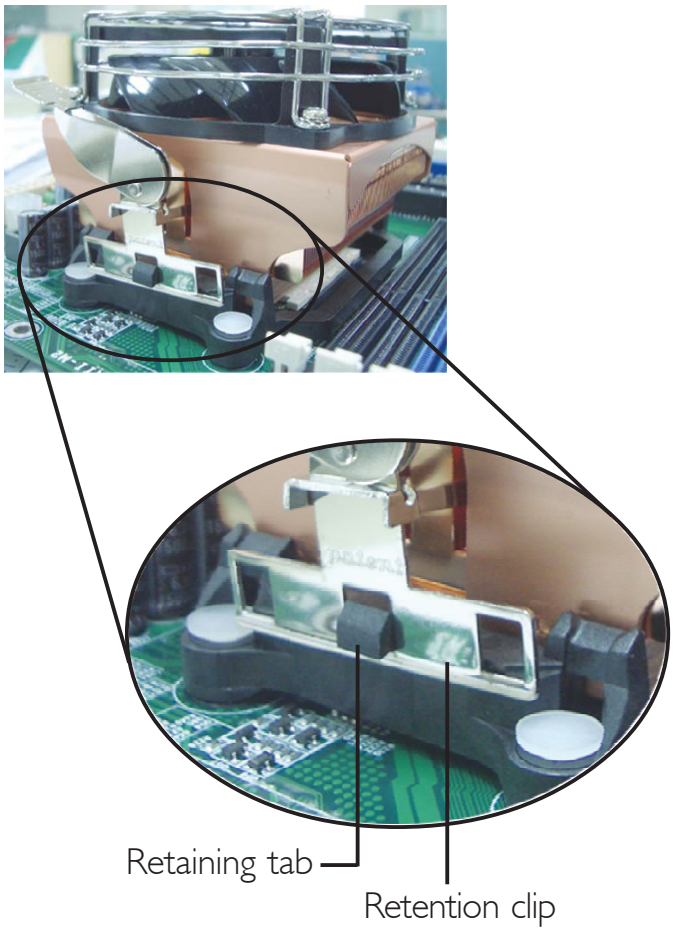
1. Before you install the fan / heat sink, you must apply a thermal paste onto the top of the CPU. The thermal paste is usually supplied when you purchase the CPU or fan heat sink assembly. Do not spread the paste all over the surface. When you later place the heat sink on top of the CPU, the compound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

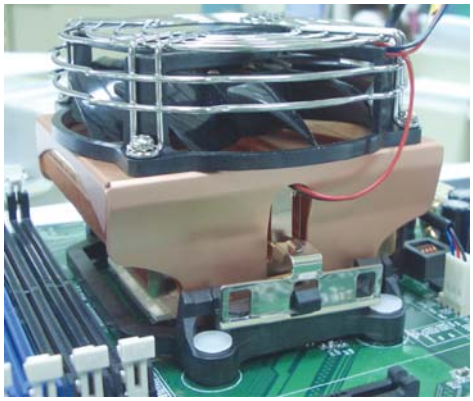


2. The system board comes with the retention module base already installed.

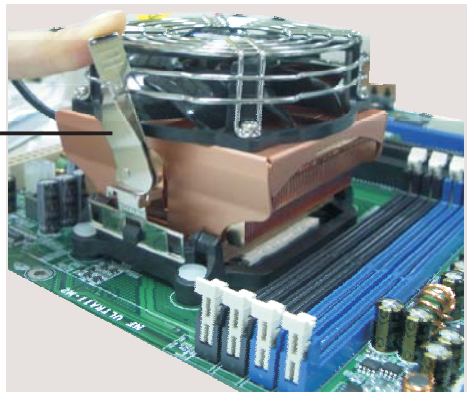
3. Place the heat sink on top of the CPU. Now hook one side of the retention clip onto the retention module base by fitting the hole(s) on the retention clip into the retaining tab(s) of the retention module base.



4. 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.



5. 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.



Note:

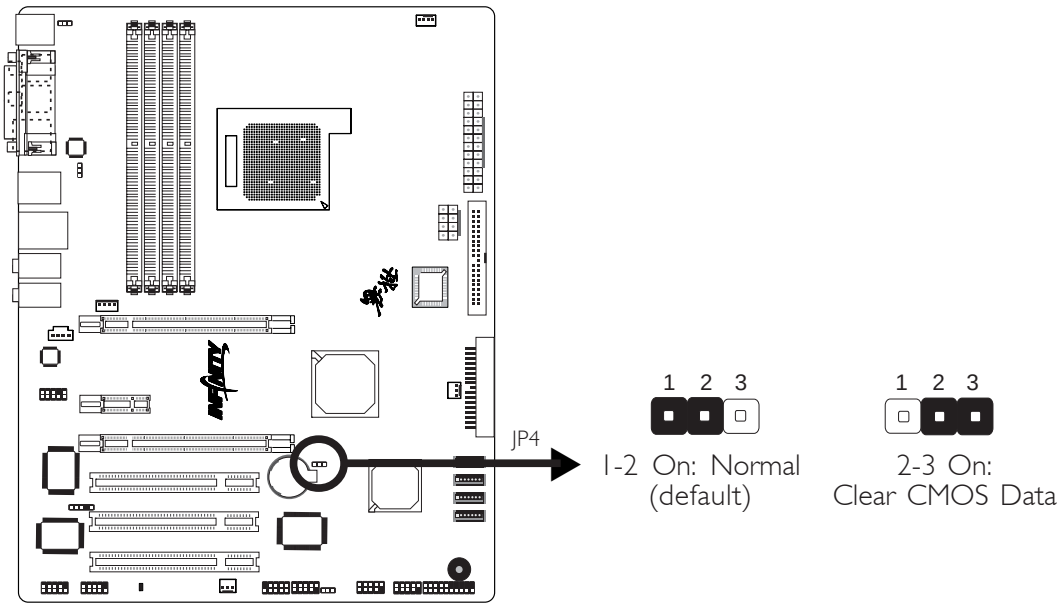
1. You will not be able to secure the fan and heat sink assembly in place if it did not fit properly onto the retention module base.

2. Make sure there is sufficient air circulation across the CPU fan and heat sink.

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

Jumper Settings

Clear CMOS Data



If you encounter the following,

a) *CMOS data becomes corrupted.*
b) *You forgot the supervisor or user password.*
c) *You are unable to boot-up the computer system because the processor's clock/ratio was incorrectly set in the BIOS.*

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

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

1. Power-off the system and unplug the power cord.
2. Set JP4 pins 2 and 3 to On. Wait for a few seconds and set JP4 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

   If your reason for clearing the CMOS data is due to incorrect setting of the processor's clock/ratio in the BIOS, please proceed to step 4.

4. After powering-on the system, press <Del> to enter the main menu of the BIOS.

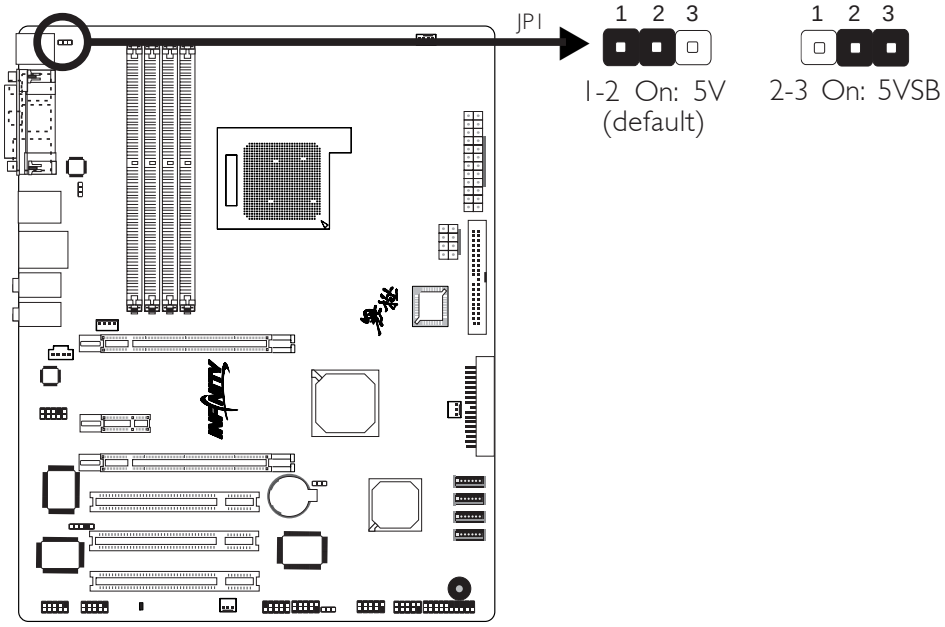
5. Select the Genie BIOS Setting submenu and press <Enter>.

6. Set the processor's clock/ratio to its default setting or an appropriate bus clock or ratio. Refer to the Genie BIOS Setting section in chapter 3 for more information.

7. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.

8. Type <Y> and press <Enter>.

PS/2 Power Select



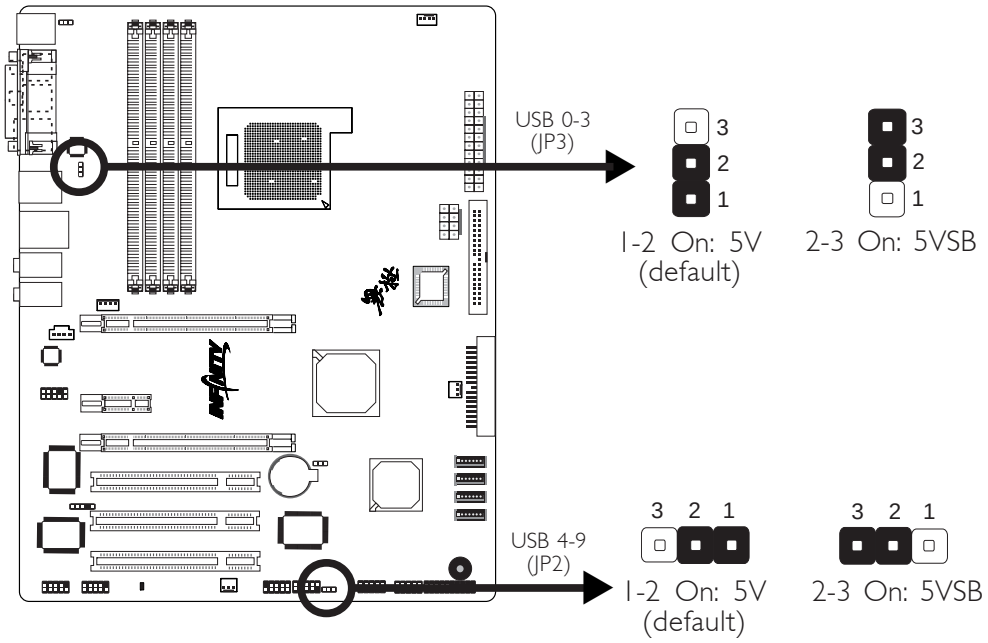
JP1 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

BIOS Setting

Configure the PS/2 keyboard/mouse wake up function in the Power Management Setup submenu of the BIOS. Refer to chapter 3 for more information.

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

USB Power Select

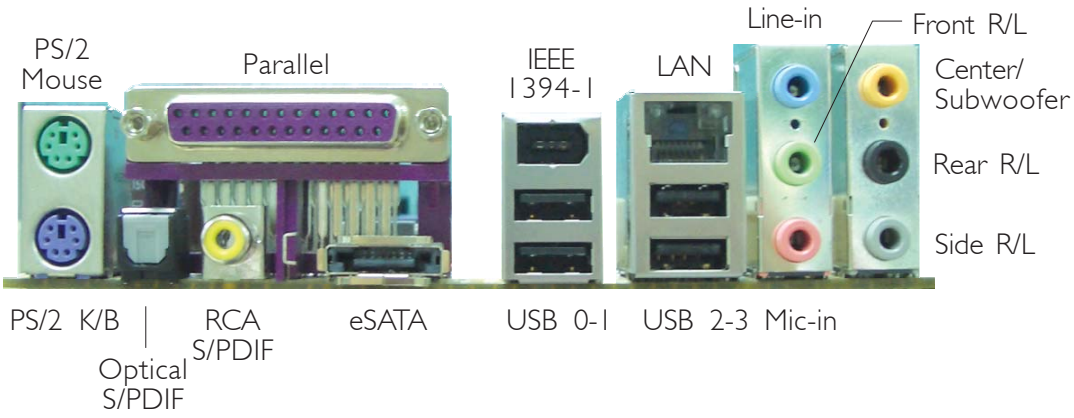


JP2 and JP3 are used to select the power of the USB ports. Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system.

Important:

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

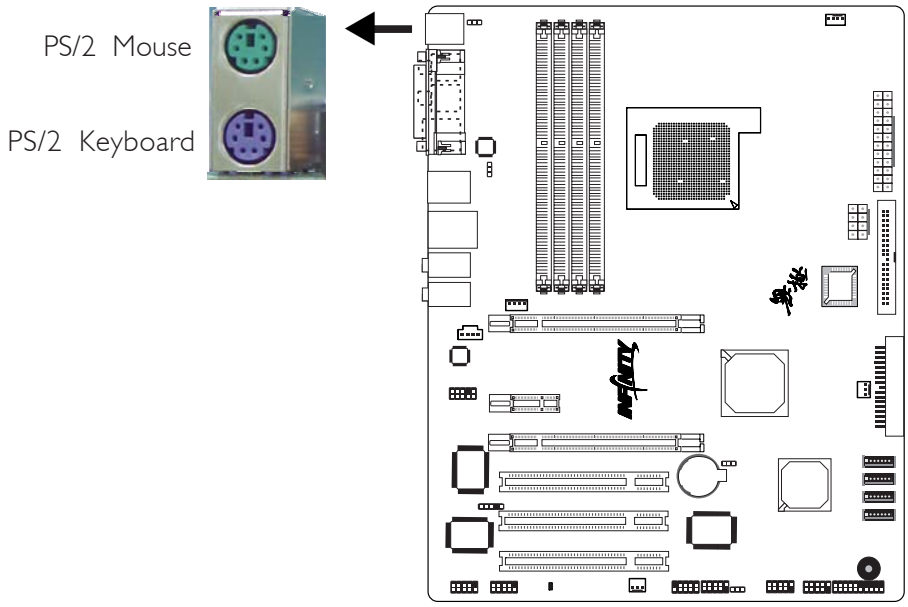
Rear Panel I/O Ports



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

- PS/2 mouse port
- PS/2 keyboard port
- Parallel port
- Optical S/PDIF port
- RCA S/PDIF port
- eSATA port
- IEEE 1394-1 port
- USB ports
- LAN port
- Line-in port
- Front R/L port
- Mic-in port
- Center/Subwoofer port
- Rear R/L port
- Side R/L port

PS/2 Mouse and PS/2 Keyboard



The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location CN5 of the system board. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

Warning:
Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.

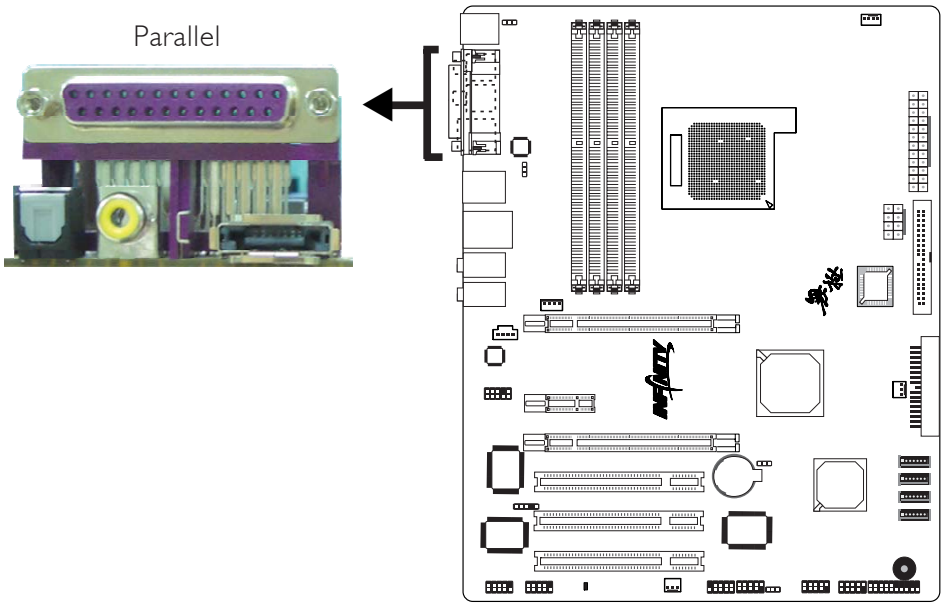
Wake-On-PS/2 Keyboard/Mouse

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

- **Jumper Setting:**
  JP1 must be set to "2-3 On: 5VSB". Refer to "PS/2 Power Select" in this chapter for more information.

- **BIOS Setting:**
  Configure the PS/2 wake up function in the Power Management Setup submenu of the BIOS. Refer to chapter 3 for more information.

Parallel Port



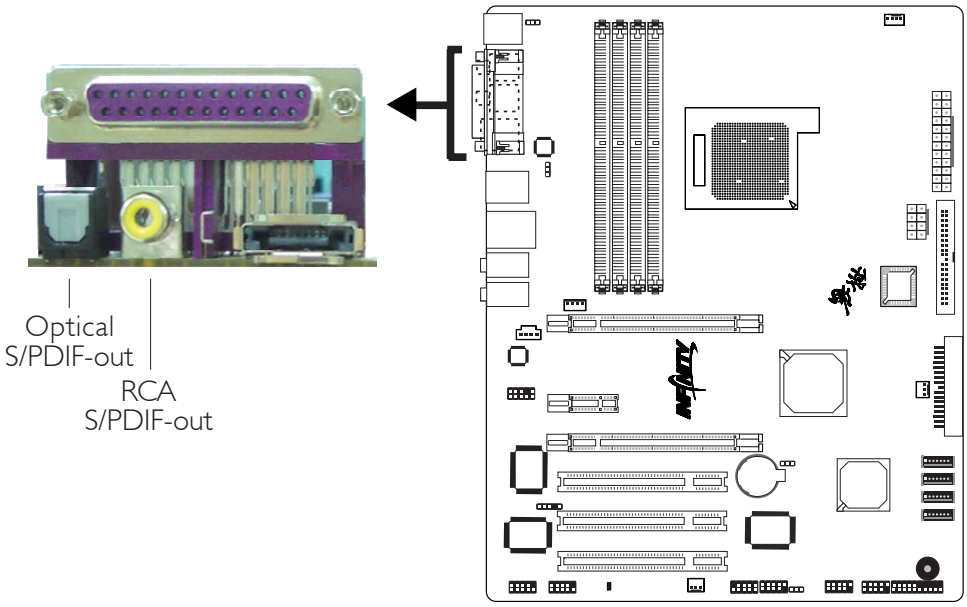
The system board has a standard parallel port (Burgundy) at location CN14 for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP.

Setting	Function
SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel port operation at maximum speed.

BIOS Setting

Configure the parallel port in the Integrated Peripherals submenu ("Super IO Device" section) of the BIOS. Refer to chapter 3 for more information.

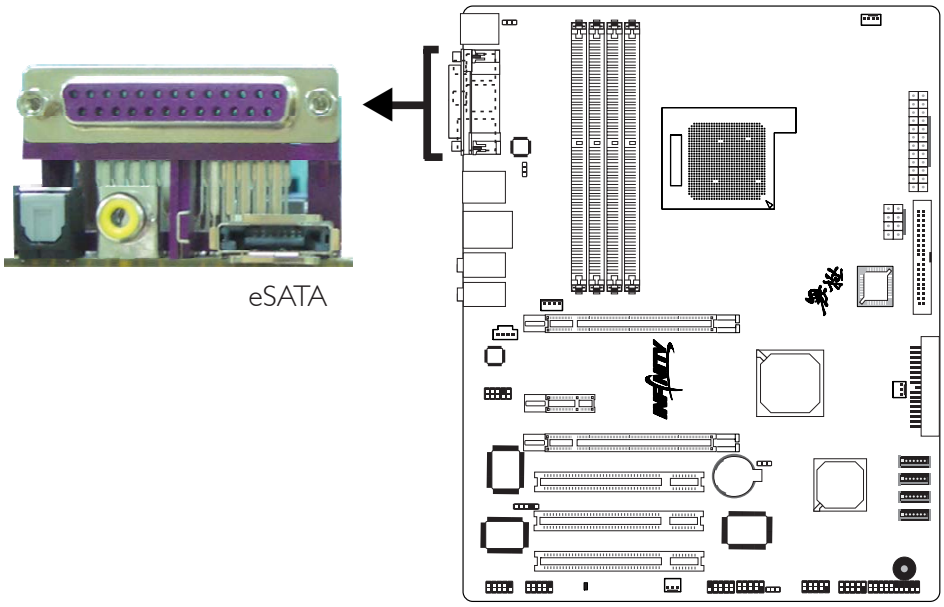
S/PDIF



The system board is equipped with an onboard optical S/PDIF-out port and a coaxial RCA S/PDIF-out port at locations CN11 and CN10 respectively. S/PDIF ports are used to connect audio output devices.

Important:
DO NOT use optical S/PDIF-out and coaxial RCA S/PDIF-out at the same time.

eSATA Port



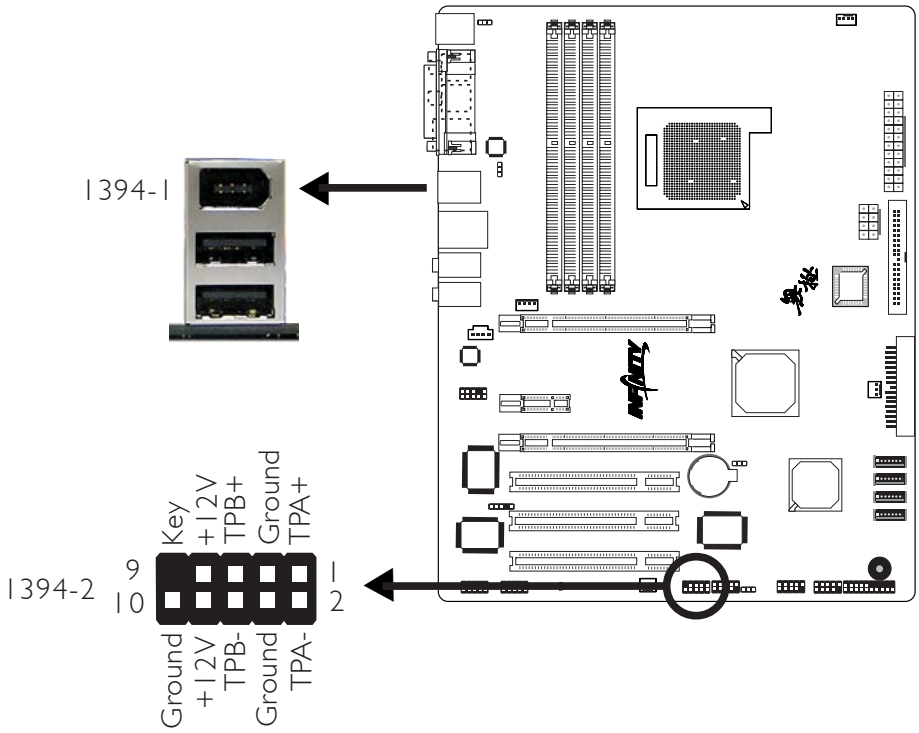
The eSATA port at location CN7 is a hot pluggable interface used to connect an external Serial ATA device providing data transfer rate up to 3Gb/s.

Driver Installation

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

If you intend to boot from the eSATA drive, you need to install Windows® XP or Windows® 2000 in the drive. The provided floppy diskette includes the eSATA driver required to complete Windows installation in the eSATA drive.

