RS482

System Board
User's Manual

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FCC and DOC Statement on Class B

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

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

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

2. Shielded interface cables must be used in order to comply with the emission limits.

Table of Contents

About this Manual

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

Warranty

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

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

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

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

Static Electricity Precautions

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

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

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

Safety Measures

To avoid damage to the system:
• Use the correct AC input voltage range.

To reduce the risk of electric shock:
• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
• Danger of explosion if battery incorrectly replaced.
• Replace only with the same or equivalent type recommend by the manufacturer.
• Dispose of used batteries according to 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 floppy cable
- ☑ Two Serial ATA data cables
- ☑ One Serial ATA power cable
- ☑ S-Video to HDTV output cable
- ☑ S-Video to Composite TV output cable
- ☑ One ATI SB450 RAID driver 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 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ Socket 939
Front Side Bus	2000MT/s HyperTransport interface
Chipset	ATI® chipset - North bridge: ATI Radeon® Xpress 200 RS482 - South bridge: ATI® SB450
System Memory	Four 184-pin DDR SDRAM DIMM sockets Supports dual channel (128-bit wide) memory interface Supports up to 4GB system memory Supports PC2100 (DDR266), PC2700 (DDR333) and PC3200 (DDR400) DDR SDRAM DIMM Supports x8/x16 ECC/non-ECC unbuffered DIMMs, 32Mb (using 64Mbx16 DRAMs) to 1Gb DDR devices
Expansion Slots	1 PCI Express x16 slot 1 PCI Express x1 slot 2 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 Wake-On-Ring RTC timer to power-on the system AC power failure recovery
Hardware Monitor	Monitors CPU/system temperature Monitors 5V/12V/3.3V/5VSB/Vbat/Vcore/Vdimm/Vchip voltages Monitors the speed of the cooling fans CPU Overheat Protection function monitors CPU temperature during system boot-up
Graphics	Integrated ATI Radeon® X300 GPU DirectX 9.0 graphics core Interfaces: - VGA to connect VGA monitor - DVI-D to connect devices that support DVI-D - TV-out to connect a TV with S-Video output, Composite video output or HDTV (Y/Pb/Pr component) video output Dual display using DVI-D + TV-out or DVI-D + VGA interfaces - devices connected to these interfaces can be displayed simultaneously SurroundView™ allows up to 4 independent displays by adding a graphics card (only ATI graphics card supported)

Audio	Realtek ALC850 8-channel AC'97 audio CODEC True stereo line level outputs S/PDIF-in/out interface
LAN	Realtek RTL8110SB Gigabit PCI LAN Fully compliant to IEEE 802.3 (10BASE-T), 802.3u (100BASE-TX) and 802.3ab (1000BASE-T) standards
IDE	Two IDE connectors support up to four UltraDMA 133Mbps hard drives
Serial ATA with RAID	Supports four Serial ATA ports SATA speed up to 1.5Gb/s RAID 0 and RAID 1
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 optical S/PDIF 1 TV-out port 1 VGA monitor port 1 DVI-D port 1 IEEE 1394 port 1 RJ45 LAN port 4 USB 2.0/1.1 ports Center/subwoofer, rear R/L and side R/L jacks Line-in, line-out (front R/L) and mic-in jacks
Internal I/O	2 connectors for 4 additional external USB 2.0/1.1 ports 1 connector for 1 external COM port 1 connector for 1 external IEEE 1394 port 1 front audio connector for external line-out and mic-in jacks 1 CD-in internal audio connector 1 coaxial S/PDIF connector 1 IrDA connector 4 Serial ATA connectors 2 IDE connectors 1 floppy connector 1 24-pin ATX main power connector 1 4-pin ATX 12V power connector 1 front panel connector 3 fan connectors
PCB	microATX form factor 24.4cm (9.6") x 24.4cm (9.6")

Features

The system board supports the AMD Athlon™ 64 processor. 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.

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.

VGA ON BOARD

The integrated ATI Radeon® X300 GPU (Graphics Processing Unit) is a graphics processor built for DirectX™ 9 and OpenGL™ technology. It supports dual display by using either DVI-D + TV-out or DVI-D + VGA interfaces. The 3D graphics feature supports resolution up to 2536x2536@32bpp.

SurroundView™

The SurroundView™ technology supports up to 4 independent displays by adding a PCI Express graphics card. Note: the system board supports ATI graphics card only.

DVI

The DVI-D (Digital Visual Interface) port is used to connect a device that supports DVI-D such as digital LCD monitor. DVI is an interface that converts analog signals into digital signals. Data is transmitted using the TMDS (Transition Minimized Differential Signaling) protocol, providing a digital signal from the PC's graphics subsystem to the display.

TV-Out

The TV-out port is used to connect a TV that comes with S-Video output, Composite video output or Pr/Y/Pb component HDTV video output. S-Video is a technology for transmitting video signals over a cable by dividing the video information into two separate signals: color (chrominance) and brightness (luminance). These signals produce sharper images than composite video where the video information is transmitted as a single signal over one wire.

CPU Overheat Protection

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.

Double Data Rate SDRAM (DDR SDRAM) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore doubling the speed of data transfer.

The onboard Realtek ALC850 which is an AC'97 compatible 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. ALC850 also supports S/PDIF input and 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.

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. ATI® SB450 supports 4 Serial ATA ports with speed of up to 1.5Gb/s. Serial ATA improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The system board supports RAID 0 and RAID 1.

The Realtek RTL8110SB Gigabit Phy supports up to 1Gbps.

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.

2.0 USB

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

WAKE-ON-RING

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

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

WAKE-ON-LAN

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

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

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

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

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

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

ACPI 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.

Français

Caractéristiques et Spécifications

Processeur	AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ Socket 939 Interface HyperTransport 2000MT/s
Chipset	ATI® chipset - Pont nord: ATI Radeon® Xpress 200 RS482 - Pont sud: ATI® SB450
Mémoire Système	4 sockets DDR SDRAM DIMM 184 broches Supporte l'interface de mémoire deux canaux (128-bit) Supporte jusqu'à 4GB de mémoire Supporte DDR SDRAM DIMM PC2100 (DDR266), PC2700 (DDR333) et PC3200 (DDR400) Supporte x8/x16, ECC/non-ECC DIMM non-tamponnés, DDR de 32Mb (sur la base de 64Mbx16 DRAM) à 1Gb
Logements d'Extension	1 slot PCI Express x16 1 slot PCI Express x1 2 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 Réveil Par Le Réseau 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 Gère l'alarme de voltage et d'échec de 5V/12V/3.3V/5VSB/Vbat/Vcore/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 ALC850 8-canaux audio CODEC Sorties de niveau de lignes stéréo vraies Interface entrée/sortie S/PDIF

Graphiques	Processeur integré ATI Radeon® X300 GPU Le coeur graphique DirectX 9.0 Interfaces: - VGA pour la connection du moniteur VGA - DVI-D pour la connection des installations qui supportent DVI-D - La TV-sortie pour la connection des télés avec la sortie S-Video, la sortie composite ou la sortie HDTV (componentielle Y/Pb/Pr) Ecran de visualisation binaire avec utilisation de DVI-D + la TV-sortie ou DVI-D + VGA interfaces - des installations connectées aux interfaces données peuvent travailler simultanément La fonction SurroundView™ permet de connecter 4 moniteurs independents à la carte vidéo (seulement ATI)
LAN	Realtek RTL8110SB Gigabit PCI 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 avec RAID	Supporte 4 interface Serial ATA SATA vitesse jusqu'à 1.5Gb/s RAID 0 et RAID 1
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 optique S/PDIF 1 port de S-Video 1 port de DB-15 CRT VGA 1 port de DVI-D 1 port IEEE 1394 1 port RJ45 LAN 4 ports USB 2.0/1.1 Center/subwoofer, rear R/L et side R/L prises audio Line-in, line-out (front R/L) et mic-in prises audio
Interne I/O	2 connecteurs pour 4 ports USB 2.0 supplémentaires 1 connecteur pour 1 série 1 connecteur pour 1 IEEE 1394 1 connecteur audio de l'avant pour la sortie ligne/l'entrée micro 1 connecteur CD-in audio internes 1 S/PDIF coaxial 1 connecteur IrDA 4 connecteurs Serial ATA 2 connecteurs IDE 1 connecteur de FDD 1 connecteur d'alimentation ATX 24-pin 1 connecteur d'alimentation 12V ATX 4-pin 1 connecteur devant panneau 3 connecteurs de ventilateurs
PCB	Facteur de forme de microATX 24.4cm (9.6") x 24.4cm (9.6")

Deutsch

Leistungsmerkmale und Technische Daten

Prozessor	AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ Socket 939 Interface HyperTransport 2000MT/s
Chipset	ATI® chipset - Nordbrücke: ATI Radeon® Xpress 200 RS482 - Südbrücke: ATI® SB450
Systemspeicher	4 DDR-SDRAM-DIMM- Fassungen mit 184poligem Anschlußstecker Unterhält 128-bit – Speiher mit den zwei Kanälen Unterhält bis zum 4GB-Systemspeicher Unterstützt DDR SDRAM DIMM PC2100 (DDR266), PC2700 (DDR333) und PC3200 (DDR400) Unterhält nur x8/x16 ECC/non-ECC ohne Dämpfer DIMMs, 32Mb (unter Verwendung von 64Mbx16 DRAM's) bis zu 1Gb DDR Geräte
Expansion Schlitz	1 PCI Express x16-Einbauplätzen 1 PCI Express x1-Einbauplätzen 2 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 bei Klingeln 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 sowie Warnsignal bei Überhitzung Überwachung der Spannungen des 5V/12V/3.3V/5VSB/Vbat/Vcore/Vdimm/Vchip Überwachung der Geschwindigkeit des Ventilators Prozessor-Shutz - Die Ausschaltung bei der Überhitzung – die automatische Ausschaltung des Computers bei der Überhitzung
Audio	Realtek ALC850 8-Kanal-audio-CODEC Naturgetreue Stereo-Leitungspegel-Ausgabe S/PDIF-In/Aus-Schnittstelle

Grafik	Integrierte ATI Radeon® X300 GPU DirectX 9.0 Grafikkern Schnittstellen: - VGA zum Anschluss eines VGA Bildschirms - DVI-D zum Anschluss von DVI-D-fähigen Geräten - TV-out zum Anschluss an ein Fernsehgerät mit S-Video Output, Composite Video Output oder HDTV Video Output (Y/Pb/Pr component) Dual Displays, die DVI-D + TV-out oder DVI-D + VGA Schnittstellen verwenden - Geräte, die an diese Schnittstellen angeschlossen werden, können simultan angezeigt werden SurroundView™ ermöglicht bis zu 4 unabhängige Displays durch das Hinzufügen einer Grafikkarte (ausschliessliche Unterstützung für ATI Grafikkarten)
LAN	Realtek RTL8110SB Gigabit PCI 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 mit RAID	Unterstützt 4 Serial ATA-porte 1.5Gb/s SATA-Geschwindigkeit RAID 0 und RAID 1
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 S/PDIF optischen-Anschlüsse 1 S-Video-Anschlüsse 1 CRT VGA DB-15-Anschlüsse 1 DVI-D-Anschlüsse 1 IEEE 1394-Anschlüsse 1 RJ45 LAN-Anschlüsse 4 USB 2.0/1.1-Anschlüsse Center/subwoofer, rear R/L und side R/LAudio-Anschlußbuchsen Line-in, line-out (front R/L) und mic-in Audio-Anschlußbuchsen
Internes I/O	2 Anschlußfassung für 4 zusätzliche externe USB 2.0-Anschlüsse 1 Anschluß für eine externe serieller Schnittstelle 1 Anschluß für eine externe IEEE 1394 Schnittstelle 1 Frontaudioanschluß für die externe Ausgangsleitung und den Mikrofoneingang 1 interne Audioanschlüsse (CD-in) und 1 coaxial S/PDIF-Anschluß 1 IrDA-Anschluß 4 Serial-ATA-Anschlüsse 2 IDE-Anschlüsse und 1 Floppy-Anschlüsse 1 Anschlußstecker für das ATX-Netzgerät 24-pin 1 Anschlußstecker für das 12V ATX-Netzgerät 4-pin 1 Frontabdeckung Stecker 3-ventilator-Anschlüsse
PCB	microATX Formfaktor 24.4cm (9.6") x 24.4cm (9.6")

Español

Características y Especificaciones

Procesador	AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ Socket 939 Interface de HyperTransport 2000MT/s
Chipset	ATI® chipset - Puente norte: ATI Radeon® Xpress 200 RS482 - Puente sur: ATI® SB450
Memoria de Sistema	4 zocalos 184-pin DDR SDRAM DIMM Soporta memoria de dos canales (128-bit) Soporta hasta 4 GB de memoria sistémica Soporta PC2100 (DDR266), PC2700 (DDR333) y PC3200 (DDR400) Soporta sólo x8/x16 ECC/non-ECC ungepuffert DIMM, dispositivos de 32Mb (DRAM 64Mbx16) a 1Gb DDR
Ranuras de Expansión	1 slot PCI Express x16 1 slot PCI Express x1 2 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-Ring Wake-On-LAN Temporizador de RTC para encender el sistema Recuperación de Fracaso de Energía AC
Monitor del Hardware	Monitores de los CPU/sistema temperaturas y alarma acalorada. Monitores de voltajes de 5V/12V/3.3V/5VSB/Vbat/Vcore/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 ALC850 8-canal audio CODEC Auténtico salidas de nivel de línea estéreo Interfáz de S/PDIF-in/out

Gráficos	GPU ATI Radeon® X300 integrada Gráficos DirectX 9.0 Interfaces: - VGA para la conexión de un monitor VGA - DVI-D para la conexión de monitores compatibles DVI-D - Salida de TV para la conexión a una TV con conector S-Video, vídeo compuesto o vídeo HDTV (componentes Y/Pb/Pr) Pantalla dual: conexión DVI-D + salida de TV o DVI-D + VGA - los dispositivos conectados a estos interfaces pueden ser visualizados de forma simultánea. SurroundView™ permite la utilización de hasta 4 pantallas independientes mediante una tarjeta gráfica adicional (sólo se soportan tarjetas gráficas ATI)
LAN	Realtek RTL8110SB Gigabit PCI 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 con RAID	Soporta 4 interfaz Serial ATA Velocidad de SATA a 1.5Gb/s RAID 0 y RAID 1
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 de S/PDIF óptico 1 puerto de S-Video 1 puerto de CRT VGA DB-15 1 puerto de DVI-D 1 puerto de IEEE 1394 1 puerto de RJ45 LAN 4 puertos de USB 2.0/1.1 Center/subwoofer, rear R/L y side R/L enchufes de audio Line-in, line-out (front R/L) y mic-in enchufes de audio
Conectador Interno	2 conectors para 4 puertos de USB 2.0/1.1 externo adicional 1 conector para un puerto de serie 1 conector para un puerto de IEEE 1394 1 conectador audio delantero para la salida extrema de linea y el micro 1 conector de CD-in audio interno 1 S/PDIF coaxial 1 conector de IrDA 4 conectores de Serial ATA 2 conector de IDE y 1 conector de FDD 1 conectore de 24-pin fuente de alimentación de ATX 1 conectore de 12V 4-pin fuente de alimentación de ATX 1 conector de conectador del panel delantero 3 conectores de abanicos
PCB	microATX forme el factor 24.4cm (9.6") x 24.4cm (9.6")

Русский язык

Характеристики и свойства

Процессор	AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ гнездо 939 Интерфейс системной шины 2000MT/s
Чипсет	ATI® Чипсет - Северный мост: ATI Radeon® Xpress 200 RS482 - Южный мост: ATI® SB450
Оперативная Память	4 184-pin DDR SDRAM DIMM Поддерживает двухканальный (128-битного) интерфейс Поддерживает до 4ГБ системной памяти Поддерживает PC2100 (DDR266), PC2700 (DDR333) и PC3200 (DDR400) DDR SDRAM DIMM Поддерживает только x8/x16 ECC/non-ECC небуфф DIMM, DDR от 32Мб (на базе 64Мбх16 DRAM) до 1Гб
Слоты	1 PCI Express x16 слотов 1 PCI Express x1 слотов 2 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 Входящий Звонок Активизация На Сетевое Событие RTC Таймер для Включения Системы Скачки Напряжения
монитор оборудования	Мониторинг температуры процессора/системы Мониторинг напряжений 5V/12V/3.3V/5VSB/Vbat/Vcore/Vdimm/Vchip Мониторинг скорости вращения вентилятора Защита процессора - Выключение при перегреве – автоматическое выключение компьютера при перегреве
тональнозвуково	Realtek ALC850 8-канал CODEC Настоящий линейный стерео выход интерфейса S/PDIF-in и S/PDIF-out

Графика	Встроенный процессор ATI Radeon® X300 Графическое ядро DirectX 9.0 Интерфейсы: - VGA для подключения VGA монитора - DVI-D для подключения устройств DVI-D - TV-выход для подключения телевизоров с S-Video выходом, композитным выходом или выходом HDTV (компонентным Y/Pb/Pr) Двойной экран с использованием DVI-D + TV-выхода или DVI-D + VGA интерфейсов - устройства, подключенные к данным интерфейсам могут работать одновременно Функция SurroundView™ позволяет подключить к видео карте (только ATI) до 4-х независимых мониторов
LAN	Realtek RTL8110SB Gigabit PCI 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 с RAID	Поддерживает 4 Serial ATA порта SATA скорость up к 1.5Gb/s RAID 0 и RAID 1
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 S/PDIF оптического порт 1 S-Video порта 1 CRT VGA порта 1 DVI-D порта 1 IEEE 1394 порт 1 RJ45 LAN порт 4 USB 2.0/1.1 порта Center/subwoofer, rear R/L и side R/L гнезда для звука Mic-in, line-in и line-out гнезда для звука
внутренне I/O	2 разъем для 4-х дополнительных внешних USB 2.0 портов 1 разъем для внешнего внешнего порта 1 разъем для внешнего IEEE 1394 порта 1 передний аудио разъем для внешнего линейного выхода и микрофона 1 внутренних звуковых разъема (CD-in) 1 coaxial S/PDIF разъем 1 разъем для интерфейса IrDA и 4 Serial ATA разъема 2 IDE разъема и 1 разъем FDD 1 разъема питания ATX 24-pin и 1 12V ATX 4-pin 1 Фронт панель разъем 3 Разъемы для вентилятора
PCB	фактор формы microATX 24.4cm (9.6") x 24.4cm (9.6")

日本語

プロセッサ	AMD® Athlon™ 64 X2 / Athlon 64 FX / Athlon™ 64 / Sempron™ ソケット939
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®` ップセット -ノースブリッジ: ATI Radeon® Xpress 200 RS482 -サウスブリッジ: ATI® SB450
システムメモリ	184ピンDDR SDRAM DIMMソケット x 4 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 PC2100（DDR266）、PC2700（DDR333）およびPC3200（DDR400）DDR SDRAM DIMM対応 x8/x16 ECC/非ECC アンバッファードDIMM、32Mb（64Mbx16DRAM使用）～1Gb DDRデバイス対応
拡張スロット	PCI Express x16 用スロット x 1 PCI Express x1 用スロット x 1 PCIスロット x 2
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主導電源管理 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） ウェイクオンリング（Wake-On-Ring） システム電源オン用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/システム温度のモニタリング 5V/12V/3.3V/5VSB/Vbat/Vcore/Vdimm/Vエップ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
グラフィックス	統合ATI Radeon® X300 GPU DirectX 9.0グラフィックコア インタフェース: - VGA（VGAモニタに接続） - DVI-D（DVI-D対応デバイスに接続） - TV出力（S-Video出力、コンポジットビデオ出力またはY/Pb/PrコンポーネントHDTVビデオ出力を備えたテレビに接続 DVI-D + TV出力またはDVI-D + VGAインタフェースによるデュアルディスプレイ - 3 つのインタフェースに接続されたデバイスの同時表示が可能 SurroundView™を使えば、グラフィックカード（ATIグラフィックカードのみ対応）を追加して最大4 台のディスプレイに表示可能
オーディオ	Realtek ALC850 8チャネル AC'97 オーディオCODEC トゥルー・ステレオ・ラインレベル出力 S/PDIF-入力/出力インターフェース

LAN	Realtek RTL8110SB ギガビットPCI LAN IEEE 802.3 (10BASE-T)、802.3u (100BASE-TX)および 802.3ab (1000BASE-T)基準に完全準拠
IDE	2つのIDEコネクタにより最大4台のUltraDMA 133Mbpsハードドライブと接続可能
シリアルATA （SATA）	4つのSATAポートをサポート SATA速度は最大1.5Gb/s RAID 0 および RAID 1
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 光学S/PDIF x 1 S-Video TV出力ポート x 1 CRT VGAモニタ用ポート x 1 DVI-D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 センタ/サブウーファ、リアR/LおよびサイドR/L端子 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
内部I/O	4ポート外部USB 2.0/1.1ポート用コネクタ x 2 1つの外部COMポート用コネクタ x 1 外部IEEE 1394ポート用コネクタ x 1 外部ライン出力およびマイク入力端子用前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 同軸S/PDIFコネクタ x 1 IrDAコネクタ x 1 SATAコネクタ x 4 IDEコネクタ x 2 フロッピーコネクタ x 1 24ピンATX主電源コネクタ x 1 4ピンATX12V電源コネクタ x 1 フロントパネルコネクタ x 1 ファンコネクタ x 3
PCB	microATX フォームファクタ 24.4cm x 24.4cm

Chapter 2 - Hardware Installation

System Board Layout
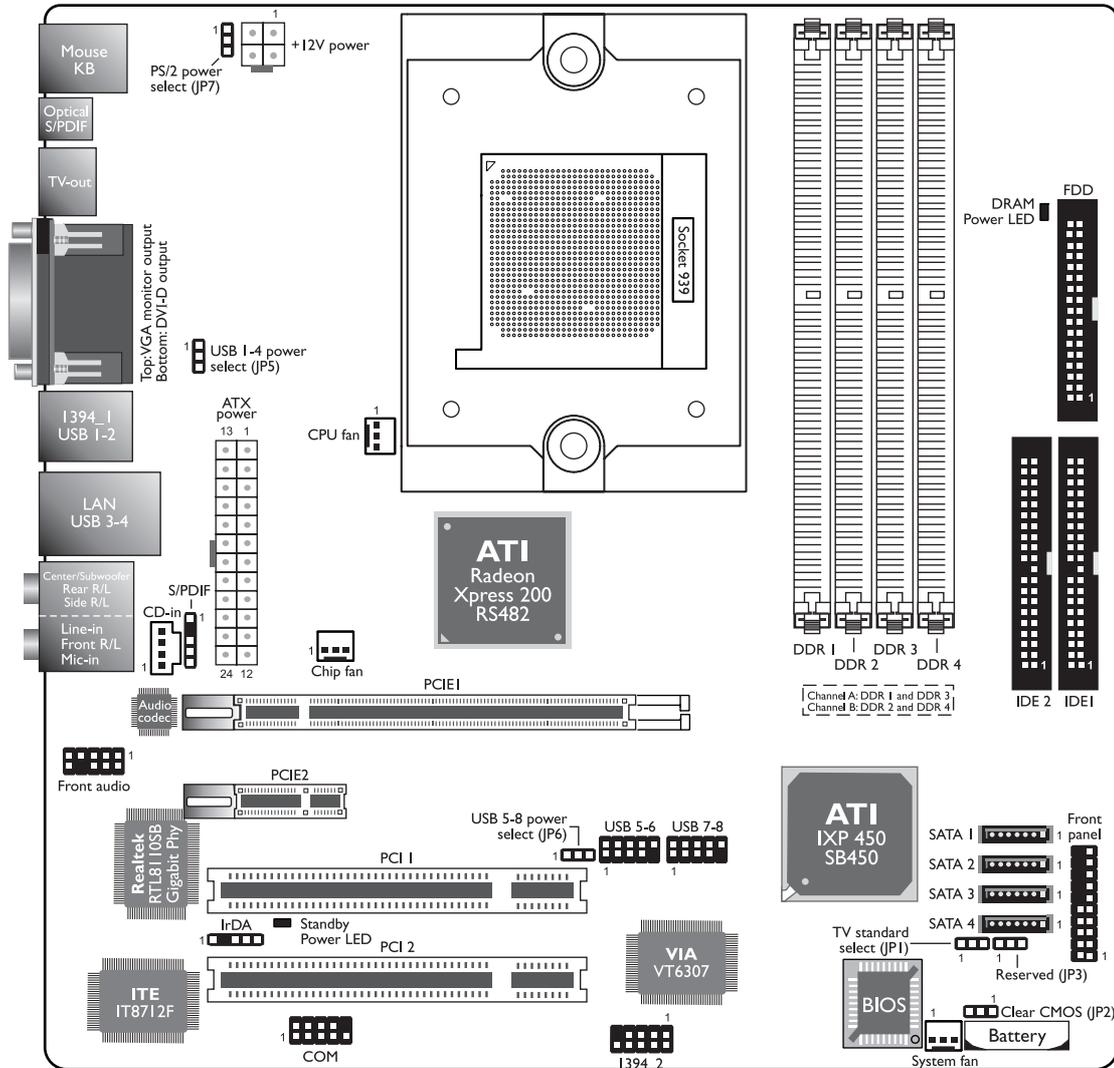
Warning:

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

System Memory

Warning:

When the DRAM Power LED lit red, it indicates that power is present on the DDR sockets. Power-off the PC then unplug the power cord prior to installing any memory modules. Failure to do so will cause severe damage to the motherboard and components.

DRAM Power LED

DDR 1, Channel A
DDR 2, Channel B
DDR 3, Channel A
DDR 4, Channel B
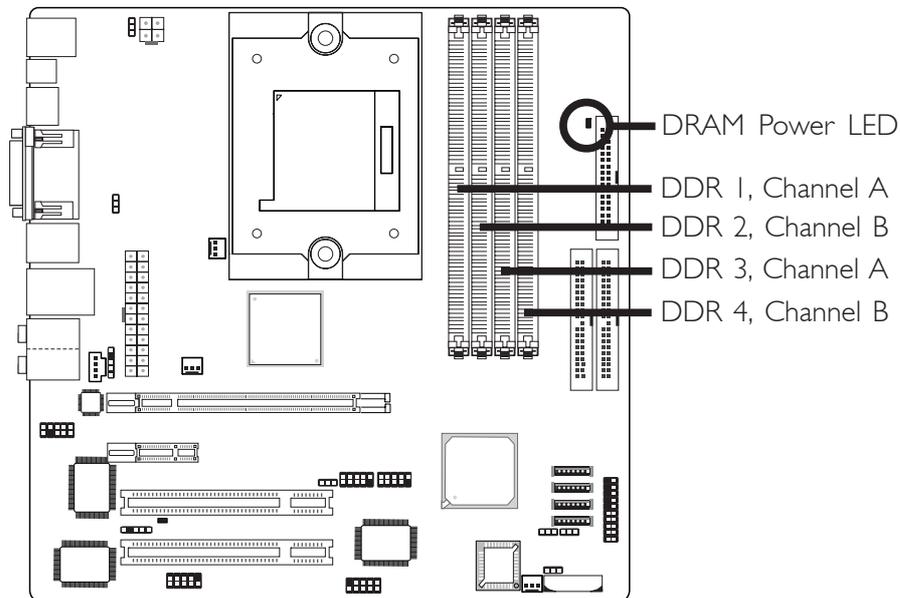
The system board supports DDR SDRAM DIMM. Double Data Rate SDRAM (DDR SDRAM) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore doubling the speed of data transfer. Refer to chapter 1 (System Memory section) for detailed specification of the memory supported by the system board.

The four DDR DIMM sockets on the system board are divided into 2 channels:

Channel A - DDR 1 and DDR 3
Channel B - DDR 2 and DDR 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 DDR DIMMs other than the recommended configurations may cause system boot failure.

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

Important Notes on Memory Usage

1. The system board will fail to boot when 3 DIMMs are used.

    The integrated memory controller in AMD's 64-bit Socket 939 series CPU supports dual channel however when 3 DIMMs are installed, the controller is not capable of accurately distinguishing between dual and single channels resulting to boot up problem. Even if you have luckily booted the system, the total memory size detected is from 2 DIMMs only, not 3. Therefore we do not suggest using 3 DIMMs.

