

# **MI 689-AL**

## **System Board User's Manual**

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Product names or trademarks appearing in this manual are for identification purpose only and are the properties of the respective owners.

## Caution

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.

## **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.

## About this Manual

This user's manual contains detailed information about the system board. If, in some cases, some information doesn't match those shown in the multilingual manual, the multilingual manual should always be regarded as the most updated version. The multilingual manual is included in the system board package.

To view the user's manual, insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. Click the "TOOLS" icon then click "Manual" on the main menu.

## About the Package

The system board and accessories in the package may not come similar to the information stated in this manual. 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.

## Warranty

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

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# Chapter I - Introduction

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## I.1 Features

### Processor

- AMD Sempron™ and Athlon™ 64 (up to 3700+)
- Socket 754

### System Bus

- 1600MT/s HyperTransport interface

### Chipset

- ULI® M1689

### Memory

- Supports single channel (64-bit wide) memory interface
- Two 184-pin DDR DIMM sockets
- Supports up to 2GB using PC1600 (DDR200), PC2100 (DDR266), PC2700 (DDR333) or PC3200 (DDR400) unbuffered DDR SDRAM DIMM
- Supports x8/x16, non-ECC, up to 512Mb DDR devices

### BIOS

- Award BIOS
- CPU/DRAM overclocking
- 2Mbit flash memory
- AMD Cool'n'Quiet™ technology

### Energy Efficient Design

- Supports ACPI specification and OS Directed Power Management
- Supports ACPI STR (Suspend to RAM) function
- Wake-On-Events include:
  - Wake-On-PS/2 Keyboard/Mouse
  - Wake-On-USB Keyboard/Mouse
  - Wake-On-LAN
  - RTC timer to power-on the system
- AC power failure recovery

### Hardware Monitor

- Monitors CPU temperature
- Monitors Vcore/Vdimm/3.3V/5V/12V/Vbat voltages
- Monitors the speed of the CPU fan and system fan

### Audio Features

- 6-channel audio CODEC
- Supports Microsoft® DirectSound/DirectSound 3D
- AC'97 supported with full duplex, independent sample rate converter for audio recording and playback

### Onboard LAN Features

- LAN Phy supports 10/100Mbps
- Support IEEE 802.3 standard

### Serial ATA Interface with RAID

- Supports two SATA (Serial ATA) interfaces which are compliant with SATA 1.0 specification (1.5Gbps interface)
- Supports RAID 0, RAID 1 and JBOD

### IDE Interface

- Two IDE connectors support four UltraDMA 133Mbps hard drives

### Accelerated Graphics Port (A.G.P.)

- Supports AGP 8x up to 2133MB/sec. and AGP 4x up to 1066MB/sec. bandwidth for 3D graphics applications

### Rear Panel I/O Ports

- 1 mini-DIN-6 PS/2 mouse port
- 1 mini-DIN-6 PS/2 keyboard port
- 2 DB-9 serial ports
- 1 DB-25 parallel port
- 4 USB 2.0/1.1 ports
- 1 RJ45 LAN port
- 3 audio jacks: line-in, line-out and mic-in



### I/O Connectors

- 2 connectors for 4 additional external USB 2.0/I.I ports
- 1 front audio connector for external line-out and mic-in jacks
- 1 CD-in internal audio connector
- 1 S/PDIF connector
- 1 IrDA connector
- 2 Serial ATA connectors
- 2 IDE connectors
- 1 floppy connector
- 1 20-pin ATX power connector
- 1 4-pin ATX 12V power connector
- 1 front panel connector
- 2 fan connectors

### Expansion Slots

- 1 AGP 8x/4x slot
- 5 PCI slots

### PCB

- ATX form factor
- 30.5cm (12.01") x 20cm (7.87")

## 1.2 Special Features of the System Board

### AMD Athlon™ 64

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 "1T/2T Memory Timing" field of the BIOS. Refer to the Advanced Chipset Features section ("DRAM Configuration" section) in chapter 3 for more information.

### AMD 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.

### 6-channel Audio

The audio jacks at the rear panel will support 6-channel audio only when the audio utility is configured to support this function. The mic-in at the rear will be disabled. Use the front audio's mic-in jack.

### S/PDIF

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

### Serial ATA Interface with RAID

Serial ATA is a storage interface that is compliant with SATA 1.0 specification. With speed of up to 1.5Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s. The system board allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1 and JBOD.

### IrDA Interface

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

## USB Ports

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.

## Dual Function Power Button

Depending on the setting in the “Soft-Off By PWR-BTTN” field of the Power Management Setup, this switch will allow the system to enter the Soft-Off or Suspend mode.

## AGP (Accelerated Graphics Port)

AGP is an interface designed to support high performance 3D graphics cards. It utilizes a dedicated pipeline to access system memory for texturing, z-buffering and alpha blending. The AGP slot supports AGP 8x with up to 2.13GB/sec. bandwidth and AGP 4x with up to 1066MB/sec. bandwidth for 3D graphics applications. AGP in this system board will deliver faster and better graphics to your PC.