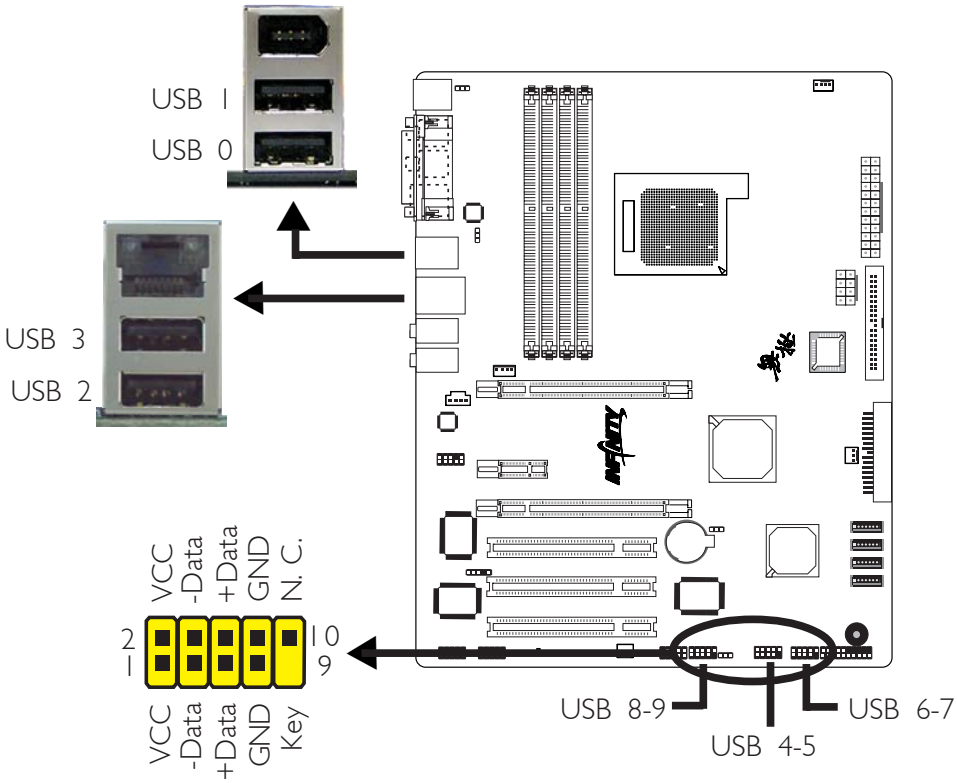
IEEE 1394



The onboard IEEE 1394 port is at location CN1 (IEEE 1394-1) of the system board.

The IEEE 1394 connector at location J5 (1394-2) is for connecting an additional 1394 device. Your 1394 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 insert the connector that is attached to the 1394 port cable to J5. Make sure pin 1 of the cable connector is aligned with pin 1 of J5.

USB (Universal Serial Bus)



The system board supports 10 USB 2.0/1.1 ports. Four onboard USB 2.0/1.1 ports (Black) are at locations CN1 (USB 0-1) and CN2 (USB 2-3) of the system board.

The J4 (USB 4-5), J3 (USB 6-7) and J18 (USB 8-9) 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 insert the connector that is attached to the USB port cables to J4, J3 or J18. Make sure pin 1 of the cable connector is aligned with pin 1 of J4, J3 or J18.

BIOS Setting

Configure the onboard USB in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

Refer to chapter 4 for more information about installing the USB 2.0 driver.

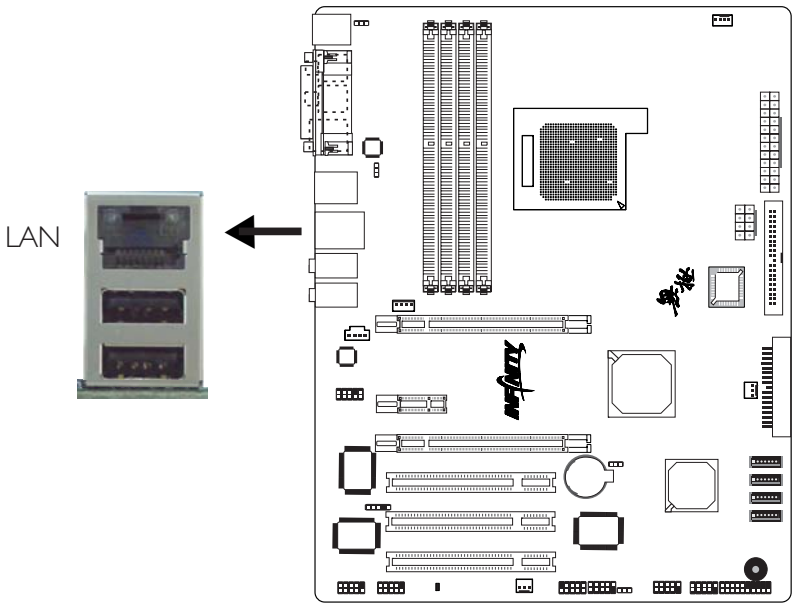
Wake-On-USB Keyboard/Mouse

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

- **Jumper Setting:**
  JP2 and/or JP3 must be set to "2-3 On: 5VSB". Refer to "USB Power Select" in this chapter for more information.

Important:
If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support ≥1.5A. For 3 or more USB ports, the 5VSB power source of your power supply must support ≥2A.

RJ45 LAN



The onboard LAN port is at location CN2 of the system board. LAN allows the system board to connect to a local area network by means of a network hub.

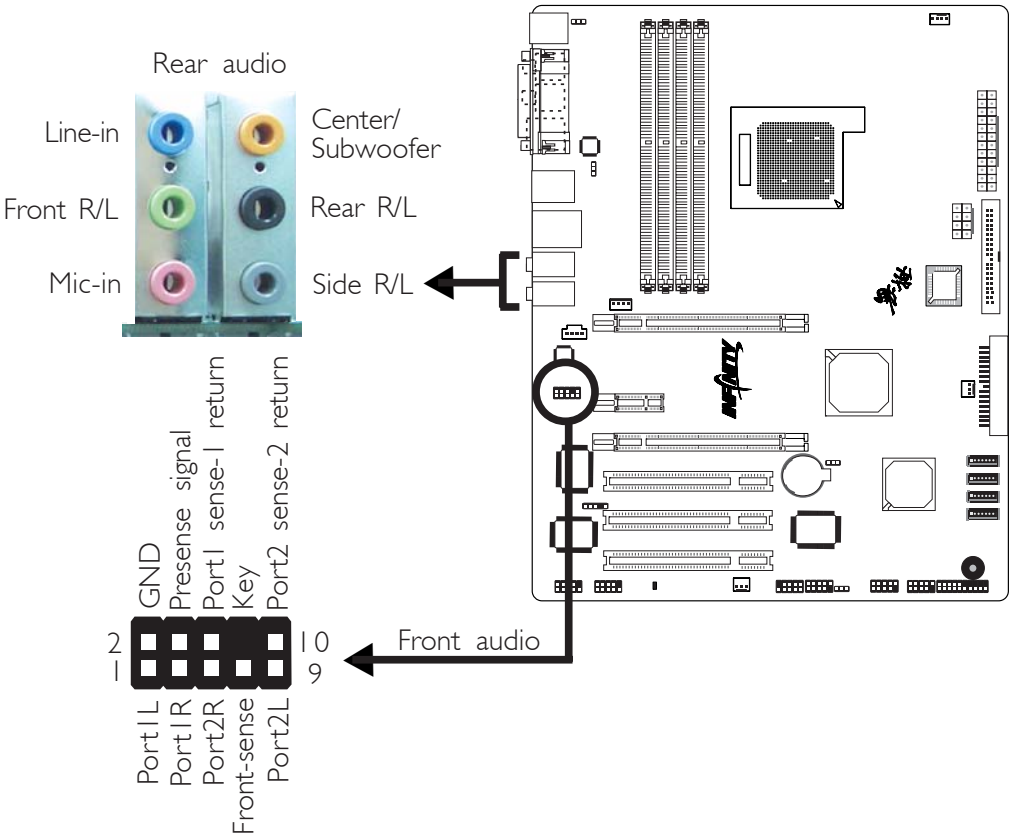
BIOS Setting

Configure the onboard LAN in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

Audio



Rear Panel Audio

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.

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.

Front Audio

The front audio connector at location J11 allows you to connect to the line-out and mic-in jacks that are at the front panel of your system. Using this connector will disable the rear audio's line-out and mic-in functions.

BIOS Setting

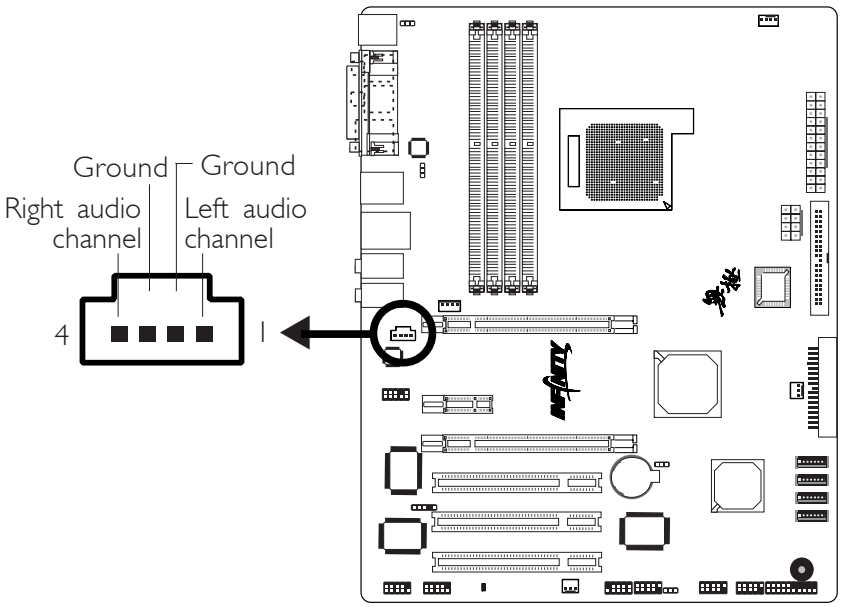
Configure the onboard audio in the Integrated Peripherals submenu ("Onboard Device" section) of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

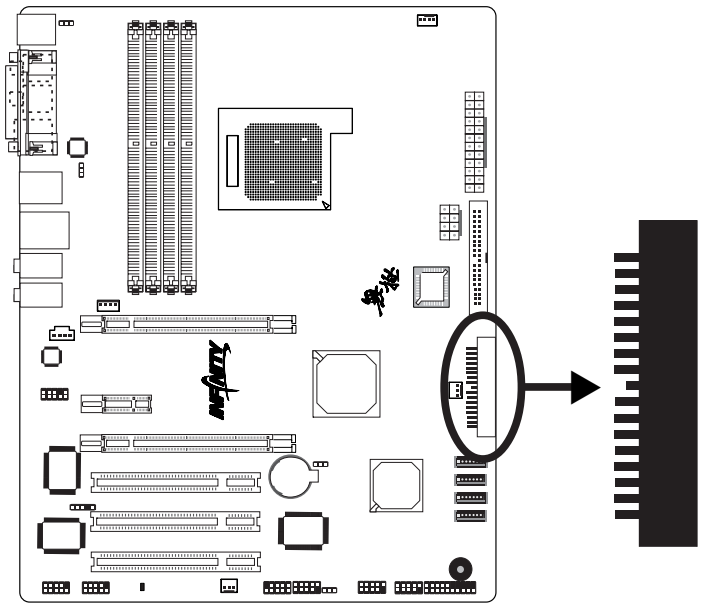
Internal I/O Connectors

CD-in Connector



The CD-in connector at location J12 is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

Floppy Disk Drive Connector



The 90° floppy disk drive connector supports a standard floppy disk drive. To prevent improper floppy cable installation, the floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

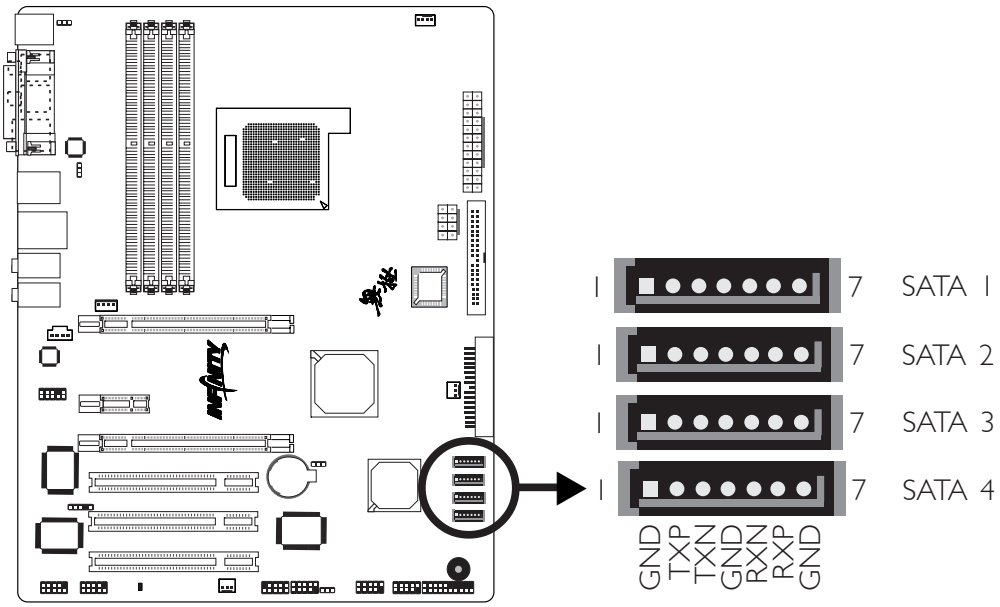
Connecting the Floppy Disk Drive Cable

Install one end of the floppy disk drive cable into the shrouded floppy disk header (J1) on the system board and the other end-most connector to the floppy drive. The colored edge of the daisy chained ribbon cable should be aligned with pin 1 of J1.

BIOS Setting

Enable or disable this function in the Integrated Peripherals submenu ("Super IO Device" section) of the BIOS. Refer to chapter 3 for more information.

Serial ATA Connectors



- SATA speed up to 3Gb/s
- RAID 0, RAID 1 and RAID 0+1

Connecting Serial ATA Cables

Connect one end of the Serial ATA cable to SATA 1 (J7), SATA 2 (J8), SATA 3 (J9) or SATA 4 (J10) and the other end to your Serial ATA device.

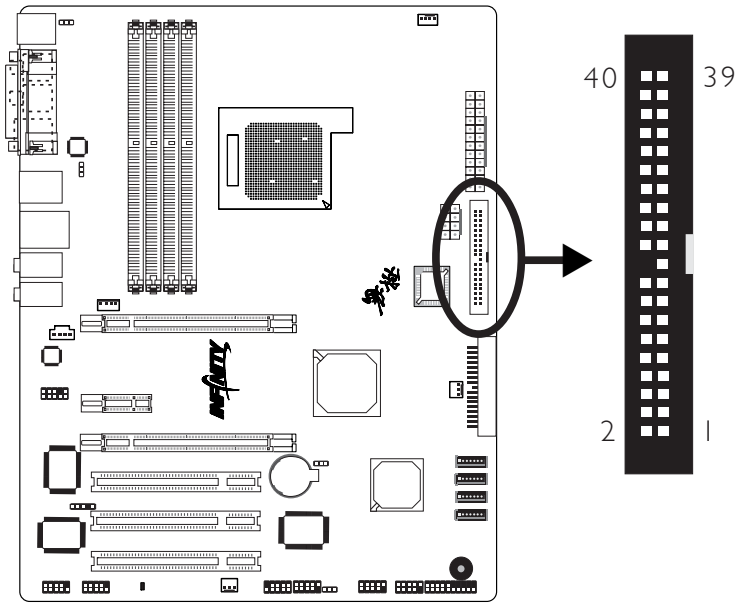
BIOS Setting

Configure Serial ATA in the Integrated Peripherals submenu ("OnChip IDE Device" section) of the BIOS. Refer to chapter 3 for more information.

Configuring RAID

The system board allows configuring RAID on Serial ATA drives. Refer to chapter 6 for steps in configuring RAID.

IDE Disk Drive Connectors



The shrouded PCI IDE header will interface two Enhanced IDE (Integrated Drive Electronics) disk drives. To prevent improper IDE cable installation, the shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

The IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable have 3 connectors on them, one that plugs into an IDE connector on the system board and the other 2 connects to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

Connecting the IDE Disk Drive Cable

Install one end of the IDE cable into the IDE header (J6) on the system board and the other connectors to the IDE devices.

Note:
Refer to your disk drive user's manual for information about selecting proper drive switch settings.

Adding a Second IDE Disk Drive

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.

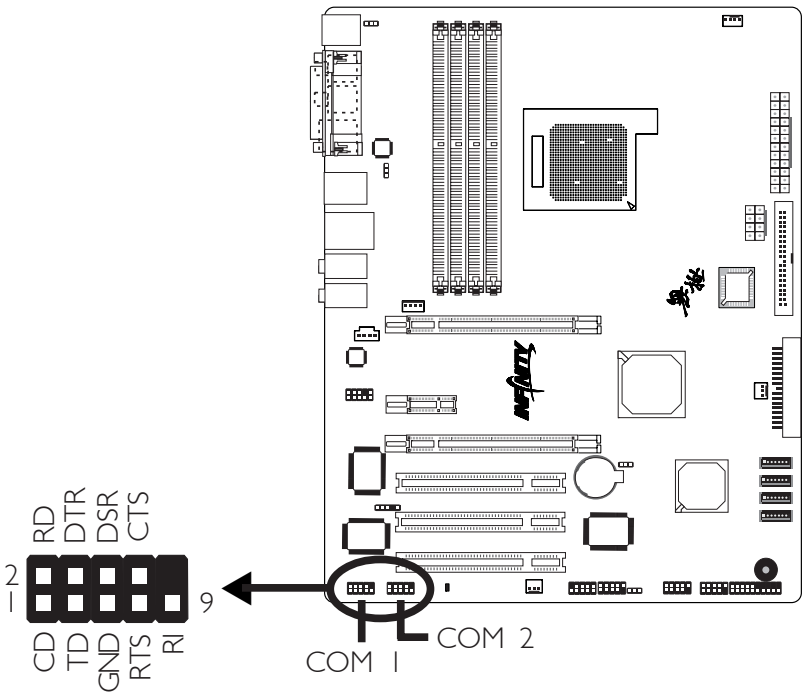
The system board supports Enhanced IDE or ATA-2, ATA/33, ATA/66, ATA/100 or ATA/133 hard drives. We recommend that you use hard drives from the same manufacturer. In a few cases, drives from two different manufacturers will not function properly when used together. The problem lies in the hard drives, not the system board.

Important:
If you encountered problems while using an ATAPI CD-ROM drive that is set in Master mode, please set the CD-ROM drive to Slave mode. Some ATAPI CD-ROMs may not be recognized and cannot be used if incorrectly set in Master mode.

BIOS Setting

Configure the onboard IDE in the Integrated Peripherals submenu ("OnChip IDE Device" section) of the BIOS. Refer to chapter 3 for more information.

Serial (COM) Connectors



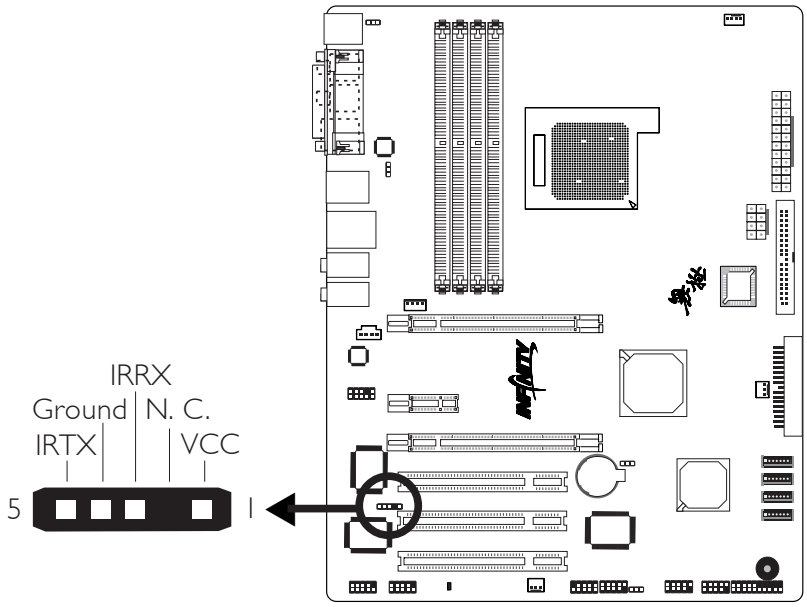
The two 9-pin connectors at locations J13 (COM 1) and J23 (COM 2) are for connecting serial ports. The serial port cable is an optional item and must be purchased separately. Your serial ports may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the connector that is attached to the serial port cable to J13 or J23. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of J13 or J23.

The serial ports are RS-232 asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

BIOS Setting

Configure the onboard serial in the Integrated Peripherals submenu ("Super IO Device" section) of the BIOS. Refer to chapter 3 for more information.

IrDA Connector



The IrDA connector at location J2 is for connecting an IrDA module. Connect the cable connector from your IrDA module to J2.

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

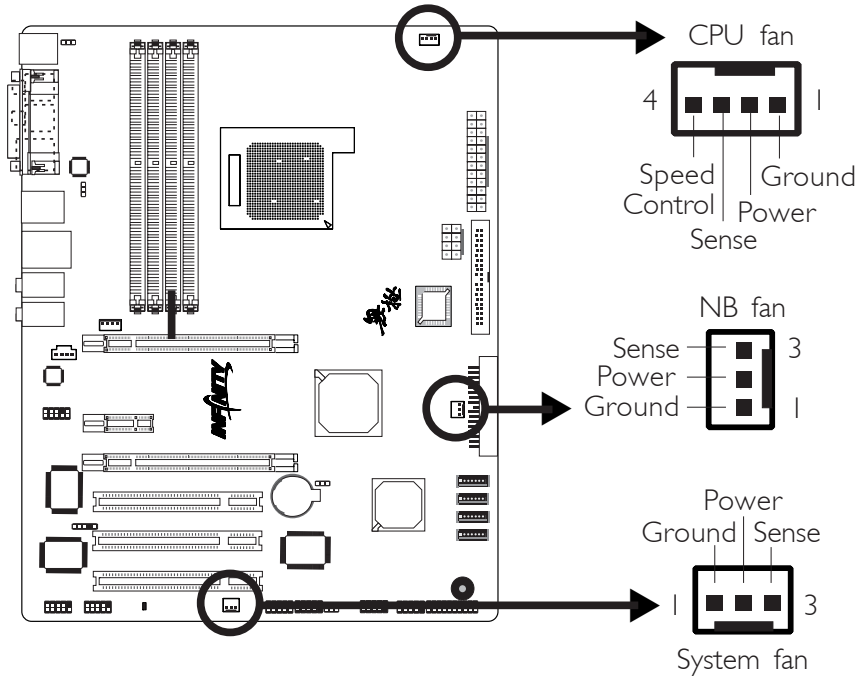
BIOS Setting

Configure IrDA in the Integrated Peripherals submenu ("Super IO Device" section) of the BIOS.

Driver Installation

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

Cooling Fan Connectors

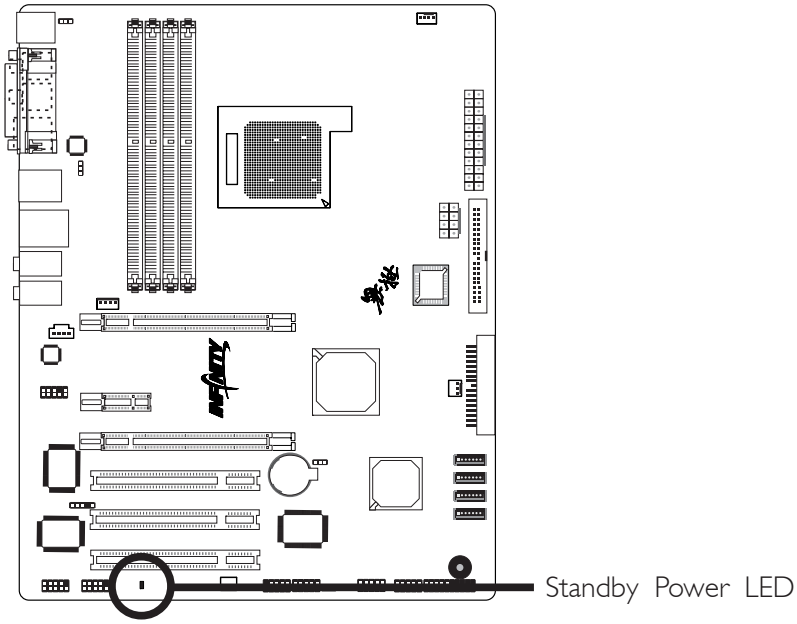


Connect the CPU fan's cable connector to the CPU fan connector (J16) on the system board. NB fan (J15) and System fan (J17) are used to connect additional cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The "PC Health Status" submenu of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

Standby Power LED



Standby Power LED

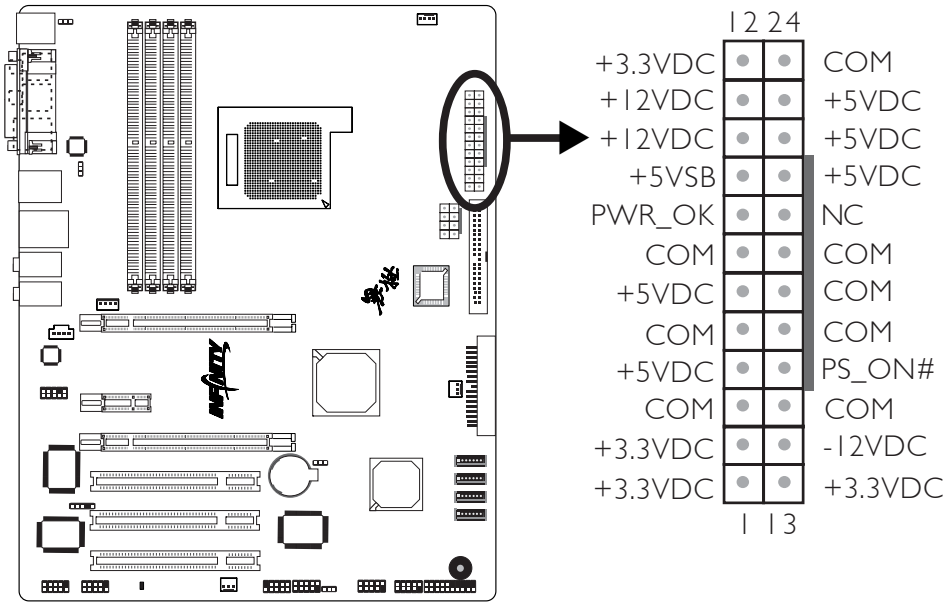
This LED will light when the system is in the standby mode.