2. The table below lists different memory configurations and their corresponding memory speed. Take note that some memory configurations will automatically reduce the memory speed to DDR333.

Memory Speed	DIMM 1	DIMM 2	DIMM 3	DIMM 4
DDR400	S			
DDR333			S	
DDR400	D			
DDR400			D	
DDR400	S		S	
DDR333	D		D	
DDR400	S	S		
DDR400	D	D		
DDR333			S	S
DDR400			D	D
DDR400	S	S	S	S
DDR333	D	D	D	D

"S": Single side DIMM
"D": Double side DIMM

If in any case the system becomes unstable, set the memory timing from "1T" to "2T" in the "1T/2T Memory Timing" field (Genie BIOS Setting submenu, DRAM Timing and Config section of the Award BIOS).

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

Installing the DIM Module

A DIM module simply snaps into a DIMM socket on the system board. Pin 1 of the DIM module must correspond with Pin 1 of the socket.
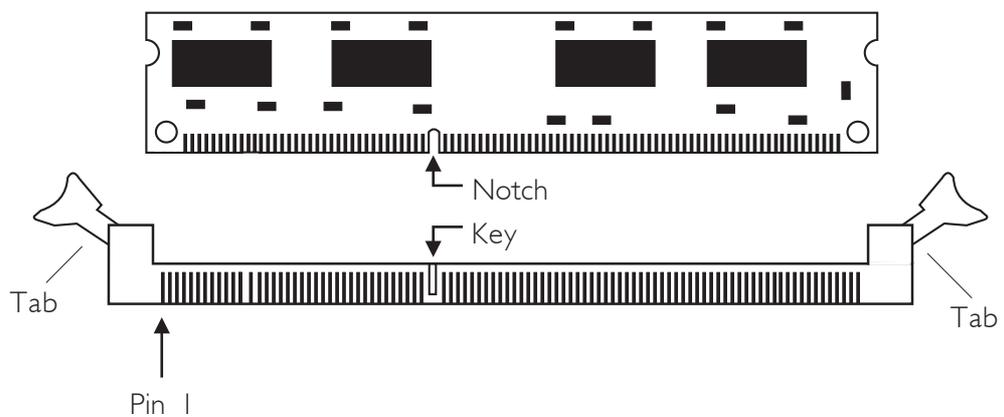
1. Pull the "tabs" which are at the ends of the socket to the side.

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 a surface mount 939-pin CPU socket. This socket is exclusively designed for installing an AMD CPU.

Installing the CPU

1. Make sure the PC and all other peripheral devices connected to it has been powered down.

2. Disconnect all power cords and cables.

3. Locate the 939-pin CPU socket on the system board.
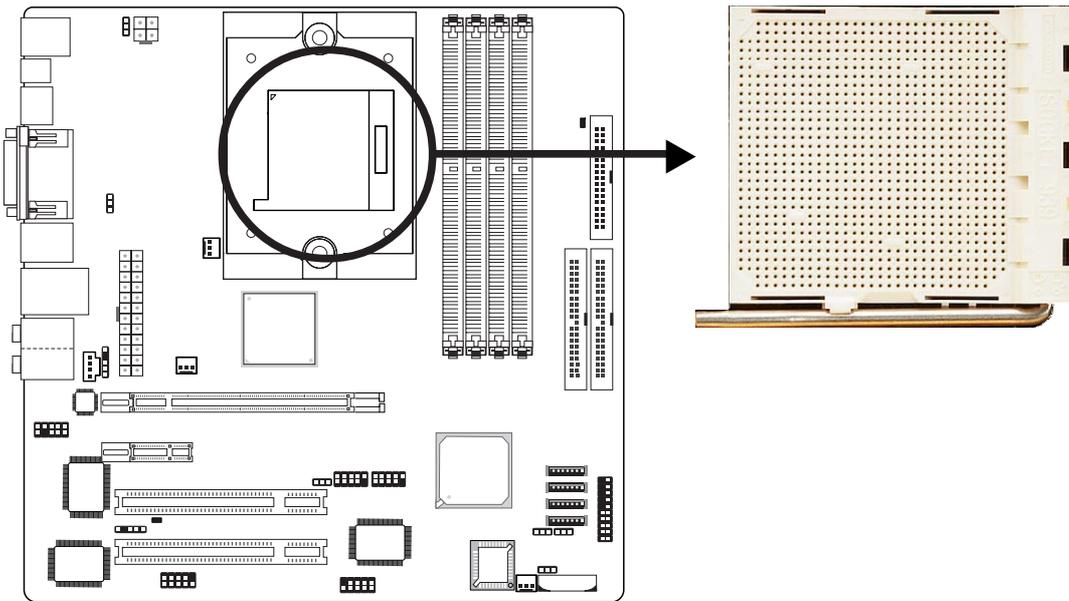
4. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the lever is lifted to at least this angle otherwise the CPU will not fit in properly.

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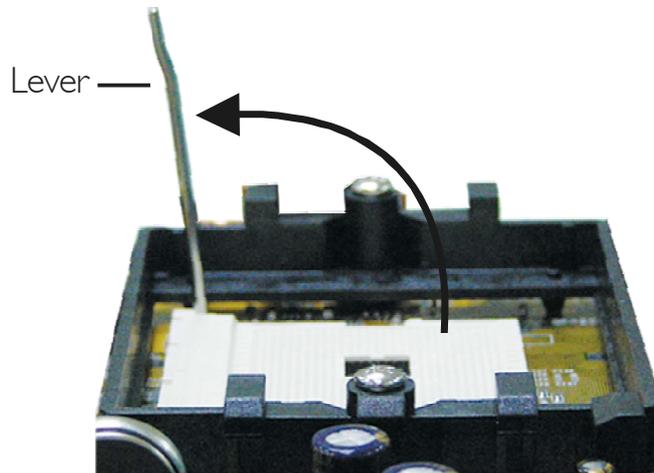
5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged view) shown below.

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

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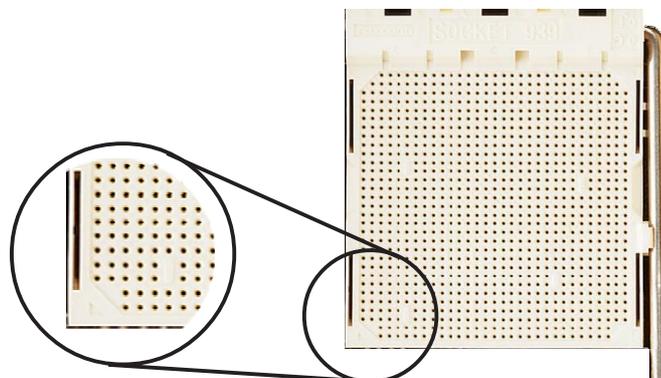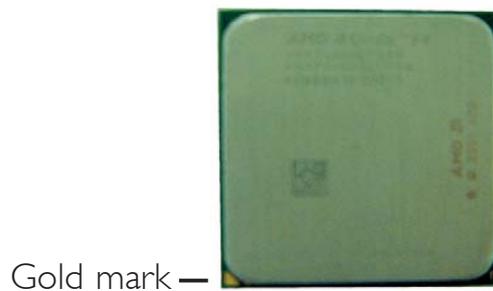
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

> **Important:**
> *Do not force the CPU into the socket. Forcing the CPU into the socket may bend the pins and damage the CPU.*
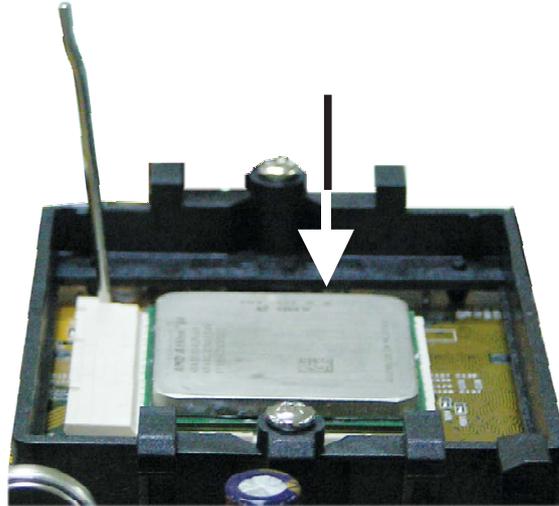
7. Once the CPU is in place, push down the lever to lock the socket. The lever should click on the side tab to indicate that the CPU is completely secured in the socket.

Side tab
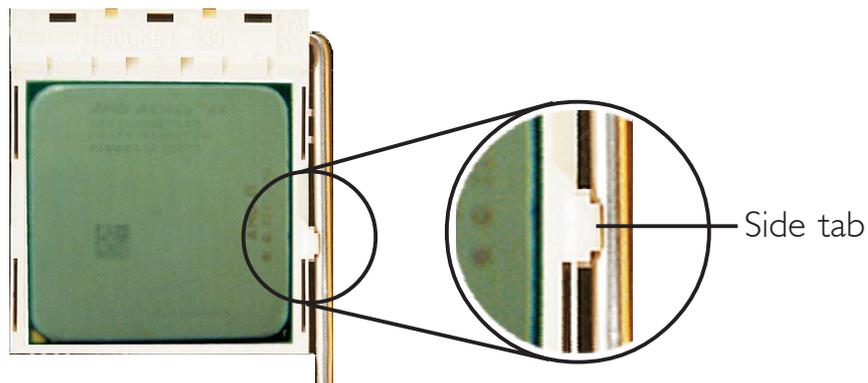
Installing the Fan and Heat Sink

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.

Retention module base

33

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 holes on the retention clip into the retaining tabs of the retention module base.

Side View

Top View
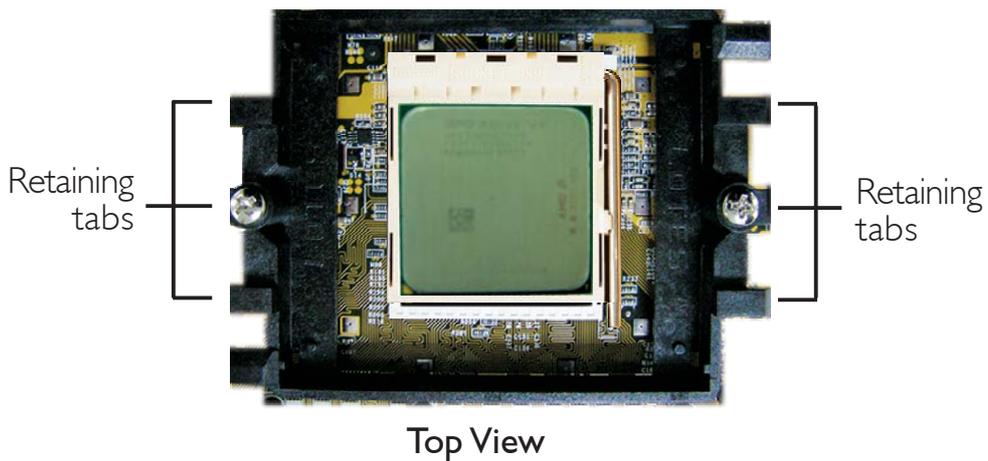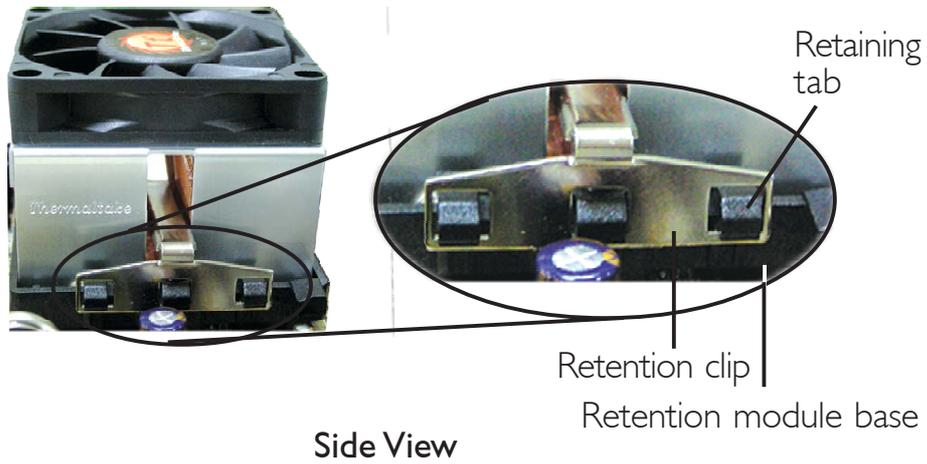
4. Hook the other side of the retention clip (the one near the retention lever) so that the holes on the retention clip also fit into the retaining tabs of the retention module base.

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

Retention lever —

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:**
> *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

3 2 1

1-2 On: Normal
(default)

3 2 1

JP2

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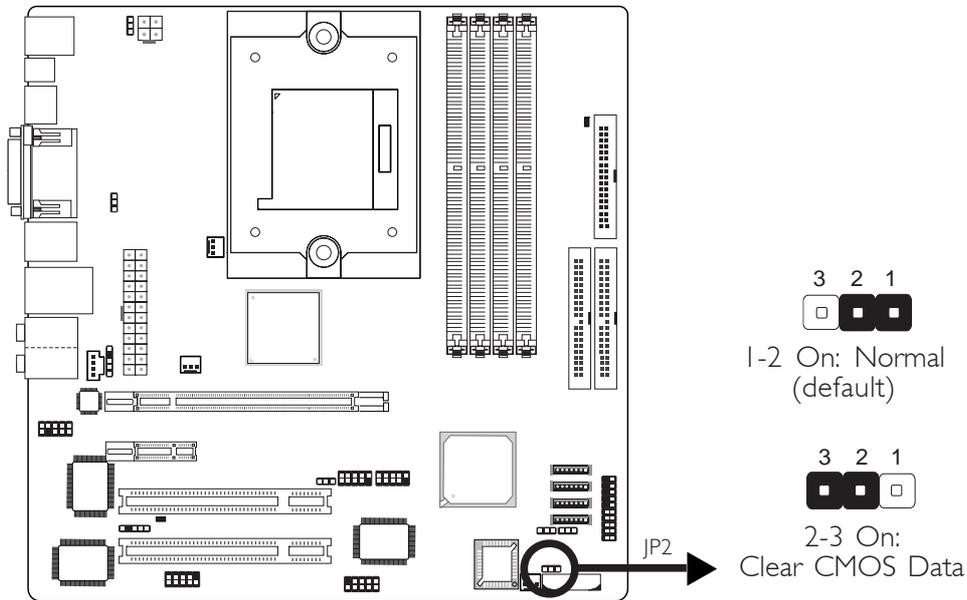
If you encounter the following,

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

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

3. Now power-on the system.

   If your reason for clearing the CMOS data is due to incorrect setting of the processor's ratio/clock 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

1-2 On: 5V
(default)

2-3 On: 5VSB
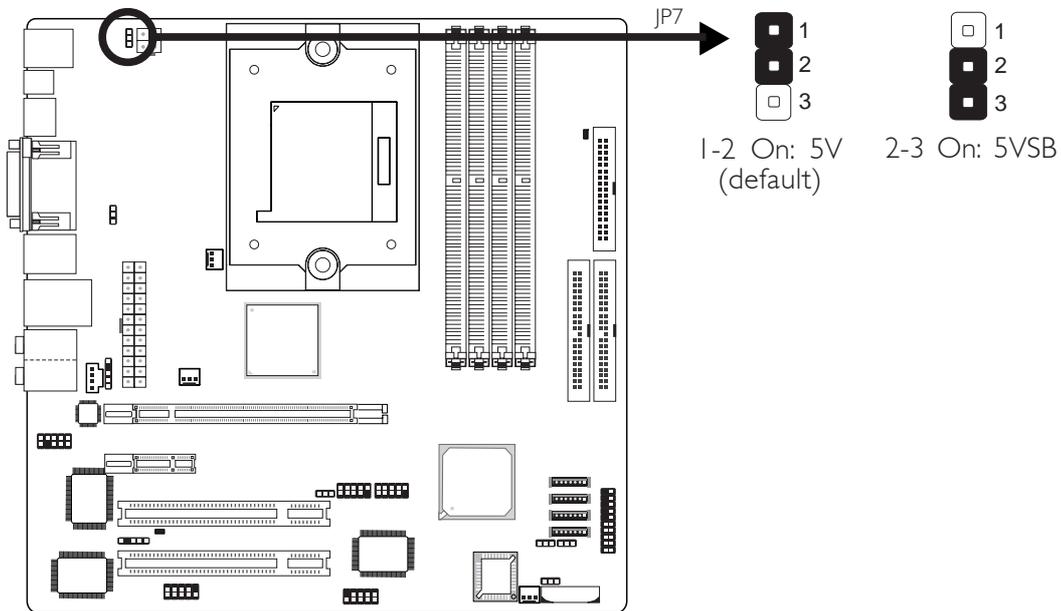
JP7 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

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

USB 1-4
(JP5)

1
2
3

1-2 On: 5V
(default)

1
2
3

2-3 On: 5VSB

USB 5-8
(JP6)

1 2 3

1-2 On: 5V
(default)

1 2 3

2-3 On: 5VSB
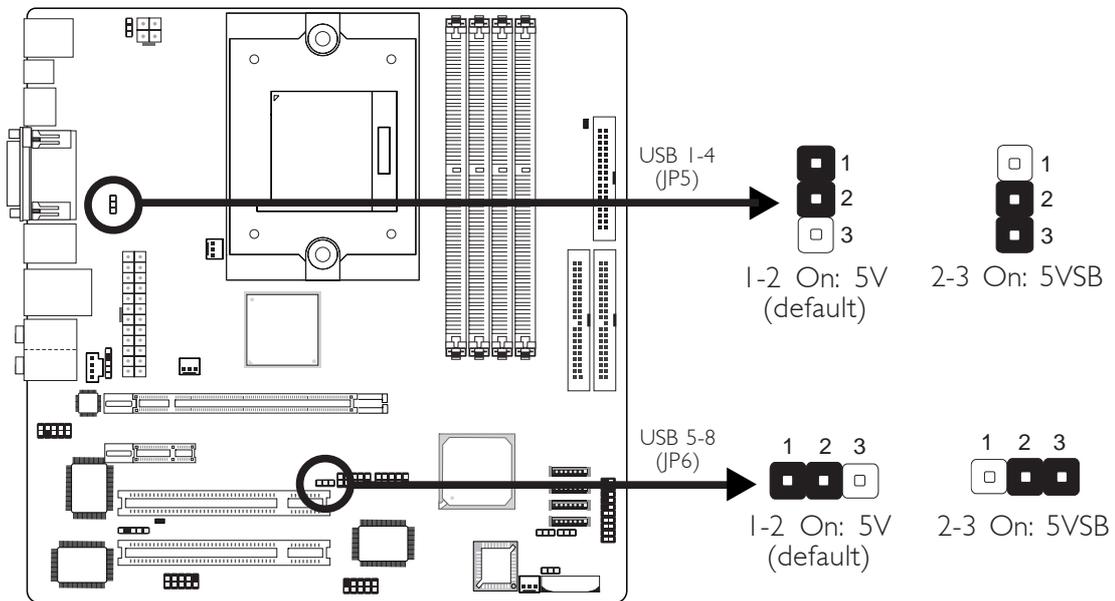
JP5 and JP6 are used to select the power of the USB ports. Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system.

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.

TV Standard Select

JP1

1-2 On: NTSC   2-3 On: PAL
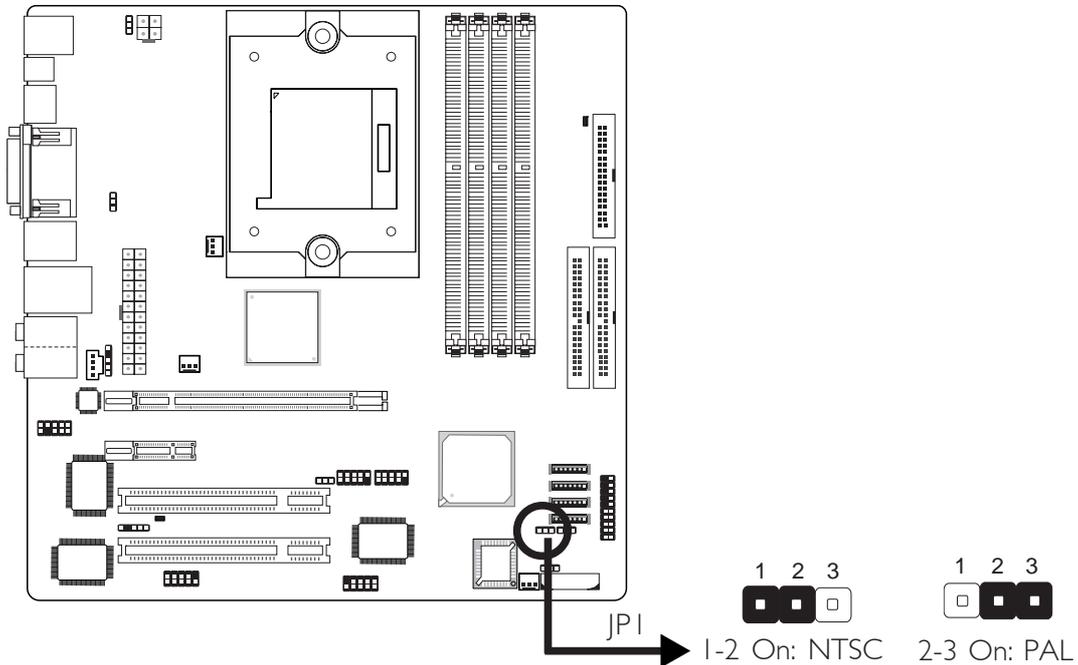
JP1 must be set according to the TV standard in your area. The setting configured here will be registered in the BIOS as the default TV standard. This is required to ensure that display will appear on the TV when you boot up the system. If necessary, you can later change the TV standard in the BIOS (Advanced Chipset Features submenu),

Factory Use Jumper (Reserved)

JP3
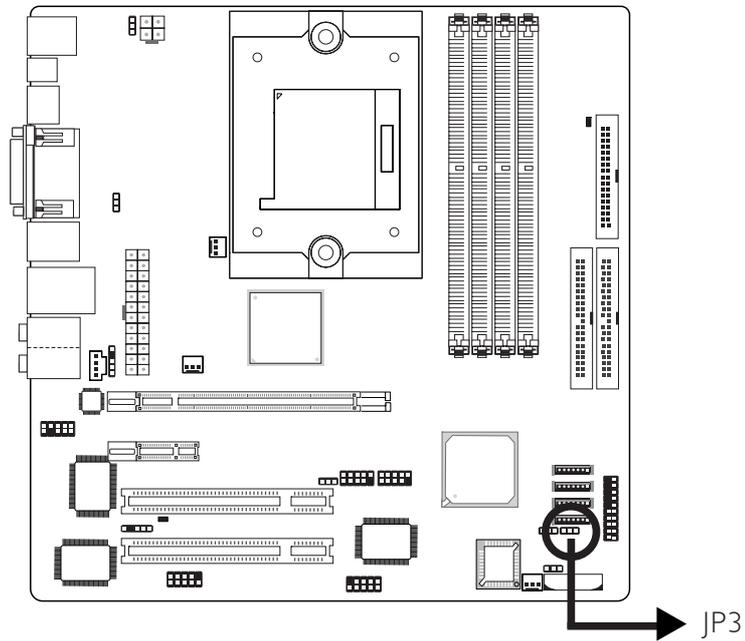
JP3 is for factory use only. Please leave it in its default setting. Reconfiguring the jumper may cause problems.

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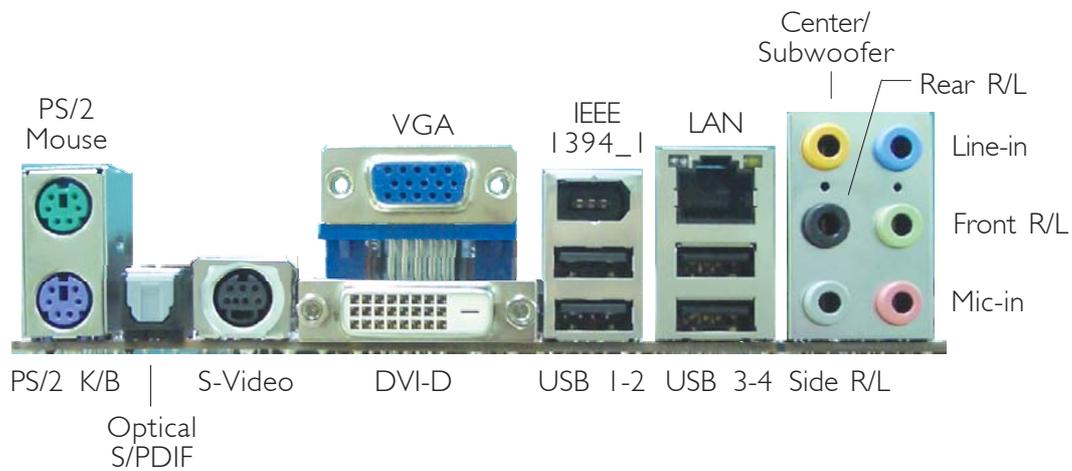
The rear panel I/O ports consist of the following:

- PS/2 mouse port
- PS/2 keyboard port
- Optical S/PDIF port
- S-Video port
- VGA monitor port
- DVI-D port
- IEEE 1394_1 port
- USB ports
- LAN port
- Center/Subwoofer port
- Rear R/L port
- Side R/L port
- Line-in port
- Front R/L port
- Mic-in port

PS/2 Mouse and PS/2 Keyboard

PS/2 Mouse
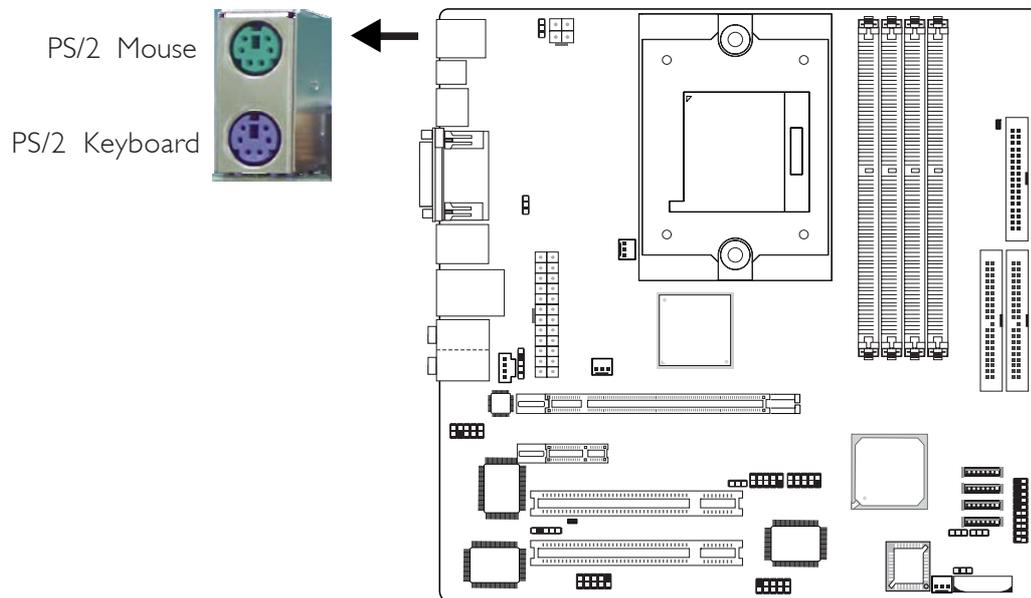
PS/2 Keyboard

The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location CN2 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:**
   JP7 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.