## Wake-On-LAN

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

**Important:**

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

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

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

**Important:**

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

## Wake-On-USB Keyboard/Mouse

This function allows you to use a 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  $\geq 1.5\text{A}$ .*
- If you are using the Wake-On-USB Keyboard/Mouse function for 3 or more USB ports, the 5VSB power source of your power supply must support  $\geq 2\text{A}$ .*

## RTC Timer to Power-on the System

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

## 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® 98/2000/ME/XP supports the ACPI function allowing 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® 98/2000/ME/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  $\geq 1\text{A}$ .*

## AC Power Failure Recovery

When power returns after an AC power failure, you may choose to either power-on the system manually, let the system power-on automatically or return to the state where you left off before power failure occurs.

## Virus Protection

Most viruses today destroy data stored in hard drives. The system board is designed to protect the boot sector and partition table of your hard disk drive.

## I.3 Package Checklist

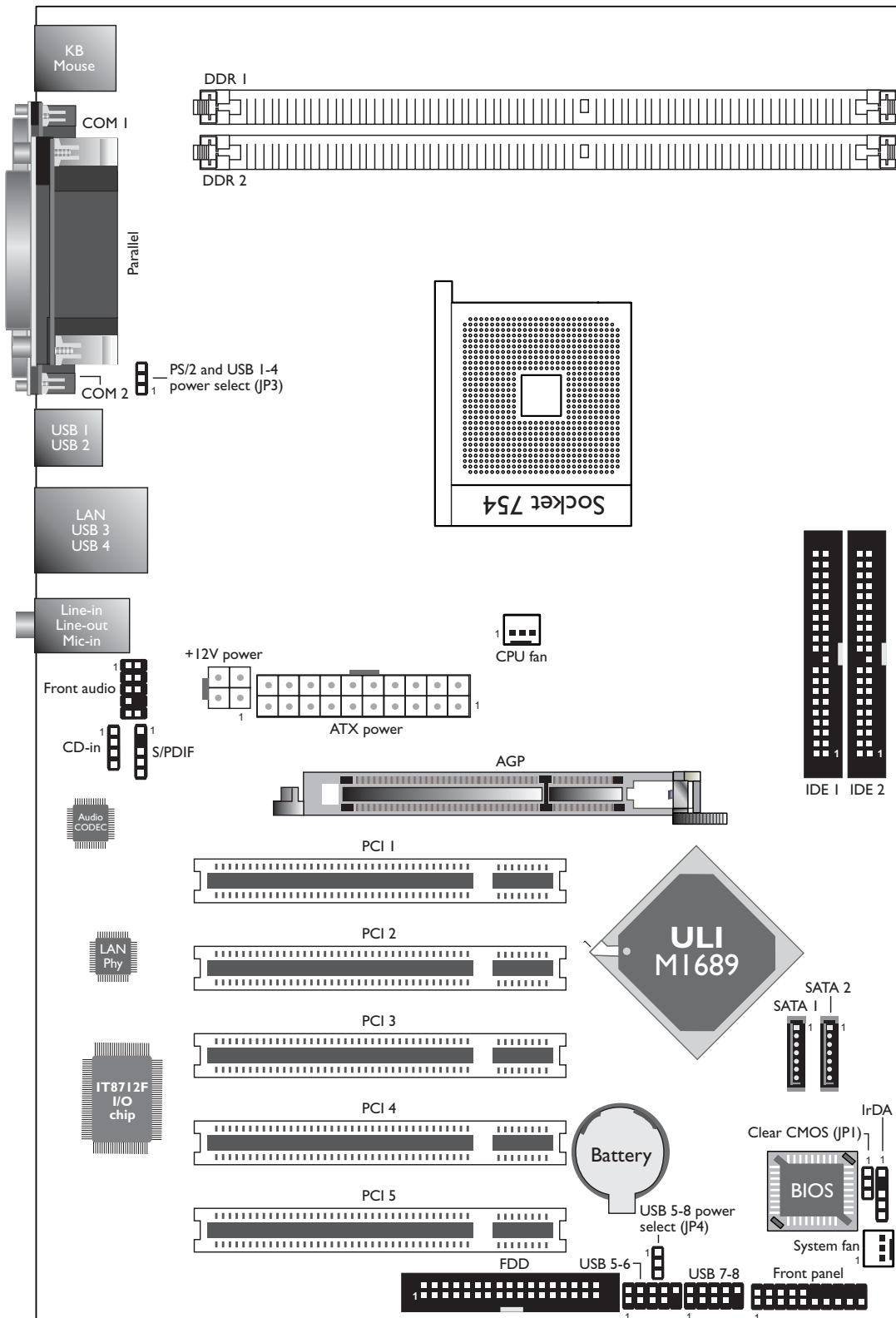
The system board package contains the following items:

- ☒ The system board
- ☒ A user's manual
- ☒ One IDE cable
- ☒ One floppy cable
- ☒ One Serial ATA cable
- ☒ One SATA RAID floppy diskette
- ☒ One I/O shield
- ☒ One "Mainboard Utility" CD