Warning:

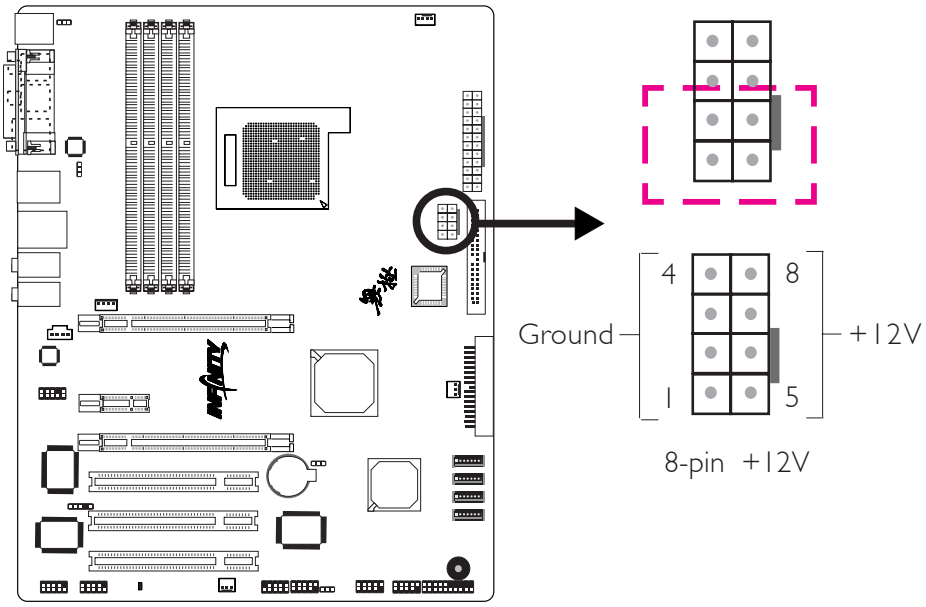
When the Standby Power LED lit red, it indicates that power is present on the PCI slots. Power-off the PC then unplug the power cord prior to installing any add-in cards. Failure to do so will cause severe damage to the motherboard and components.

Power Connectors

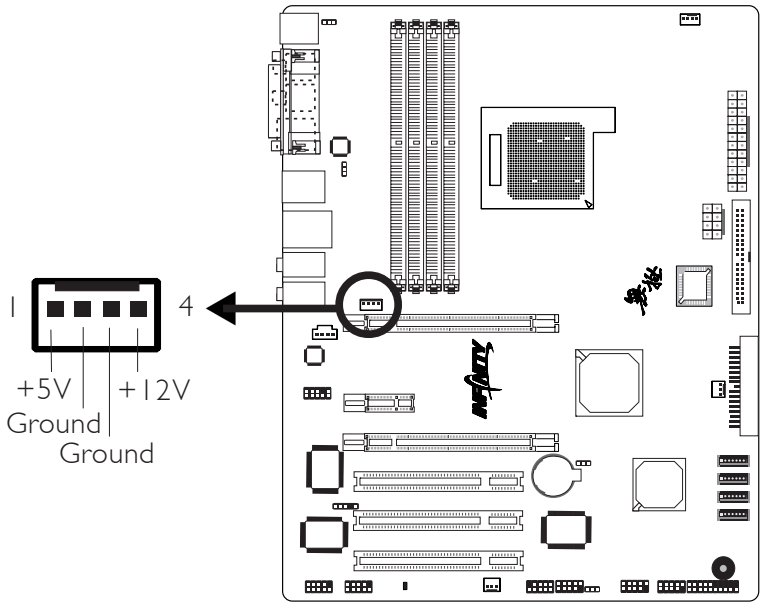
Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted onto CN12.



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 connector to CN3 as shown below.



The FDD-type power connector is an additional power connector. If you are using two graphics cards, we recommend that you plug a power cable from your power supply unit onto the 5V/12V power connector at location J19. 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.

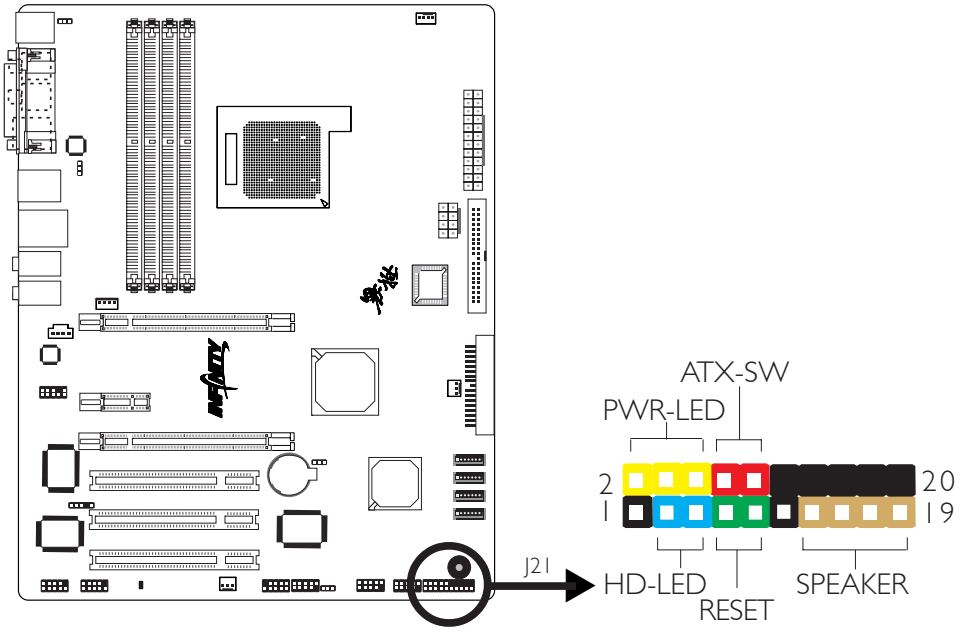
1. The time where power is totally discharged varies among power supplies. It's discharge time is highly dependent on the system's configuration such as the wattage of the power supply, the sequence of the supplied power as well as the number of peripheral devices connected to the system. Due to this reason, we strongly recommend that you wait for the Standby Power LED (refer to the "Standby Power LED" section in this chapter for the location of the 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. Refer to "Soft-Off By PWRBTN" in the Power Management Setup (Chapter 3).

PWR-LED: Power/Standby LED

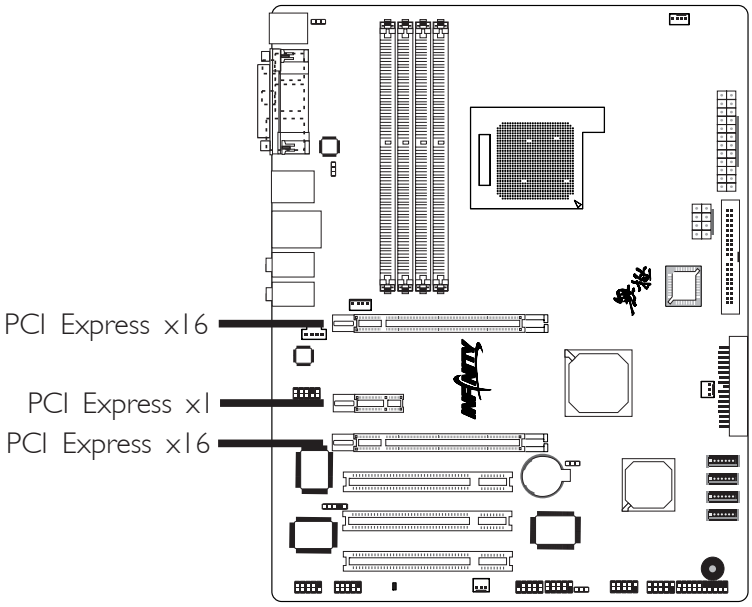
When the system's power is on, this LED will light. When the system is in the S1 (POS - Power On Suspend) or S3 (STR - Suspend To RAM) state, it will blink every second.

Note:

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

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

PCI Express Slots



PCI Express x16

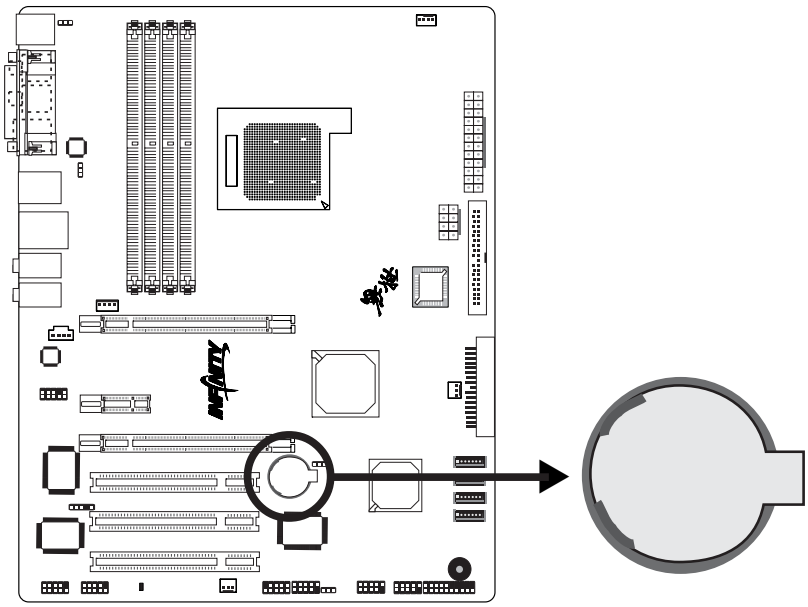
Install PCI Express x16 graphics card, that comply to the PCI Express specifications, into the PCI Express x16 slot. To install a graphics card into the x16 slot, align the graphics card above the slot then press it down firmly until it is completely seated in the slot. The retaining clip of the slot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

Refer to chapter 7 for information about CrossFire.

PCI Express x1

Install PCI Express x1 cards such as network cards or other cards that comply to the PCI Express specifications into the PCI Express x1 slot.

Battery



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

Safety Measures

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

Chapter 3 - BIOS Setup

Award BIOS Setup Utility

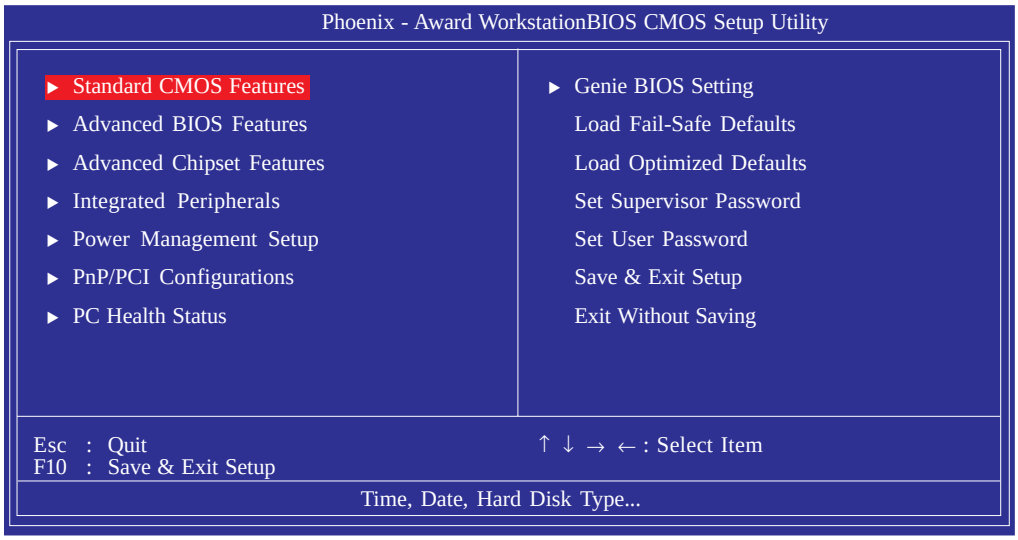
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

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

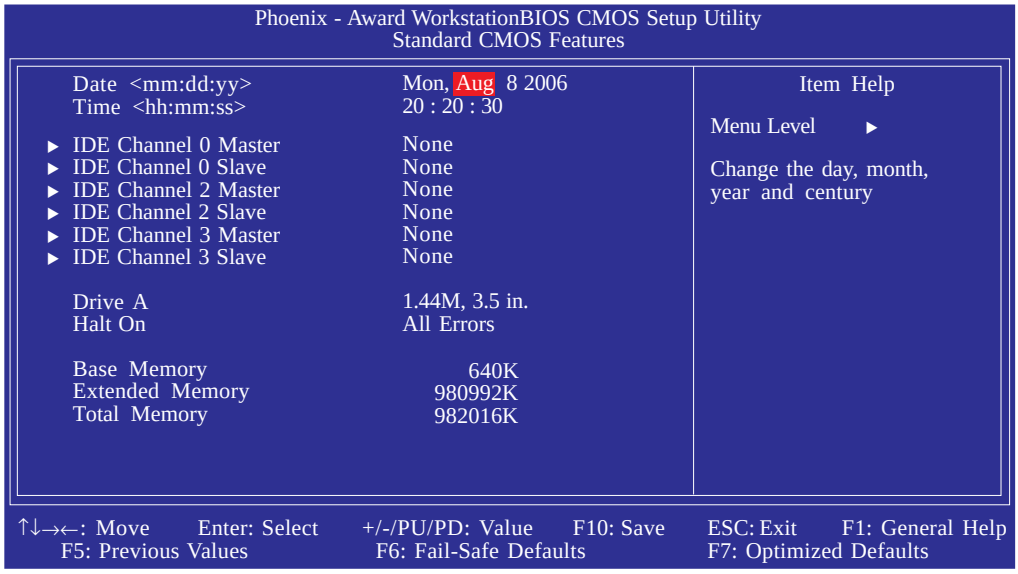
If the message disappears before you respond, restart the system or press the "Reset" button. You may also restart the system by pressing the <Ctrl> <Alt> and <Del> keys simultaneously.

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



Standard CMOS Features

Use the arrow keys to highlight "Standard CMOS Features" and 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.

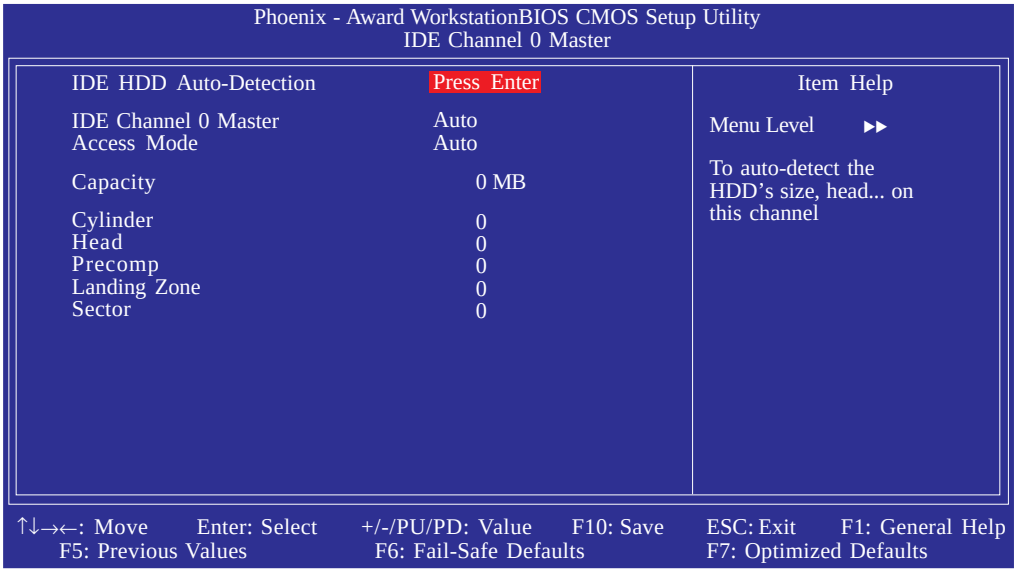
Date

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.

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 0/2/3 Master and IDE Channel 0/2/3 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.

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

Halt On

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

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

Base Memory

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

Extended Memory

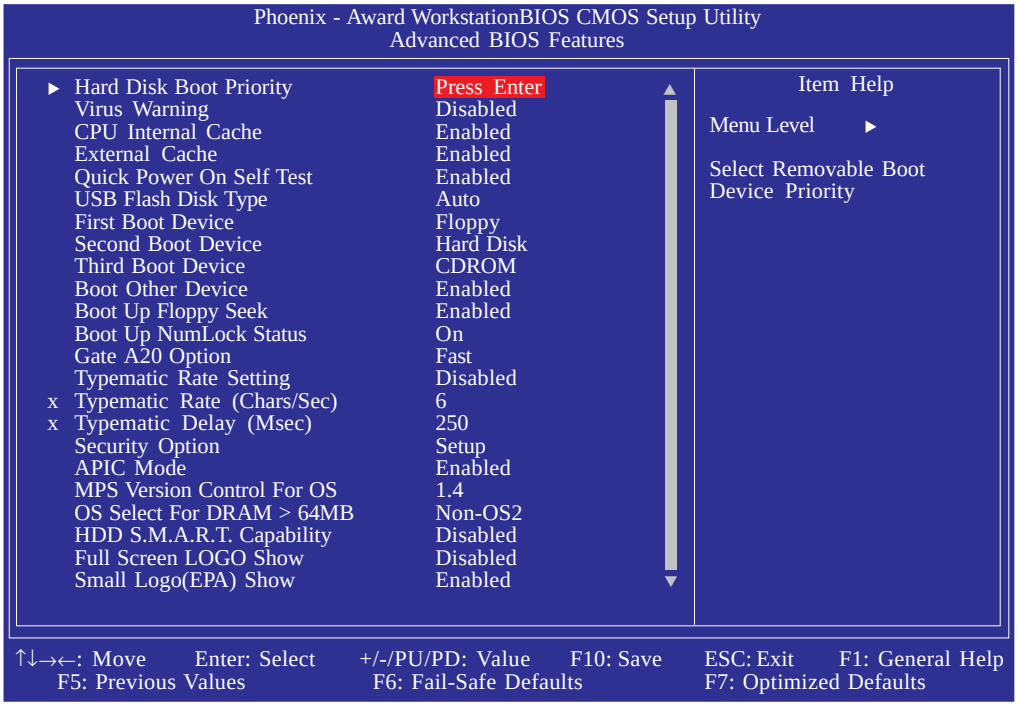
Displays the amount of extended memory detected during boot-up.

Total Memory

Displays the total memory available in the system.

Advanced BIOS Features

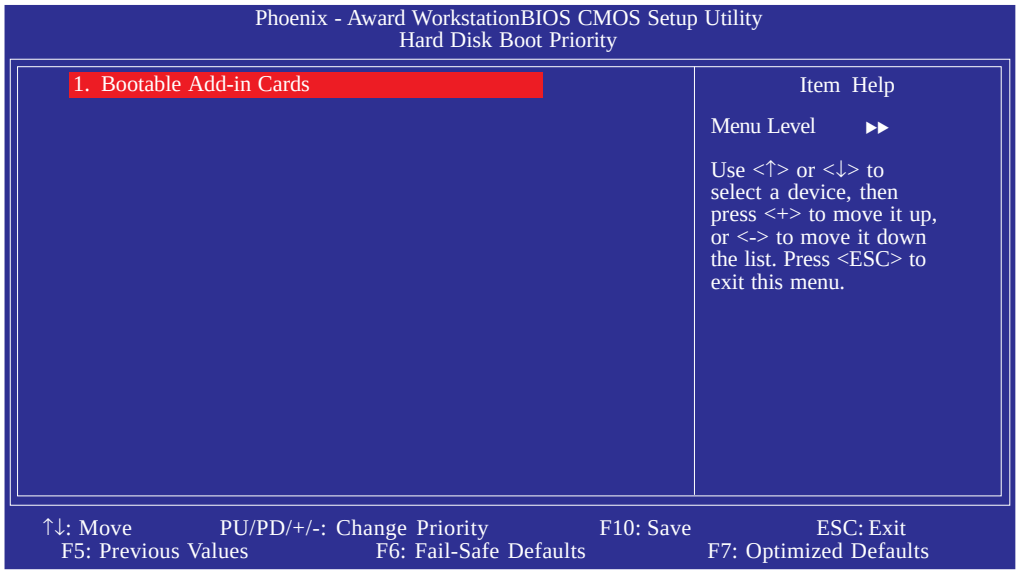
The Advanced BIOS Features allows you to configure your system for basic operation. Some entries are defaults required by the system board, while others, if enabled, will improve the performance of your system or let you set some features according to your preference.



The screen above list all the fields available in the Advanced BIOS Features 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.

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.

Virus Warning

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

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

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field. Also, disable this field if you are installing or running certain operating systems like Windows® 2000/XP or the operating system may not install nor work.

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) after you power on the system. When Enabled, the BIOS will shorten or skip some check items during POST.

USB Flash Disk Type

Auto	Automatically detects the USB device.
HDD	Emulates the USB flash disk to HDD mode.
Floppy	Emulates the USB flash disk to floppy mode.

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.

Gate A20 Option

This entry allows you to select how gate A20 is handled. Gate A20 is a device used to address memory above 1 Mbyte. Initially, gate A20 was handled via the keyboard controller. Today, while keyboards still provide this support, it is more common, and much faster, for the system chipset to provide support for gate A20.

Typematic Rate Setting

Disabled Continually holding down a key on your keyboard will cause the BIOS to report that the key is down.

Enabled The BIOS will not only report that the key is down, but will first wait for a moment, and, if the key is still down, it will begin to report that the key has been depressed repeatedly. For example, you would use such a feature to accelerate cursor movements with the arrow keys. You can then select the typematic rate and typematic delay in the "Typematic Rate (Chars/Sec)" and "Typematic Delay (Msec)" fields below.

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.

APIC Mode

Leave this field in its default setting.

MPS Version Control for OS

This field is used to select the MPS version used by the system.

OS Select for DRAM > 64MB

This field allows you to access the memory that is over 64MB in OS/2. The options are: Non-OS2 and OS2.

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.

Full Screen Logo Show

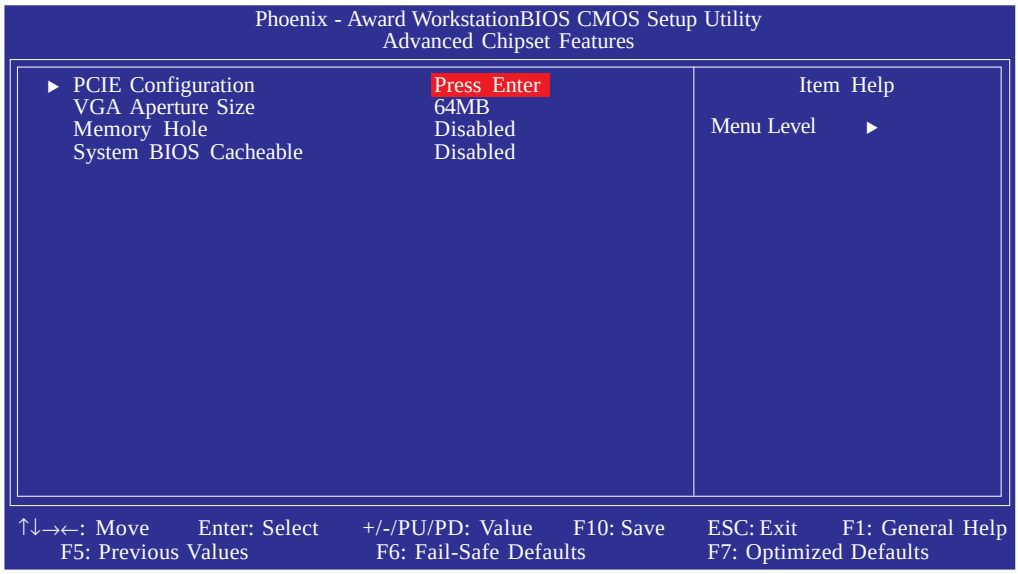
This field is applicable only if you want a particular logo to appear during system boot-up.