S/PDIF

Optical S/PDIF-out

+5V I
Key
SPDIF out
GND
SPDIF in 5

Coaxial RCA
S/PDIF-in/out
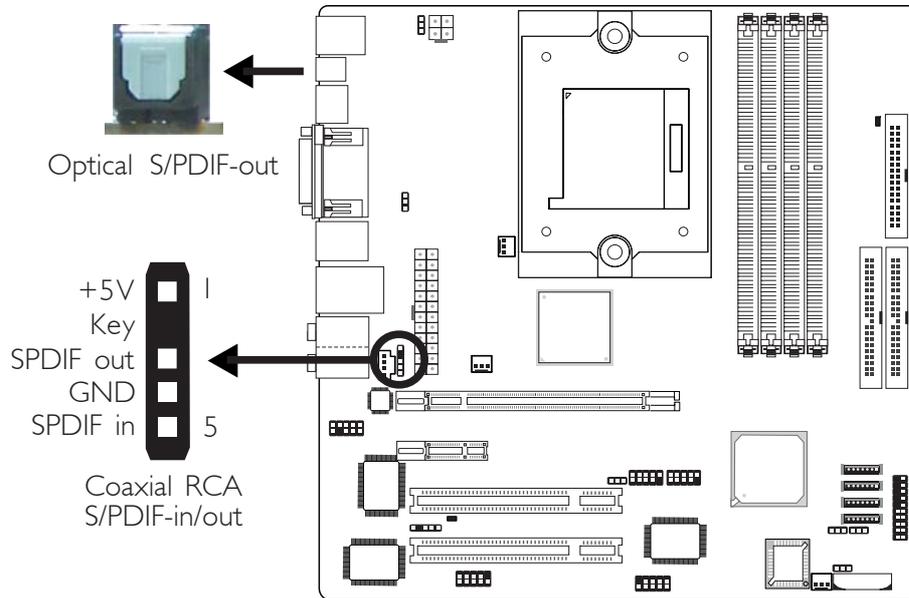
The system board is equipped with an onboard optical S/PDIF-out port at location CN7. It is also equipped with a connector at location J3 for coaxial RCA S/PDIF-in/out port connection. S/PDIF ports are used to connect audio output devices.

Your coaxial RCA S/PDIF ports may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then connect the audio cable connector to J3. Make sure pin 1 of the audio cable connector is aligned with pin 1 of J3.

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

TV-Out
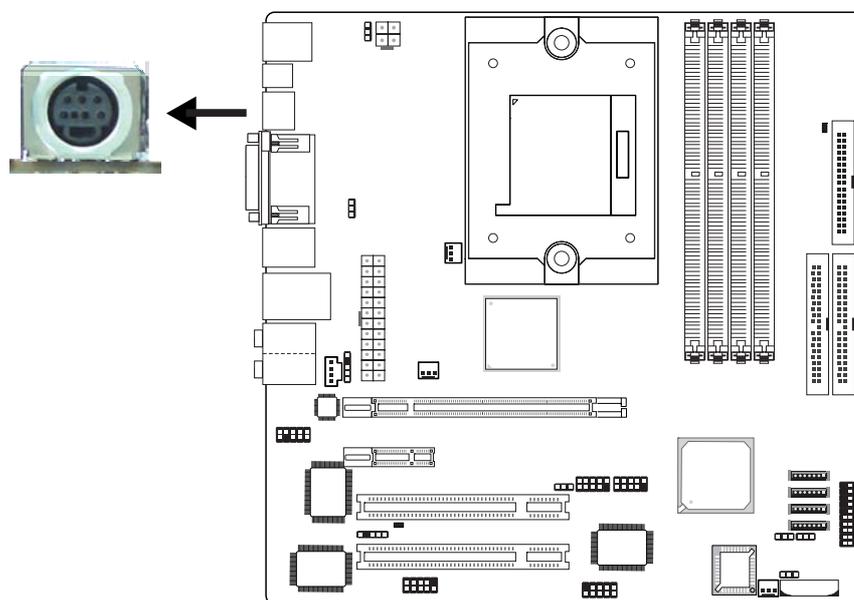
The TV-out port is used to connect a TV that comes with an S-Video output, Composite video output or Pr/Y/Pb component HDTV video output. The table below lists the supported video output and their corresponding cables.

TV-Out Port of TV	Cables
S-Video Output	Standard 4-pin S-Video cable
Composite Video Output	"S-Video to Composite TV" cable
Pr/Y/Pb Component HDTV Video Output	"S-Video to HDTV" cable

Video Output Cables

Standard 4-pin S-Video Cable for TV with S-Video In Port

Connect to 4-pin
S-Video port of TV

Connect to TV-Out
port of system board

"S-Video to Composite TV" Cable

Connect to the AV
port of TV

Connect to TV-Out port
of system board

"S-Video to HDTV" Cable

Pr
Y
Pb
Connect to HDTV

Connect to TV-Out port
of system board

Warning:
The "S-Video to Composite TV" and "S-Video to HDTV" cables are customized cables exclusively designed for use with this system board. Damage may occur if you use cables other than those specified in this section.

Dual Display

Aside from connecting a TV to the TV-Out port, the system board supports dual display by connecting another display device to the DVI-D port.

Port	Display Device
TV-Out ————▶	TV
and	and
DVI-D ————▶	LCD monitor or LCD TV

SurroundView™

The system board supports SurroundView™ allowing up to 4 independent displays. Refer to chapter 7 for more information.

BIOS Setting

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

VGA
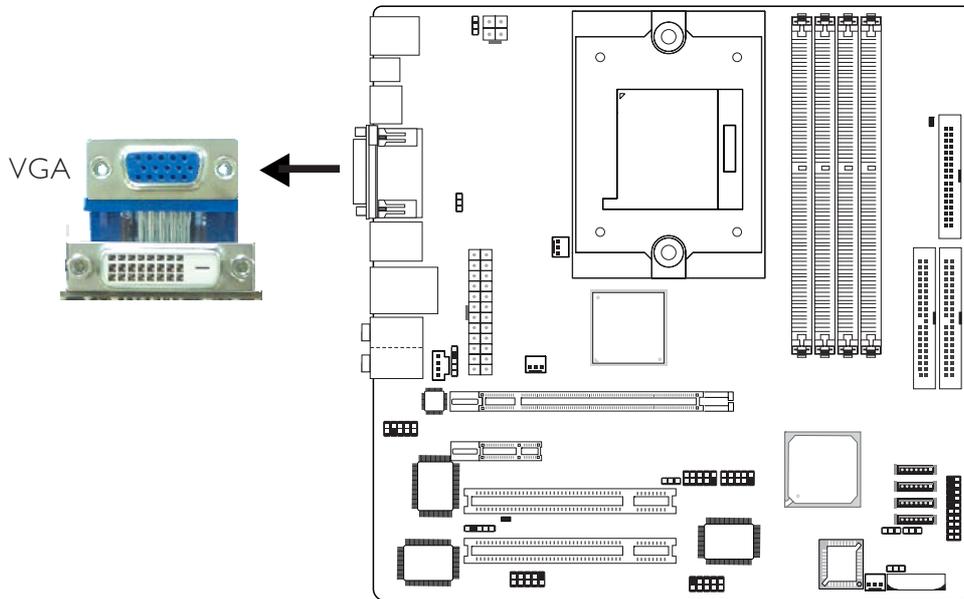
The VGA port is used for connecting a VGA monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port (Blue) at location CN11. After you plug the monitor's cable connector into the VGA port, gently tighten the cable screws to hold the connector in place.

Dual Display

Aside from connecting a VGA monitor to the VGA port, the system board supports dual display by connecting another display device to the DVI-D port.

Port	Display Device
VGA ⟶	VGA monitor
and	and
DVI-D ⟶	LCD monitor or LCD TV

SurroundView™

The system board supports SurroundView™ allowing up to 4 independent displays. Refer to chapter 7 for more information.

BIOS Setting

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

Driver Installation

Installing the ATI Catalyst Integrated System Drivers will automatically install the graphics drivers. Refer to chapter 4 for more information.

DVI-D
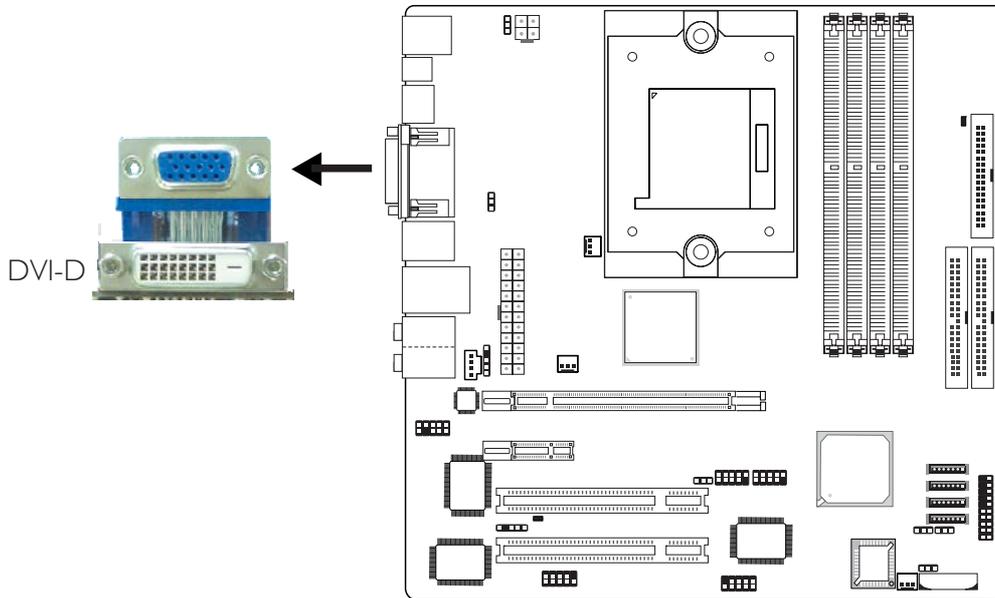
DVI-D

The DVI-D (Digital Visual Interface) port is used to connect a digital LCD monitor or LCD TV.

Connect the display device's cable connector to the DVI-D port at location CN6. After you plug the cable connector into the DVI-D port, gently tighten the cable screws to hold the connector in place.

Dual Display

Aside from connecting a LCD display device to the DVI-D port, the system board supports dual display by connecting another display device to either the TV-out or VGA port.

Port	Display Device
DVI-D ⟶	LCD monitor or LCD TV
and	and
TV-out ⟶	TV

or

Port	Display Device
DVI-D ⟶	LCD monitor or LCD TV
and	and
VGA ⟶	VGA monitor

SurroundView™

The system board supports SurroundView™ allowing up to 4 independent displays. Refer to chapter 7 for more information.

BIOS Setting

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

IEEE 1394
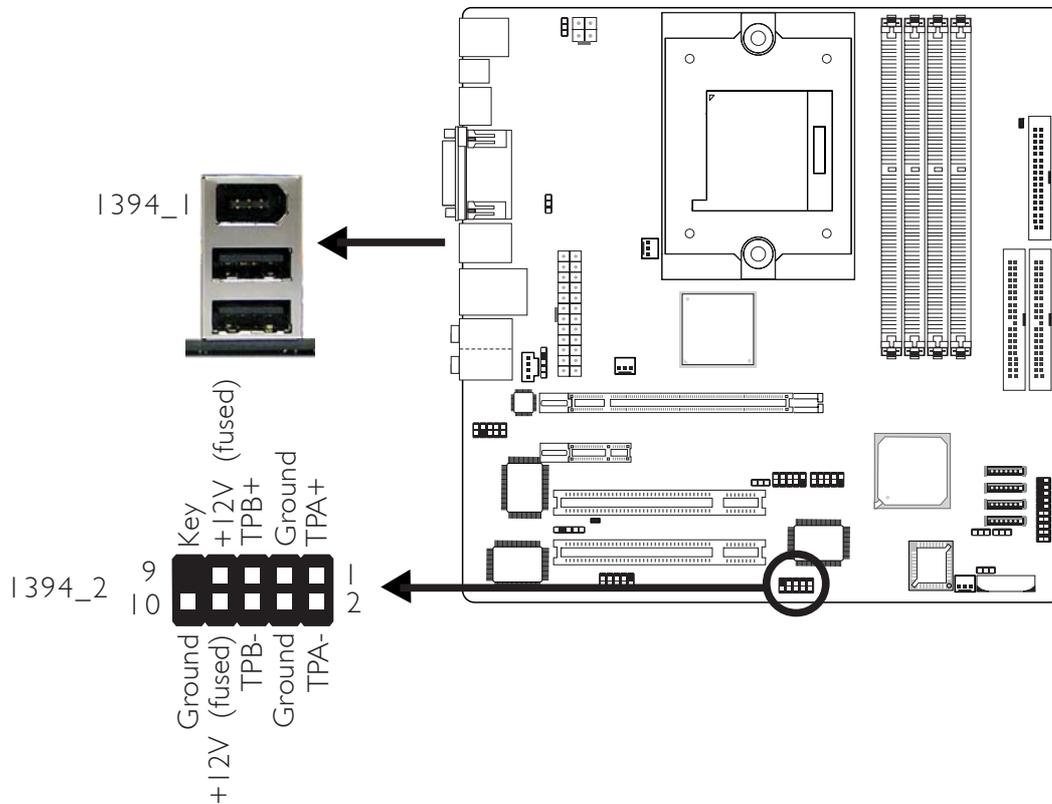
The onboard IEEE 1394 port is at location CN3 (IEEE 1394_1) of the system board.

The IEEE 1394 connector at location J8 (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 J8. Make sure pin 1 of the cable connector is aligned with pin 1 of J8.

BIOS Setting

Configure the onboard 1394 in the Integrated Peripherals submenu ("South OnChip PCI Device" section) of the BIOS. Refer to chapter 3 for more information.

USB (Universal Serial Bus)

USB 2
USB 1

USB 4
USB 3

VCC
-Data
+Data
GND
N. C.

2 10
1 9

VCC
-Data
+Data
GND
Key

USB 5-6   USB 7-8
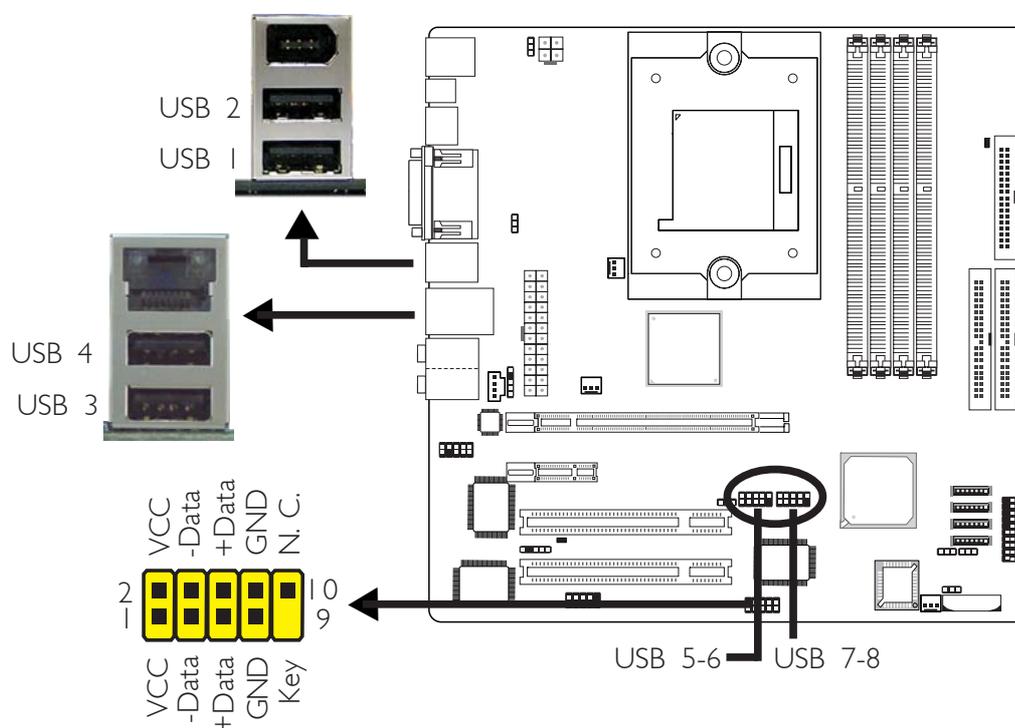
The system board supports 8 USB 2.0/1.1 ports. Four onboard USB 2.0/1.1 ports (Black) are at locations CN3 (USB 1-2) and CN4 (USB 3-4) of the system board.

The J34 (USB 5-6) and J18 (USB 7-8) connectors allow you to connect 4 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 J34 or J18. Make sure pin 1 of the cable connector is aligned with pin 1 of the J34 or J18.

BIOS Setting

Configure the onboard USB in the Integrated Peripherals submenu ("South OnChip PCI 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:**
  JP5 and/or JP6 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

LAN
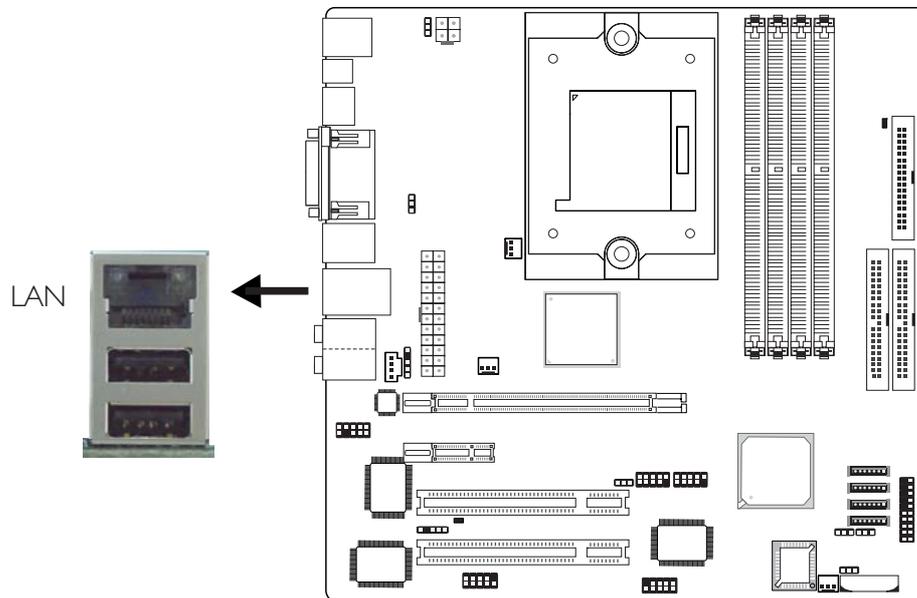
The onboard LAN port is at location CN4 of the system board. LAN allows the system board to connect to a local area network by means of a network hub.

BIOS Setting

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

Driver Installation

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

Audio
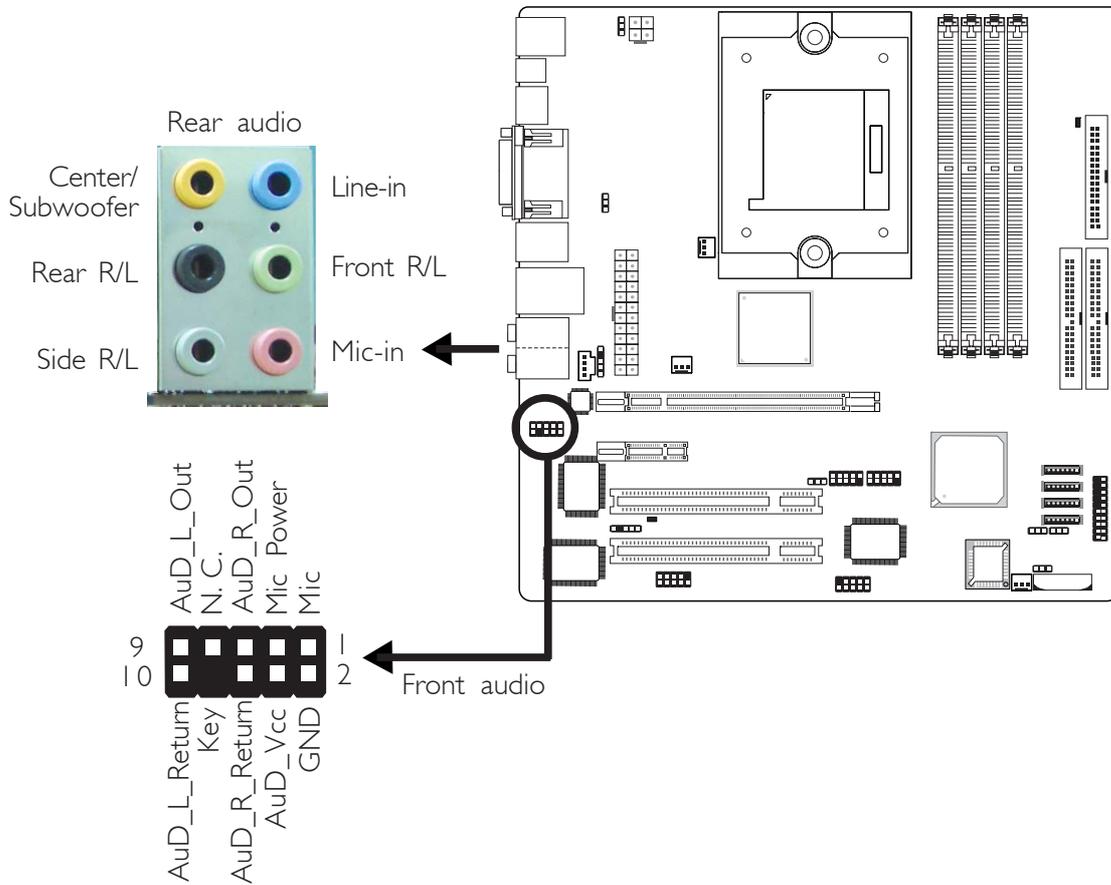
Rear Panel Audio (CN8)

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

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

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

Line-in (Light Blue)
This jack is used to connect any audio devices such as Hi-fi set, CD player, tape player, AM/FM radio tuner, synthesizer, etc.

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

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

Mic-in Jack (Pink)

This jack is used to connect an external microphone.

Front Audio

The front audio connector at location J4 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.

Remove the jumper caps from pins 5-6 and pins 9-10 of J4 prior to connecting the front audio cable connector. Make sure pin 1 of the cable connector is aligned with pin 1 of J4. If you are not using this connector, make sure to replace the jumper caps back to their original pin locations.

Pins 5-6 and 9-10 short (default)	The front audio is disabled. The rear audio is enabled.
Pins 5-6 and 9-10 open	The front audio is enabled. The rear audio is disabled.

BIOS Setting

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

Driver Installation

Install the audio drivers. An audio software application program will at the same time be installed into your system. Refer to chapter 4 for more information.

Internal I/O Connectors

CD-in Connector
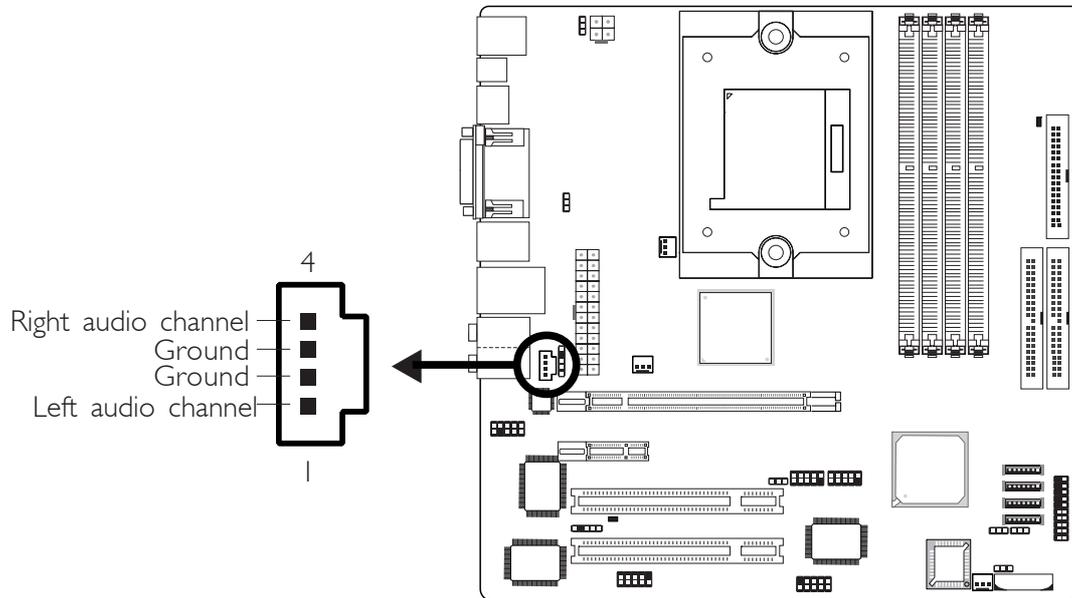
The CD-in connector at location J1 is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

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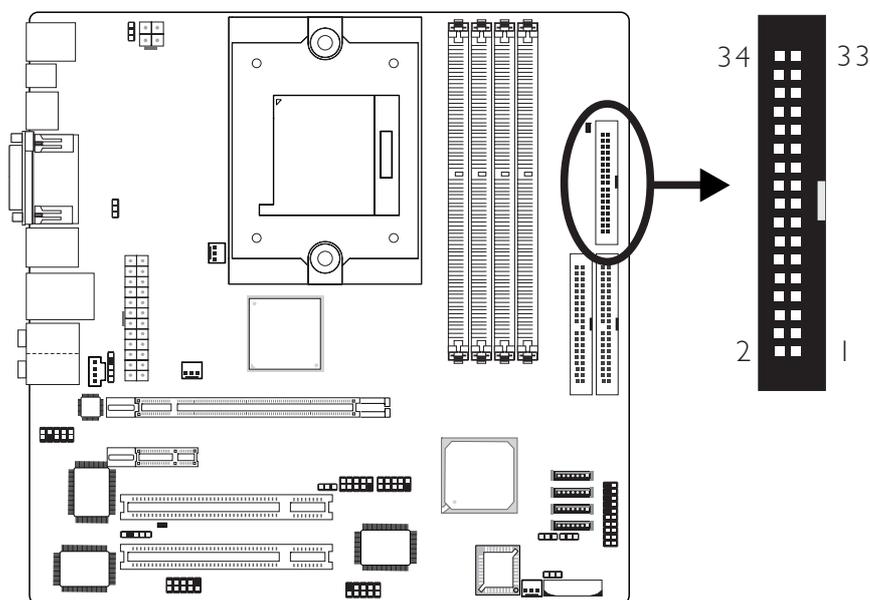
The floppy disk drive connector supports a standard floppy disk drive. To prevent improper floppy cable installation, the floppy disk header has a keying mechanism. The 34-pin connector on the floppy cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

Connecting the Floppy Disk Drive Cable

Install one end of the floppy disk drive cable into the shrouded floppy disk header (J23) 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 J23.

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.

Hardware Installation ∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎∎

Serial ATA Connectors
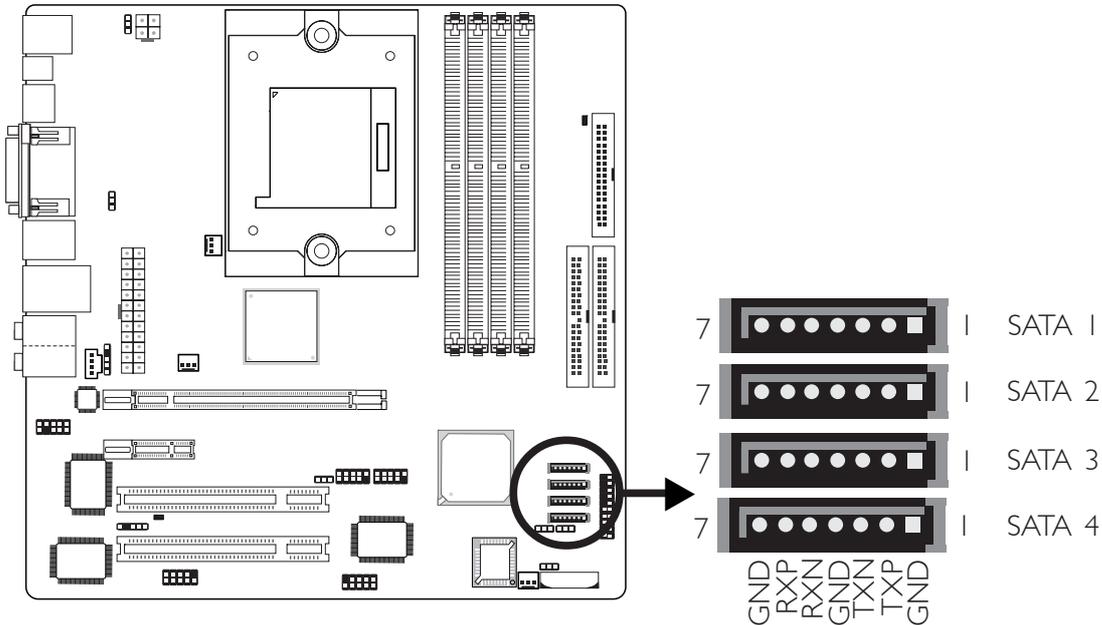
- SATA speed up to 1.5Gb/s
- RAID 0 and RAID 1

Controller	SATA Ports
Controller A ⟶	SATA 1 and SATA 2
Controller B ⟶	SATA 3 and SATA 4

Connecting Serial ATA Cables

Connect one end of the Serial ATA cable to SATA 1 (J2), SATA 2 (J10), SATA 3 (J11) or SATA 4 (J13) and the other end to your Serial ATA device.

Configuring RAID

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

> **Important:**
> *RAID must be configured on Serial ATA drives that are connected to the same controller. Meaning, create RAID on either SATA 1 and SATA 2 or SATA 3 and SATA 4.*

2

IDE Disk Drive Connectors

40 [::] 39   40 [::] 39

2 [::] 1   2 [::] 1

IDE 2   IDE 1
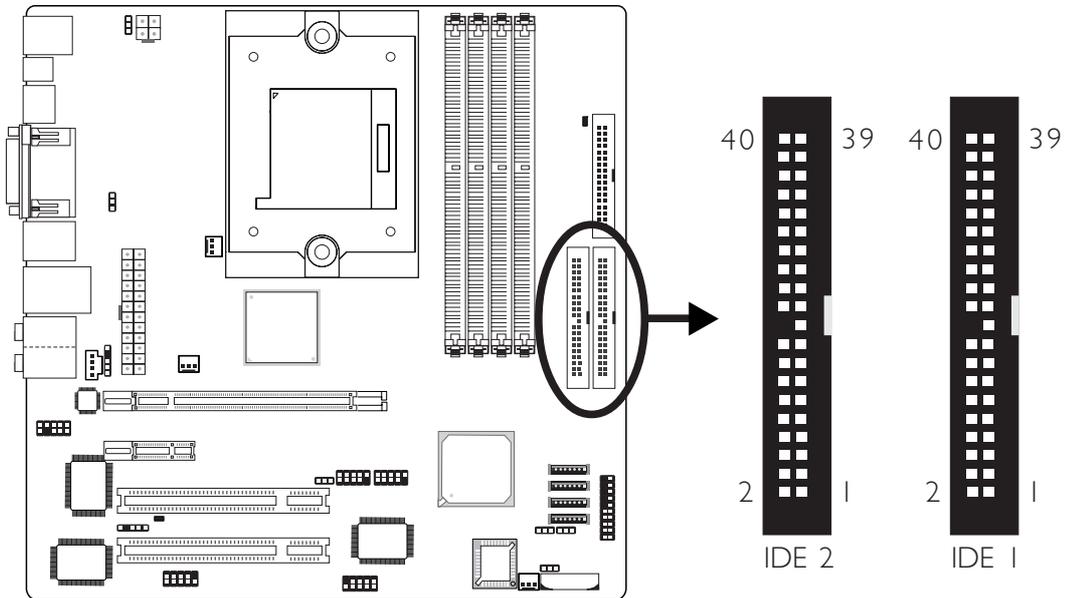
The two shrouded PCI IDE headers will interface four Enhanced IDE (Integrated Drive Electronics) disk drives. To prevent improper IDE cable installation, each shrouded PCI IDE header has a keying mechanism. The 40-pin connector on the IDE cable can be placed into the header only if pin 1 of the connector is aligned with pin 1 of the header.

Each 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 1 header (J25) on the system board and the other connectors to the IDE devices.

If you are adding a third or fourth IDE device, use another IDE cable and install one end of the cable into the IDE 2 header (J22) 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 ("South OnChip IDE Device" section) of the BIOS. Refer to chapter 3 for more information.

Serial (COM) Connector
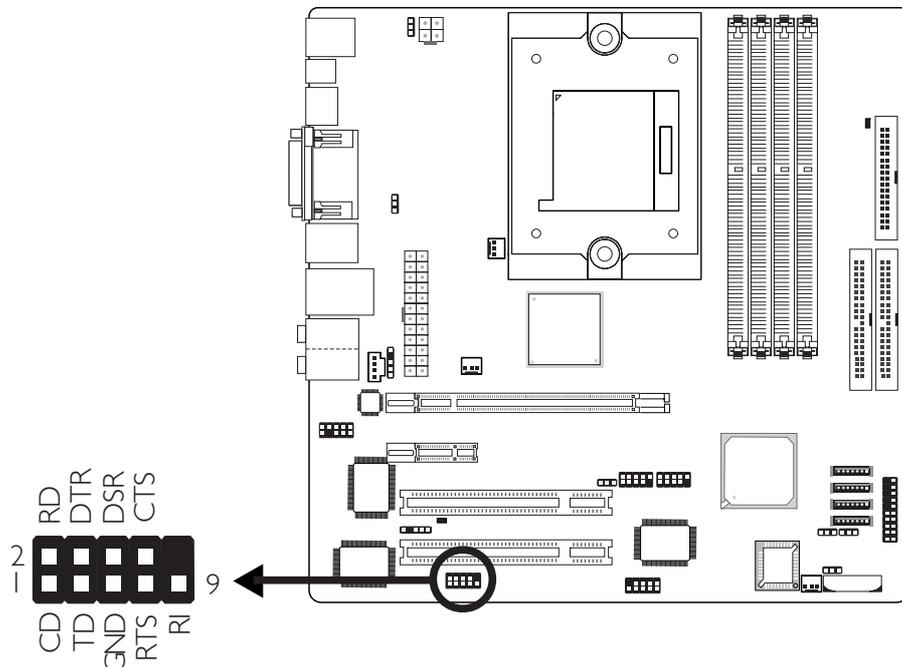
The 9-pin connector at location J7 is for connecting a serial port. The serial port cable is an optional item and must be purchased separately. Your serial port may come mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the connector that is attached to the serial port cable to J7. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the connector.

The serial port is an RS-232 asynchronous communication port 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

IRRX
N. C. | Ground
VCC | IRTX
1 [■ ■ ■ ■] 5
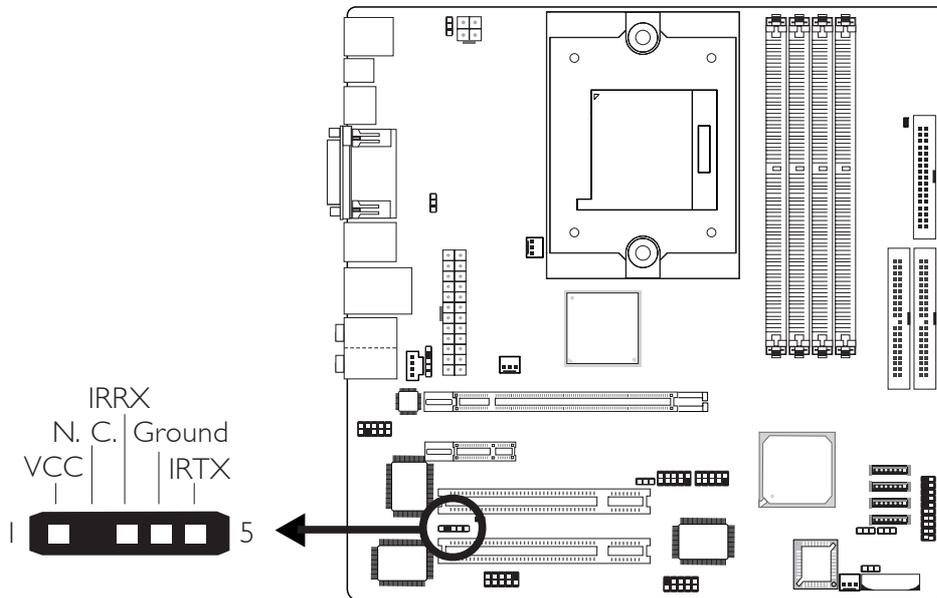
The IrDA connector at location J5 is for connecting an IrDA module. Connect the cable connector from your IrDA module to J5.

> **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
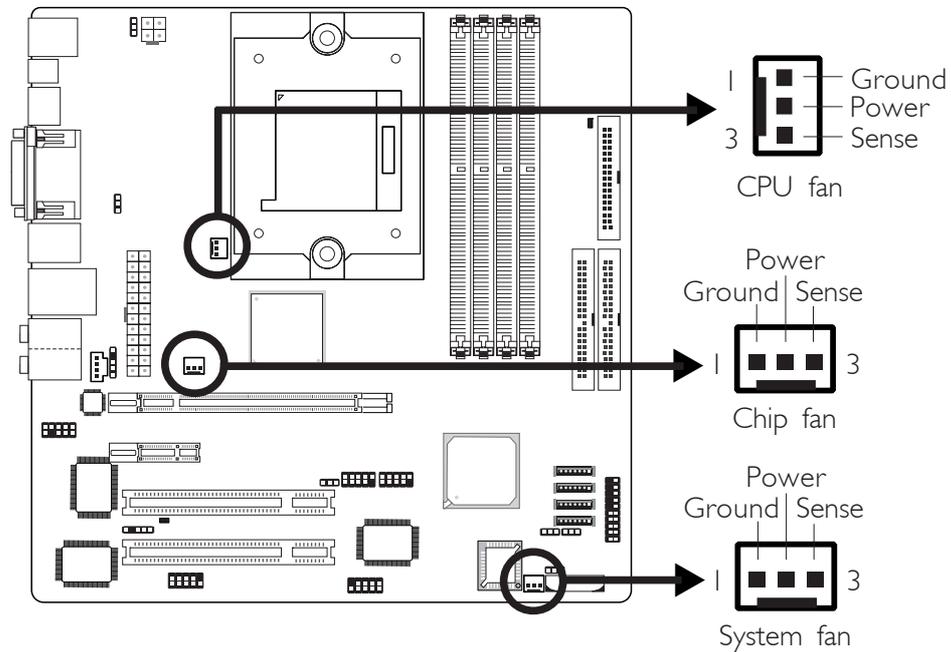
Connect the CPU fan's cable connector to the CPU fan connector (J30) on the system board. Chip fan (J31) and System fan (J32) are used to connect additional cooling fans. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

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.

DRAM Power LED and Standby Power LED
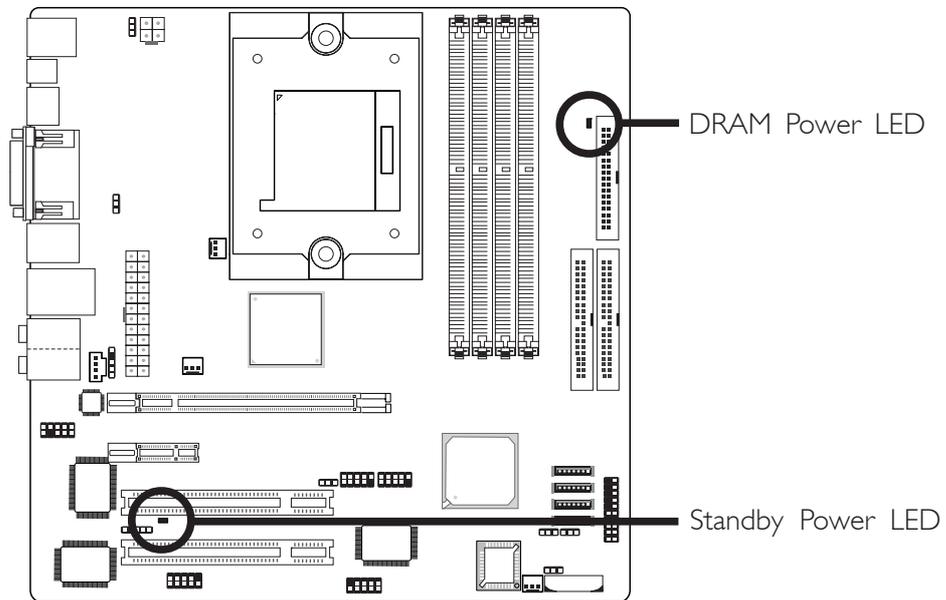
DRAM Power LED

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

Standby Power LED

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

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

Power Connectors

Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply unit has a standard 24-pin ATX main power connector that must be inserted onto CN5.

13 1

+3.3VDC	•	•	+3.3VDC
-12VDC	•	•	+3.3VDC
Ground	•	•	Ground
PS_ON#	•	•	+5VDC
Ground	•	•	Ground
Ground	•	•	+5VDC
Ground	•	•	Ground
NC	•	•	PWR_OK
+5VDC	•	•	+5VSB
+5VDC	•	•	+12VDC
+5VDC	•	•	+12VDC
Ground	•	•	+3.3VDC

24 12

Your power supply unit also comes with a 4-pin +12V power connector. The +12V power enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM). Connect the 4-pin power connector to CN9.

2   1

| Ground | • | • | Ground |
| +12V | • | • | +12V |

4   3

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.**

<u>Important:</u>
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.

Front Panel Connectors
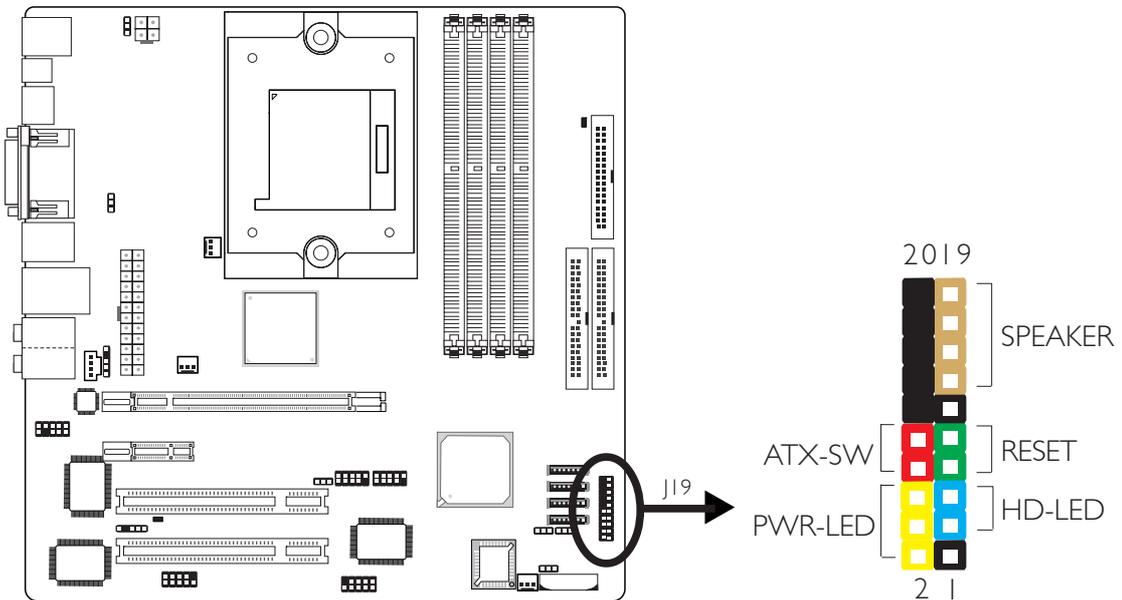
HD-LED: Primary/Secondary IDE LED

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
PCI Express x1
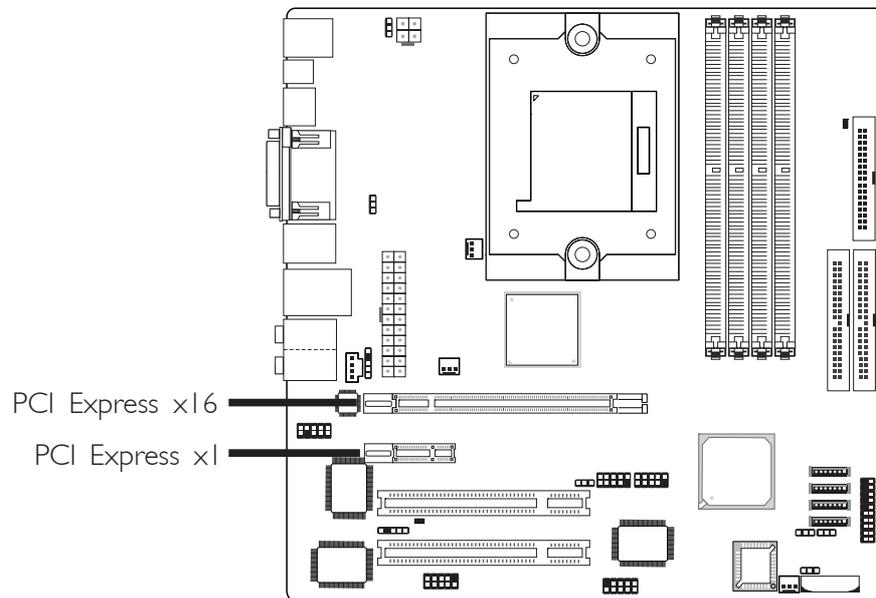
PCI Express x16

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.

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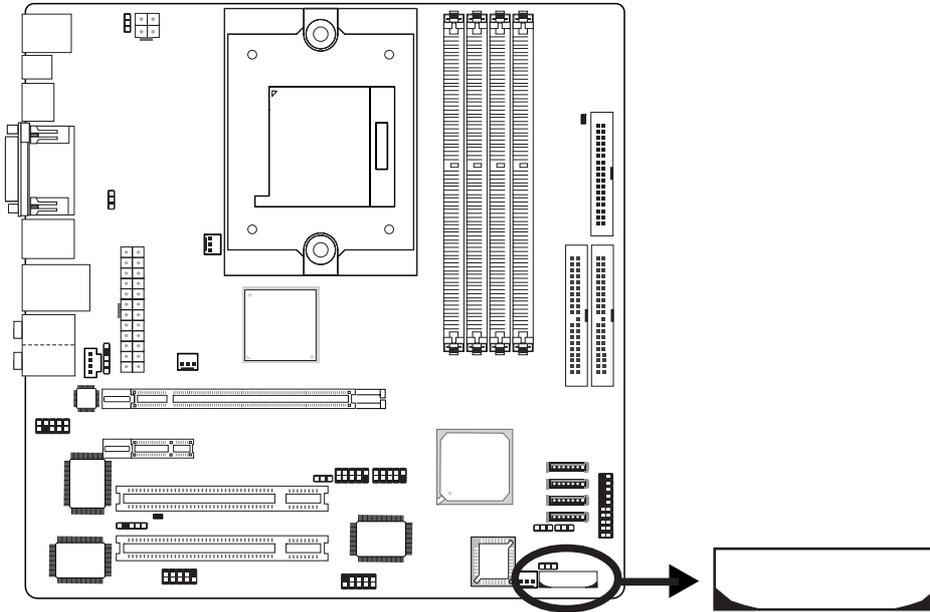
The lithium ion battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

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.

I/O Shield

The system board package comes with 2 mounting screws for fastening the I/O shield onto the rear panel I/O. Due to EMI purpose, you must secure the I/O shield onto the rear panel by mounting the screws into the 2 mounting holes that are on each side of the DVI-D port.

DVI-D
Mounting hole   Mounting hole

Mounting screw   Mounting screw   I/O shield
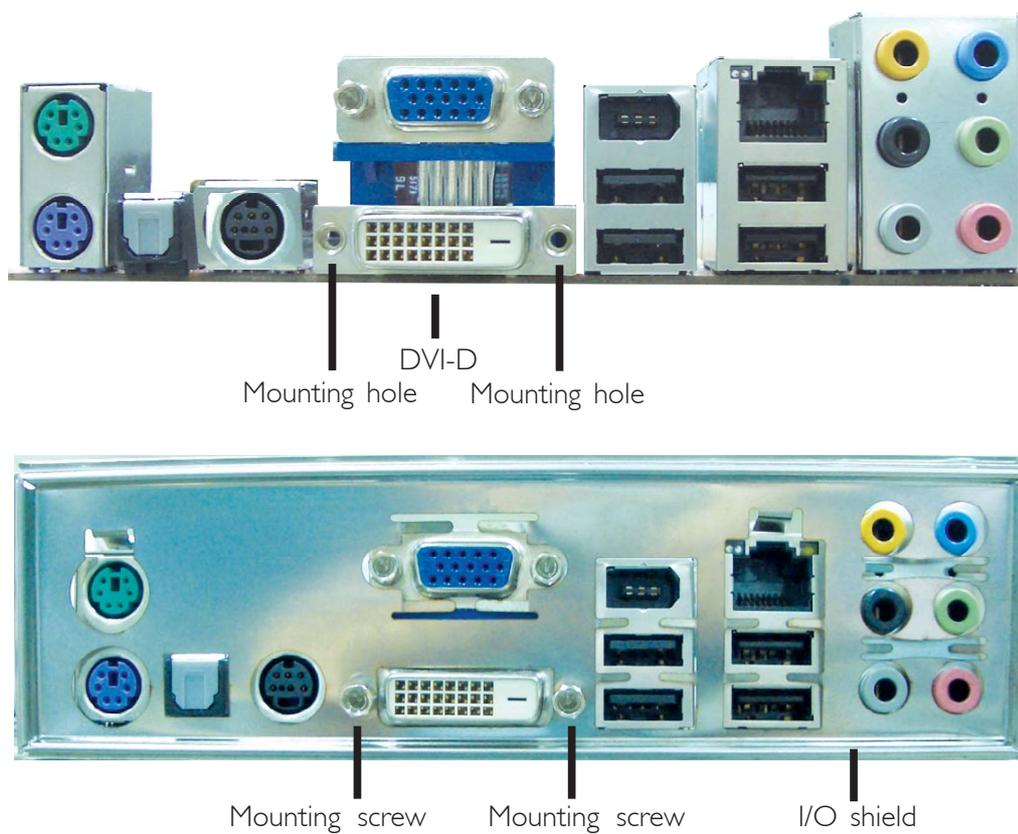
Chapter 3 - BIOS Setup

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:

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

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

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

```
                 Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ Genie BIOS Setting
   ▶ Advanced BIOS Features             Load Fail-Safe Defaults
   ▶ Advanced Chipset Features          Load Optimized Defaults
   ▶ Integrated Peripherals             Set Supervisor Password
   ▶ Power Management Setup             Set User Password
   ▶ PnP/PCI Configurations             Save & Exit Setup
   ▶ PC Health Status                   Exit Without Saving

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

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

Standard CMOS Features

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

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

     Date <mm:dd:yy>              Thu, Nov 10 2005          Item  Help
     Time <hh:mm:ss>              9 : 3 : 54
                                                        Menu Level    ▶
  ▶  IDE Channel 0 Master         ST340823A
  ▶  IDE Channel 0 Slave          None                 Change the day, month,
  ▶  IDE Channel 1 Master         CD-532E              year and century
  ▶  IDE Channel 1 Slave          None
  ▶  IDE Channel 2 Master         None
  ▶  IDE Channel 3 Master         None
  ▶  IDE Channel 4 Master         None
  ▶  IDE Channel 5 Master         None

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

     Base Memory                     640K
     Extended Memory              980992K
     Total Memory                 982016K

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

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

Date

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

Time

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

IDE Channel 0 Master/Slave, IDE Channel 1 Master/Slave and IDE Channel 2/3/4/5 Master

IDE Channel 0 Master
IDE Channel 0 Slave
IDE Channel 1 Master   Used to configure Parallel ATA drives
IDE Channel 1 Slave

IDE Channel 2 Master
IDE Channel 3 Master
IDE Channel 4 Master   Used to configure Serial ATA drives
IDE Channel 5 Master

Note:
The fields for configuring Serial ATA drives ("IDE Channel 2 Master" to "IDE Channel 5 Master") will not appear on the following 2 conditions.

1. If the Serial ATA channels are enabled.
2. If "Serial ATA Mode" is set to RAID Controller.

The fields mentioned in items 1 and 2 are in the Integrated Peripherals submenu, South OnChip IDE Device section of the BIOS. Settings in this section are controlled by the ATI RAID BIOS.

To configure the IDE drives, move the cursor to a field then press <Enter>. The following screen will appear.
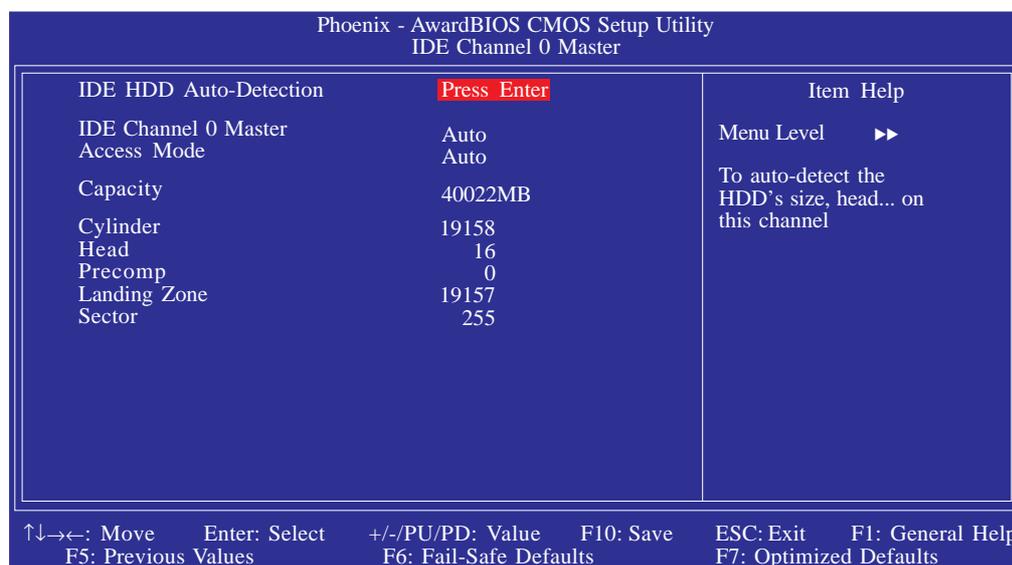
```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           IDE Channel 0 Master

   IDE HDD Auto-Detection          Press Enter              Item  Help

   IDE Channel 0 Master               Auto            Menu Level      ▶▶
   Access Mode                        Auto
                                                      To auto-detect the
   Capacity                          40022MB          HDD's size, head... on
                                                      this channel
   Cylinder                           19158
   Head                                  16
   Precomp                                0
   Landing Zone                       19157
   Sector                               255




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

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

IDE HDD Auto-Detection

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

IDE Channel 0 Master/Slave and IDE Channel 1 Master/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.