Enabled The logo will appear in full screen during system boot-up.
Disabled The logo will not appear during system boot-up.

Small Logo(EPA) Show

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

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.

PCIE Configuration

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

VGA Aperture Size

This field is used to select the amount of system memory available for direct access by the graphics device.

Memory Hole

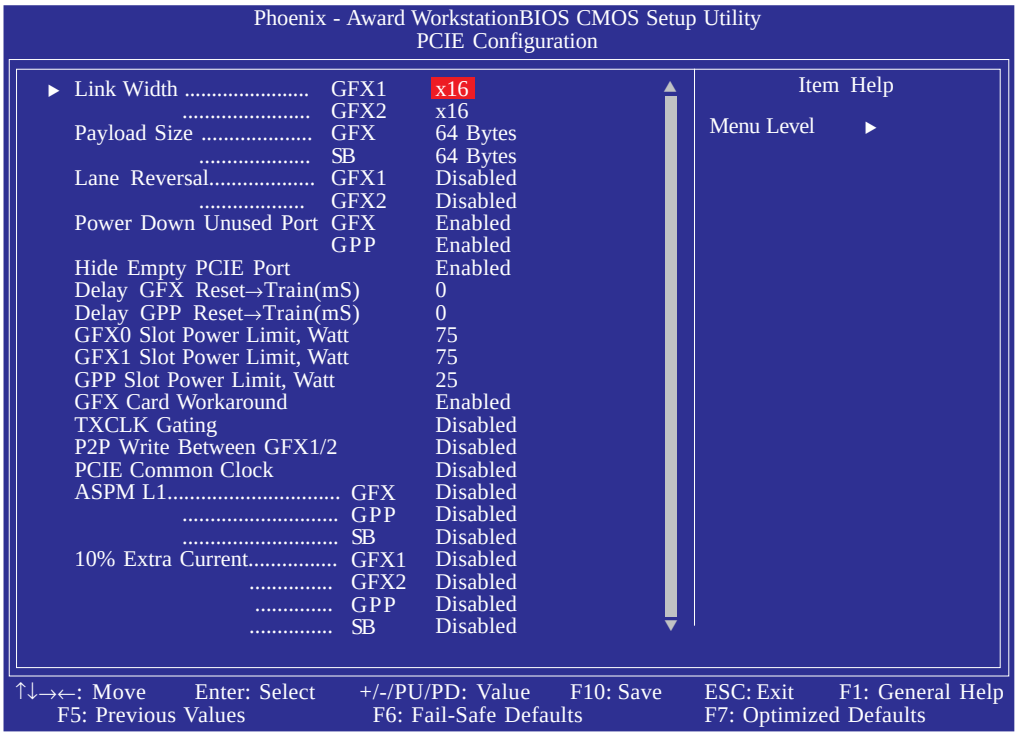
In order to improve system performance, certain space in memory can be reserved for ISA cards. This memory must be mapped into the memory space below 16MB. When enabled, the CPU assumes the 15-16MB memory range is allocated to the hidden ISA address range instead of the actual system DRAM. When disabled,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

System BIOS Cacheable

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

PCIE Configuration

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



The screen above list all the fields available in the PCIE Configuration 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.

Link Width GFX1/GFX2

The options are Disabled, x1, x2, x4, x8, x12 and x16.

Payload Size GFX/SB

The options are 16 Bytes, 32 Bytes and 64 Bytes.

Lane Reversal GFX1/GFX2

The options are Enabled and Disabled.

Power Down Unused Port GFX/GPP

The options are Enabled and Disabled.

Hide Empty PCIE Port

The options are Enabled and Disabled.

Delay GFX Reset→Train(mS)

Leave this in its default setting.

Delay GPP Reset→Train(mS)

Leave this in its default setting.

GFX0 Slot Power Limit, Watt

Leave this in its default setting.

GFX1 Slot Power Limit, Watt

Leave this in its default setting.

GPP Slots Power Limit, Watt

Leave this in its default setting.

GFX Card WorkAround

The options are Enabled and Disabled.

TXCLK Gating

The options are Enabled and Disabled.

P2P Write Between GFX1/2

The options are Enabled and Disabled.

PCIE Common Clock

The options are Enabled and Disabled.

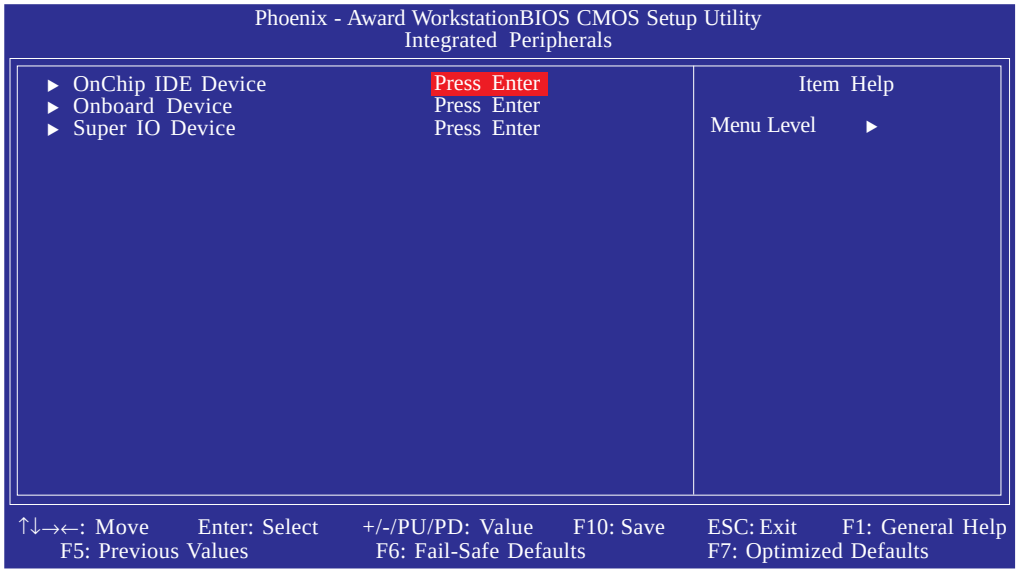
ASPM L1 GFX/GPP/SB

This field is used to configure ASPM of GFX/GPP/SB. The options are Disabled, L0, L1 and L0 & L1.

10% Extra Current GFX1/GFX2/GPP/SB

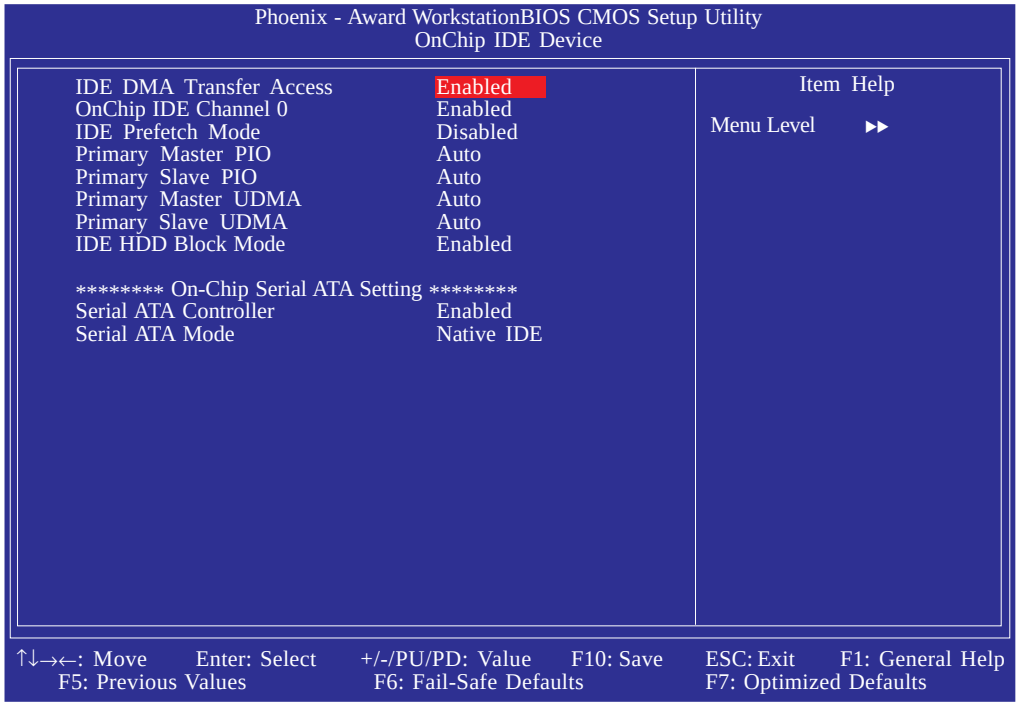
This field allows you to provide 10% extra current to GFX1/GFX2/GPP/SB.

Integrated Peripherals



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

OnChip IDE Device



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

IDE DMA Transfer Access

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

OnChip IDE Channel 0

This field is used to enable or disable the primary IDE controller. The default is Enabled. Select Disabled if you want to add a different hard drive controller.

Primary Master PIO and Primary 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.

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

Primary Master UDMA and Primary 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.

Auto	The BIOS will automatically detect the settings for you.
Disabled	The BIOS will not detect these categories.

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.

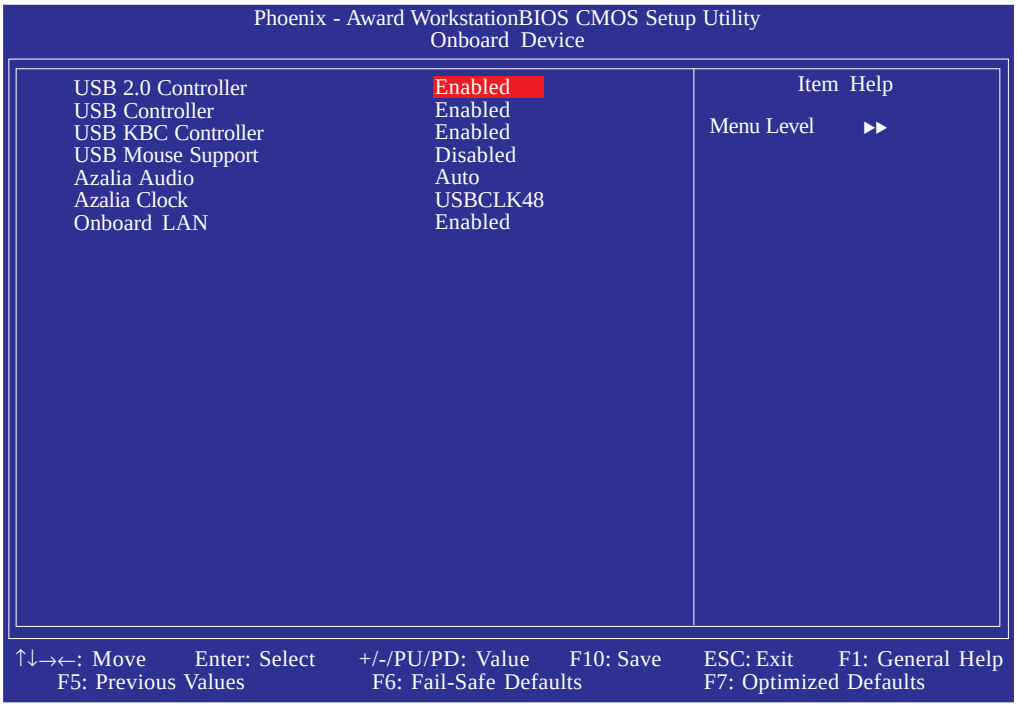
Serial ATA Controller

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

Serial ATA Mode

This field is used to set the Serial ATA drives to IDE or RAID mode.

Onboard Device



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

USB 2.0 Controller

This field is used to enable or disable USB 2.0.

USB Controller

This field is used to enable or disable the onboard USB function.

USB KBC Controller

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 Support

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.

Azalia Audio

Auto	The system automatically detects the onboard audio.
Disabled	Disables the onboard audio.

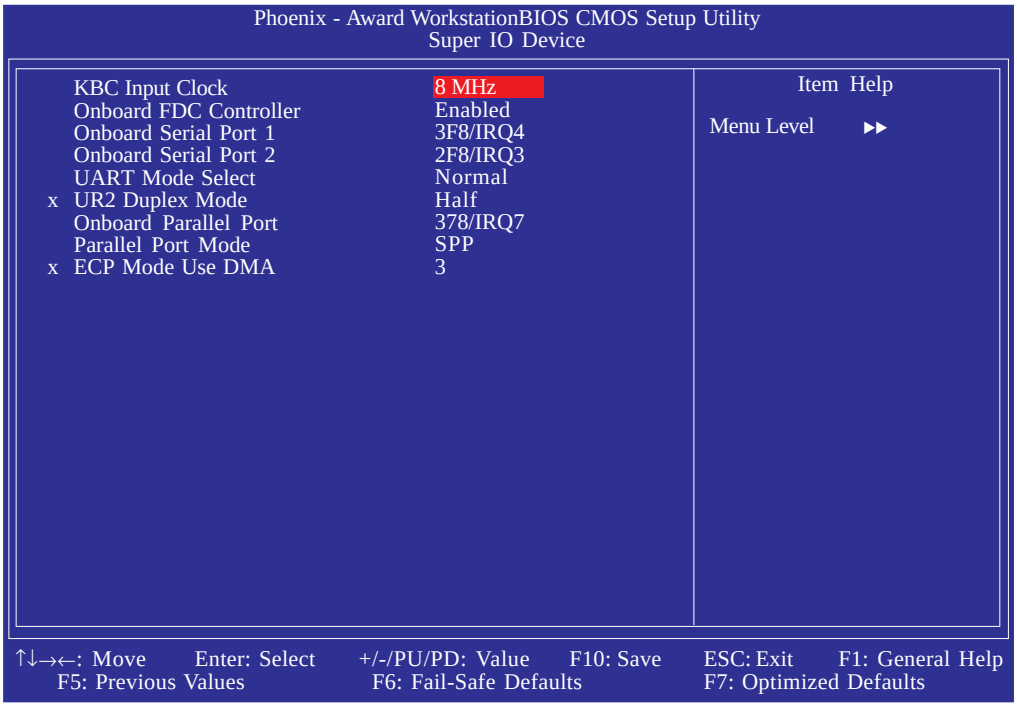
Azalia Clock

This field is used to select the onboard audio's clock.

Onboard LAN

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

Super IO Device



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

KBC Input Clock

This is used to select the input clock of your keyboard. The options are: 8MHz and 12MHz. The default is 8MHz.

Onboard FDC Controller

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

Onboard Serial Port 1 and Onboard Serial Port 2

Auto The system will automatically select an I/O address for the onboard serial port 1 and serial port 2.
3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3 Allows you to manually select an I/O address for the onboard serial port 1 and serial port 2.
Disabled Disables the onboard serial port 1 and/or serial port 2.

UART Mode Select

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

UR2 Duplex Mode

Half Data is completely transmitted before receiving data.
Full Transmits and receives data simultaneously.

Onboard Parallel Port

378/IRQ7, 3BC/IRQ7, 278/IRQ5 Selects the I/O address and IRQ for the onboard parallel port.

Disabled Disables the onboard parallel port.

Parallel Port Mode

The options are SPP, EPP, ECP and ECP+EPP. These apply to a standard specification and will depend on the type and speed of your device. Refer to your peripheral's manual for the best option.

SPP
Allows normal speed operation but in one direction only.

"ECP (Extended Capabilities Port)"
Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

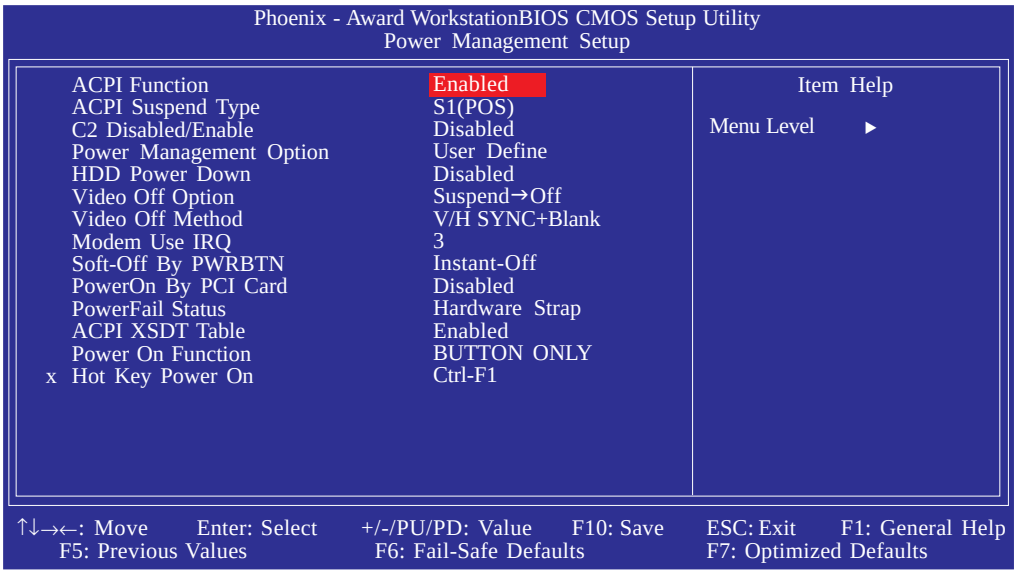
"EPP (Enhanced Parallel Port)"
Allows bidirectional parallel port operation at maximum speed.

ECP Mode Use DMA

This field is used to select a DMA channel for the parallel port.

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 Function

This function should be enabled only in operating systems that support ACPI. Currently, only Windows® 98SE/2000/ME/XP supports this function. When this field is enabled, the system will ignore the settings in the "HDD Power Down" field. If you want to use the Suspend to RAM function, make sure this field is enabled then select "S3(STR)" in the field below.

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.

Power Management Option

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

Min Saving	Minimum power saving time for the "HDD Power Down" = 15 min.
Max Saving	Maximum power saving time for the "HDD Power Down" = 1 min.
User Define	Allows you to set the power saving time in the "HDD Power Down" field.

HDD Power Down

This is selectable only when the Power Management field is set to User Define. When the system enters the HDD Power Down mode according to the power saving time selected, the hard disk drive will be powered down while all other devices remain active.

Video Off Option

Always On	The system BIOS will never turn off the screen.
Suspend -> Off	The screen is off when the system is in the Suspend mode.
All Modes -> Off	The screen is off when the system is in the Doze, Standby or Suspend mode.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Initializes display power management signaling. Use this option if your video board supports it.

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 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.

PowerFail Status

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

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

Former-Sts 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.

ACPI XSDT Table

The options are Enabled and Disabled.

Power On Function

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

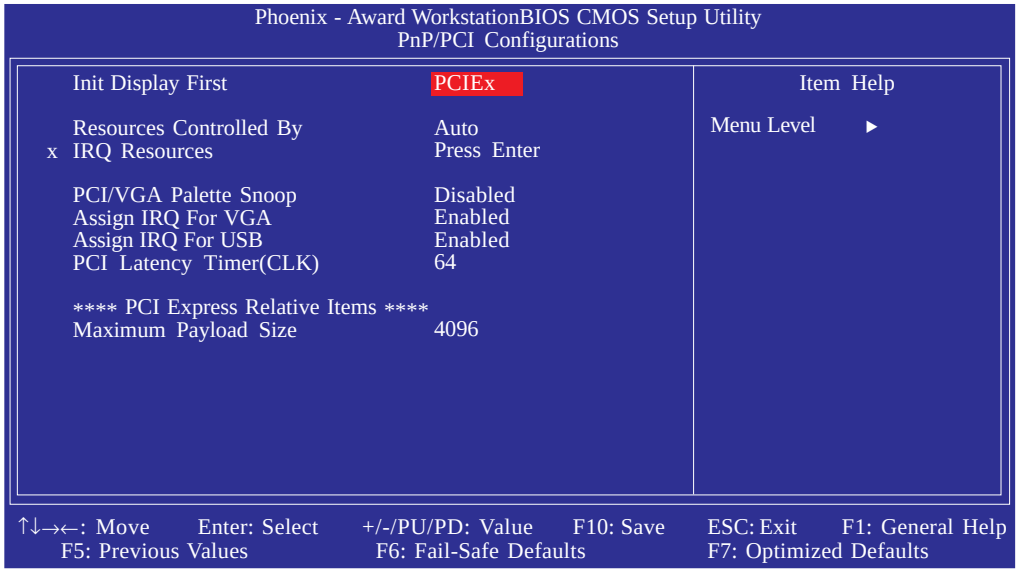
Button only	Default setting. Uses the power button to power on the system.
Password	When this option is selected, set the password you would like to use to power-on the system in the "KB Power On Password" field.
Hot Key	When this option is selected, select the function key you would like to use to power-on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

Hot Key Power On

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

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

Init Display First

This field is used to select whether to initialize the PCI Express or PCI first when the system boots.

PCIEx When the system boots, it will first initialize the PCI Express x16 graphics card.

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

Resources Controlled By

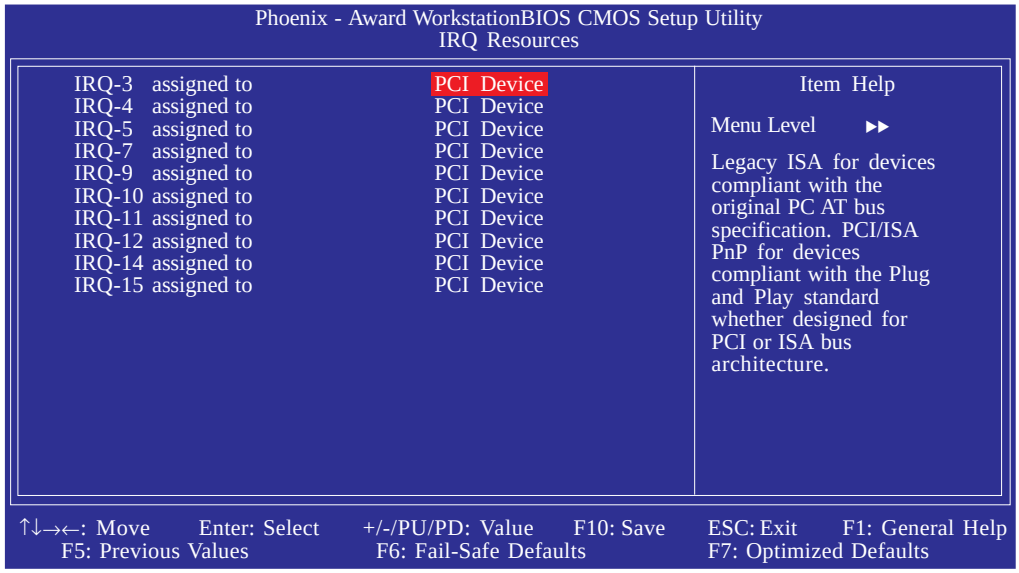
The Award Plug and Play BIOS has the capability to automatically configure all of the boot and Plug and Play compatible devices.

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.

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.

Note:
When Disabled, a "Yellow" mark will appear in Windows® 95's Device Manager.

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.

Note:
When Disabled, a "Yellow" mark will appear in Windows® 95's Device Manager.

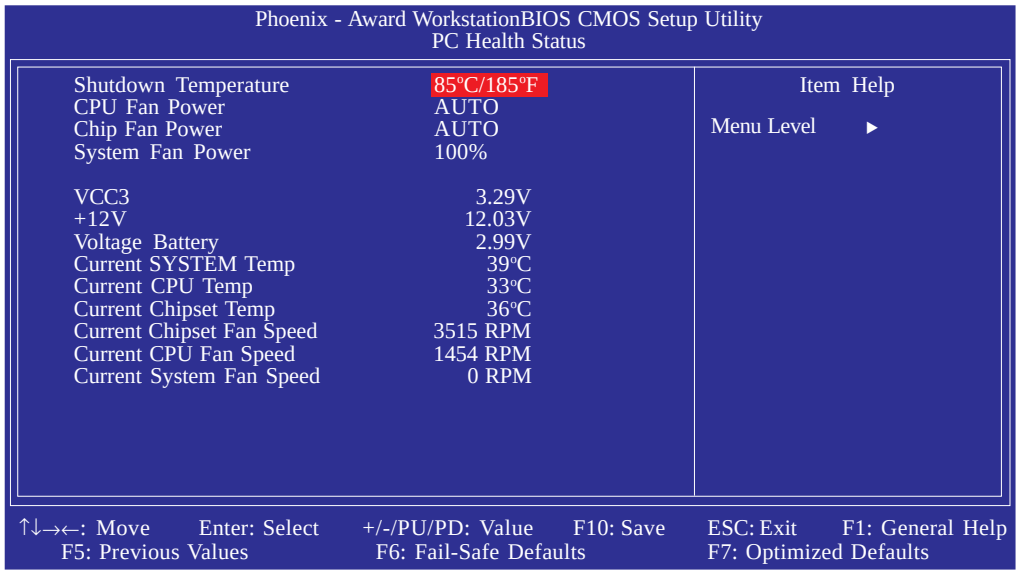
PCI Latency Timer (CLK)

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.

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 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 in this field. If the system detected that the CPU temperature exceeded the temperature set in this field, it will automatically shutdown.

CPU/Chip/System Fan Power

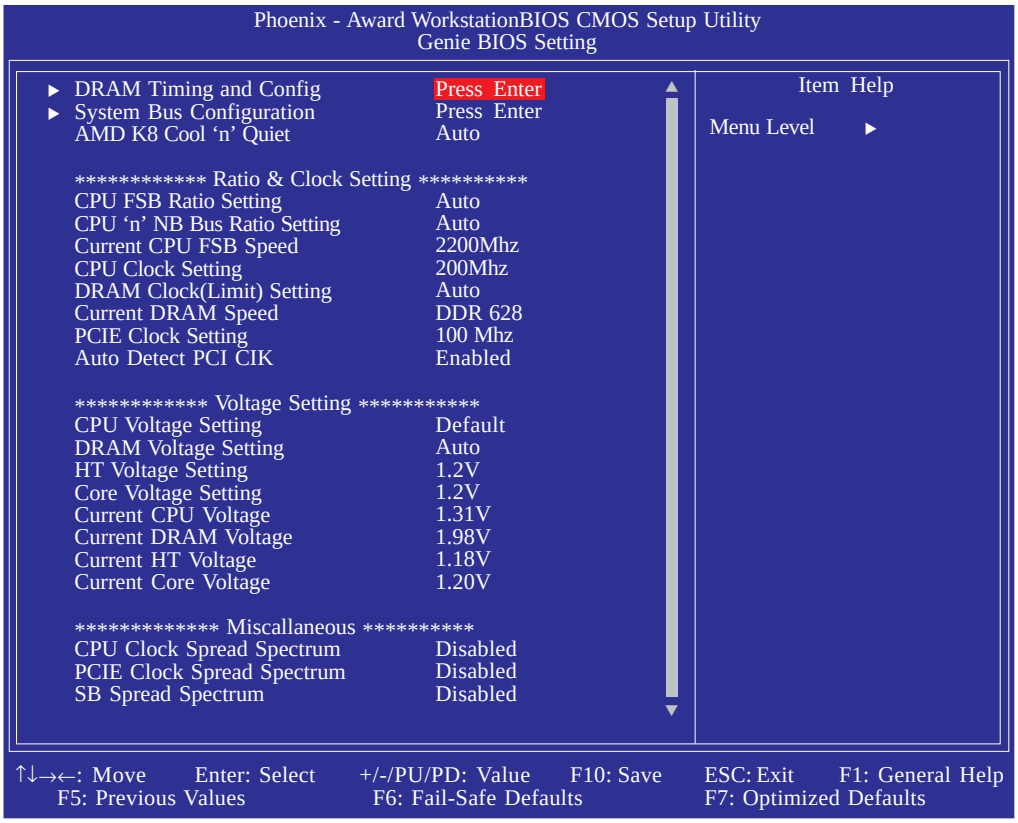
Auto Enables the Smart Fan function. The speed of the fan will rotate according to the current temperature.

60%, 70%, 80%, 90% 100% These options allow you to manually select the speed of the fan.

VCC3 to Current System 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.

DRAM Timing and Config

System Bus Configuration

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

AMD K8 Cool 'n' Quiet Control

Auto 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.

Disabled Disables AMD's Cool'n'Quiet technology.

CPU FSB Ratio Setting

This field is used to select the CPU FSB ratio.

CPU 'n' NB Bus Ratio Setting

This field is used to select the bus ratio between the CPU and Northbridge.

Current CPU FSB Speed

This field will show the detected FSB of the CPU.

CPU Clock Setting

This field provides several options for selecting the external system bus clock of the processor. The available options allow you to adjust the processor's bus clock by 1MHz increment.

Important:
Selecting an external bus clock other than the default setting may result to the processor's or system's instability and are not guaranteed to provide better system performance.

DRAM Clock (limit) Setting

This field is used to select the clock speed of the DIMM.

Current DRAM Speed

This field will show the detected speed of the DRAM.

PCIE Clock Setting

This field is used to select the bus clock of the PCI Express. It allows you to adjust the bus clock by 1MHz increment.

Auto Detect PCI Clk

When enabled, the system will automatically send clock signals to existing PCI devices.

CPU Voltage Setting

This field allows you to manually adjust to a higher core voltage that is supplied to the CPU.

DRAM Voltage Setting

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

HT Voltage Setting

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

Core Voltage Setting

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

Important:
Although the CPU / DRAM / HT / Core overvoltage is supported, we do not recommend that you use a higher voltage because unstable current may be supplied to the system board causing damage.

Current CPU Voltage

This field will show the detected voltage of the CPU.

Current DRAM Voltage

This field will show DRAM's current voltage.

Current HT Voltage

This field will show the Southbridge chip's current voltage.

Current Core Voltage

This field will show the Northbridge chip's current voltage.

CPU Clock Spread Spectrum

The options are Disabled, +/- 0.1% to +/- 0.9%.

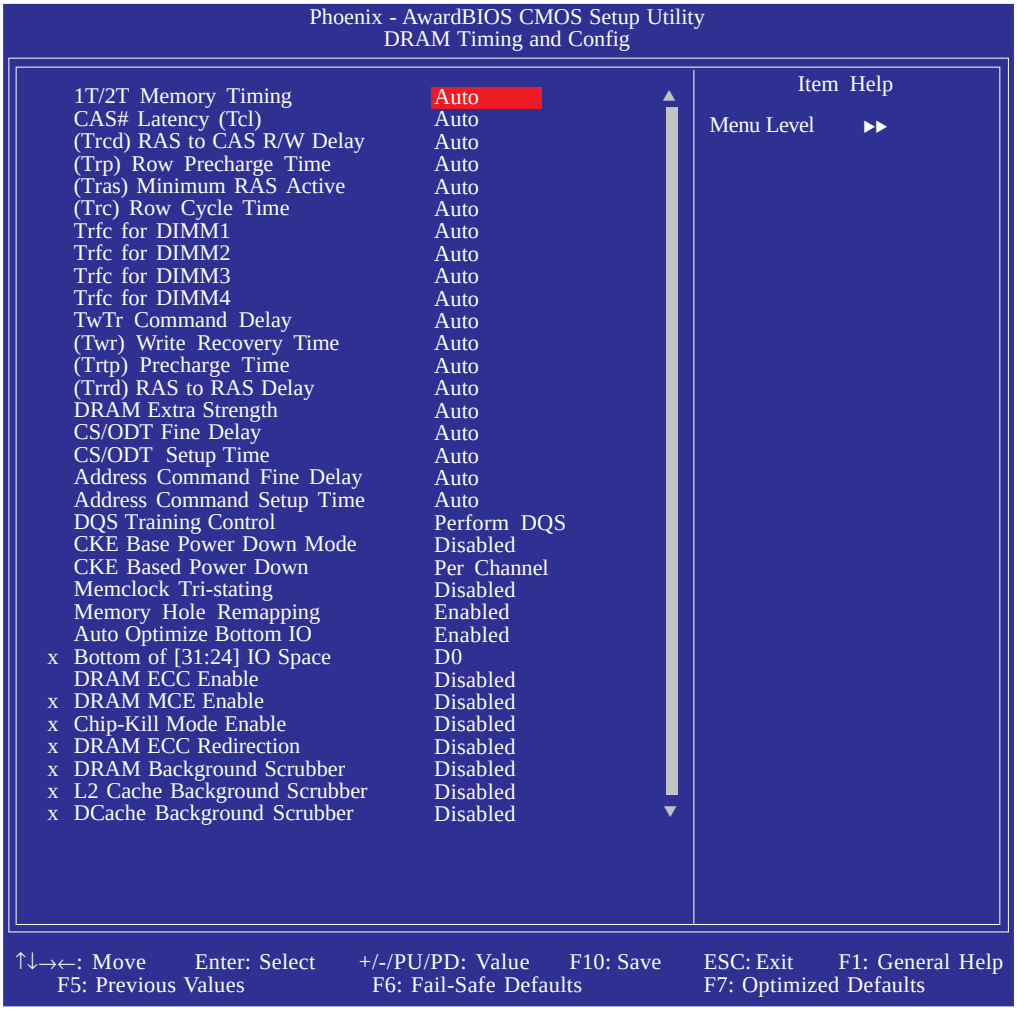
PCIE Clock Spread Spectrum

The options are Disabled, +/- 0.1% to +/- 0.9%.

SB Spread Spectrum

The options are Enabled and Disabled.

DRAM Timing and Config



The screen above list all the fields available in the DRAM Timing and Config 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.

1T/2T Memory Timing

2T timing which provides better system stability is supported in CG or later revisions of the AMD Athlon™ 64 CPU. This field will not appear if you are using a CPU whose version is older than the CG revision.

Auto Automatically detects the memory timing.

1T Sets the memory timing to Performance mode. Select this mode for better system performance.

2T Sets the memory timing to Normal mode. Select this mode if you encounter system instability. (default)

CAS# Latency (Tcl)

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

(Trcd) RAS to CAS R/W Delay

When DRAM refreshes, both rows and columns are addressed separately. This field is used to select the delay time from RAS (Row Address Strobe) to CAS (Column Address Strobe) when reading and writing to the same bank. The lesser the clock cycle, the faster the DRAM's performance.

(Trp) Row Precharge Time

This field is used to select the number of cycles that is allowed for Row Address Strobe (RAS) to precharge. If insufficient time is allowed for the RAS to accumulate its charge before DRAM refreshes, refreshing may be incomplete and DRAM may fail to retain data.

(Tras) Minimum RAS Active Time

This field is used to select the minimum time RAS takes to read from and write to a memory cell.

(Trc) Row Cycle Time

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

Trfc for DIMM1, Trfc for DIMM2, Trfc for DIMM3 and Trfc for DIMM4

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

TwTr Command Delay

The options are Reserved, 1 bus clock, 2 bus clocks and 3 bus clocks.

(Twr) Write Recovery Time

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

(Trtp) Precharge Time

This field is used to select the precharge time.

(Trrd) RAS to RAS Delay

This field is used to select the delay time from RAS (Row Address Strobe) to the next RAS (Row Address Strobe) when reading to the same bank. The lesser the clock cycle, the faster the DRAM's performance.

DRAM Extra Strength

The options are Auto, Level 1, Level 2, Level 3 and Level 4.

CS/ODT Fine Delay

The options are Auto, 0 MEMCLK, 1/64 MEMCLK to 17/64 MEMCLK.

CS/ODT Setup Time

The options are Auto, 1/2 MEMCLK and 1 MEMCLK.

Address/Command Fine Delay

The options are Auto, 0 MEMCLK, 1/64 MEMCLK to 17/64 MEMCLK.

Address/Command Setup Time

The options are Auto, 1/2 MEMCLK and 1 MEMCLK.

DQS Training Control

The options are Skip DQS and Perform DQS.

CKE Base Power Down Mode

The options are Enabled and Disabled.

CKE Based Power Down

The options are Per Channel and Per CS.

Memclock Tri-stating

The options are Enabled and Disabled.

Memory Hole Remapping

The options are Enabled and Disabled.

Auto Optimize Bottom IO

The options are Enabled and Disabled.

Bottom of [31:24] IO Space

This field is used to select the memory that will be remapped to another address higher than 00E0.

DRAM ECC Enable

This field is used to enable or disable the DRAM's ECC feature. When enabled, it allows the system to automatically correct and recover from memory failure.

DRAM MCE Enable

The options are Enabled and Disabled.

Chip-Kill Mode Enable

The options are Enabled and Disabled.

DRAM ECC Redirection

The options are Enabled and Disabled.

DRAM Background Scrubber

This field allows the DRAM scrubbing feature to correct memory errors.

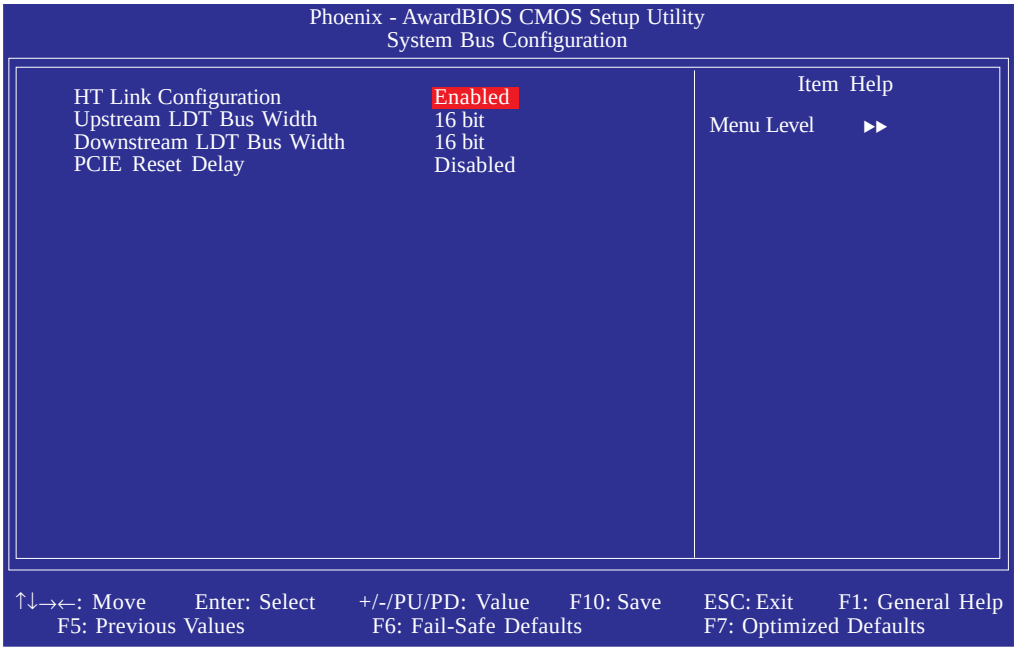
L2 Cache Background Scrubber

This field corrects the memory errors of the L2 data cache RAM.

DCache Background Scrubber

This field corrects the memory errors of the L1 data cache RAM.

System Bus Configuration



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

HT Link Configuration

This field is used to enable or disable the HT link.

Upstream LDT Bus Width

This field is used to select the utilized upstream data width of the HyperTransport link.

Downstream LDT Bus Width

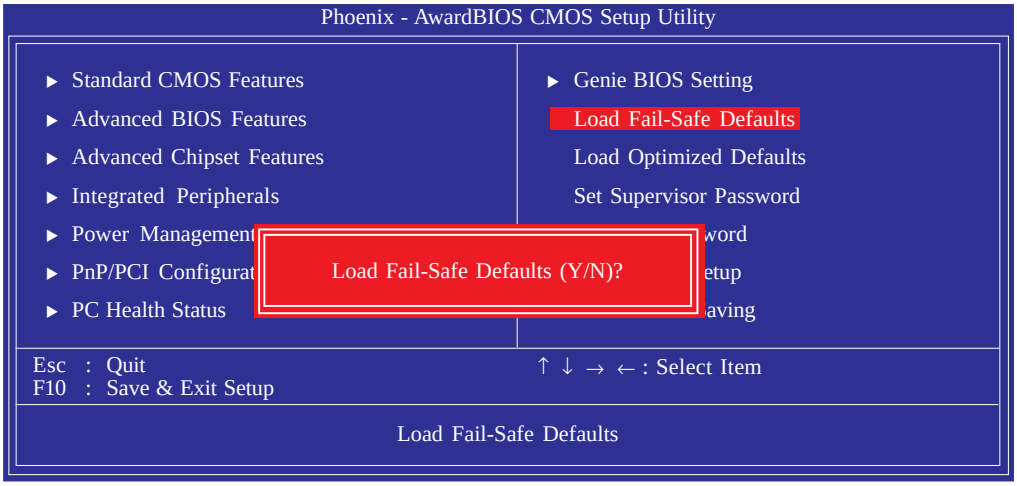
This field is used to select the utilized downstream data width of the HyperTransport link.

PCIE Reset Delay

This field is used to enable or disable the reset delay of the PCI Express slot.

Load Fail-Safe Defaults

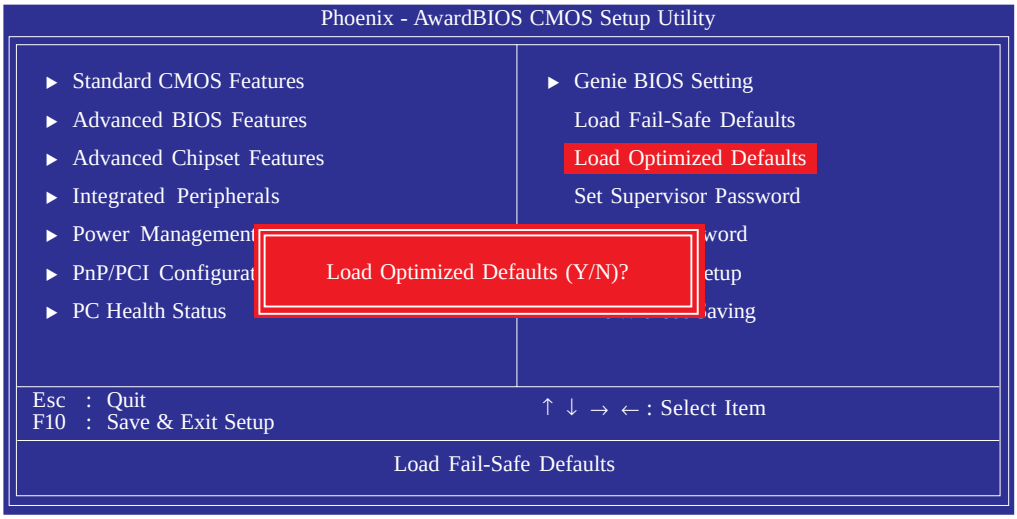
The "Load Fail-Safe Defaults" option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press <Enter>.



If you want to proceed, type <Y> and press <Enter>. The default settings will be loaded.

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>.

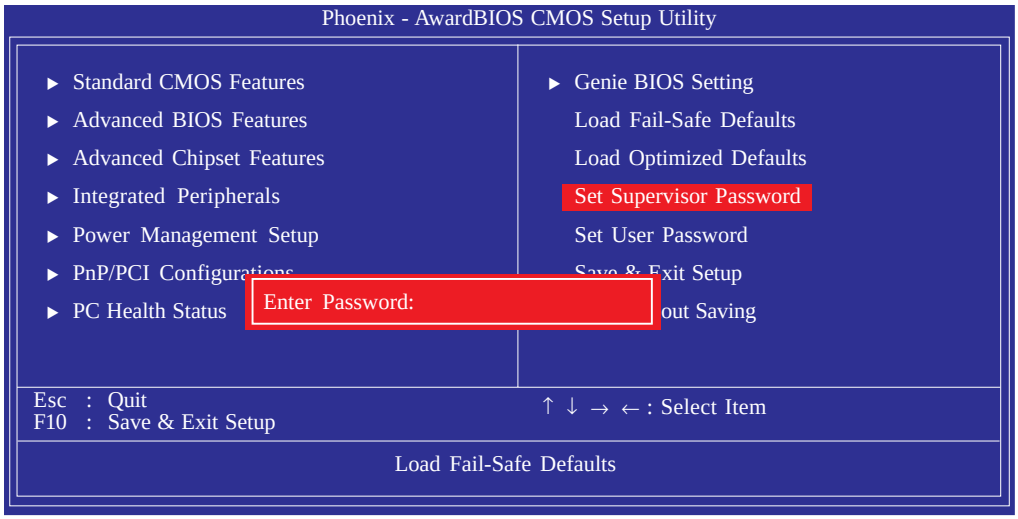


Type <Y> and press <Enter> to load the Setup default values.

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:

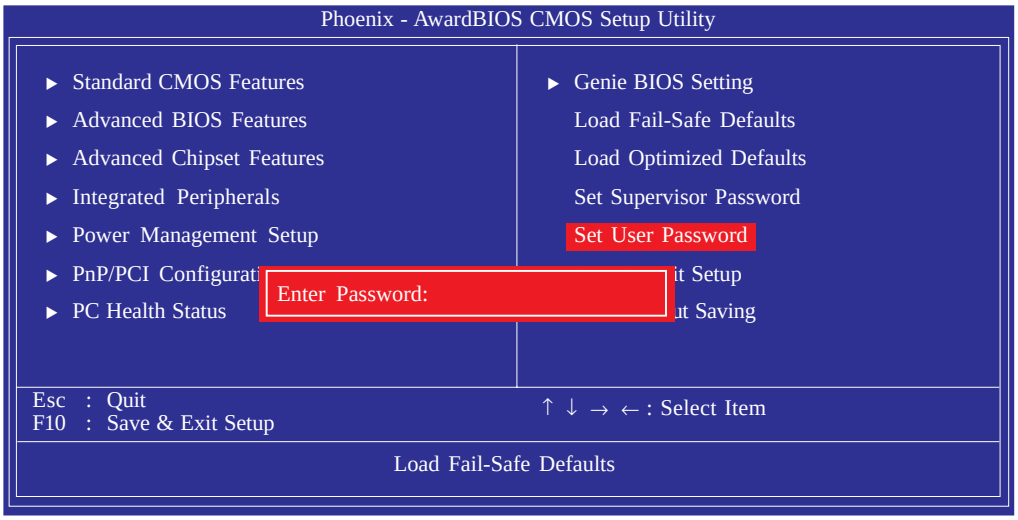
You are asked to verify the password. Type in exactly the same password. If you type in a wrong password, you will be prompted to enter the correct password again. To delete or disable the password function, highlight "Set Supervisor Password" and press <Enter>, instead of typing in a new password. Press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



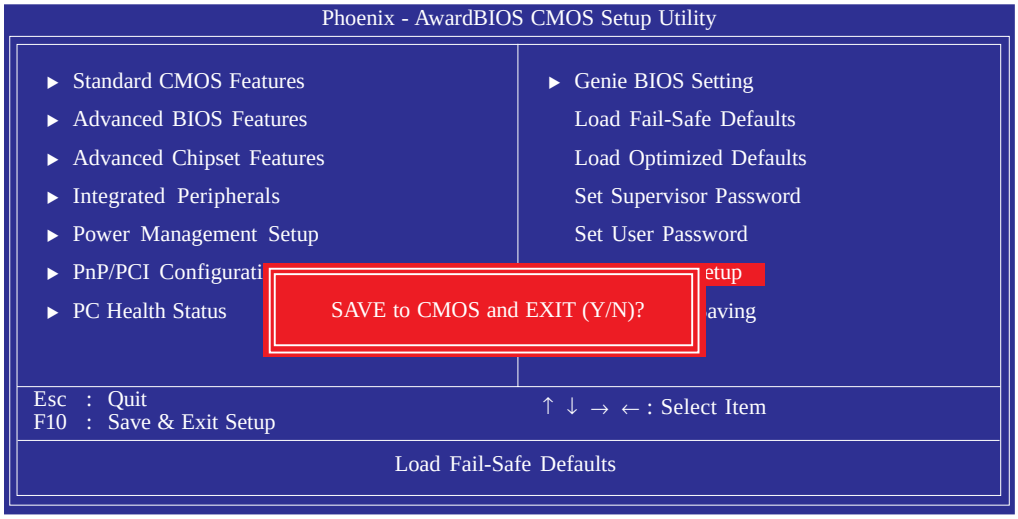
Type in the password. You are limited to eight characters. When done, the message below will appear:

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

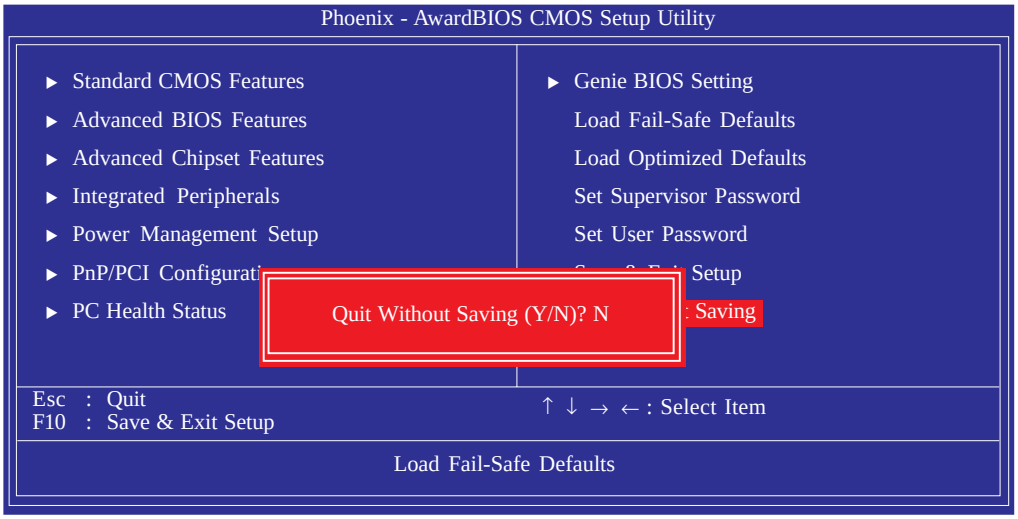
When all the changes have been made, highlight "Save & Exit Setup" and press <Enter>.