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

 ▶ Hard Disk Boot Priority        Press  Enter              Item  Help
   Virus  Warning                 Disabled
   CPU Internal Cache             Enabled           Menu Level      ▶
   External  Cache                Enabled
   Quick Power On Self Test       Enabled           Select Removable Boot
   USB Flash Disk Type            Auto              Device  Priority
   First Boot Device              Removable
   Second Boot Device             Hard Disk
   Third Boot Device              CDROM
   Boot Other Device              Enabled
   Boot Up Floppy Seek            Disabled
   Boot Up NumLock Status         On
   Gate A20 Option                Fast
   Typematic Rate Setting         Disabled
 x Typematic Rate (Chars/Sec)     6
 x Typematic Delay (Msec)         250
   Security Option                Setup
   APIC Mode                      Enabled
   MPS Version Control For OS      1.4
   OS Select For DRAM > 64MB      Non-OS2
   HDD S.M.A.R.T. Capability      Disabled
   Full Screen LOGO Show          Disabled

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

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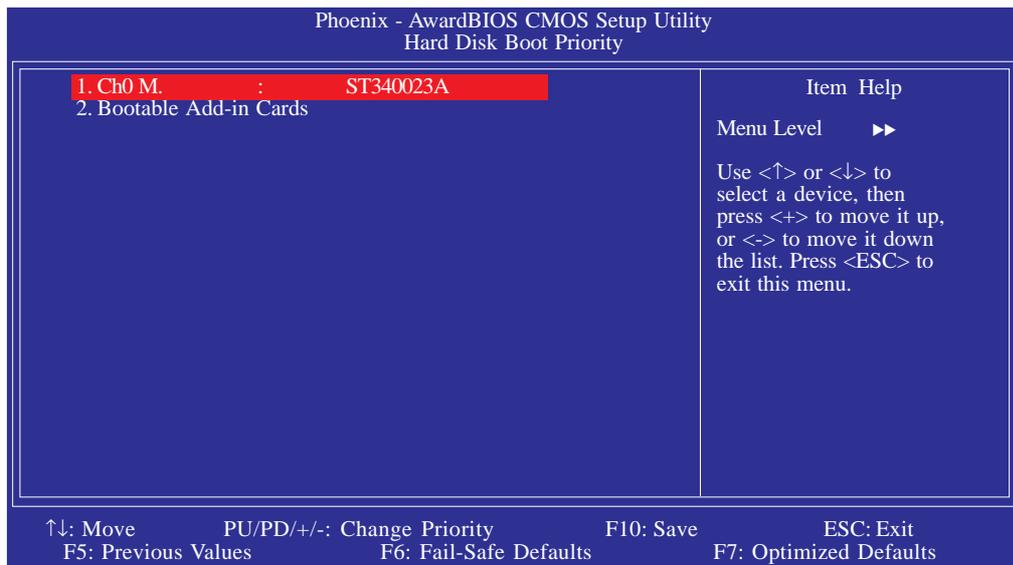
```
                    Phoenix - AwardBIOS CMOS Setup Utility
                           Hard Disk Boot Priority

     1. Ch0 M.            :           ST340023A                Item  Help
     2. Bootable Add-in Cards
                                                        Menu Level      ▶▶

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




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

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

Virus Warning

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

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

Many disk diagnostic programs which attempt to access the boot sector table will cause the warning message to appear. If you are running such a program, we recommend that you first disable this field. Also, disable this field if you are installing or running certain operating systems like Windows® 95/98/2000 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) whenever the system is powered on. The BIOS will shorten or skip some check items during POST. To attain the shortest POST time, select "Enabled".

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 field 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. A20 refers to the first 64KB of extended memory.

Fast   The chipset controls Gate A20.
Normal   A pin in the keyboard controller controls 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 that the system board is using.

OS Select for DRAM > 64MB

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

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

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

Full Screen Logo Show

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

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

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

Advanced Chipset Features

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

    PCIE  Reset  Delay                 Disabled      ▲       Item  Help
    PCIE GFX Core Payload Size         64 Bytes
    PCIE GPP Core Payload Size         64 Bytes          Menu Level    ▶
    GFX0 Link Width                    x16
    ASPM GFX                           Disabled
    ASPM  GPP                          Disabled
    ASPM NB-SB                         Disabled
    TXCLK Gating                       Disabled
    PCIE Common Clock                  Disabled
    GFX Multi Function Mode            Disabled
    Internal Video Mode                UMA
    UMA Frame Buffer Size              64MB
    VGA Aperture Size                  128MB
    Memory  Hole                       Disabled
    System BIOS Cacheable              Disabled
    Init Display First                 PCIEx
    Surroundview                       Enabled


    ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪ On-Chip  VGA  Setting ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪
    RS482 Video Mode                   RS482 Mode
    GFX Clock Mode                     200MHz
    Async GFX Clock                    14.318MHz OSC
    Async GFX Clock Source             Disabled
    MCLK Spread Spectrum               Auto
    Dual Mode Interleaving             Disabled
    Dynamic  CKE                       Enabled
    Boot Display                       Auto
    TV Standard                        NTSC          ▼

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

The screen above list all the fields available in the Advanced Chipset 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.

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 Reset Delay

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

PCIE GFX Core Payload Size

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

PCIE GPP Core Payload Size

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

GFX0 Link Width

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

ASPM GFX

The options are L0, L1, L0 & L1 and Disabled.

ASPM GPP

The options are L0, L1, L0 & L1 and Disabled.

ASPM NB-SB

The options are L0, L1, L0 & L1 and Disabled.

TXCLK Gating

The options are Enabled and Disabled.

PCIE Common Clock

The options are Enabled and Disabled.

GFX Multi Function Mode

This field is used to enable the SurroundView™ technology which supports up to 4 independent displays by adding PCI Express graphics cards.

Internal Video Mode

This field is used to select the internal video mode. The options are UMA, UMA+SidePort, SidePort and Disabled.

UMA Frame Buffer Size

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

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.

Init Display First

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

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

Surroundview

This field is used to enable SurroundView™ which allows connecting up to 4 independent display devices.

GFX Clock Mode

The options are Sync and Async.

Async GFX Clock

This field is used to select the clock of the asynchronous GFX.

Async GFX Clock Source

This field is used to select the clock source of the asynchronous GFX. The options are 14.318MHz OSC and 100MHz PCIE.

MCLK Spread Spectrum

The options are Disabled, 0.25%, 0.5% and 0.75%.

Dual-Mode Interleaving

The options are Enabled and Disabled.

Dynamic CKE

The options are Enabled and Disabled.

Boot Display

This field is used to select the type of display to use when the system boots.

> **Important:**
> *The BIOS does not support booting from an HDTV therefore if you intend to use HDTV to boot up the system, you do not need to set this field. Instead, before you power-up the system, make sure this is the only display device connected to it. After the system boots up, you may then connect other display devices. Install the ATI Catalyst Integrated System Drivers to enable the system to detect the additional devices. The devices can be viewed in the ATI Catalyst Control Center utility which you will find available after installing the driver.*

TV Standard

Set this field according to the TV standard in your area.

Integrated Peripherals
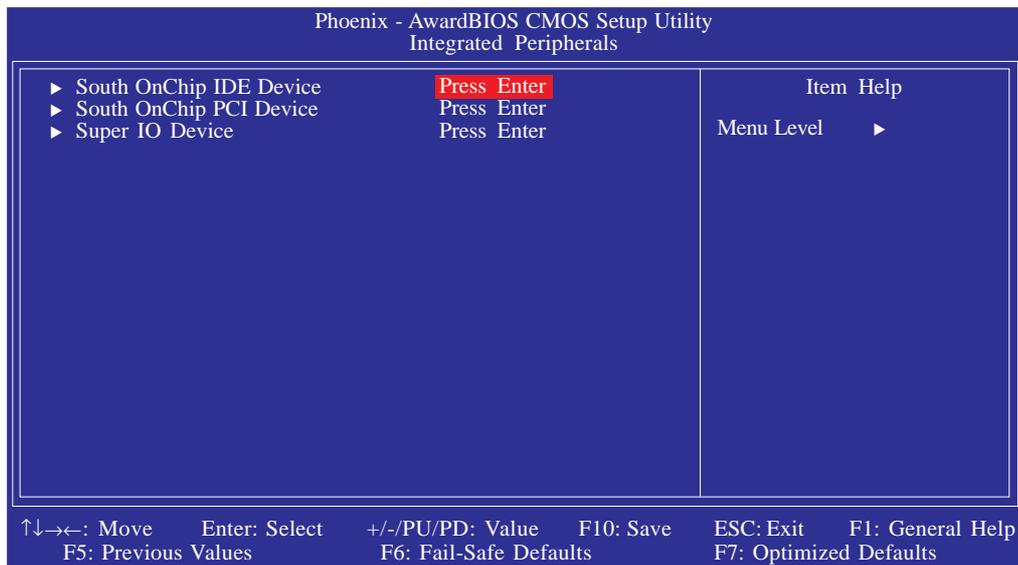
```
              Phoenix - AwardBIOS CMOS Setup Utility
                     Integrated  Peripherals
┌────────────────────────────────────────────┬──────────────────────┐
│  ▶  South OnChip IDE Device     Press Enter │      Item  Help      │
│  ▶  South OnChip PCI Device     Press Enter │                      │
│  ▶  Super IO Device             Press Enter │  Menu Level     ▶    │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
│                                             │                      │
└─────────────────────────────────────────────────────────────────────┘
 ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
    F5: Previous Values              F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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

South OnChip IDE Device

```
              Phoenix - AwardBIOS CMOS Setup Utility
                     South OnChip IDE Device
┌────────────────────────────────────────────┬──────────────────────┐
│  IDE HDD Block Mode             Enabled     │      Item  Help      │
│  IDE DMA Transfer Access        Enabled     │                      │
│  IDE Prefetch Mode              Enabled     │  Menu Level     ▶▶   │
│  On-Chip Primary IDE            Enabled     │                      │
│  IDE Primary Master PIO         Auto        │                      │
│  IDE Primary Slave PIO          Auto        │                      │
│  IDE Primary Master UDMA        Auto        │                      │
│  IDE Primary Slave UDMA         Auto        │                      │
│  On-Chip Secondary IDE          Enabled     │                      │
│  IDE Secondary Master PIO       Auto        │                      │
│  IDE Secondary Slave PIO        Auto        │                      │
│  IDE Secondary Master UDMA      Auto        │                      │
│  IDE Secondary Slave UDMA       Auto        │                      │
│                                             │                      │
│ ************* On-Chip Serial ATA Setting ************* │            │
│  Serial ATA Controller          Both        │                      │
│  Serial ATA Mode                IDE Controller │                   │
│                                             │                      │
│                                             │                      │
│                                             │                      │
└─────────────────────────────────────────────────────────────────────┘
 ↑↓→←: Move     Enter: Select    +/-/PU/PD: Value   F10: Save   ESC: Exit   F1: General Help
    F5: Previous Values              F6: Fail-Safe Defaults   F7: Optimized Defaults
```

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

IDE HDD Block Mode

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

Disabled   The IDE HDD uses the standard mode.

IDE DMA Transfer Access

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

IDE Prefetch Mode

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

On-Chip Primary IDE and On-Chip Secondary IDE

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

IDE Primary Master/Slave PIO and IDE Secondary Master/Slave PIO

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

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.

IDE Primary Master/Slave UDMA and IDE Secondary Master/Slave UDMA

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

Auto   The BIOS will automatically detect the settings for you.

Disabled   The BIOS will not detect these categories.

Serial ATA Controller

This field is used to select the Serial ATA channels you want enabled.

Serial ATA Mode

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

South OnChip PCI Device
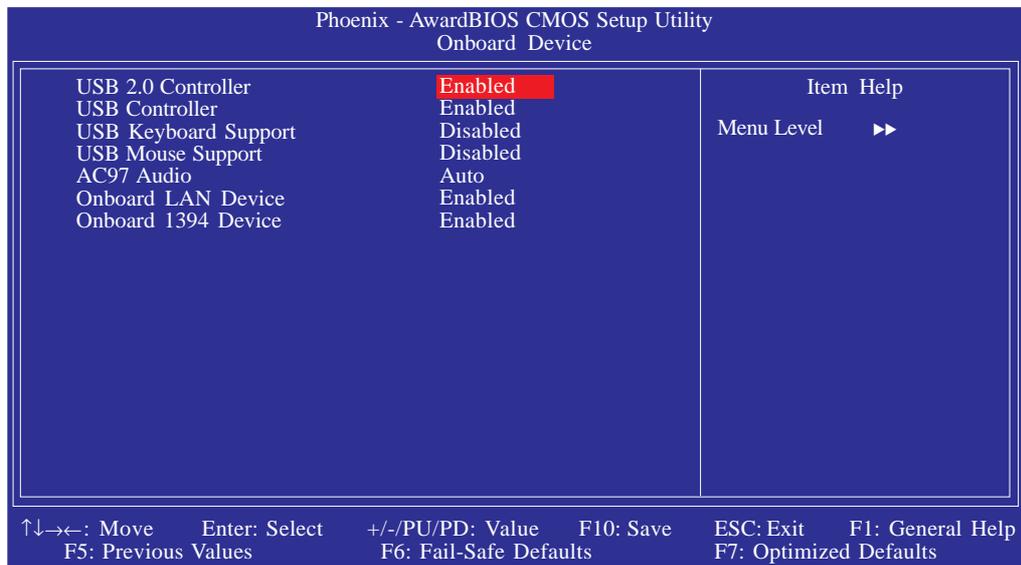
```
                     Phoenix - AwardBIOS CMOS Setup Utility
                                Onboard Device

   USB 2.0 Controller              Enabled                        Item  Help
   USB Controller                  Enabled
   USB Keyboard Support            Disabled            Menu Level      ▶▶
   USB Mouse Support               Disabled
   AC97 Audio                      Auto
   Onboard LAN Device              Enabled
   Onboard 1394 Device             Enabled




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

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

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 Keyboard Support

This field is used to enable or disable the USB keyboard.

USB Mouse Support

This field is used to enable or disable the USB mouse.

AC97 Audio

Auto   Select this option when using the onboard audio.
Disabled   Select this option when using a PCI sound card.

Onboard LAN Device

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

Onboard 1394 Device

This field is used to enable or disable the onboard 1394 controller.

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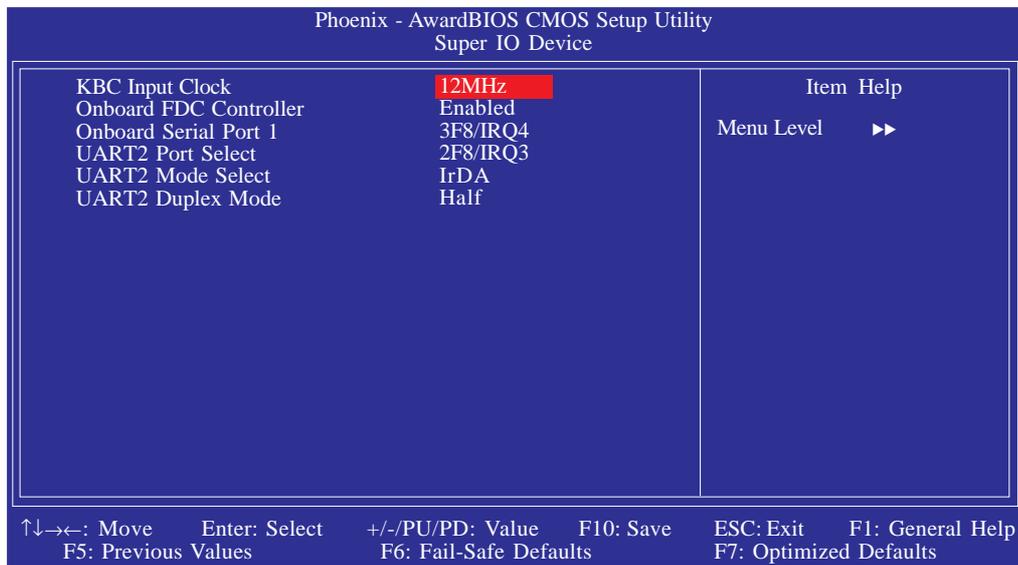
```
               Phoenix - AwardBIOS CMOS Setup Utility
                         Super IO Device

   KBC Input Clock               12MHz            Item  Help
   Onboard FDC Controller        Enabled
   Onboard Serial Port 1         3F8/IRQ4      Menu Level    ▶▶
   UART2 Port Select             2F8/IRQ3
   UART2 Mode Select             IrDA
   UART2 Duplex Mode             Half




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

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

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

Auto   The system will automatically select an I/O address for the onboard serial port.

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

Disabled   Disables the onboard serial port.

UART2 Port Select

Auto   The system will automatically select an I/O address for the IR device.

3F8/IRQ4, 2F8/IRQ3, 3E8/IRQ4, 2E8/IRQ3   Allows you to manually select an I/O address for the IR device.

Disabled   Disables the IR device.

UART2 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.

UART2 Duplex Mode

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

Power Management Setup

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

```
               Phoenix - AwardBIOS CMOS Setup Utility
                     Power  Management  Setup
┌──────────────────────────────────────────────────┬──────────────────┐
│  ACPI Function                  Enabled           │     Item  Help   │
│  ACPI Suspend Type              S1(POS)            │                  │
│  C2 Disable/Enable              Disabled           │ Menu Level    ▶ │
│  C3  Latency                    Disabled           │                  │
│  Power Management  Option       User  Define       │                  │
│  HDD Power Down                 Disabled           │                  │
│  Video Off Option               Suspend -> Off     │                  │
│  Video Off Method               V/H Sync+Blank     │                  │
│  Modem Use IRQ                  3                  │                  │
│  Soft-Off By PWRBTN             Instant-Off        │                  │
│  Wake-Up By PCI Card            Disabled           │                  │
│  RTC Alarm Resume               Disabled           │                  │
│ x Date (of Month)               0                  │                  │
│ x Resume  Time  (hh:mm:ss)      0 : 0 : 0          │                  │
│  Power On Function              BUTTON  ONLY       │                  │
│ x KB Power On Function          Enter              │                  │
│ x Hot  Key  Power  On           Ctrl-F1            │                  │
│  PWRON  After  PWR-Fail         Off               │                  │
├──────────────────────────────────────────────────┴──────────────────┤
│ ↑↓→←: Move    Enter: Select   +/-/PU/PD: Value   F10: Save   ESC: Exit    F1: General Help │
│    F5: Previous Values          F6: Fail-Safe Defaults       F7: Optimized Defaults │
└──────────────────────────────────────────────────────────────────────┘
```

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

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.

C3 Latency

This field is used to select the clock cycle of the C3 latency time.

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.
Disabled	Disables the Power Management function.

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.

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.

Wake-Up by PCI Card

Enabled   This field should be set to Enabled only if your PCI card such as LAN card or modem card uses the PCI PME (Power Management Event) signal to remotely wake up the system. Access to the LAN card or PCI card will cause the system to wake up. Refer to the card's documentation for more information.

Disabled   The system will not wake up despite access to the PCI card.

RTC Alarm Resume

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

Disabled   Disables the automatic power-on function. (default)

Date (of Month)

0   The system will power-on everyday according to the time set in the "Time (hh:mm:ss) Alarm" field.

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

Resume Time (hh:mm:ss)

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

Power On Function

This field allows you to use the PS/2 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   Select the function key you would like to use to power-on the system in the "Hot Key Power On" field.

Mouse Move   Move the PS/2 mouse to wake up the system.

Mouse Click   Click the PS/2 mouse to wake up the system.

Any Key   Press any key to power-on the system.

Keyboard 98   Press the "wake up" key of the Windows® 98 compatible keyboard to power-on the system.

KB Power On Password

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

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

Hot Key Power On

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

PWRON After PWR-Fail

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.

PnP/PCI Configurations

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

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

    Reset Configuration Data        Disabled              Item  Help

    Resources Controlled By         Auto (ESCD)     Menu Level      ▶
  x  IRQ Resources                  Press  Enter
                                                    Default is Disabled.
    PCI/VGA Palette Snoop           Disabled        Select Enabled to reset
    Assign IRQ For VGA              Enabled         Extended  System
    Assign IRQ For USB              Enabled         Configuration Data
    PCI Latency Timer (CLK)         64              (ESCD) when you exit
                                                    Setup if you have
    ** PCI Express Relative Items **   4096         installed a new add-on
    Maximum  Payload  Size                          and  the  system
                                                    reconfiguration  has
                                                    caused  a  serious
                                                    conflict that the OS
                                                    cannot boot.


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

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

Reset Configuration Data

Enabled The BIOS will reset the Extended System Configuration Data (ESCD) once automatically. It will then recreate a new set of configuration data.

Disabled The BIOS will not reset the configuration data.
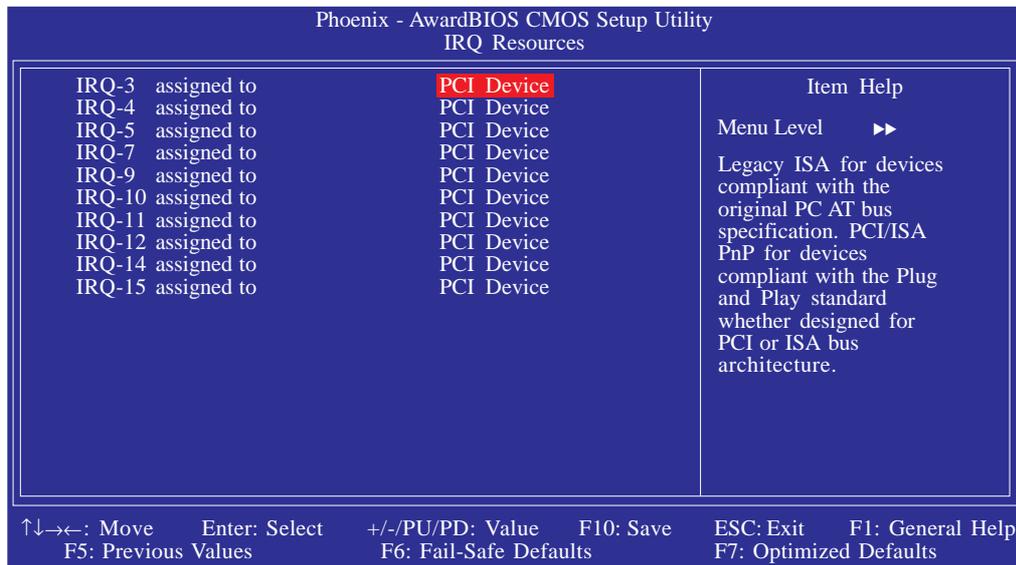
Resources Controlled By

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

Auto(ESCD) The system will automatically detect the settings for you.

Manual Choose the specific IRQ in the "IRQ Resources" field.

IRQ Resources

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

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                           IRQ  Resources

    IRQ-3   assigned to      PCI  Device            Item  Help
    IRQ-4   assigned to      PCI  Device
    IRQ-5   assigned to      PCI  Device        Menu Level    ▶▶
    IRQ-7   assigned to      PCI  Device
    IRQ-9   assigned to      PCI  Device        Legacy  ISA  for  devices
    IRQ-10  assigned to      PCI  Device        compliant  with  the
    IRQ-11  assigned to      PCI  Device        original  PC  AT  bus
    IRQ-12  assigned to      PCI  Device        specification.  PCI/ISA
    IRQ-14  assigned to      PCI  Device        PnP  for  devices
    IRQ-15  assigned to      PCI  Device        compliant  with  the  Plug
                                                and  Play  standard
                                                whether  designed  for
                                                PCI  or  ISA  bus
                                                architecture.


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

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

PCI/VGA Palette Snoop

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

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

Assign IRQ for VGA

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

Assign IRQ for USB

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

PCI Latency Timer (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

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

    Shutdown  Temperature          Disabled              Item  Help
    CPU Fan Full On                SmartFan
    Vcc3                           3.32V          Menu Level      ►
    Vcc5                           5.05V
    +12V                           11.96V
    V5SB                           5.10V
    VBAT                           3.34V
    Current  System  Temperature   34°C
    Current  CPU  Temperature      41°C
    Current  NB  Temperature       36°C
    Current Chip Fan Speed         0 RPM
    Current System Fan Speed       0 RPM
    Current CPU Fan Speed          2596 RPM




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

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

Shutdown Temperature

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

CPU Fan Full On

Enabled   The CPU fan will rotate at full speed.

SmartFan   The CPU fan's speed will rotate according to the CPU's temperature.

Vcc3 to VBAT

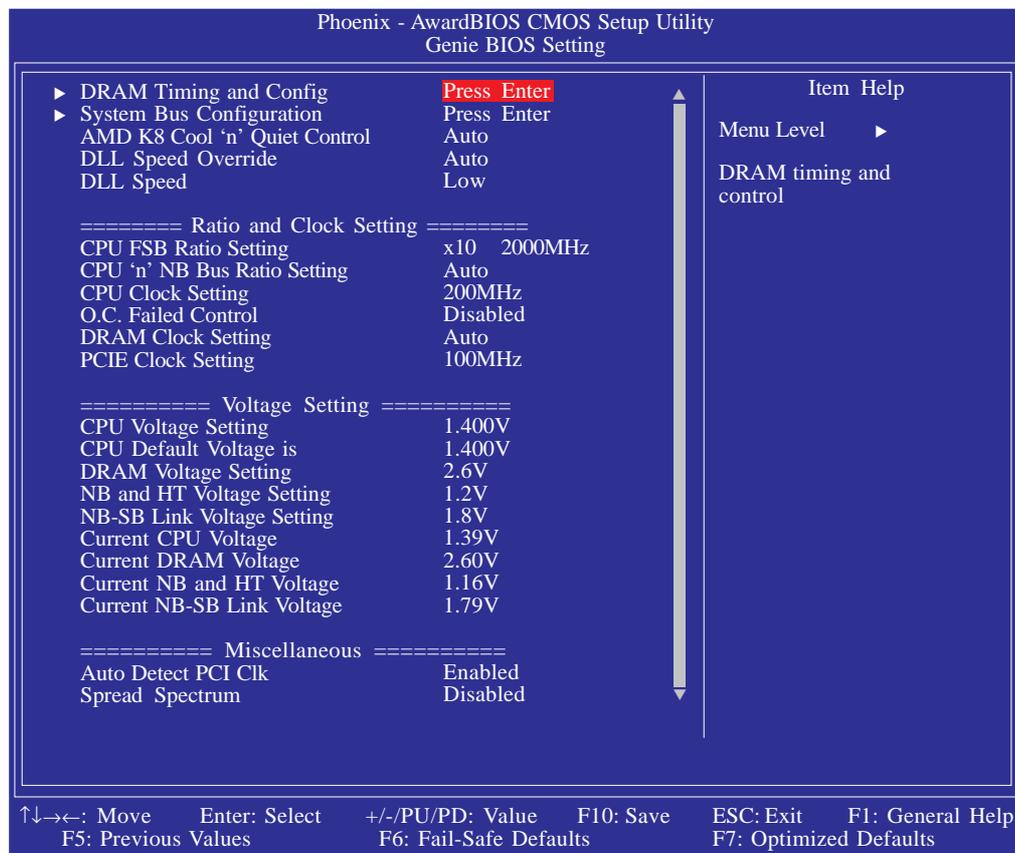These fields will show the monitored output voltages.

Current System Temperature to Current NB Temperature

These fields will show the current temperature of the internal system, CPU and north bridge chip.

Current Chip Fan Speed to Current CPU Fan Speed

These fields will show the current fan speed of the monitored cooling fans in RPM (Rotation Per Minute).