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> <Esc> simultaneously or <Del> 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> <Esc> simultaneously or <Del> after memory testing is done.

ATI RAID BIOS

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

When the system powers-up and all drives have been detected, the ATI 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 6 for steps in configuring RAID.

Updating the BIOS

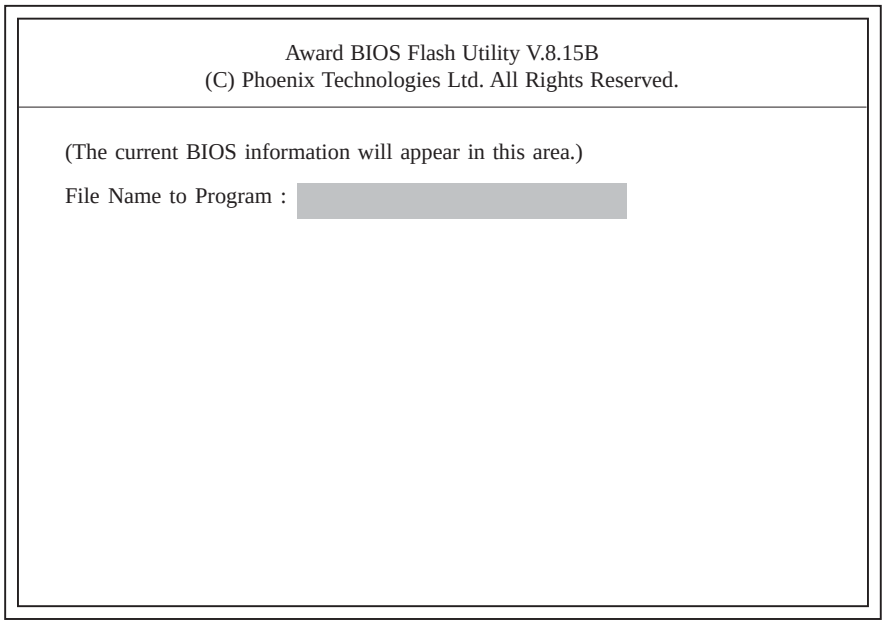
To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. You can download them from DFI's web site or contact technical support or your sales representative.

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

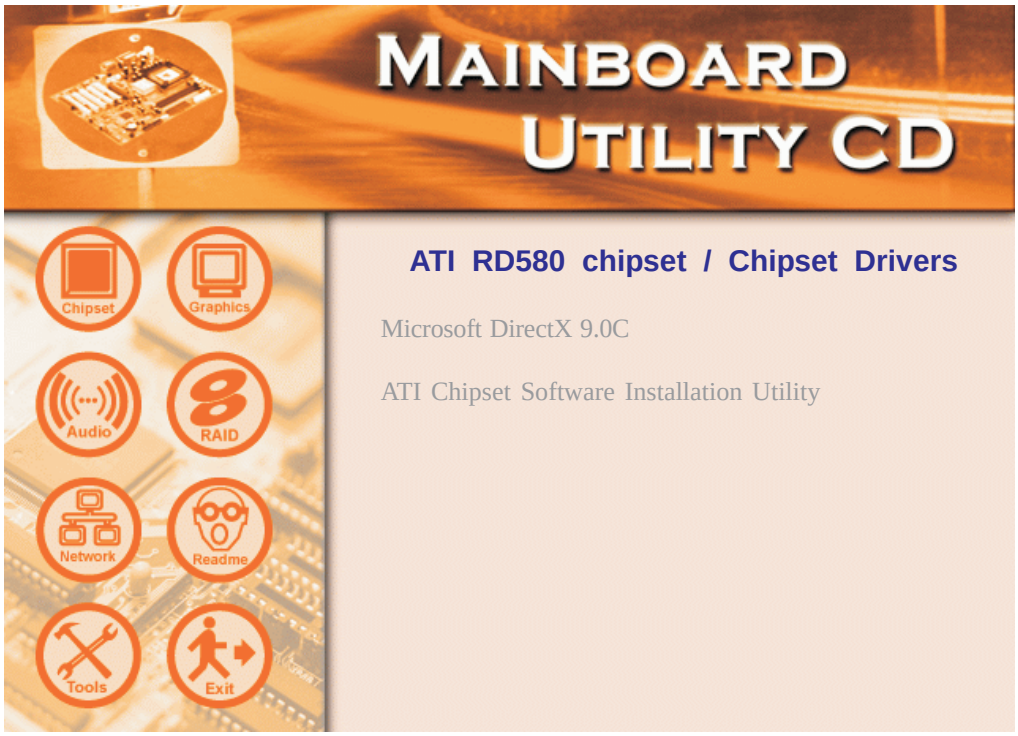
8. Press <Y> to flash the new BIOS.

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



Important:
You must first install Microsoft DirectX 9.0C prior to installing any drivers.

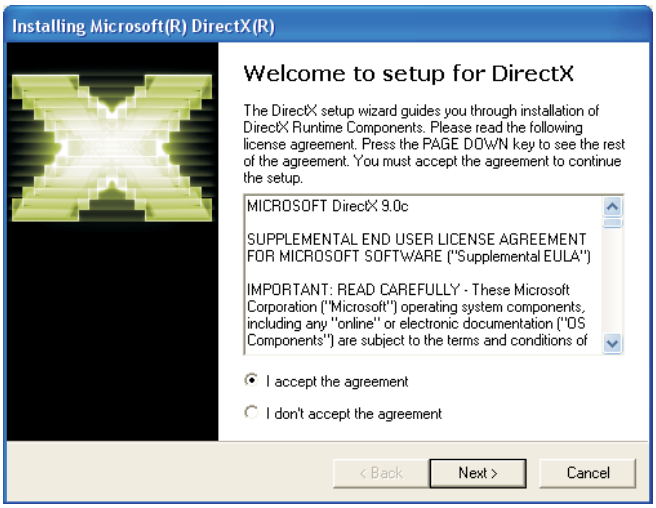
4 Supported Software

Microsoft DirectX 9.0C

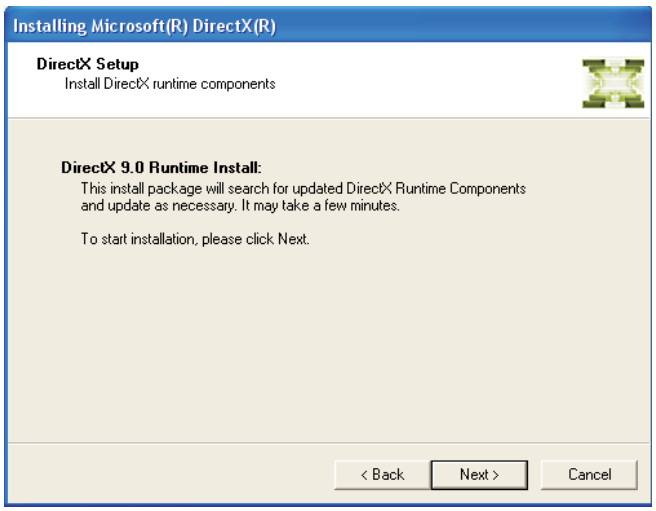
When you insert the CD, the default menu that will appear is the Chipset Drivers menu. If in any case it is not, click the "CHIPSET" icon that is on the left side of the autorun screen.

1. Click "Microsoft DirectX 9.0C" on the main menu.

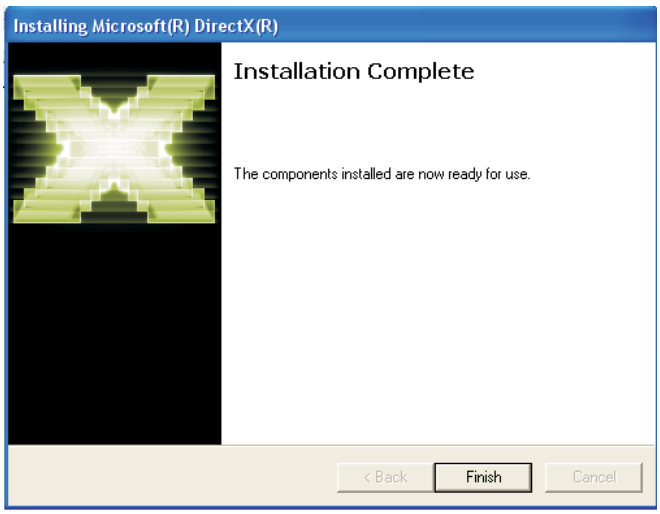
2. Click "I accept the agreement" then click Next.



3. You are now ready to install DirectX. Click Next.



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

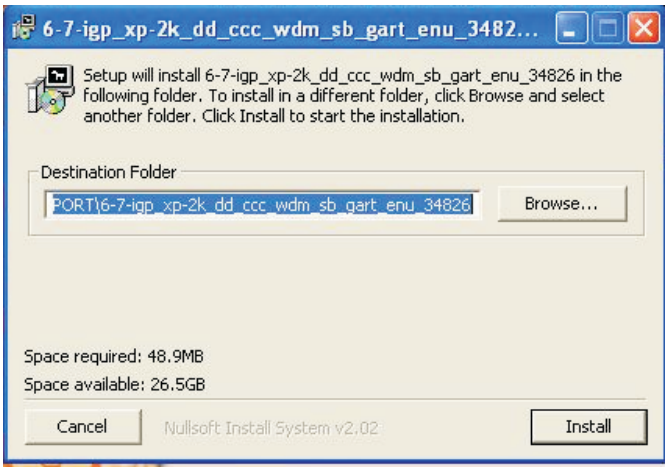


ATI Chipset Software Installation Utility

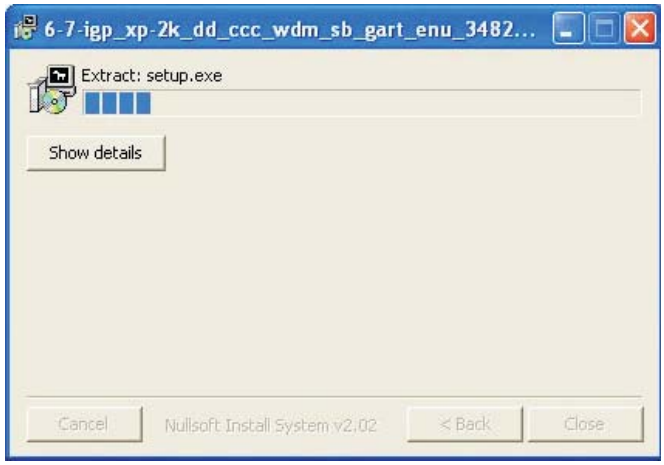
On the left side of the autorun screen, click the "CHIPSET" icon.

1. Click "ATI Chipset Software Installation Utility" on the main menu.

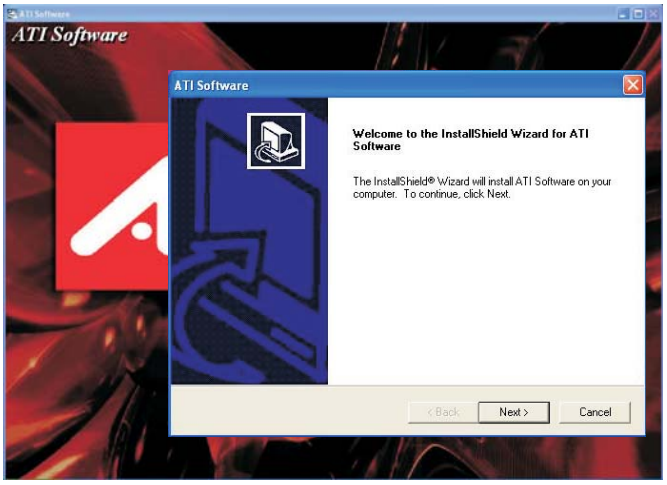
2. Click Install to install to the designated folder or click Browse to select another folder.



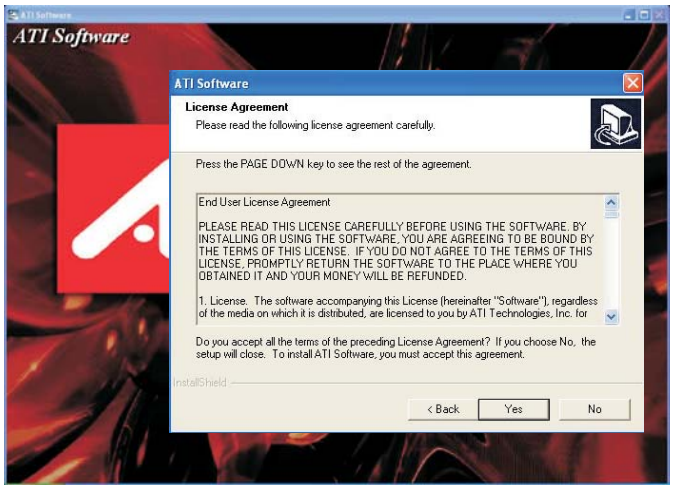
3. Setup is currently extracting the files needed to install the utility.



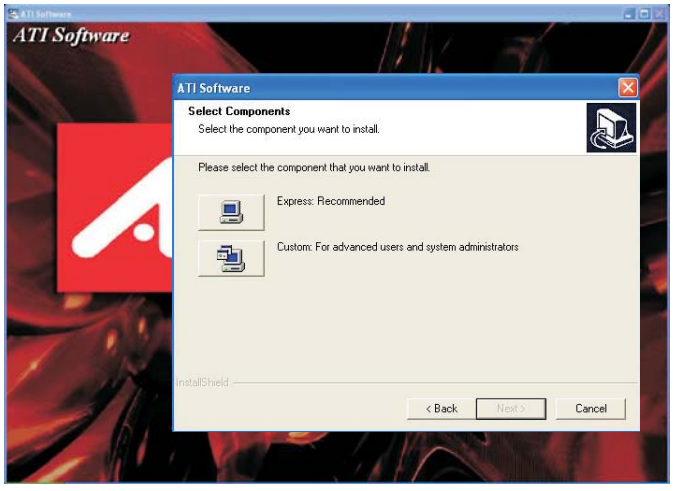
4. Setup is now ready to install the utility. Click Next.



5. Read the license agreement then click Yes.

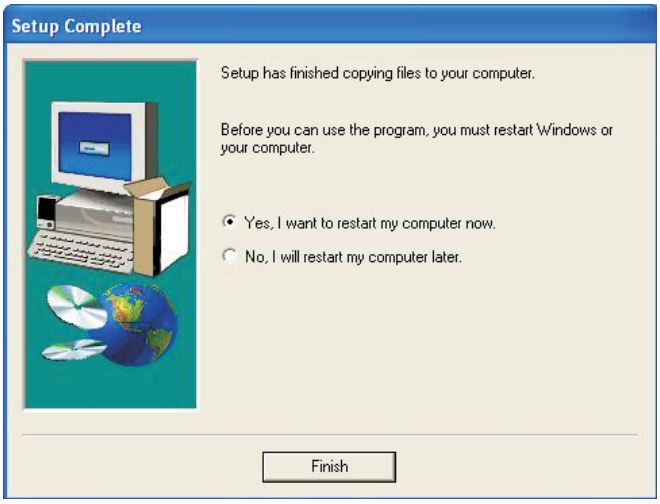


6. Select the component you want to install then click Next.



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

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

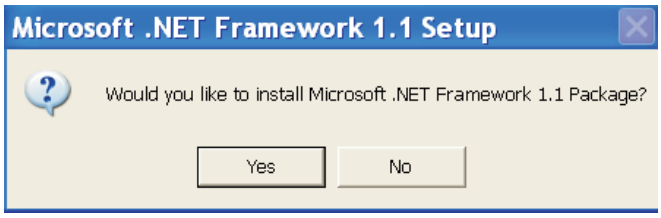


Microsoft's .NET Version 1.1 Framework

On the left side of the autorun screen, click the "GRAPHICS" icon.

1. Click "Microsoft's .NET Version 1.1 Framework" on the main menu.

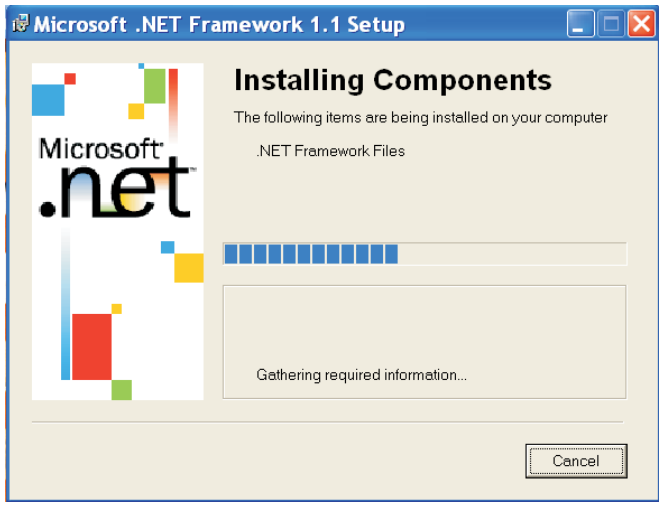
2. Click "Yes" to install the Framework package.



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.



4 Supported Software

Graphics Drivers

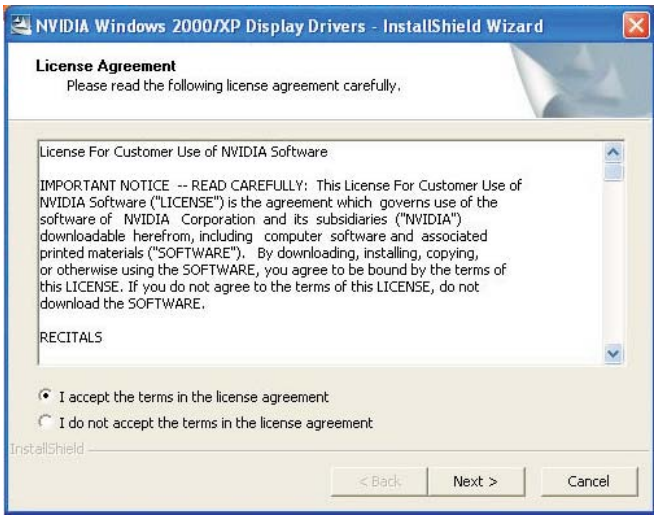
On the left side of the autorun screen, click the "GRAPHICS" icon.

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

nVidia GForce Driver for WinXP/2K

1. Click "nVidia GForce Driver for WinXP/2K" on the main menu.

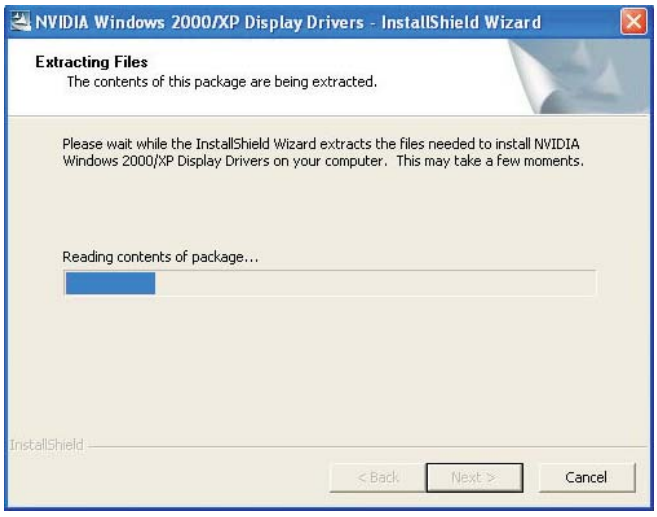
   Read the license agreement then click "I accept the terms in the license agreement". Click Next.



2. The installation wizard will extract the files needed to install the driver. After all files have been extracted, click Next.

3. Follow the prompts on the screen to complete installation.

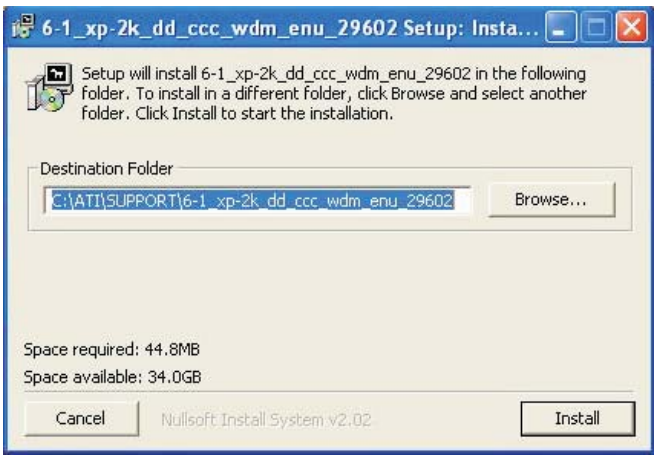
4. Reboot the system for the driver to take effect.



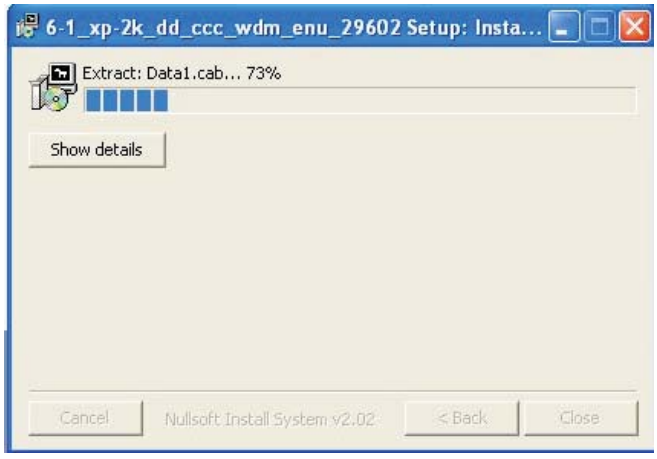
ATI Radeon Driver for WinXP/2K

1. Click "ATI Radeon Driver for WinXP/2K" on the main menu.

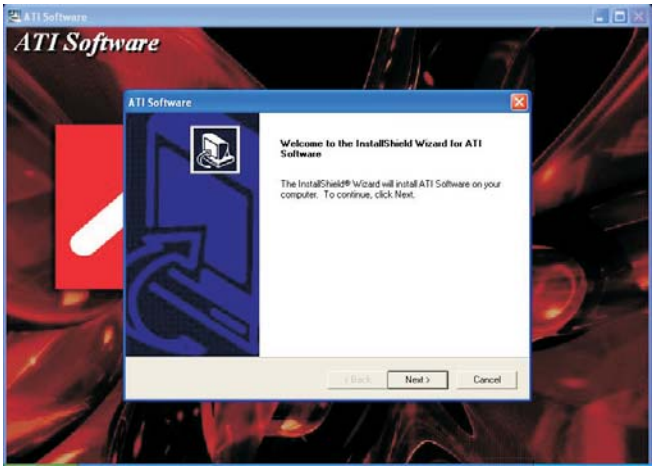
   Click Install to install to the destination folder or click Browse to select another folder.



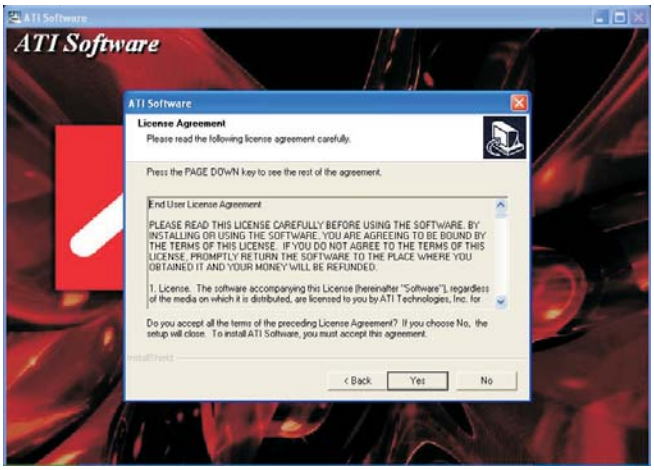
2. The installation wizard will extract the files needed to install the driver. After all files have been extracted, click Next.