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Genie BIOS Setting

```
                 Phoenix - AwardBIOS CMOS Setup Utility
                           Genie BIOS Setting
  ┌──────────────────────────────────────────────┬────────────────────┐
  │ ▶ DRAM Timing and Config          Press  Enter│▲    Item  Help      │
  │ ▶ System Bus Configuration        Press  Enter│                    │
  │   AMD K8 Cool 'n' Quiet Control    Auto        │ Menu Level    ▶    │
  │   DLL  Speed  Override             Auto        │                    │
  │   DLL  Speed                       Low         │ DRAM timing and    │
  │                                                │ control            │
  │   ======== Ratio  and  Clock  Setting ======== │                    │
  │   CPU FSB Ratio Setting           x10    2000MHz│                   │
  │   CPU 'n' NB Bus Ratio Setting     Auto        │                    │
  │   CPU Clock Setting                200MHz      │                    │
  │   O.C. Failed Control              Disabled    │                    │
  │   DRAM Clock Setting               Auto        │                    │
  │   PCIE Clock Setting               100MHz      │                    │
  │                                                │                    │
  │   ========== Voltage  Setting ========== │                         │
  │   CPU Voltage Setting              1.400V      │                    │
  │   CPU Default Voltage is           1.400V      │                    │
  │   DRAM Voltage Setting             2.6V        │                    │
  │   NB and HT Voltage Setting        1.2V        │                    │
  │   NB-SB Link Voltage Setting       1.8V        │                    │
  │   Current CPU Voltage              1.39V       │                    │
  │   Current DRAM Voltage             2.60V       │                    │
  │   Current NB and HT Voltage        1.16V       │                    │
  │   Current NB-SB Link Voltage       1.79V       │                    │
  │                                                │                    │
  │   ========== Miscellaneous ========== │                            │
  │   Auto Detect PCI Clk              Enabled     │                    │
  │   Spread  Spectrum                 Disabled    │▼                   │
  │                                                │                    │
  ├──────────────────────────────────────────────┴────────────────────┤
  │ ↑↓→←: Move      Enter: Select    +/-/PU/PD: Value    F10: Save      ESC: Exit    F1: General Help │
  │     F5: Previous Values          F6: Fail-Safe Defaults       F7: Optimized Defaults │
  └────────────────────────────────────────────────────────────────────┘
```

The 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

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

```
               Phoenix - AwardBIOS CMOS Setup Utility
                      DRAM Timing and Config

      CAS Latency (Tcl)             Auto                    Item  Help
      Min RAS Active Time (Tras)    Auto
      RAS to CAS Delay (Trcd)       Auto          Menu Level    ▶▶
      Row Precharge Time (Trp)      Auto
      Row to Row Delay (Trrd)       Auto
      Row Cycle Time (Trc)          Auto
      Row Refresh Cyc Time (Trfc)   Auto
      Read to Write Time (Trwt)     Auto
      Refresh Rate (Tref)           Auto
      Write to Read Delay (Twtr)    Auto
      Write Recovery Time (Twr)     Auto
      1T/2T  Memory  Timing         Auto
      Read  Preamble  Value         Auto
      Async  Latency  Value         Auto
      DRAM Drive Strength           Normal
      DRAM Drive Strength Ratio     x1.42
      DRAM DQ Drive Strength        Auto
      DQS  Hysteresis               Auto
      Read and Write Queue Bypass   Auto
      Dynamic Idle Cycle Counter    Auto
      Idle Cycle Limit              Auto
      Bypass Max                    Auto
      Odd Divisor Correct           Auto
      DRAM 128 bits Burst           Auto
      Dual DIMM                     Auto
      Disable Jitter                Auto
      Digital Locked Loop           Enabled
      DRAM Bank Interleaving        Enabled
      Burst Length                  4 beats
      Enable All DIMM Slots Clock   Enabled
      MTRR Mapping Mode             Continuous
      PDL  Delay  Adjust            Auto
      Delay Line Adjust             128
      DRAM ECC Feature Control      Disabled
      ECC Memory Interlock          At Least One
      ECC MCE Enable                Disabled
      Chip-Kill Mode Enable         Disabled
      ECC Redirection               Disabled
      DRAM Background Scrubber      Disabled
      L2 Cache Background Scrubber  Disabled
      DCache Background Scrubber    Disabled

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

The 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.

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.

Min RAS Active Time (Tras)

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

RAS to CAS Delay (Trcd)

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.

Row Precharge Time (Trp)

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.

Row to Row Delay (Trrd)

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

Row Cycle Time (Trc)

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

Row Refresh Cyc Time (Trfc)

This field is used to select the row refresh cycle time. Auto refresh active to RAS# active or RAS# to auto refresh - similar to Trc.

Read to Write Time (Trwt)

This field is used to select the read to write time. Although this is not a DRAM specified timing parameter, it is related to the routing latencies on the clock forwarded bus. This is measured from the first address bus slot which is not associated with part of the read burst.

Refresh Rate (Tref)

This field is used to select the refresh rate of the DIMM that requires the most frequent refresh.

Write to Read Delay (Twtr)

This field is used to select the write to read delay time. This is measured from the rising edge of the last non-masked data strobe to the rising edge of the next read command.

Write Recovery Time (Twr)

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

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)

Read Preamble Value

When the DQS receiver is turned on, you can select the time prior to the max-read DQS return. This will notify the controller on when to enable its DQS receiver when awaiting the DRAM DQS driver to turn on for a read. The controller will disable its DQS receiver until the read preamble time and then enable its DQS receiver while the DRAM asserts DQS.

Async Latency Value

This field is used to select a value equal to the maximum asynchronous latency in the DRAM read round-trip loop.

DRAM Drive Strength

This field is used to select a level of the DRAM drive strength.

DRAM Drive Strength Ratio

This field is used to select the ratio of the DRAM drive strength.

DRAM DQ Drive Strength

This field is used to select a level of the DRAM DQ drive strength.

DQS Hysteresis

The options are Auto, Enabled and Disabled.

Read to Write Queue Bypass

The options are Auto, Count 2, Count 4, Count 8 and Count 16.

Dynamic Idle Cycle Counter

This field is used to enable the dynamic idle cycle counter.

Idle Cycle Limit

This field is used to select the cycle of MemCLKs before forcibly closing (precharging) an open page.

Bypass Max

This field is used to select the number of times the first entry in DCQ can be bypassed in arbitration before the arbiter choice is disallowed.

Odd Divisor Correct

The options are Auto, Enabled and Disabled.

DRAM 128 Bits Burst

The options are Auto, Enabled and Disabled.

Dual DIMM

The options are Auto, Enabled and Disabled.

Disable Jitter

The options are Auto, On and Off.

Digital Locked Loop

The options are Enabled and Disabled.

DRAM Bank Interleaving

The options are Enabled and Disabled.

Burst Length

This field is used to select the DRAM's burst length. The DRAM will predict the address of the next memory location to be accessed after the first address is accessed. To use the burst feature, select the burst length which is the actual length of burst plus the starting address and allows internal address counter to properly generate the next memory location. The larger the size, the faster the DRAM performance.

Enable All DIMM Slots Clock

This field is used to enable or disable all DIMM clock.

MTRR Mapping Mode

This field is used to disable or continue the MTRR mapping mode.

PDL Delay Adjust

The options are Auto, Slower and Faster.

Delay Line Adjust

Leave this field in its default setting.

DRAM ECC Feature Control

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.

ECC Memory Interlock

The options are At Least One and All Are.

ECC MCE Enable

The options are Enabled and Disabled.

Chip-Kill Mode Enable

The options are Enabled and Disabled.

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

Move the cursor to this field and press <Enter>. The following screen will appear.
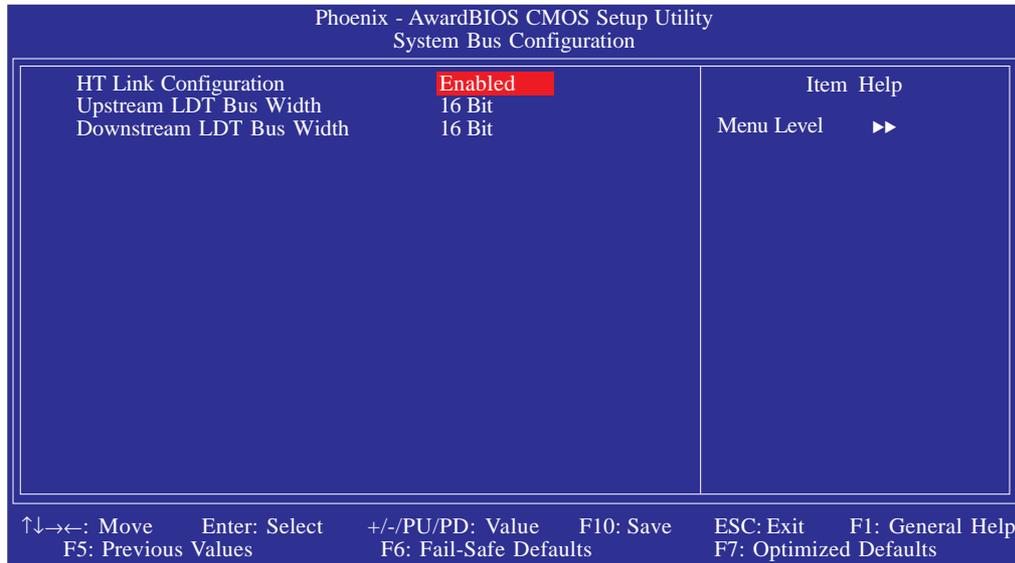
```
                    Phoenix - AwardBIOS CMOS Setup Utility
                          System Bus Configuration

     HT Link Configuration            Enabled              Item  Help
     Upstream LDT Bus Width           16 Bit
     Downstream LDT Bus Width         16 Bit            Menu Level    ▶▶




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

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

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.

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.

DLL Speed Override

The options are Auto, Enabled and DLL Speed.

DLL Speed

The options are Low and High.

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 north bridge.

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.*

O. C. Failed Control

If after overclocking, the system failed to function properly, the system will automatically adjust the CPU clock according to the value selected in this field. The adjusted clock speed is the actual CPU clock minus the value selected in this field.

DRAM Clock Setting

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

PCIE Clock Setting

This field is used to select the PCI Express clock.

CPU Voltage Setting

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

CPU Default Voltage Is

This field will show the default voltage of the CPU.

DRAM Voltage Setting

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

NB and HT Voltage Setting

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

NB-SB Link Voltage Setting

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

> **Important:**
> *Although the CPU / DRAM / NB Chip / SB Chip 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 CPU's current voltage.

Current DRAM Voltage

This field will show the DRAM's current voltage.

Current NB and HT Voltage

This field will show the north bridge chip's current voltage.

Current NB-SB Link Voltage

This field will show the south bridge chip's current voltage.

Auto Detect PCI Clk

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

Spread Spectrum

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

Hot Keys

Loading the CPU Clock, PCIE Clock and Memory Clock Default

If the overclocked settings resulted to the system's instability or worse yet, not being able to boot up the system, follow the steps below to restore the clock's settings back to their default value.

1. Power-off the system.

2. Press the Insert key first then while at it, press the power button. Release only when the system's power is on.

Loading the CPU Clock and PCIE Clock Default

Follow the steps below to reload the CPU clock and PCIE clock.

1. Power-off the system.

2. Press the power button then after 3 seconds press the Insert key.

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>.

```
                 Phoenix - AwardBIOS CMOS Setup Utility

     ▶ Standard CMOS Features          ▶ Genie BIOS Setting
     ▶ Advanced BIOS Features            Load Fail-Safe Defaults
     ▶ Advanced Chipset Features         Load Optimized Defaults
     ▶ Integrated Peripherals            Set Supervisor Password
     ▶ Power Management           ┌──────────────────────────┐ word
     ▶ PnP/PCI Configurat         │  Load Fail-Safe Defaults (Y/N)?  │ etup
     ▶ PC Health Status           └──────────────────────────┘ aving

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

                       Load Fail-Safe Defaults
```

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>.

```
                   Phoenix - AwardBIOS CMOS Setup Utility

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

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

                        Load Optimized Defaults
```

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

Set Supervisor Password

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

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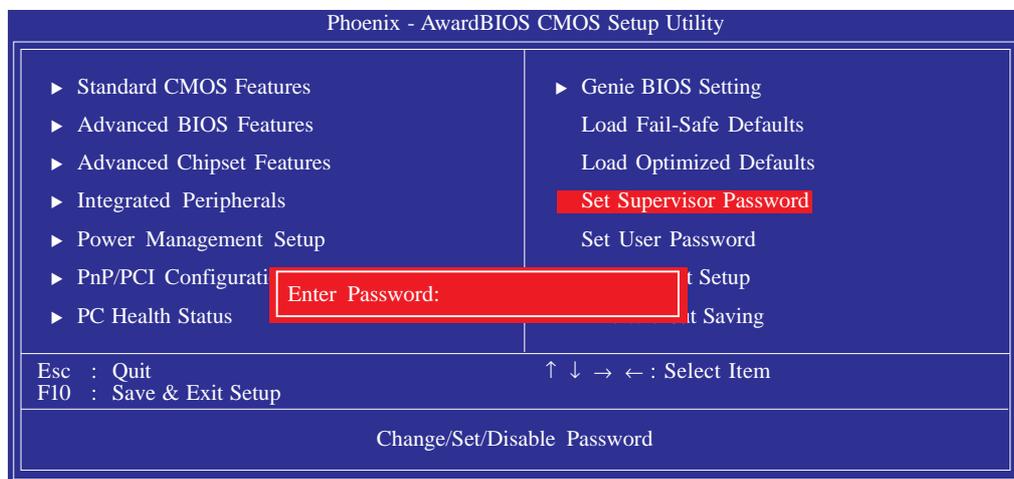
```
                  Phoenix - AwardBIOS CMOS Setup Utility

   ▶  Standard CMOS Features          ▶  Genie BIOS Setting
   ▶  Advanced BIOS Features             Load Fail-Safe Defaults
   ▶  Advanced Chipset Features          Load Optimized Defaults
   ▶  Integrated  Peripherals            Set Supervisor Password
   ▶  Power  Management  Setup           Set User Password
   ▶  PnP/PCI Configurati┌─────────────────────────┐t Setup
   ▶  PC Health Status    │ Enter  Password:        │t Saving
                          └─────────────────────────┘
   Esc  :  Quit                      ↑ ↓ → ← : Select Item
   F10  :  Save & Exit Setup

                  Change/Set/Disable  Password
```

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

Confirm Password:

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

Set User Password

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

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

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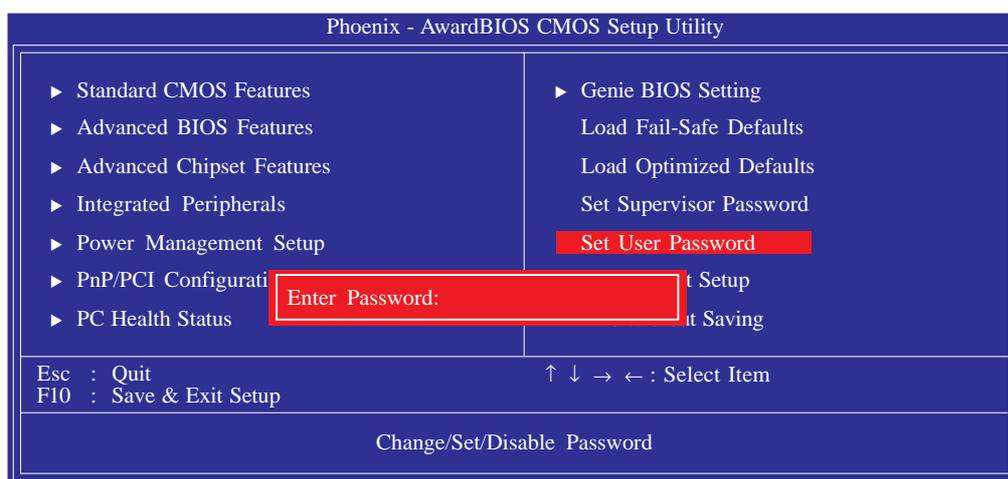
```
                 Phoenix - AwardBIOS CMOS Setup Utility

  ▶  Standard CMOS Features          ▶  Genie BIOS Setting
  ▶  Advanced BIOS Features             Load Fail-Safe Defaults
  ▶  Advanced Chipset Features          Load Optimized Defaults
  ▶  Integrated  Peripherals            Set Supervisor Password
  ▶  Power  Management Setup            Set  User  Password
  ▶  PnP/PCI Configurati                              t Setup
                           Enter  Password:
  ▶  PC Health Status                                 t Saving

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

                   Change/Set/Disable  Password
```

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

Confirm Password:

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

Save & Exit Setup

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

```
                 Phoenix - AwardBIOS CMOS Setup Utility

   ▶  Standard CMOS Features          ▶  Genie BIOS Setting
   ▶  Advanced BIOS Features             Load Fail-Safe Defaults
   ▶  Advanced Chipset Features          Load Optimized Defaults
   ▶  Integrated  Peripherals            Set Supervisor Password
   ▶  Power  Managemen┌──────────────────────────────┐sword
   ▶  PnP/PCI Configura│  SAVE to CMOS and EXIT (Y/N)? │Setup
   ▶  PC Health Status └──────────────────────────────┘Saving

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

                        Save Data to CMOS
```

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>.

```
                Phoenix - AwardBIOS CMOS Setup Utility

   ▶ Standard CMOS Features          ▶ Genie BIOS Setting
   ▶ Advanced BIOS Features             Load Fail-Safe Defaults
   ▶ Advanced Chipset Features          Load Optimized Defaults
   ▶ Integrated Peripherals             Set Supervisor Password
   ▶ Power Management        ┌─────────────────────────┐ ssword
   ▶ PnP/PCI Configurat      │  Quit Without Saving (Y/N)? N  │ Setup
   ▶ PC Health Status        └─────────────────────────┘ t Saving

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

                        Abandon All Data
```

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 connected to SATA 1 to SATA 4.

When the system powers-up and all drives have been detected, the ATI BIOS status message screen will appear. Press the <F4> key or the <Ctrl> + <S> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

Refer to chapter 6 for steps in configuring RAID.

> **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 ATI RAID BIOS utility.*

Updating the BIOS

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

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

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

3. Save the setting and reboot the system.

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

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

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

File Name to Program :

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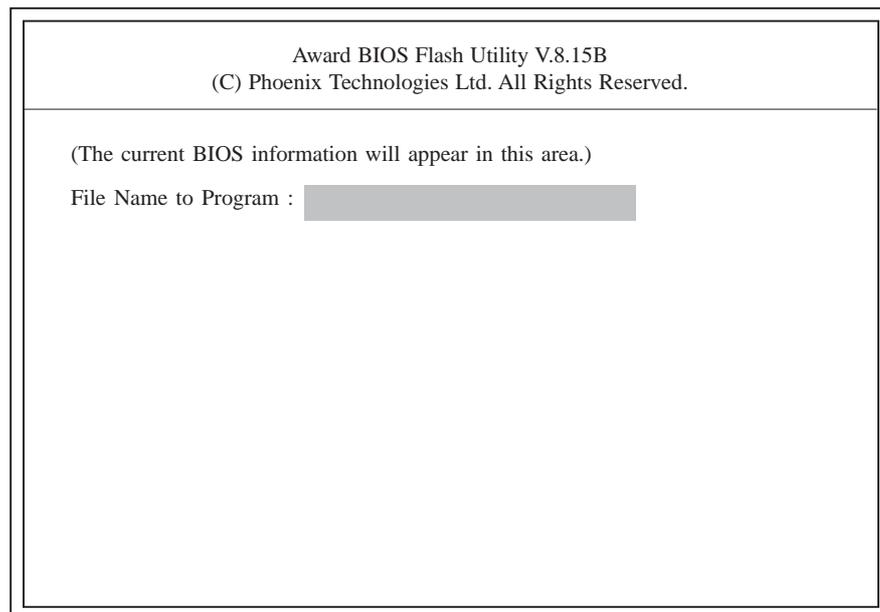
5. Type the new BIOS file name onto the gray area that is next to "File Name to Program" then press <Enter>.

6. The following will appear:

    Do You Want to Save BIOS (Y/N)

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

7. The following will then appear:

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

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

Chapter 4 - Supported Software

Drivers, Utilities and Software Applications

The 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".
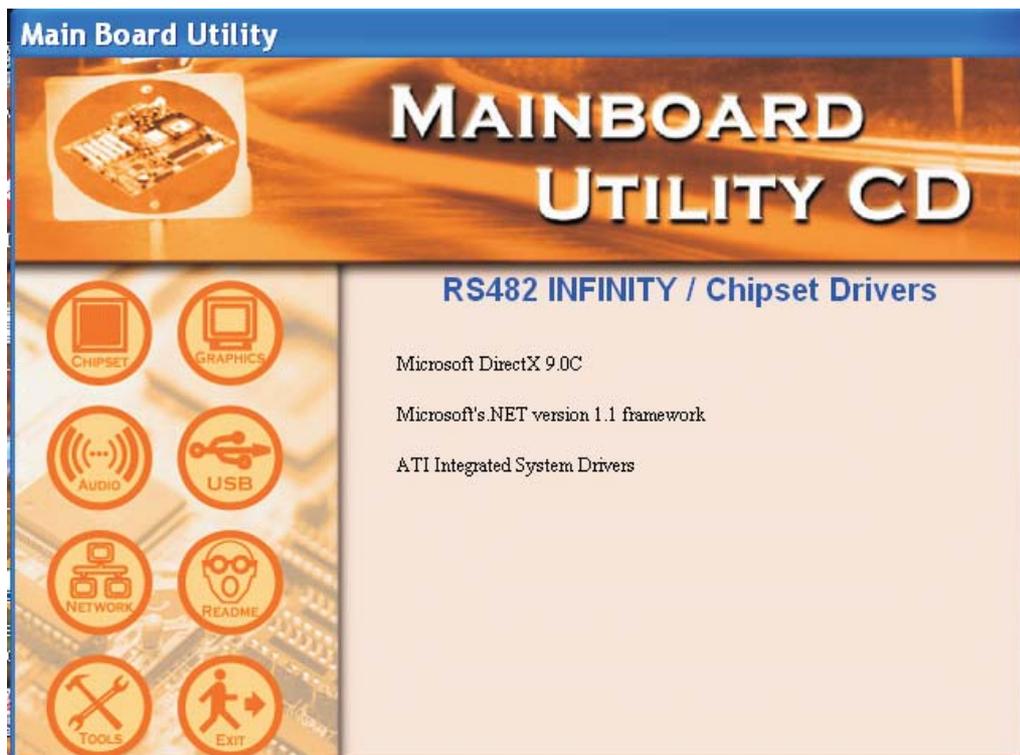
> **Important:**
> *You must first install Microsoft DirectX 9.0C and Microsoft's .NET version 1.1 Framework prior to installing any drivers.*

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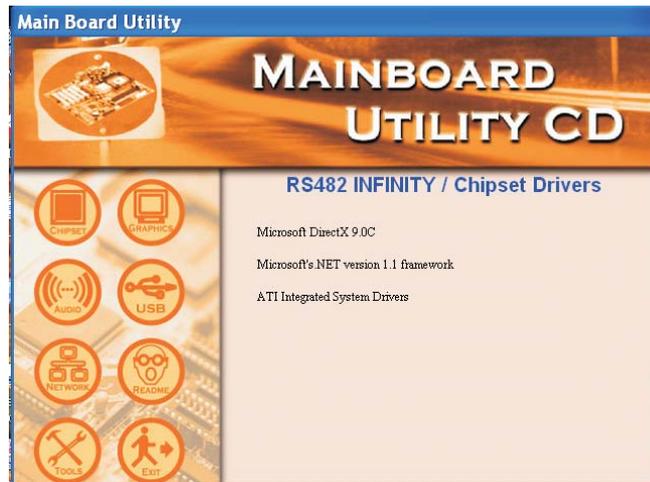
2. Click "I accept the agreement" then click Next.

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

> **Installing Microsoft(R) DirectX(R)**
>
> **DirectX Setup**
> Install DirectX runtime components
>
> **DirectX 9.0 Runtime Install:**
> This install package will search for updated DirectX Runtime Components and update as necessary. It may take a few minutes.
>
> To start installation, please click Next.
>
> < Back   Next >   Cancel
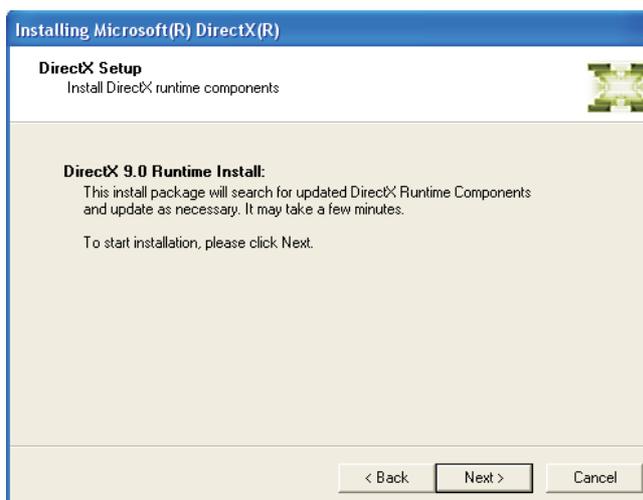
4. Click Finish. Reboot the system for DirectX to take effect.

> **Installing Microsoft(R) DirectX(R)**
>
> **Installation Complete**
>
> The components installed are now ready for use.
>
> < Back   Finish   Cancel

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4

Supported Software ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪
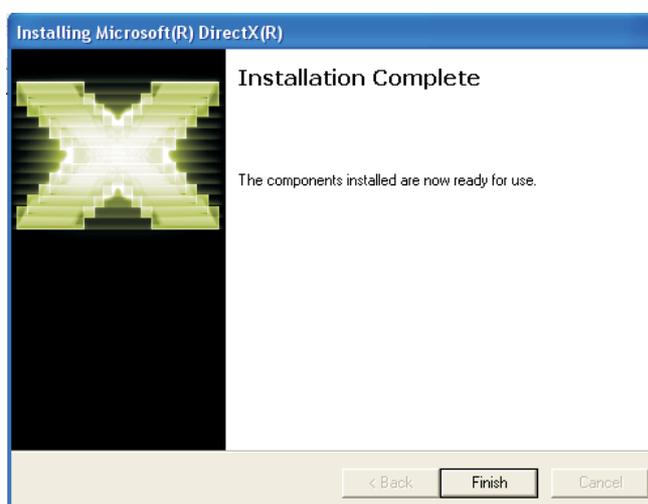
Microsoft's .NET version 1.1 Framework

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

1. Click "Microsoft's .NET version 1.1 Framework" on the main menu.
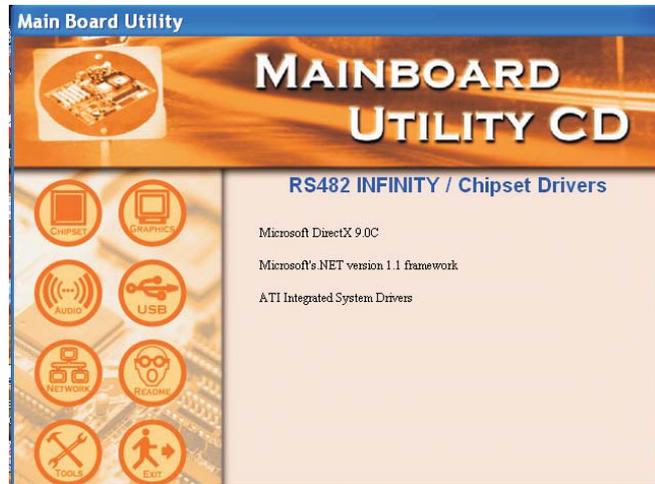
2. Click "Yes" to install the Framework package.
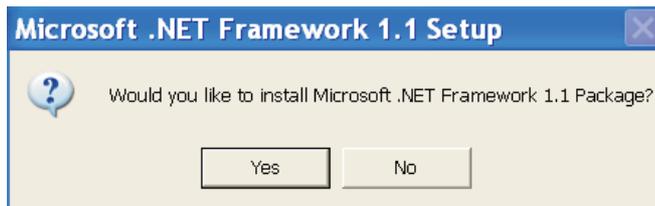
3. Setup is currently installing the files onto your computer.

   Follow the prompts on the screen to complete installation.

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

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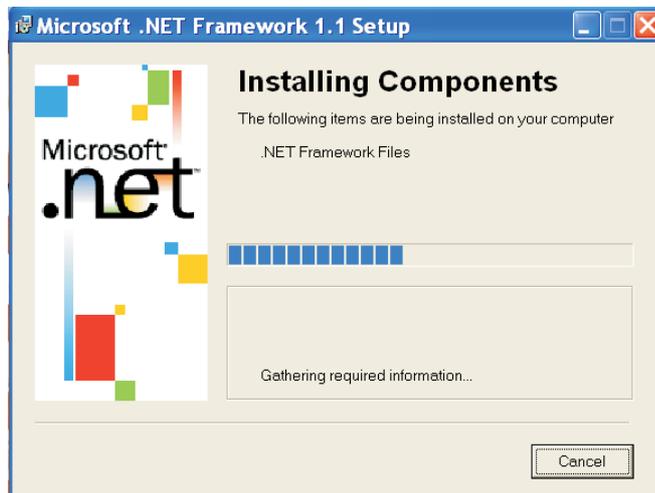
ATI Catalyst Integrated System Drivers

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

1. Click "ATI Catalyst Integrated System Drivers" on the main menu.

   Main Board Utility

   MAINBOARD UTILITY CD

   RS482 INFINITY / Chipset Drivers

   Microsoft DirectX 9.0C

   Microsoft's .NET version 1.1 framework

   ATI Integrated System Drivers
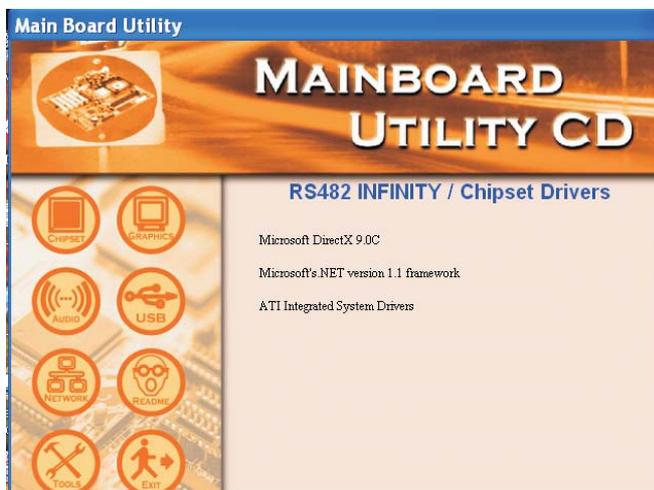
2. Click Install to install to the designated folder or click Browse to select another folder.