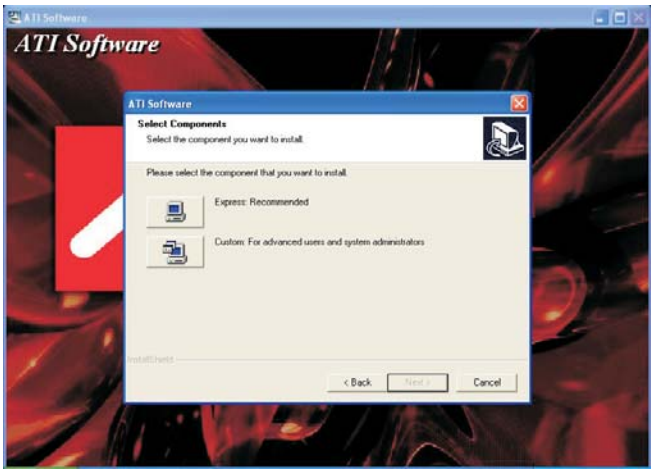
3. Setup is now ready to install the driver. Click Next.



4. Read the license agreement then click Yes.

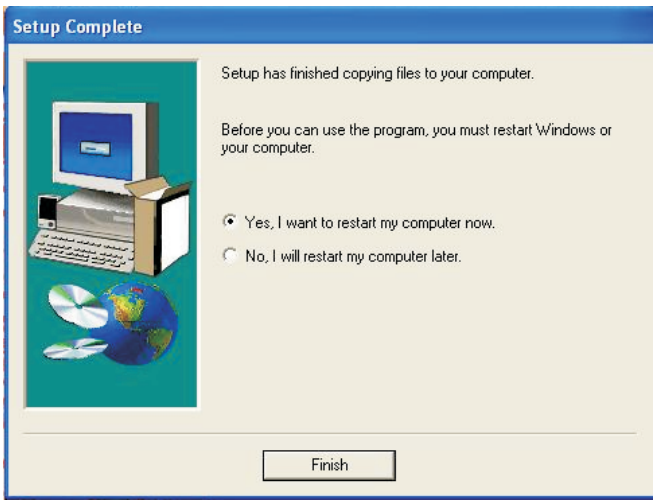


5. Select the component you want to install then click Next.



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

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



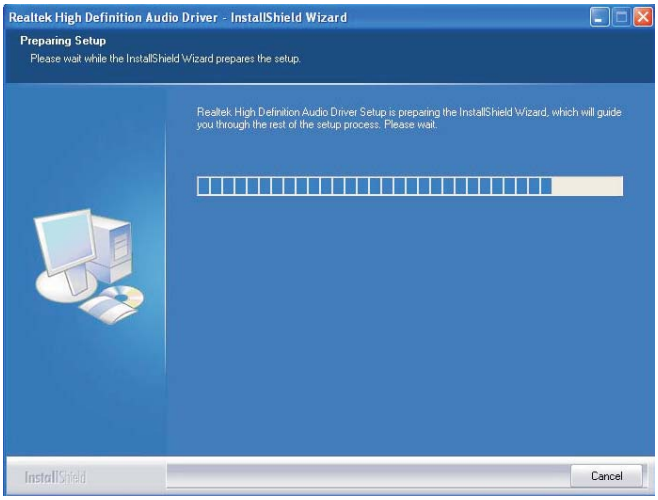
4 Supported Software

Realtek Audio Drivers

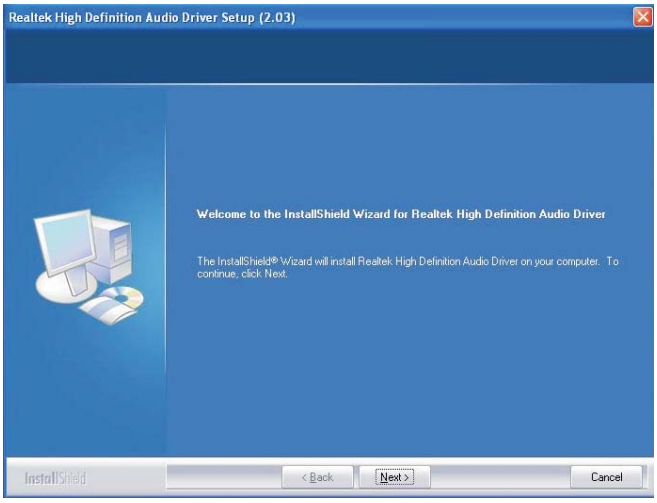
On the left side of the autorun screen, click the "AUDIO" icon.

1. Click "Realtek Audio Drivers" on the main menu.

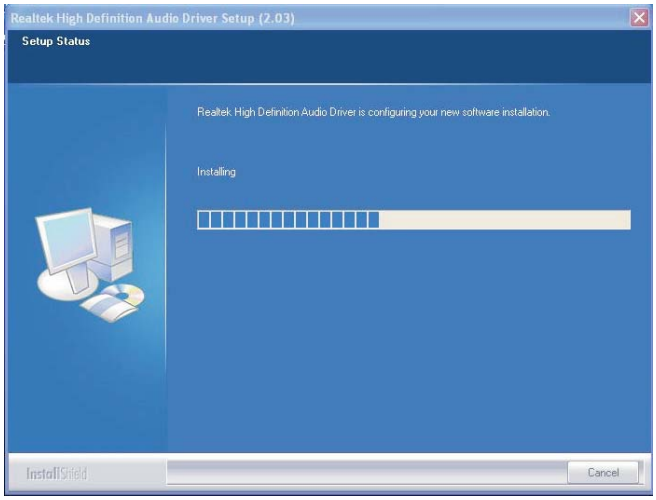
2. Setup is now preparing the installation wizard. Click Next to continue.



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

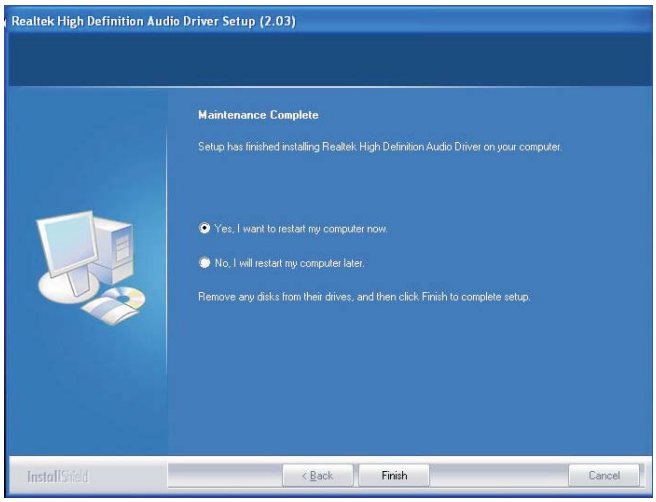


4. Setup is now configuring the new software installation.



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

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



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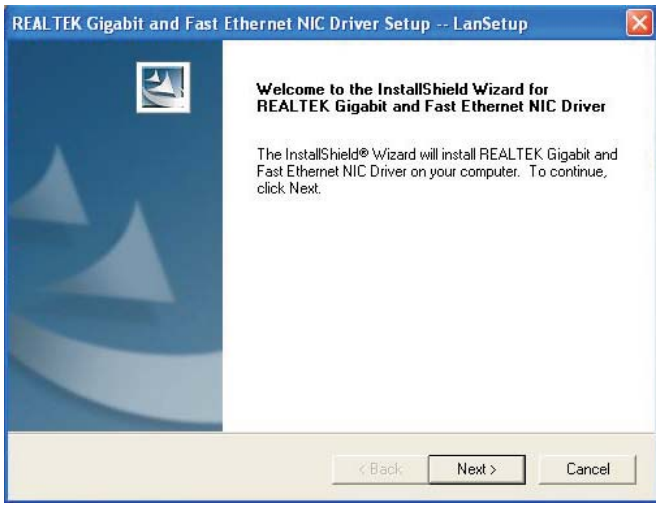
Realtek LAN Drivers

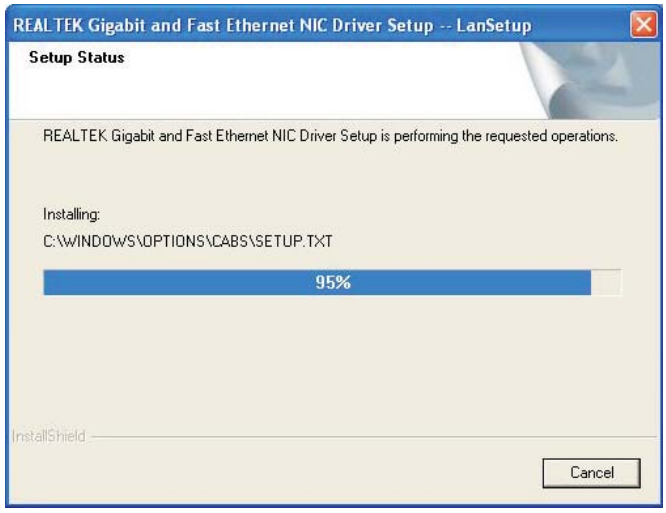
On the left side of the autorun screen, click the "NETWORK" icon.

1. Click "Realtek LAN Driver" on the main menu.

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



3. Setup is intalling and configuring the new software installation.



4. Click Finish to exit installation.

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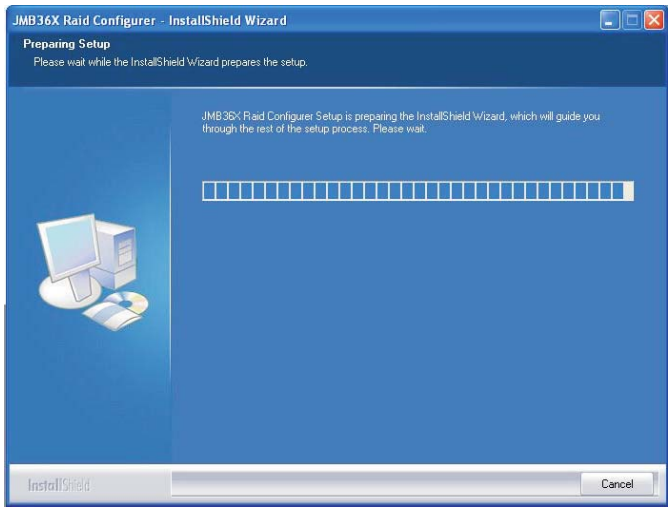
JMicron eSATA Drivers

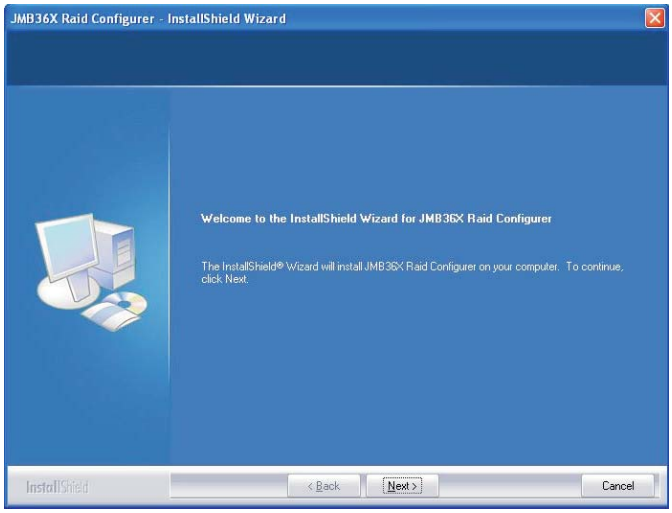
On the left side of the autorun screen, click the "TOOLS" icon.

1. Click "JMicron eSATA Drivers" on the main menu.

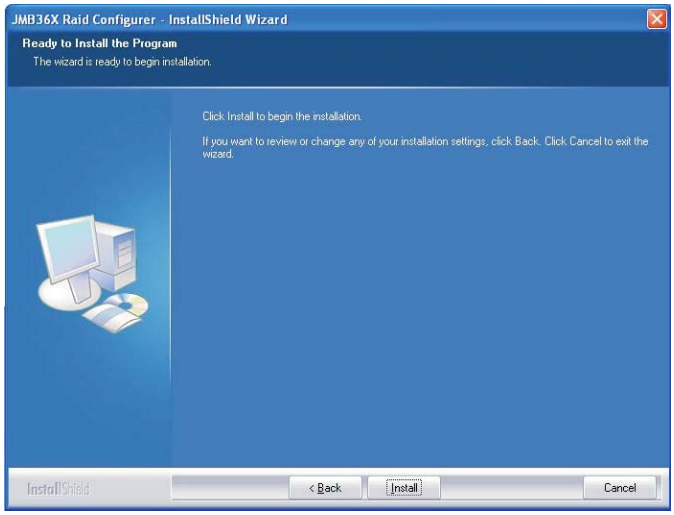
2. Setup is preparing to install the driver.



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

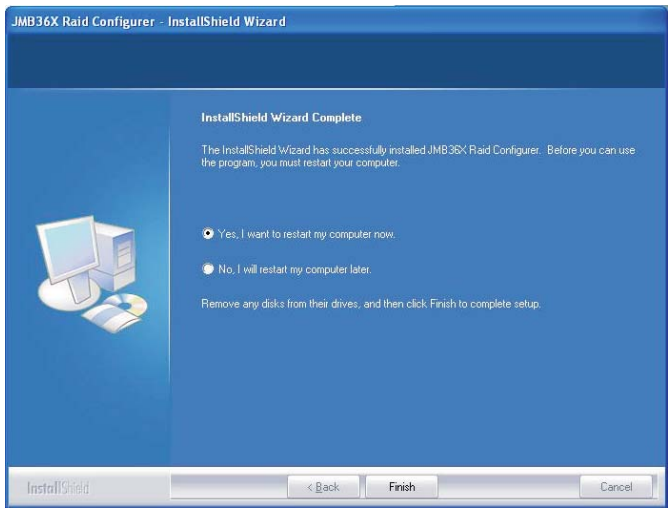


4. Click Install to begin installation.



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

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



Installing the eSATA Driver While in the Process of Installing Windows® XP or Windows® 2000

If you intend to boot from the eSATA drive, you need to install Windows® XP or Windows® 2000 in the drive. The provided floppy diskette includes the eSATA driver required to complete Windows installation in the eSATA drive.

The steps below will instruct you on installing the eSATA driver while in the process of installing Windows® XP or Windows® 2000.

1. Start Windows Setup by booting from the installation CD.
2. Press <F6> when prompted at the beginning of Windows setup.
3. Now the following steps are extremely crucial because there is an essential file that must be installed here. Press <S> to select "Specify Additional Device".
4. At this point you will be prompted to insert a floppy disk containing the eSATA driver. Insert the provided driver diskette.
5. Locate for the drive where you inserted the diskette then select the eSATA driver. Press <Enter> to install the driver.
6. If you need to install other devices, please do so at this time otherwise please proceed to the next step.
7. Follow the prompts on the screen to complete installation.
8. After installing the operating system, if in any case necessary, create the hard drives' partition.

ITE Hardware Monitor

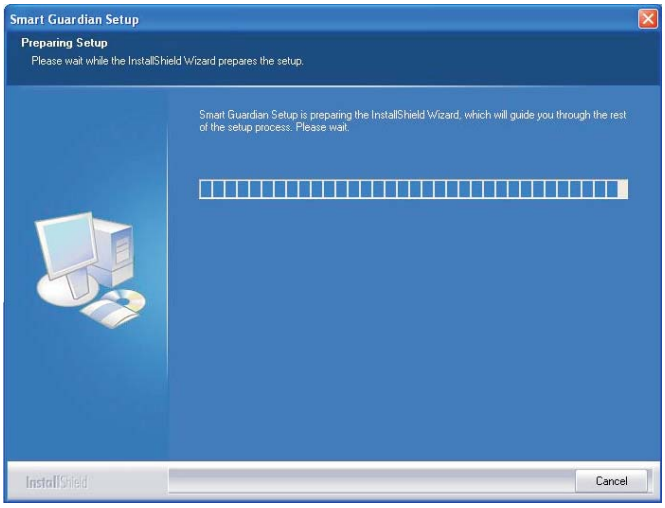
The system board comes with the ITE Hardware Monitor utility. This utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, 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 left side of the autorun screen, click the "TOOLS" icon.

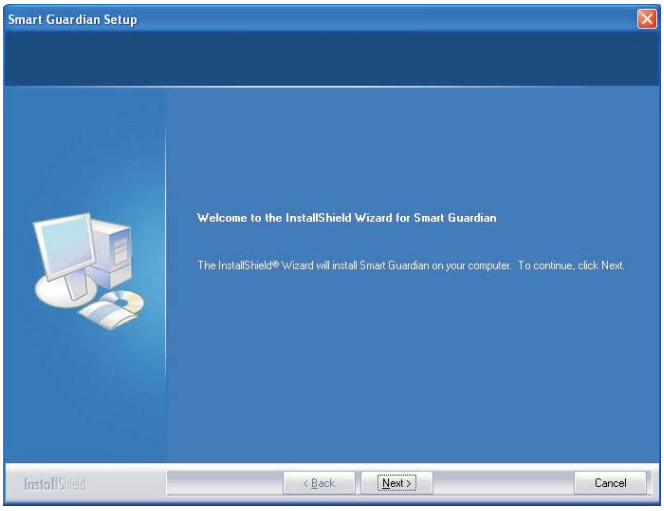
1. Click "ITE Hardware Monitor" on the main menu.

2. Setup will prepare the installation wizard.

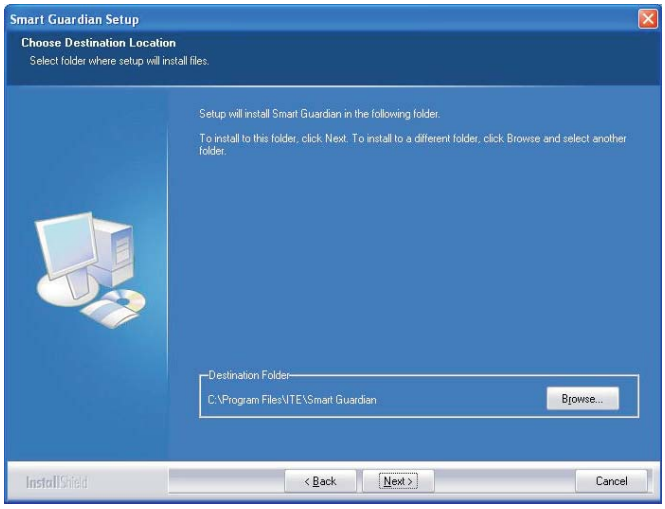
3. Setup is preparing to install the utility.



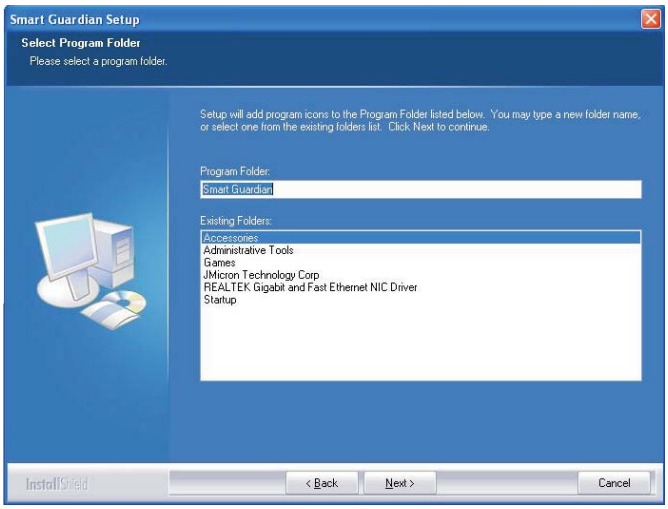
4. You are now ready to install the utility. Click Next.



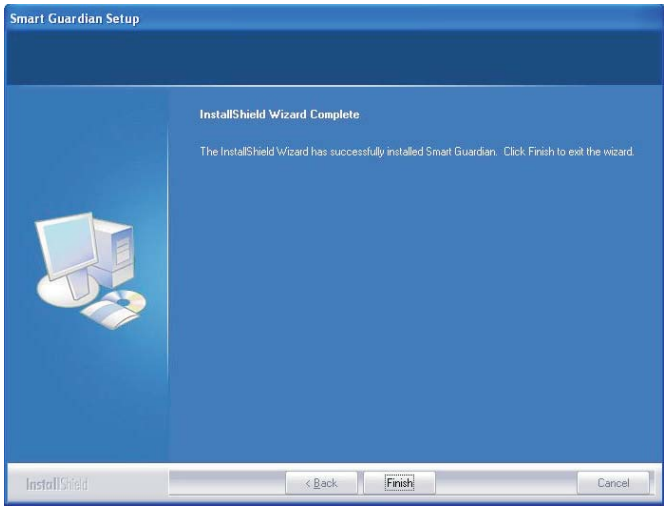
5. Click Next to install to the designated folder or click Browse to select another folder.



6. Click Next to add the program icon to the Program Folder.



7. Click Finish to exit installation.



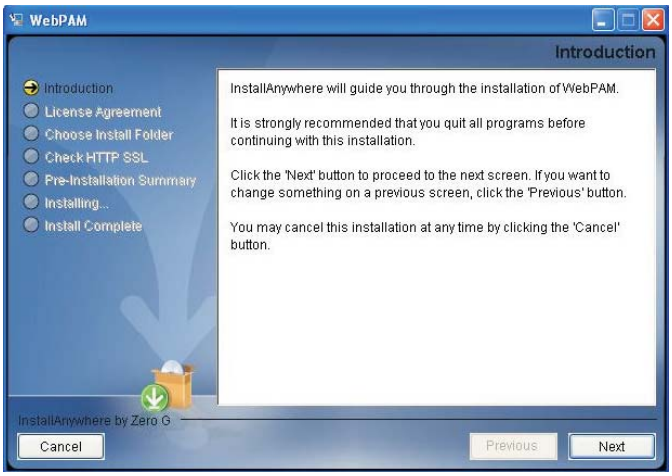
RAID Utility

On the left side of the autorun screen, click the "TOOLS" icon.

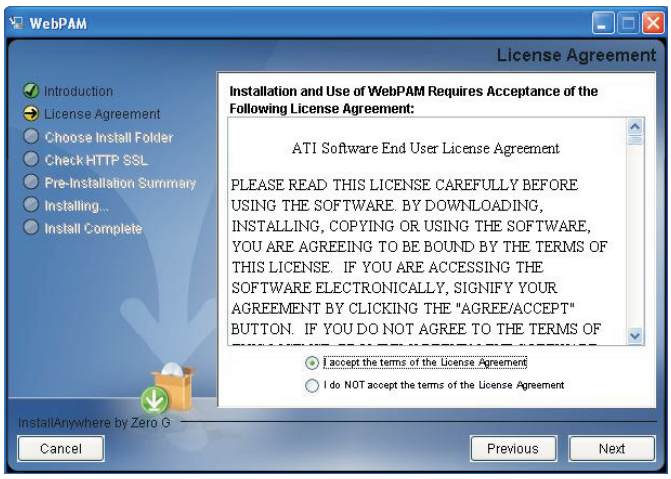
1. Click "RAID Utility" on the main menu.

2. Select the preferred language then click OK.

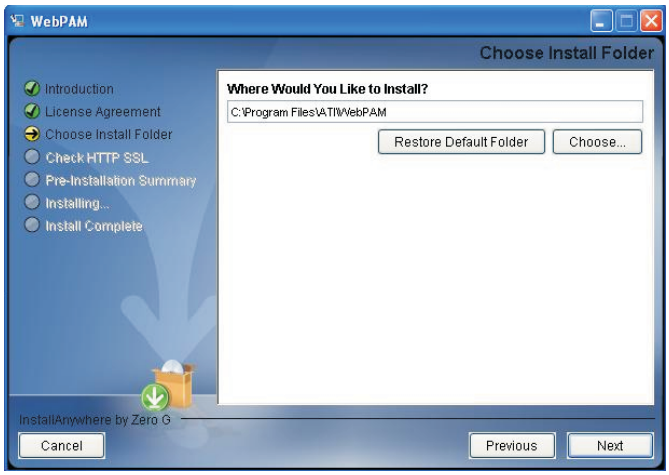
3. Setup is ready to install the utility. Click Next to continue.



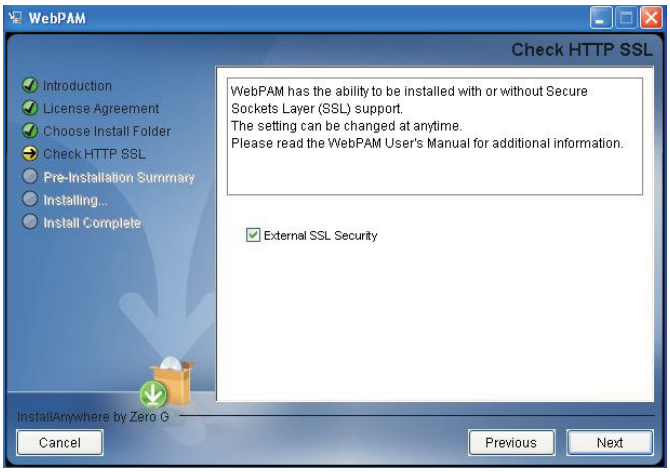
4. Read the license agreement then click "I accept the terms of the license agreement". Click Next.



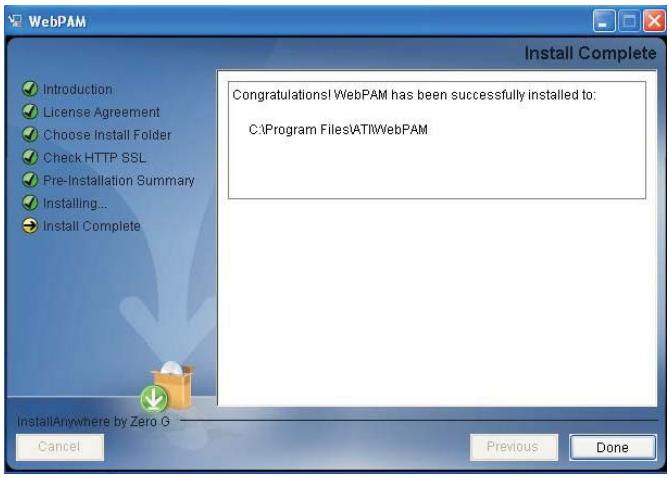
5. Click Next to install to the designated folder or click Choose to select another folder.



6. The utility provides the option of installing SSL. To install, click External SSL Security then click Next.



7. Click Done to exit installation.



USB 2.0 Drivers

Windows® XP

If your Windows® XP CD already includes Service Pack 1, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 1, it is available for download at Microsoft's Windows Update website.

Windows® 2000

If your Windows® 2000 CD already includes Service Pack 4, the USB 2.0 driver will automatically install when you install the operating system. If the CD does not include Service Pack 4, it is available for download at Microsoft's Windows Update website.

Installation Notes

1. "Autorun" ONLY supports the Windows® 2000, Windows NT® 4.0 and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Main Board Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".

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

Chapter 5 - Cool'n'Quiet Technology

Cool'n'Quiet Technology

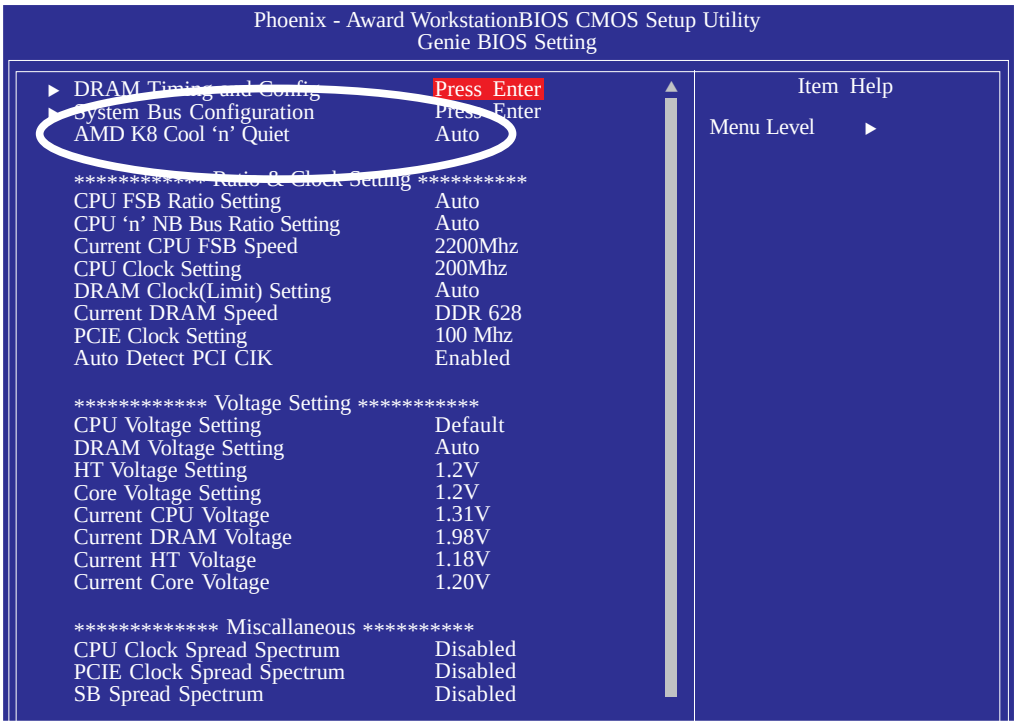
The AMD Cool'n'Quiet™ technology allows the system to detect the CPU's tasks and utilization status. When the CPU's task slows down, the system effectively lowers power consumption by lowering its CPU speed and voltage, subsequently decreasing its noise level.

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

1. Enable Cool'n'Quiet™ in the BIOS.
2. Configure Power Management in Windows.

Step 1: Enable Cool'n'Quiet™ in the BIOS

1. Power-on the system then press <Del> to enter the main menu of the BIOS.
2. Select the Genie BIOS Setting submenu then press <Enter>.
3. Set the "AMD K8 Cool 'n' Quiet" field to Auto.



4. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.

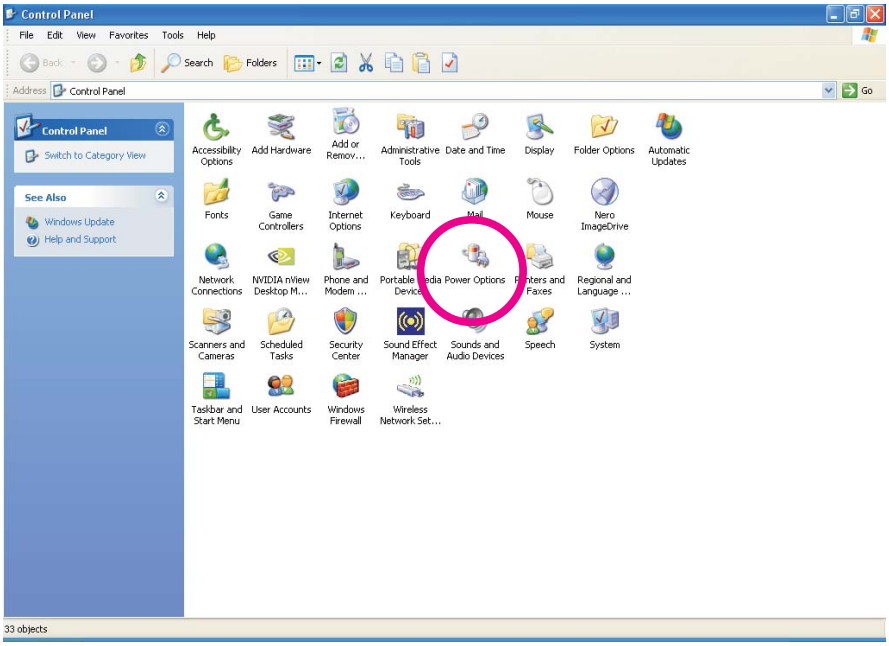
5. Type <Y> and press <Enter>.

6. Reboot the system.

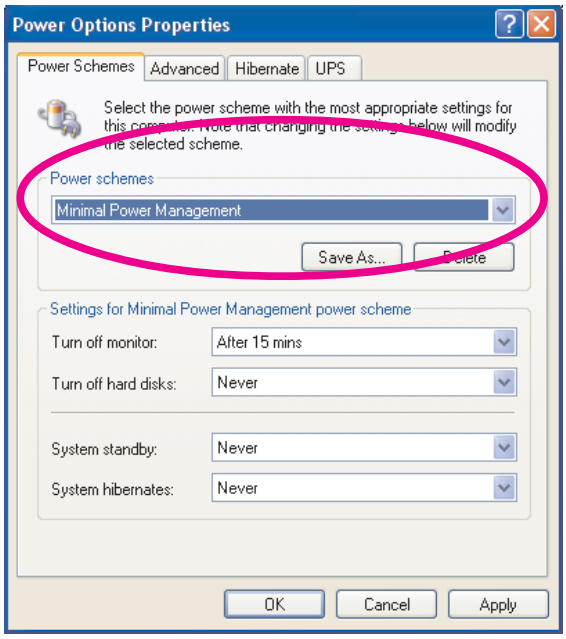
Step 2: Configure Power Management in Windows

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.



Chapter 6 - RAID

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

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.

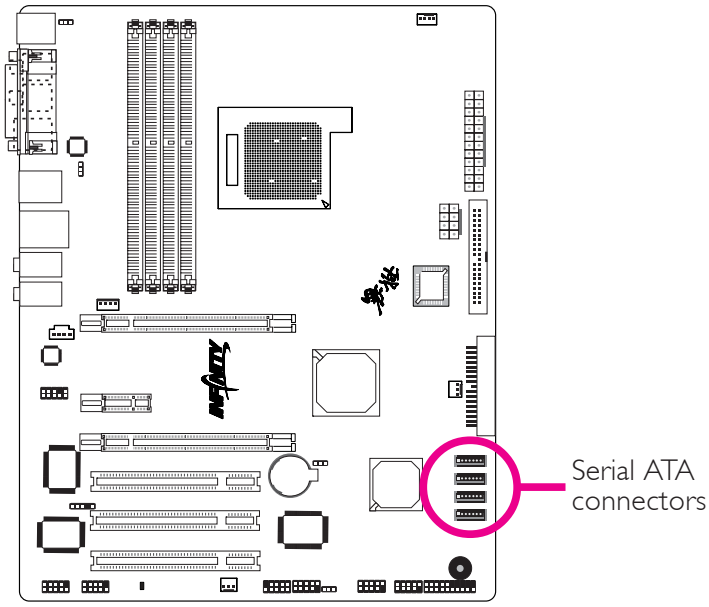
6 RAID

Settings

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

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

Step 1: Connect Serial ATA Drives



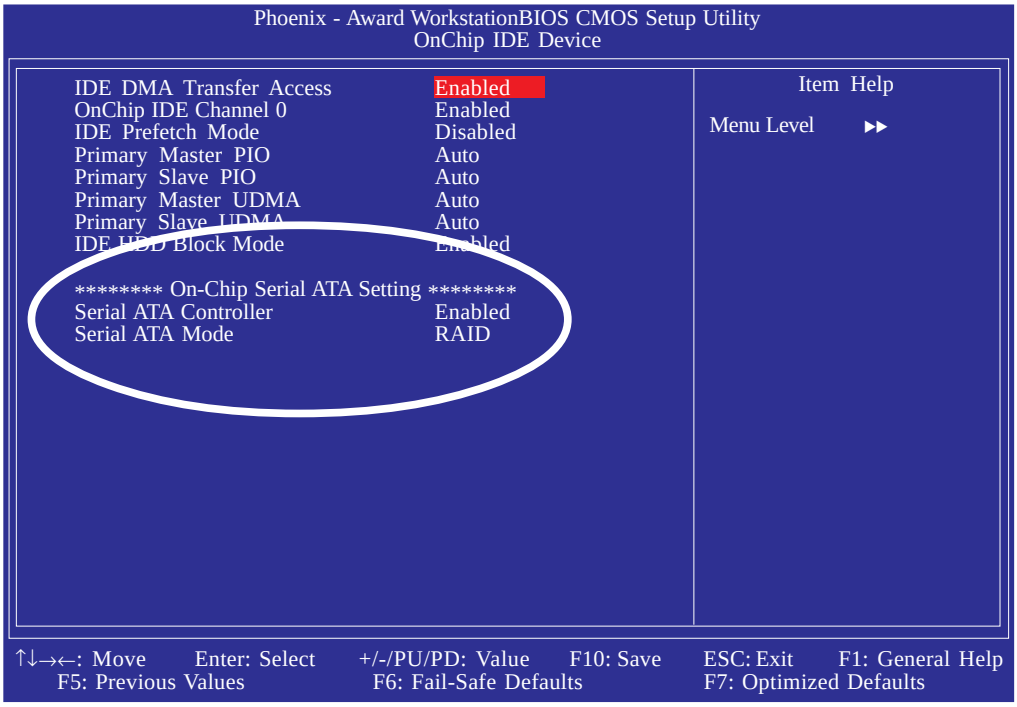
Refer to chapter 2 for details on connecting the Serial ATA drives.

Important:

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

Step 2: Configure Serial ATA in the Award BIOS

1. Power-on the system then press <Del> to enter the main menu of the Award BIOS.
2. Select the Integrated Peripherals submenu - OnChip IDE Device section of the BIOS.
3. Configure the RAID function of the Serial ATA drives.



4. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" then press <Enter>.
5. Type <Y> and press <Enter>.
6. Reboot the system.

Step 3: Configure RAID in the RAID BIOS

When the system powers-up and all drives have been detected, the ATI 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

If you are in the process of installing Windows® XP or Windows® 2000 on RAID configured drives, you will need the provided RAID driver floppy diskette. If you are installing the driver on existing Windows® XP or Windows® 2000, install the corresponding RAID driver that is in the provided CD.

Installing RAID Driver While in the Process of Installing Windows® XP or Windows® 2000

The steps below will instruct you on installing the RAID driver while in the process of installing Windows® XP or Windows® 2000 on RAID configured drives.

1. Start Windows Setup by booting from the installation CD.
2. Press <F6> when prompted at the beginning of Windows setup.
3. Now the following steps are extremely crucial because there is an essential file that must be installed here. Press <S> to select "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 the ATI controller. Press <Enter> to install the driver.
6. If you need to install other devices, please do so at this time otherwise please proceed to the next step.

7. Follow the prompts on the screen to complete installation.

8. After installing the operating system, if in any case necessary, create the hard drives' partition.

Chapter 7 - ATI CrossFire Technology

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

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.

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.

Graphics Cards Requirements

1. One Radeon® X850 / Radeon® X800 CrossFire Edition graphics card.
2. One standard PCI Express Radeon® X850 or Radeon® X800 graphics card.

   The Radeon® X850 CrossFire Edition card works with any standard PCI Express Radeon X850 graphics card (Radeon X850 PRO, Radeon X850 XT or Radeon X850 XT Platinum Edition) from ATI or any of its partners including cards previously sold.

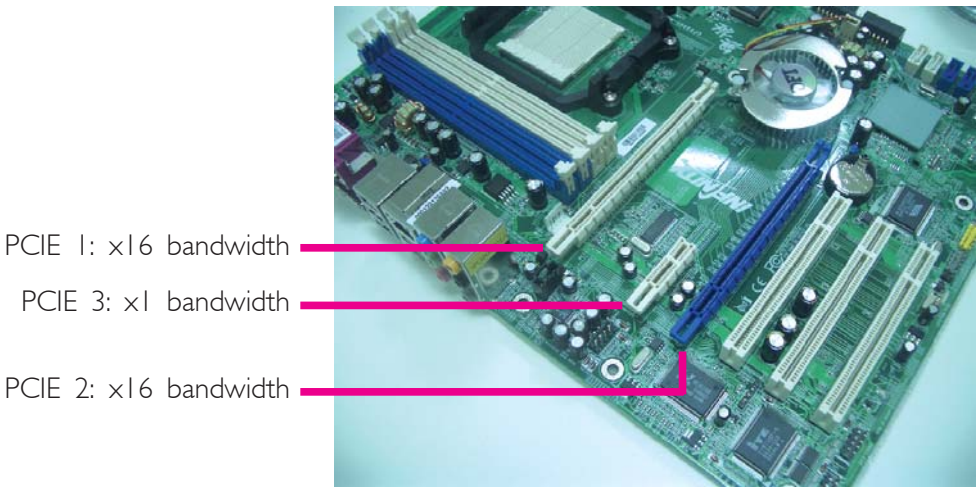
   The Radeon® X800 CrossFire Edition card works with any standard PCI Express Radeon X800 graphics card (Radeon X800, Radeon X800 PRO, Radeon X800 XL, Radeon X800 XT or Radeon X800 XT Platinum Edition) from ATI or any of its partners.

Note:
If the clock speed of the CrossFire Edition graphics card and standard PCI Express graphics card are different, both cards will operate at their individual clock speeds.

The PCI Express Slots

CrossFire Mode and/or Normal Mode

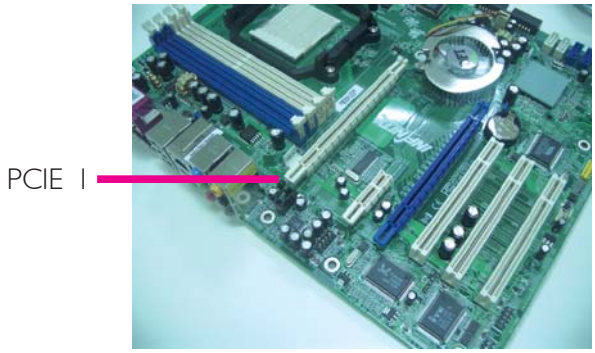
The illustration below shows the bandwidth of the PCI Express slots.



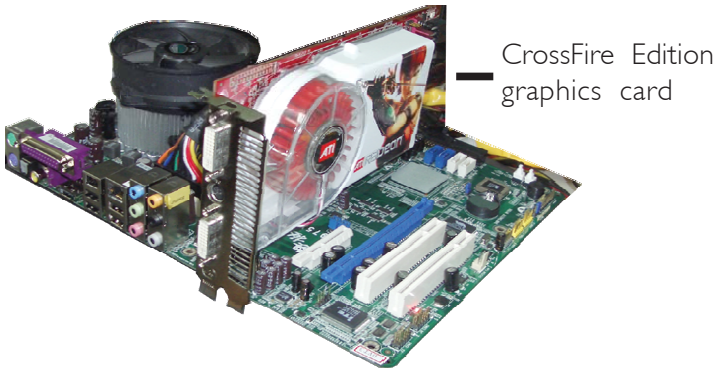
Note:
The illustrations on the following pages are for reference only therefore the board may not appear similar to the actual one. The key purpose of the illustrations is to show how CrossFire is configured using 2 graphics cards.

CrossFire Setup

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 slot then remove the bracket.

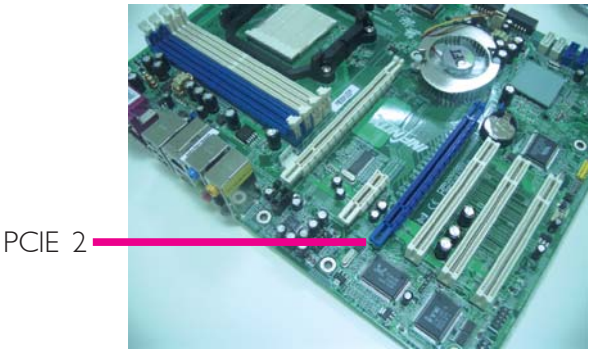


3. Align the CrossFire Edition graphics card (Master) above the PCIE 1 slot then press it down firmly until it is completely seated in the slot.



4. Secure the graphics card with the screw you removed in step 2.

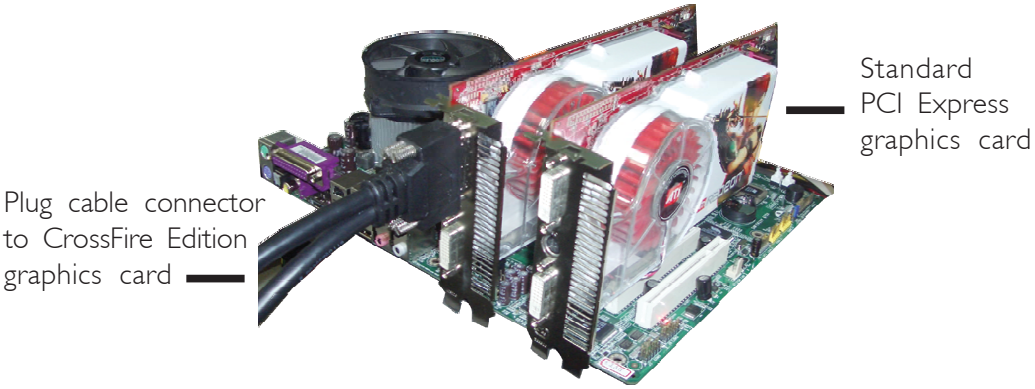
5. Remove the screw of the bracket that is opposite the PCIE 2 slot then remove the bracket.



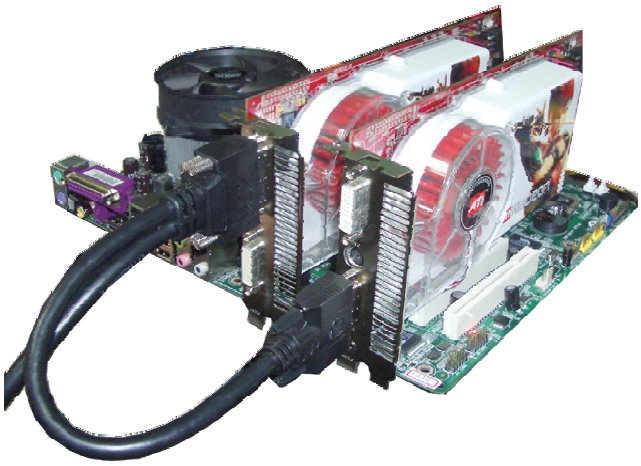
6. Align the standard PCI Express graphics card (Slave) above the PCIE 2 slot then press it down firmly until it is completely seated in the slot.

7. Secure the graphics card with the screw you removed in step 5.

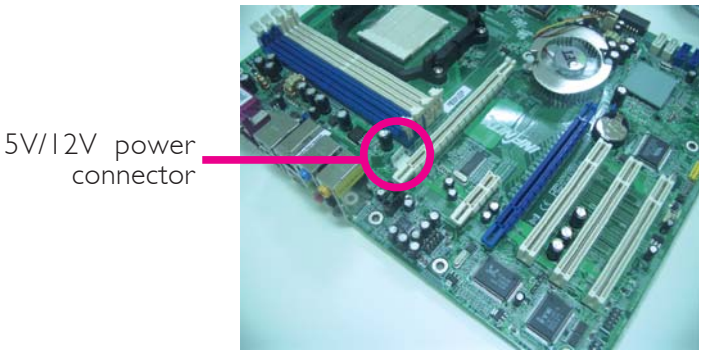
8. The CrossFire Edition graphics card comes with a cable. Plug the cable connector to a connector on the CrossFire Edition graphics card as shown below.



9. Now plug the other cable connector to the DVI-I connector on the standard PCI Express graphics card then the last cable connector to a display device.



10. Connect a 4-pin FDD-type power cable from the power supply unit to the 5V/12V power connector that is on the system board.



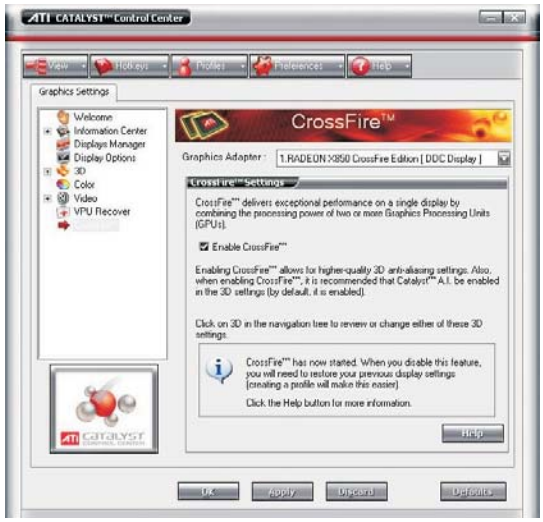
11. Install the graphics cards' drivers then restart the system for the drivers to take effect.

12. When you enter the operating system, you will notice the ATI Catalyst Control Center icon added onto your desktop. Double-click this icon.

13. Click the View tab then select Custom View.

14. In the Graphics Settings menu (left side of screen), click CrossFire. The CrossFire Settings screen will appear on the main window. Click "Enable CrossFire" then click "Yes" to continue.

15. The screen on the right indicates that CrossFire has been enabled. Make sure to restart the PC for CrossFire to take effect.



Appendix A - 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 occured 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 occured. 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-FFFFFH is bad.

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

Appendix B - Troubleshooting

Troubleshooting Checklist

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

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

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

Monitor/Display

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

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

The picture seems to be constantly moving.

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

The screen seems to be constantly wavering.

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

Power Supply

When the computer is turned on, nothing happens.

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

Floppy Drive

The computer cannot access the floppy drive.

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

Hard Drive

Hard disk failure.

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

Excessively long formatting period.

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

Parallel Port

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

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

Serial Port

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

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.

3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

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

System Board

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