   5-11-igp_xp-2k_dd_cp_wdm_sb...

   Setup will install 5-11-igp_xp-2k_dd_cp_wdm_sb_gart_27345 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.

   Destination Folder

   \SUPPORT\5-11-igp_xp-2k_dd_cp_wdm_sb_gart_27345   Browse...

   Space required: 42.8MB
   Space available: 32.7GB

   Cancel   Nullsoft Install System v2.02   Install
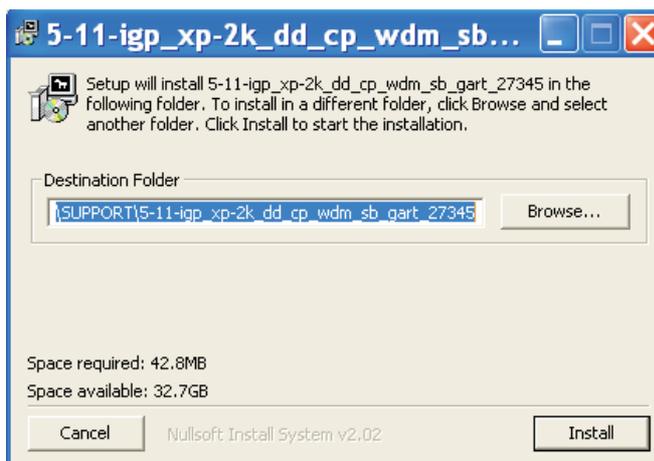
3. The installation wizard will extract the files needed to install the driver.

   5-11-igp_xp-2k_dd_cp_wdm_sb...

   Output folder: C:\ATI\SUPPORT\5-11-igp_xp-2k_dd_cp_wdm_sb_gart_273·

   Show details
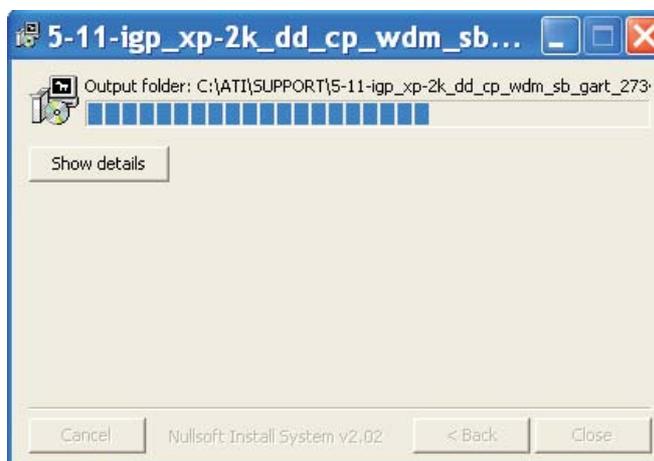
   Cancel   Nullsoft Install System v2.02   < Back   Close

4. After all files have been extracted, click Next.
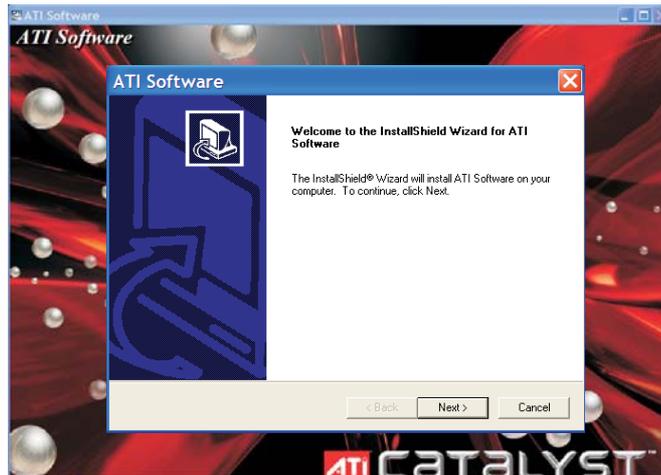
5. Read the license agreement then click Yes.

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

7. Setup is currently installing the ATI Display Driver.
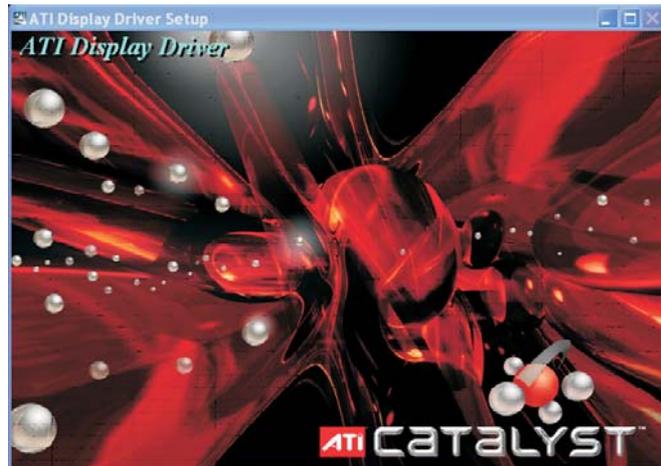
8. Setup is currently installing the ATI South Bridge Drivers.
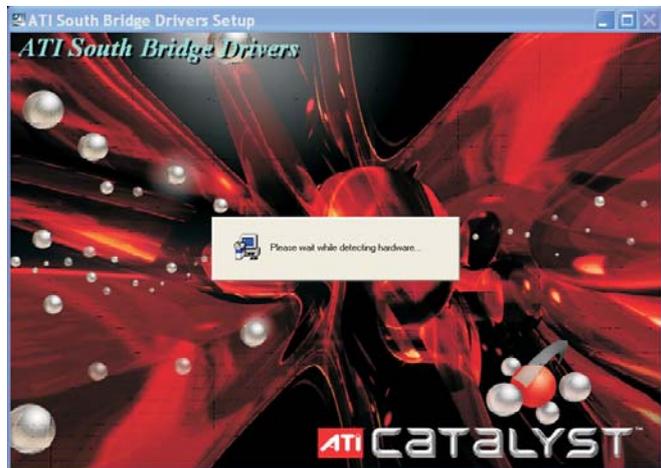
9. Click "Yes, I want to restart my computer now" then click Finish.

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

Supported Software ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪
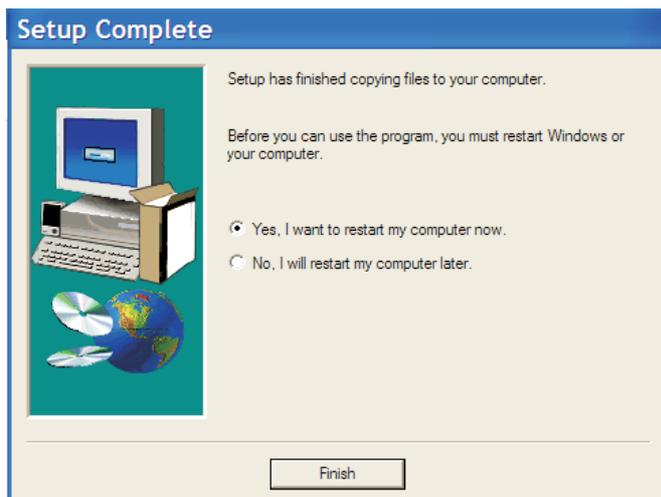
Realtek Audio Drivers

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

1. Click "Realtek Audio Drivers" on the main menu.
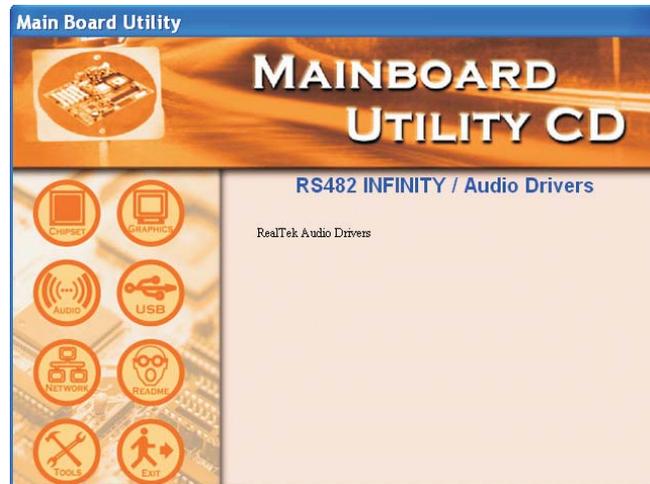
2. The installation wizard will extract the files needed to install AC97 audio.
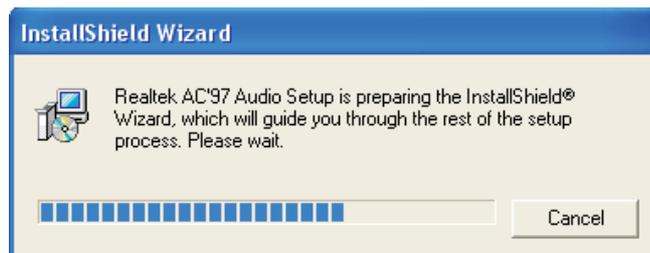
3. AC97 audio is intalling and configuring the new software installation.
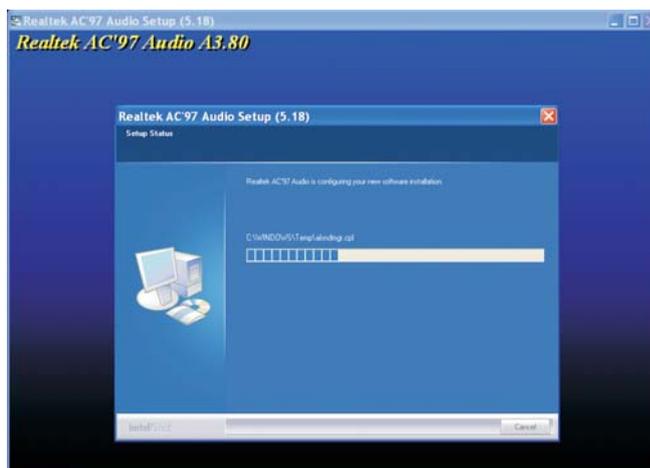
4. Click "Yes, I want to restart my computer now" then click Finish.

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

Supported Software ::
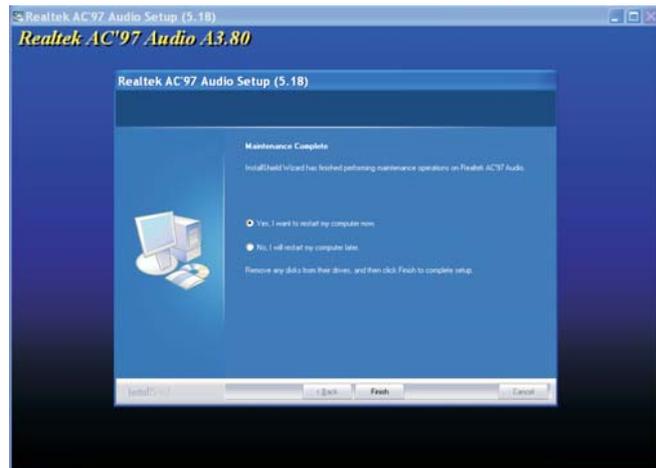
Realtek LAN Drivers

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

1. Click "Realtek LAN Drivers" on the main menu.
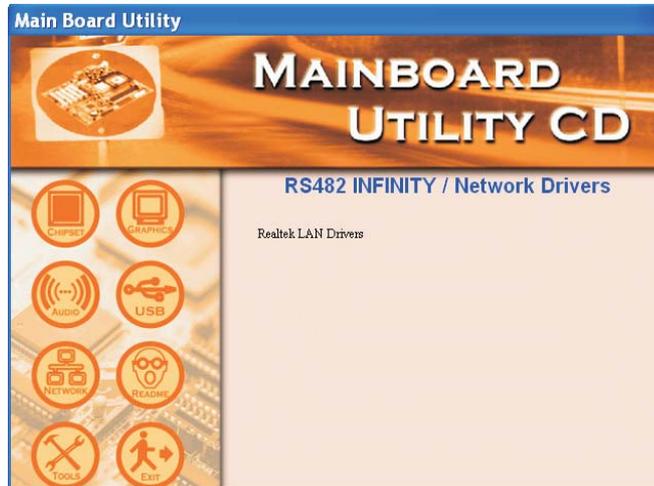
2. LanSetup is now preparing the installation wizard.
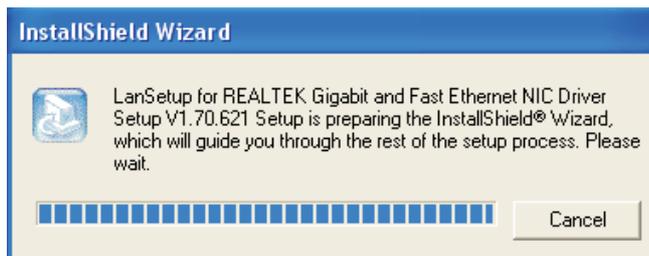
3. You are now ready to install the driver. Click Next.
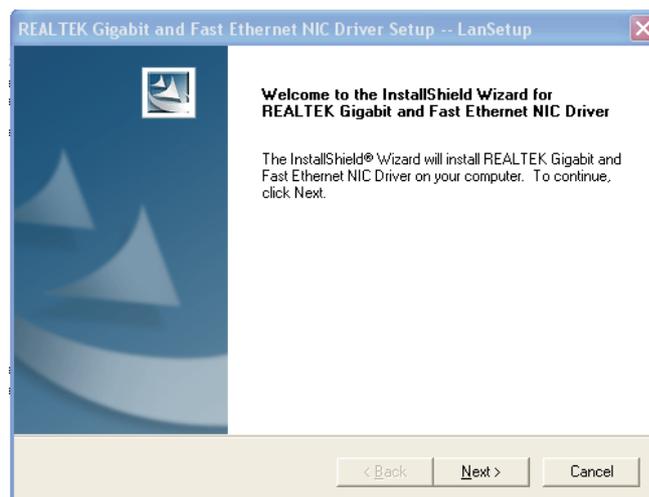
4. LanSetup is installing the new driver.
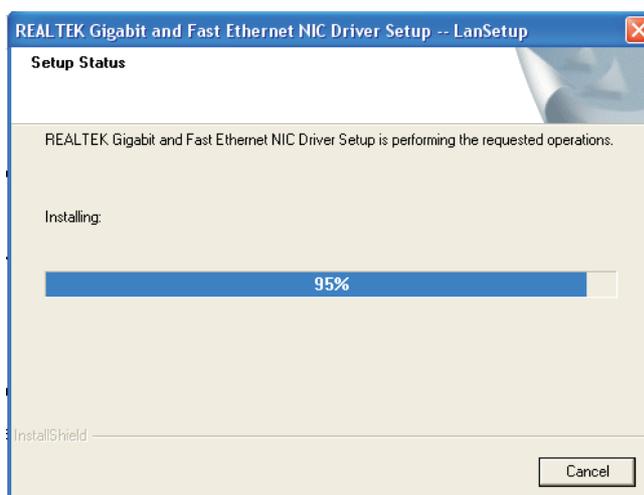
REALTEK Gigabit and Fast Ethernet NIC Driver Setup -- LanSetup

Setup Status

REALTEK Gigabit and Fast Ethernet NIC Driver Setup is performing the requested operations.

Installing:

95%

InstallShield

Cancel

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

REALTEK Gigabit and Fast Ethernet NIC Driver Setup -- LanSetup

InstallShield Wizard Complete

Setup has finished installing REALTEK Gigabit and Fast Ethernet NIC Driver on your computer.

< Back   Finish   Cancel

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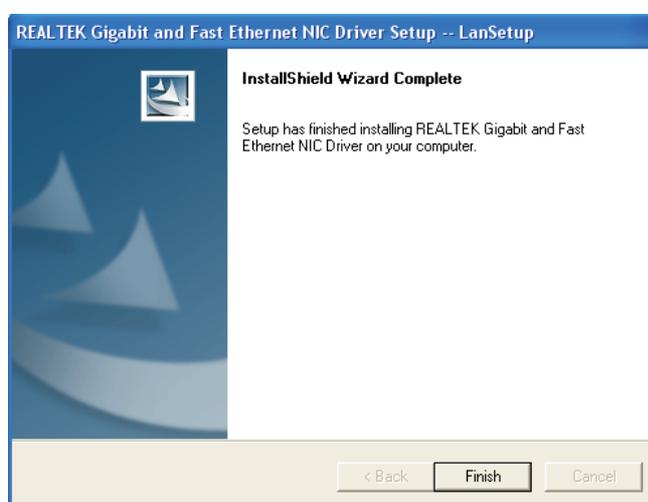
AMD Processor Drivers (Cool'n'Quiet)

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

1. Click "AMD Processor Drivers (Cool'n'Quiet)" on the main menu.

2. Setup is now ready to install and configure the driver. Click Next.
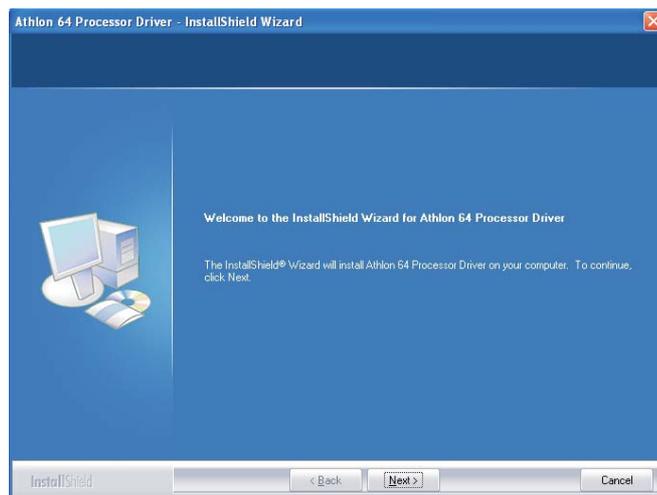
3. Read the license agreement then click Yes.
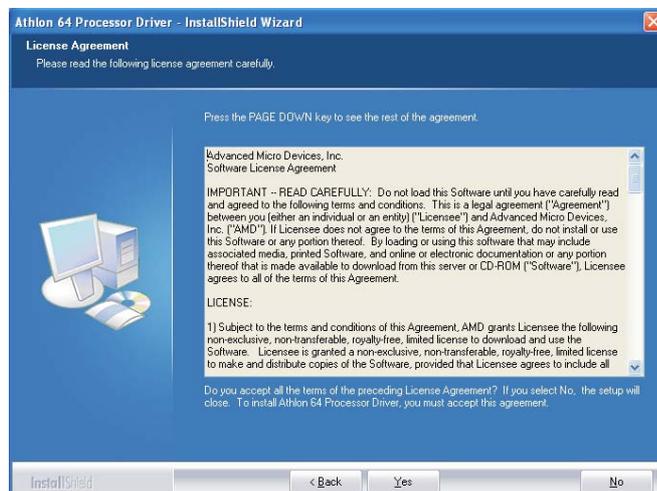
4. Go through the readme document for system requirements and installation tips then click Next.
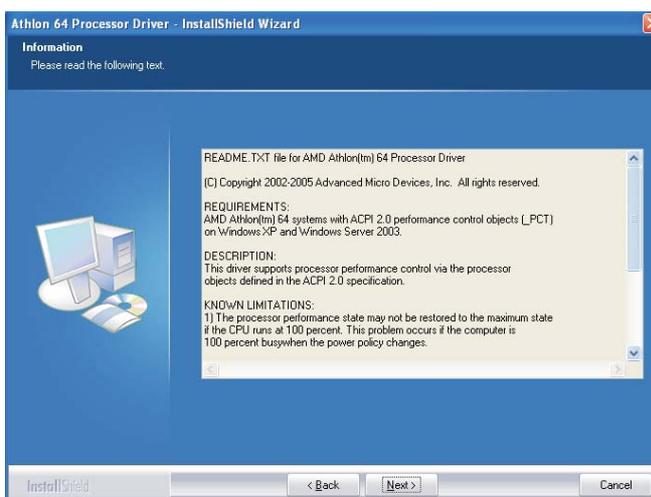
5. Click Next to install to the designated folder or click Browse to select another folder.
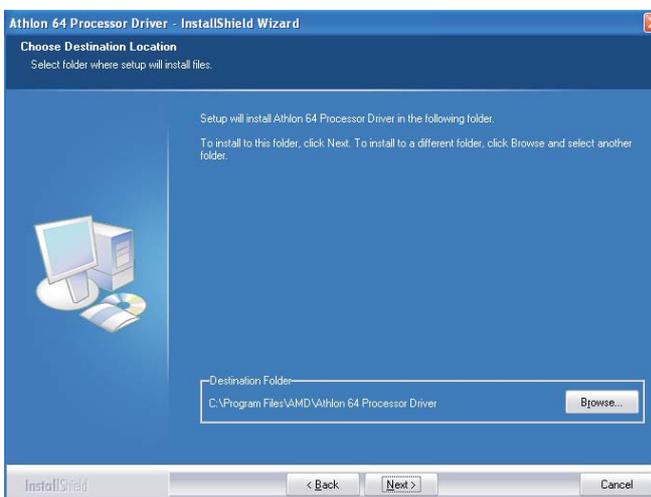
6. Click "Yes, I want to restart my computer now" then click Finish.

   Restarting the system will allow the new software installation to take effect.
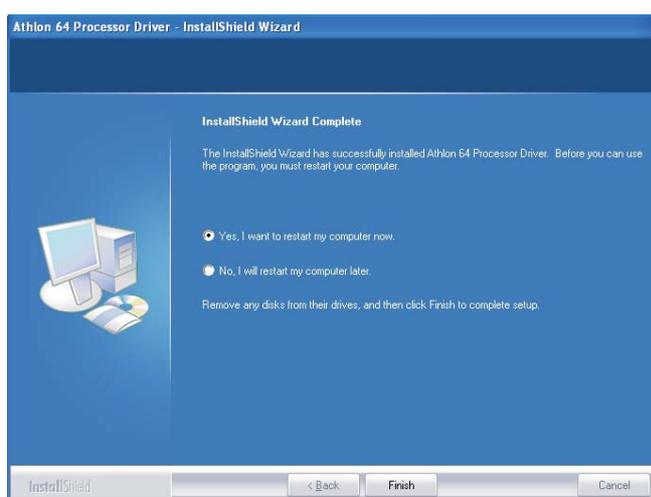
Note:
Refer to chapter 5 for more information about the Cool'n'Quiet Technology.

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Supported Software ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

ITE Smart Guardian

The system board comes with the ITE Smart Guardian 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 Smart Guardian" on the main menu.

2. Setup will prepare the installation wizard.
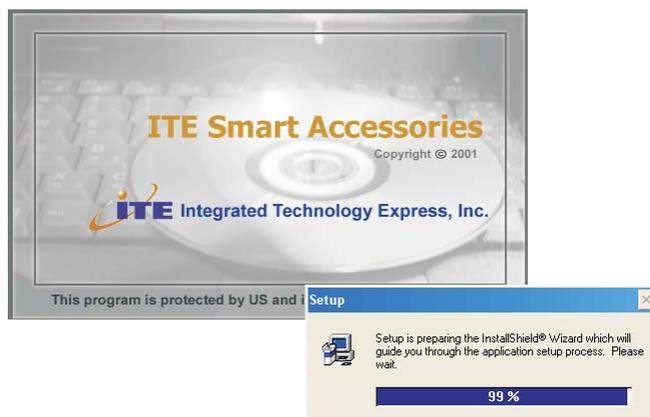
3. You are now ready to install Smart Guardian. Click Next to install or click Browse to select another folder.

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

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

Supported Software ▪▪
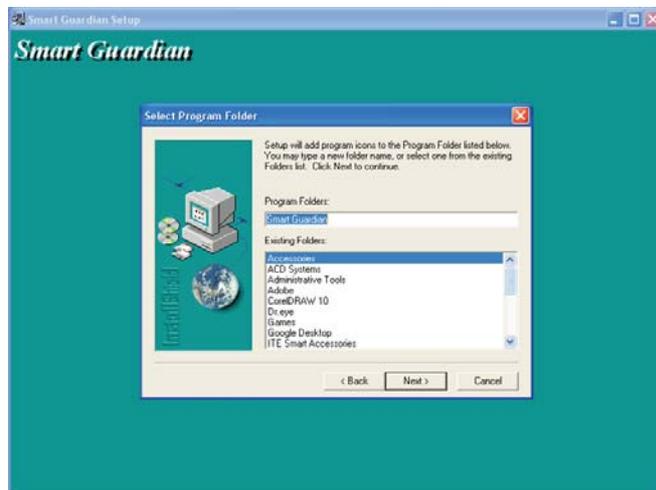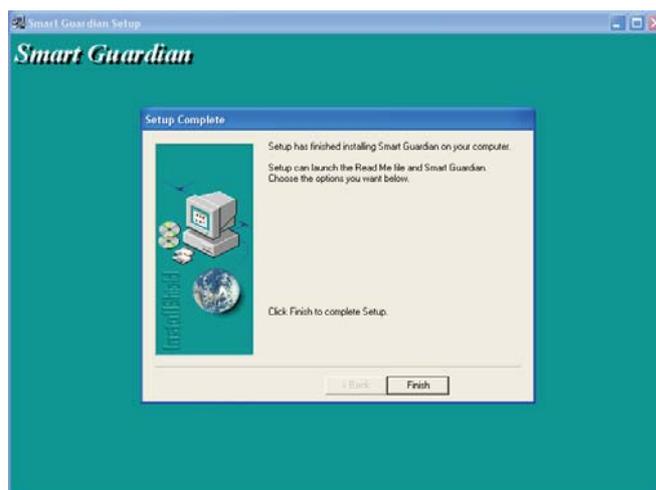
Intel USB 2.0 Drivers

The Intel chipset does not support USB 2.0 drivers for Windows® 98 SE and Windows® ME.

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

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 Control" field to Auto.

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

   ▶ DRAM Timing and Config          Press  Enter              Item  Help
   ▶ System Bus Configuration        Press  Enter
     AMD K8 Cool 'n' Quiet Control   Auto              Menu Level    ▶

        ======== Ratio and Clock Setting ========        DRAM timing and
     CPU FSB Ratio Setting           x10    2000MHz      control
     CPU 'n' NB Bus Ratio Setting    Auto
```
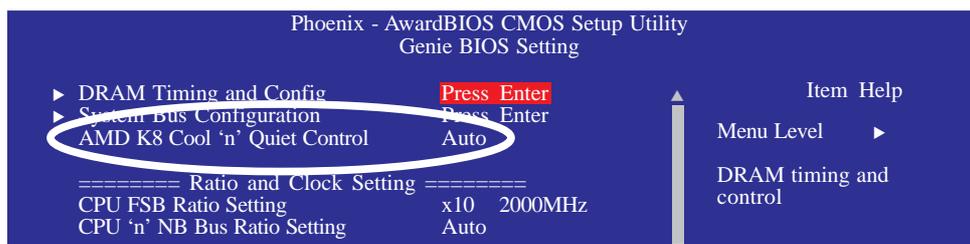
4. Press <Esc> to return to the main menu of the BIOS setup utility. Select "Save & Exit Setup" and press <Enter>.

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

6. Reboot the system.

Cool'n'Quiet Technology ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

Install the Cool'n'Quiet™ Driver

1. Insert the provided CD into a CD-ROM drive.

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

3. Click "AMD Processor Drivers (Cool'n'Quiet)" on the main menu.

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

> **Note:**
> *Refer to chapter 4 for details on installing the Cool'n'Quiet driver.*

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.
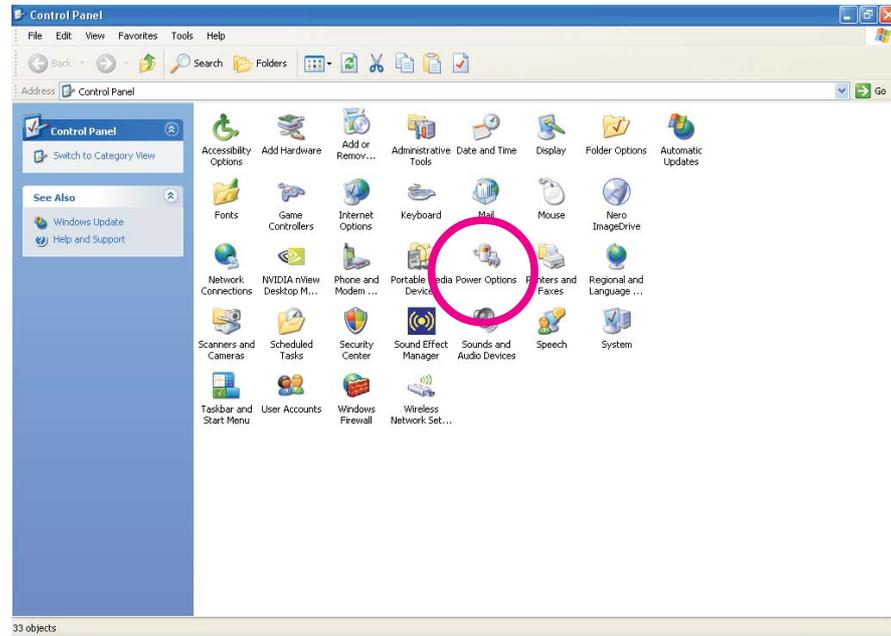
3. In the Power Schemes tab, select Minimal Power Management under the Power schemes section then click OK.
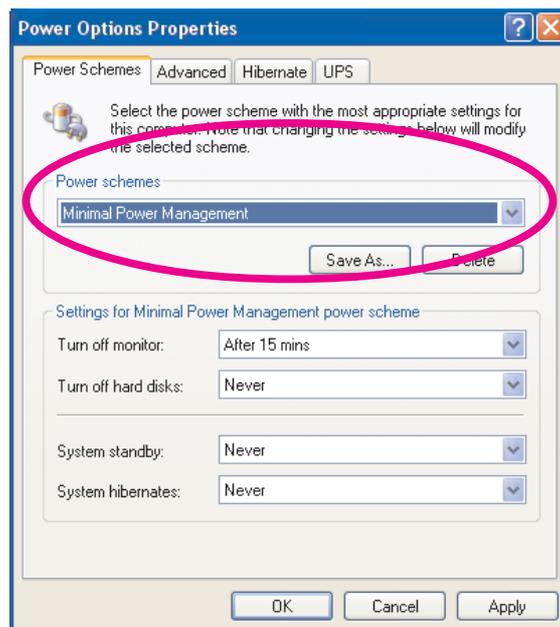
Chapter 6 - RAID

The ATI SB450 chipset allows you to configure RAID (Redundant Array of Independents Disks) on Serial ATA drives. It supports RAID 0 and RAID 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.

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 Serial ATA in the ATI RAID BIOS.
3. Install the ATI driver during OS installation.

Step 1: Connect Serial ATA Drives

Connect one end of the Serial ATA cable to a SATA connector and the other end to your Serial ATA device.

SATA connectors
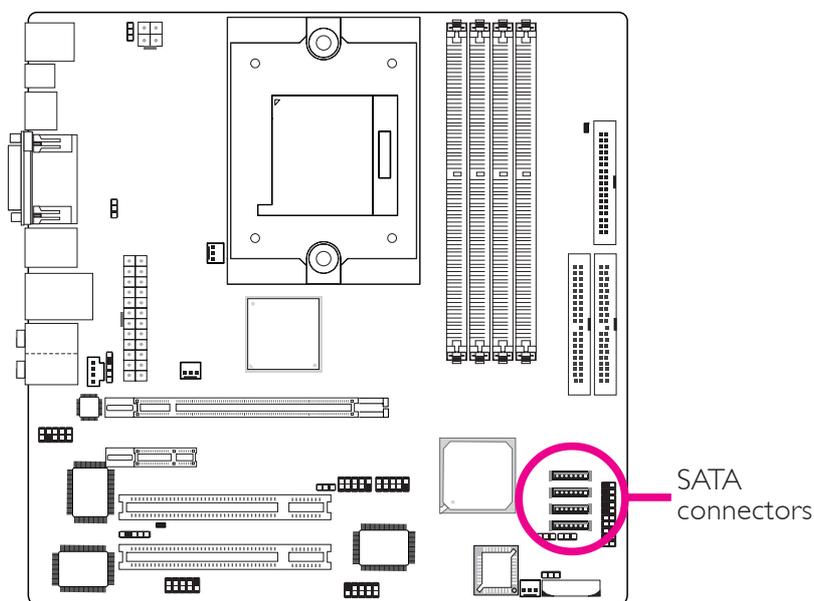
> **Important:**
> *Make sure you have installed the Serial ATA drives and connected the data cables otherwise you won't be able to enter the ATI RAID BIOS utility.*

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 - "South OnChip IDE Device" section of the BIOS.

3. Select the Serial ATA drives you want to configure as RAID in the "Serial ATA Controller" field.

4. Set the "Serial ATA Mode" field to "RAID Controller".

```
                  Phoenix - AwardBIOS CMOS Setup Utility
                        South OnChip IDE Device

   IDE HDD Block Mode              Enabled                Item  Help
   IDE DMA Transfer Access         Enabled
   IDE Prefetch Mode               Enabled        Menu Level      ▶▶
   On-Chip Primary IDE             Enabled
   IDE Primary Master PIO          Auto
   IDE Primary Slave PIO           Auto
   IDE Primary Master UDMA         Auto
   IDE Primary Slave UDMA          Auto
   On-Chip Secondary IDE           Enabled
   IDE Secondary Master PIO        Auto
   IDE Secondary Slave PIO         Auto
   IDE Secondary Master UDMA       Auto
   IDE Secondary Slave UDMA        Auto

   *************** On-Chip Serial ATA Setting ***************
   Serial ATA Controller           Both
   Serial ATA Mode                 RAID Controller
```

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

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

7. Reboot the system.

Step 3: Configure Serial ATA in the ATI 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 or the <Ctrl> + <S> keys simultaneously to enter the utility. The utility allows you to build a RAID system on Serial ATA drives.

> **Important:**
> *RAID must be configured on Serial ATA drives that are connected to the same controller. Meaning, create RAID on either SATA 1 and SATA 2 or SATA 3 and SATA 4.*

Step 4: Install the ATI Driver

If you are in the process of installing Windows® XP or Windows® 2000 on RAID configured Serial ATA drives, you will need the provided ATI RAID driver floppy diskette.

If you are installing the driver on existing Windows® XP or Windows® 2000, install the ATI Catalyst Integrated System Drivers that is in the provided CD. Normally you do not need to separately install the RAID driver on an existing Windows. Installing the ATI Catalyst Integrated System Drivers will automatically install the RAID drivers.

Installing the 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 Serial ATA drives.

1. Start Windows Setup by booting from the installation CD.

2. Press <F6> when prompted at the beginning of Windows setup.

3. 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 ATI 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.

Installing the RAID Driver on Existing Windows® XP or Windows® 2000

1. Insert the provided CD into a CD-ROM drive.

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

3. Click "ATI Catalyst Integrated System Drivers".

4. Follow the installation instructions to complete installation.

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

Chapter 7 - Configuring Display Devices

Display Settings

DOS

In DOS mode, only one display is supported. If the system is connected with more than one display device and the BIOS is set for the system to auto detect the device (Advanced Chipset Features submenu), the detect sequence will be VGA, DVI then TV.

> **Important:**
> *The BIOS does not support booting from an HDTV therefore if you intend to use HDTV to boot up the system, you do not need to set this field. Instead, before you power-up the system, make sure this is the only display device connected to it. After the system boots up, you may then connect other display devices. Install the ATI Catalyst Integrated System Drivers to enable the system to detect the additional devices. The devices can be viewed in the ATI Catalyst Control Center utility which you will find available after installing the driver.*

Windows

Run the ATI Catalyst Control Center utility.

1. If you have installed the ATI Catalyst Integrated System Drivers, you will notice the ATI Catalyst Control Center icon added onto your desktop. Double-click this icon.

2. You can use the ATI Catalyst Control Center utility to change your desktop setup too. Click the Wizard button.

3. The left side of the screen will show the display devices connected to the system. Select the displays you want enabled.

Note

TV

Once the system is powered on, it will detect for display devices. Some TVs will not be detected unless:

a) The TV is turned on prior to turning on the computer.
    or
b) It is set to the appropriate channel.

Make sure to make the correct settings prior to powering on the system.

LCD Monitor

Whenever you reconnect or change the resolution of a LCD monitor that uses a VGA interface, make sure to always adjust the monitor's image. Refer to your monitor's users guide for more information.

HDTV

720p HDTV
Use 1152x648 or 1280x720 resolution.
Recommended for computer use.

1080i HDTV
Use 1776x1000 or 1920x1080 resolution.
Recommended for watching movie. The screen of a 1080i HDTV will flicker if used as the screen of a computer.

Dual Display

Dual display is supported by connecting devices to the DVI-D + TV-out or DVI-D + VGA interfaces. The devices connected to these interfaces can be displayed simultaneously.

Port	Display Device
DVI-D and	LCD monitor or LCD TV and
TV-out	TV
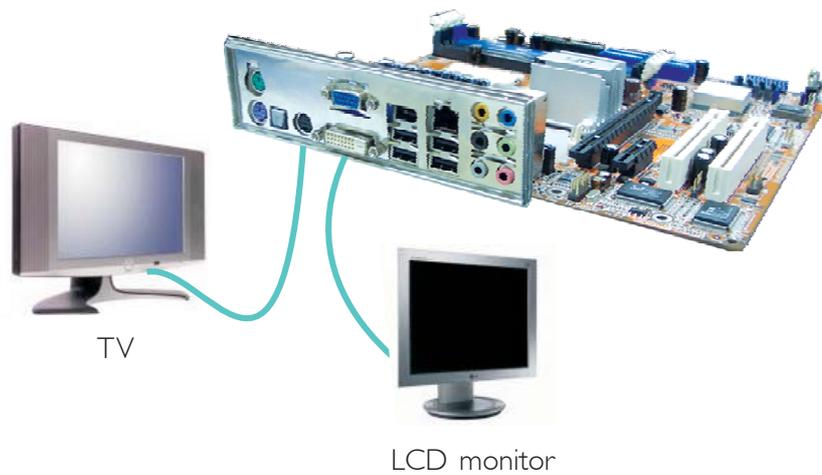
TV

LCD monitor

or

Port	Display Device
DVI-D and	LCD monitor or LCD TV and
VGA	VGA monitor

VGA monitor

LCD monitor
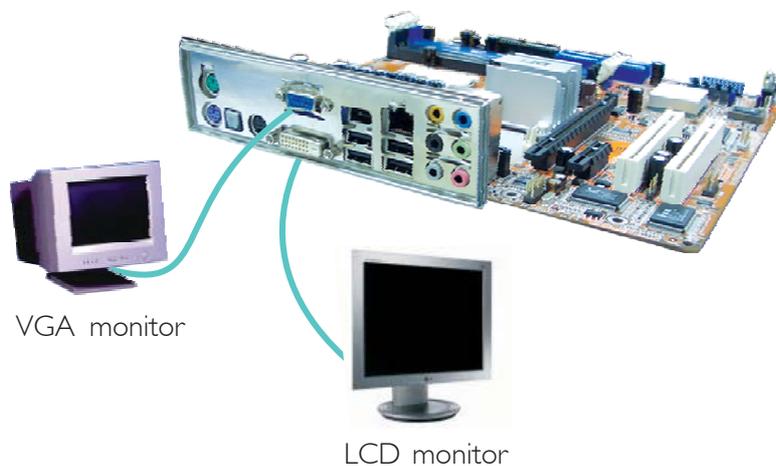
SurroundView™

The SurroundView™ technology provides the convenience and power of multiple displays. It supports up to 4 independent displays by using 2 display devices (supported by the integrated graphics) in conjunction with another 2 display devices connected to a PCI Express graphics card. Note: the system board supports ATI graphics card only.

SurroundView™ delivers increase efficiency in the workplace by allowing you to perform different task on different display screens such as creating a document on one screen, working on a chart on the next, receiving emails on another, etc. You can also take advantage of multiple display capabilities by playing games that support this feature.

Settings

To enable the SurroundView™ function, the following settings are required.

1. Install an ATI PCI Express graphics card.
2. Enable SurroundView™ in Award BIOS.
3. Configure SurroundView™ in Windows.

Step 1: Install an ATI PCI Express Graphics Card

1. Power-off the system, monitor and all peripheral devices.

2. Unplug the power cord then disconnect all cables from the system.

3. Remove the system chassis cover.

4. Remove the screw of the bracket that is opposite the PCIE1 slot then remove the bracket.

PCIE 1
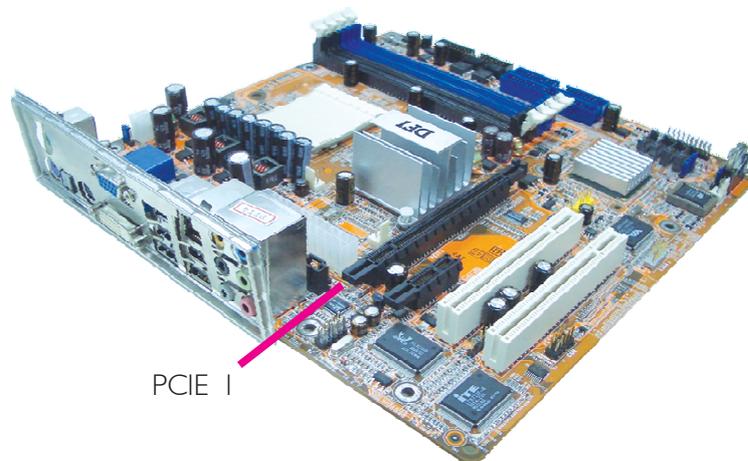
5. Align the graphics card above the PCIE1 slot then press it down firmly until it is completely seated in the slot.
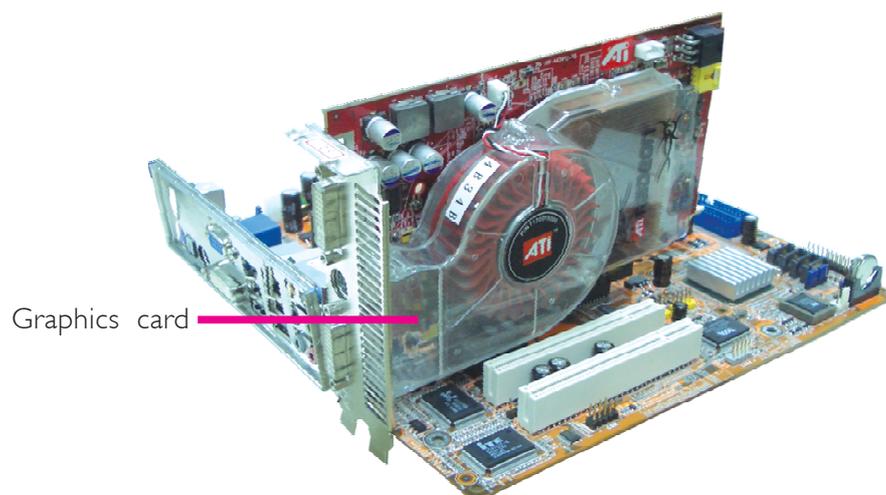
Graphics card

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

7. Replace the system chassis cover.

8. Plug the cable connector of the LCD display devices to the DVI connectors of the graphics card.
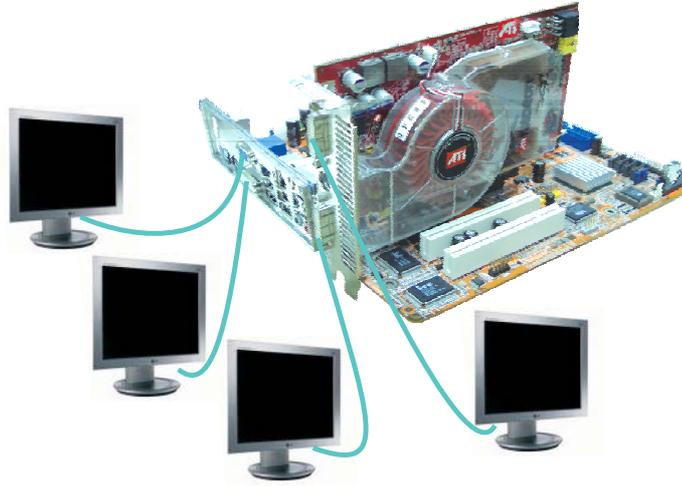
> **Note:**
> *The figure above simply illustrates the location of the DVI connectors on the graphics card. In actuality, the system board should have been installed in the chassis prior to connecting the cables.*

9. Reconnect all cables previously disconnected in step 2 then plug the power cord.

10. Power-on the sytem, monitor and peripheral devices.

> **Important:**
> *If you haven't installed the ATI Catalyst Integrated System Drivers (available in the provided CD), please do so at this time. Without the appropriate driver, the system will run in basic video mode. Installing the driver will allow you to adjust the video settings and configure multiple displays. Refer to chapter 4 for more information about driver installation.*

## Step 2: Enable SurroundView™ in Award BIOS

1. Power-on the system then press <Del> to enter the main menu of the BIOS.

2. Select the Advanced Chipset Features submenu then press <Enter>.

3. Set the "Internal Video Mode" field to UMA.

4. Set the "UMA Frame Buffer Size" field to 64MB.

5. Set the "Surroundview" field to Enabled.

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

    PCIE Reset Delay               Disabled   ▲        Item Help
    PCIE GFX Core Payload Size     64 Bytes
    PCIE GPP Core Payload Size     64 Bytes        Menu Level    ▶
    GFX0 Link Width                x16
    ASPM GFX                       Disabled
    ASPM GPP                       Disabled
    ASPM NB-SB                     Disabled
    TXCLK Gating                   Disabled
    PCIE Common Clock              Disabled
    GFX Multi Function Mode        Disabled
    Internal Video Mode            UMA
    UMA Frame Buffer Size          64MB
    VGA Aperture Size              128MB
    Memory Hole                    Disabled
    System BIOS Cacheable          Disabled
    Init Display First             PCIEx
    Surroundview                   Enabled

    ·············· On-Chip VGA Setting ···············
    RS482 Video Mode               RS482 Mode
    GFX Clock Mode                 200MHz
    Async GFX Clock                14.318MHz OSC
    Async GFX Clock Source         Disabled
    MCLK Spread Spectrum           Auto
    Dual Mode Interleaving         Disabled
    Dynamic CKE                    Enabled
    Boot Display                   Auto
    TV Standard                    NTSC       ▼

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

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

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

8. Reboot the system.

Step 3: Configure SurroundView™ in Windows

1. Power-on the system.

2. On your Windows desktop, right-click on a blank area then select Properties.
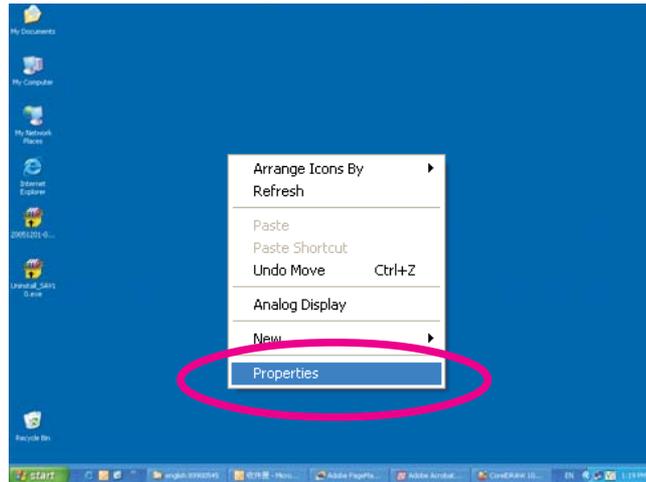

3. The Display Properties dialog box will appear. Click the Settings tab.

4. Click the Identify button to display all the detected display devices. The number of detected devices will appear in numbers on the gray area of the dialog box. The 4 monitor icons in the figure below denotes that 4 display devices are connected to the system.

Monitor icons

7
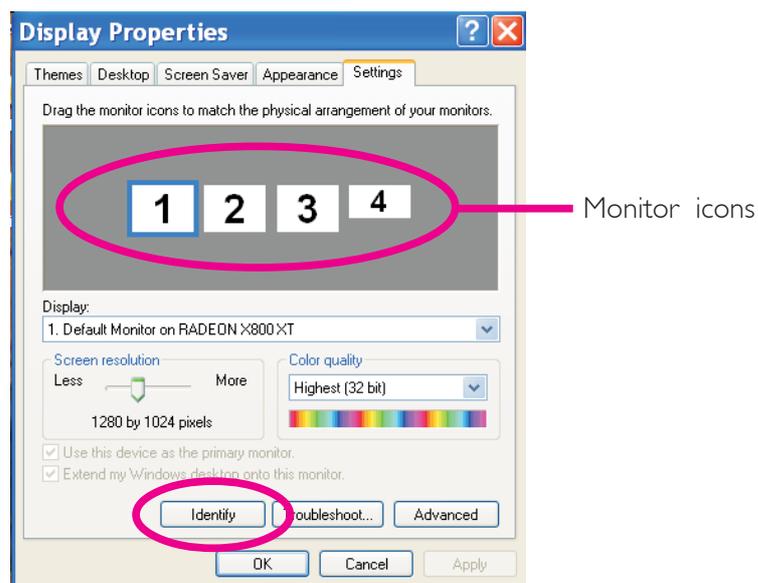
5. Under the Display section, click the arrow on the right to determine the display device that corresponds each monitor icon.
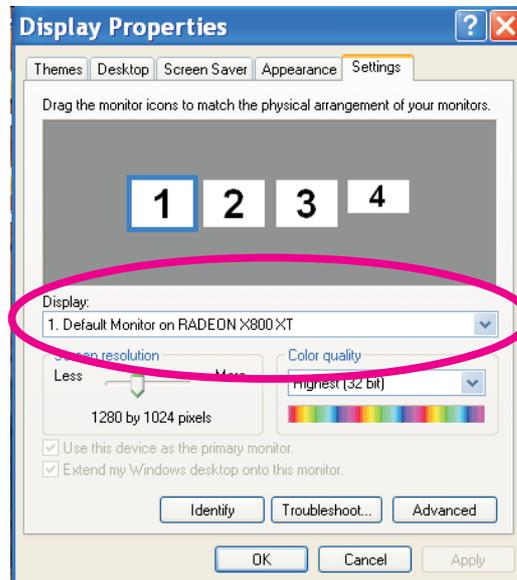
6. Right-click on the monitor icon that you want to designate as the Primary display then select Primary. All other display devices will be considered secondary displays.

7. Configure the screen resolution and color quality of the display.

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8. Click on the second monitor icon then click "Extend my Windows desktop onto this monitor".

9. Right-click on the second monitor icon then select Attached.
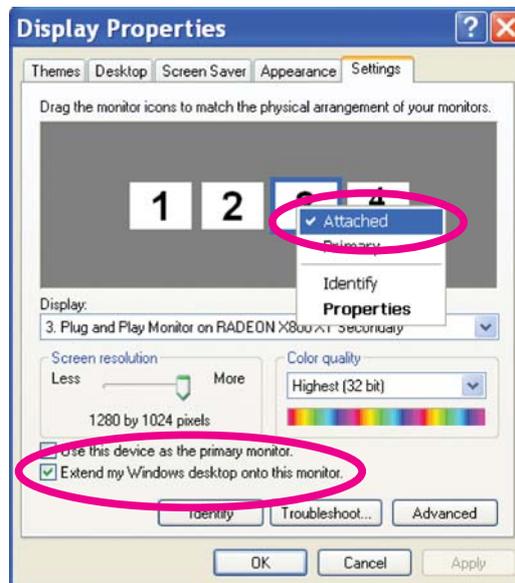
10. Configure the screen resolution and color quality of the display.

11. Repeat steps 8 to 10 for the third and fourth monitor icons.

> **Note:**
> *You can set different resolution for each display. However, if you are playing games, we highly recommend that you use the same screen resolution.*

12. Drag the monitor icons to match the physical arrangement of your display devices. This will represent the physical setup of the images and the position of the image when moved from one device to the other.

    To drag images horizontally (left and right), arrange the monitor icons side by side. To drag images vertically (up and down), arrange the monitor icons above one another.

Using SurroundView™

SurroundView™ allows you to run different applications on different screens at the same time.

1. Make sure you have identified the display devices that matches the monitor icons.
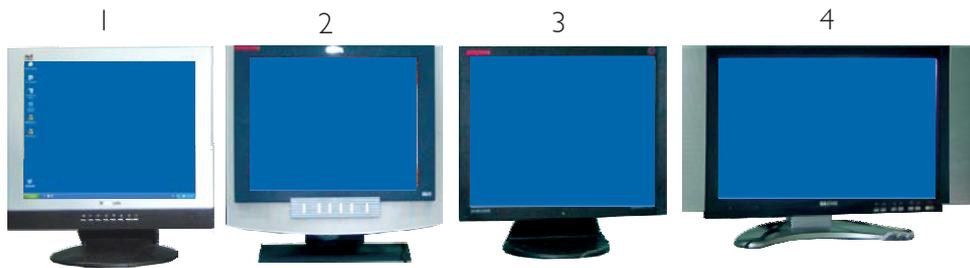
2. On the Primary display device (which in the figure below is monitor icon 1), open a Word document application program.
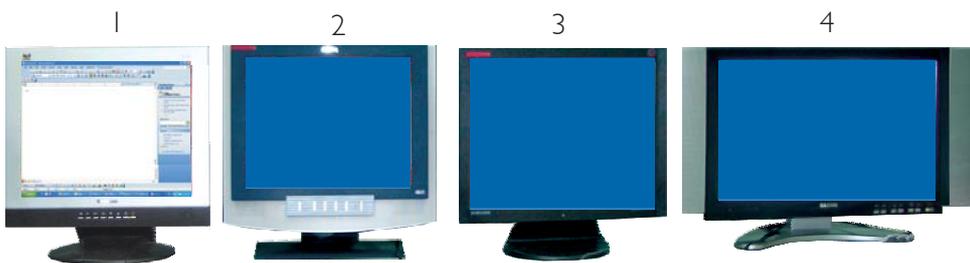
3. Using the Primary display screen, now open a graphics application program then drag it to the second display screen.
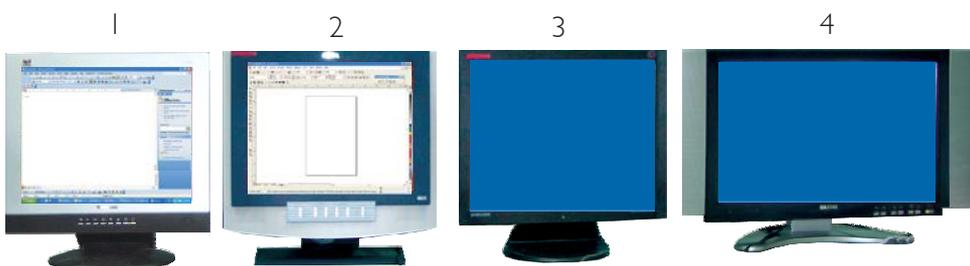
4. Repeat the same procedure for the 3rd and 4th display screens.

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

System Error Message ▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪▪

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.