If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

## Chapter 2 - Hardware Installation

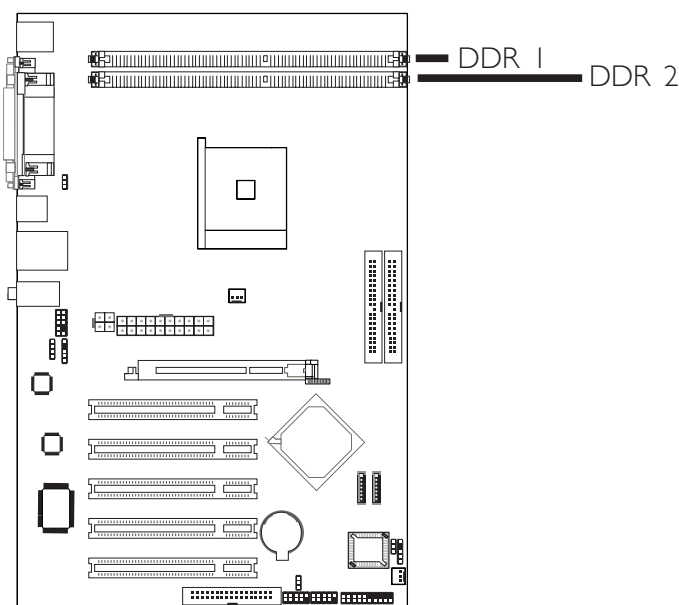
### 2.1 System Board Layout



**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.

## 2.2 System Memory



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.

**Note:**

If you are installing double rank DDR400 on both DDR 1 and DDR 2 sockets, the maximum DRAM speed will automatically be limited to the speed of a DDR333. However, you can manually adjust the speed in the “Max Memclock (Mhz)” field (Advanced Chipset Features submenu, DRAM Configuration section) of the BIOS.

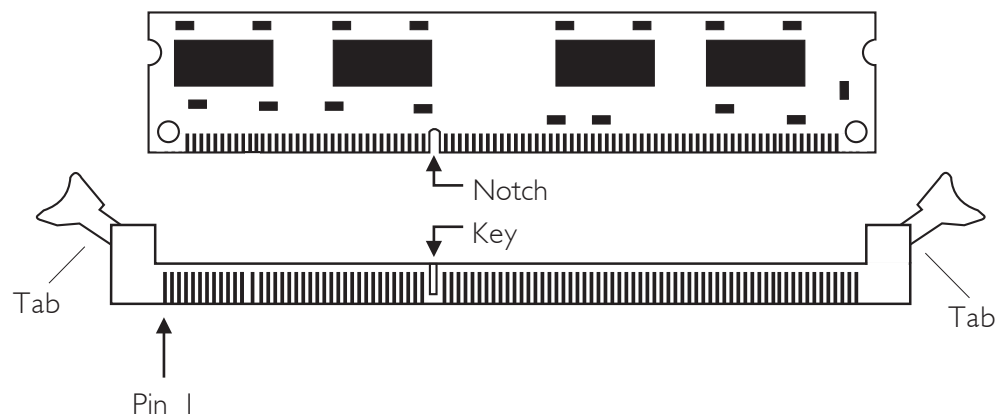


## BIOS Setting

Configure the system memory in the Advanced Chipset Features submenu (“DRAM Configuration” section) of the BIOS.

### 2.2.1 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.

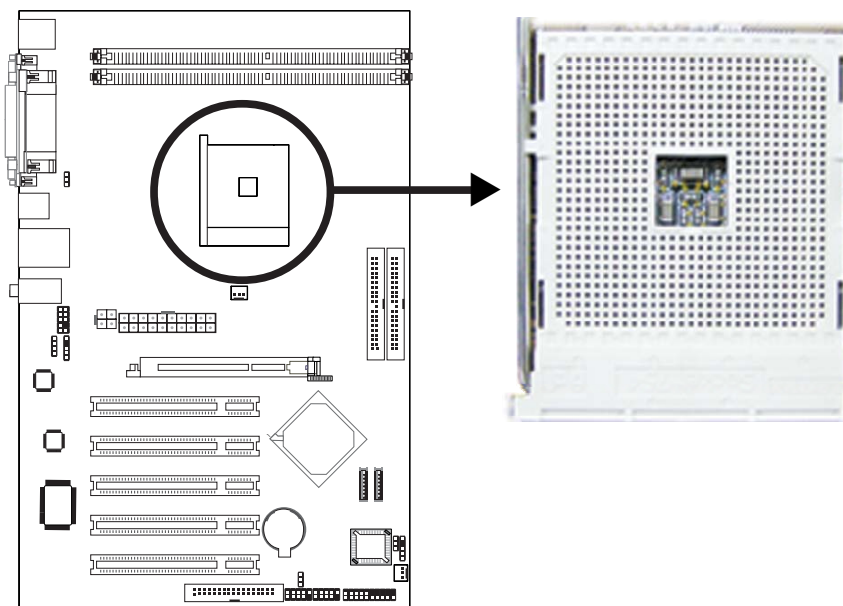
## 2.3 CPU

### 2.3.1 Overview

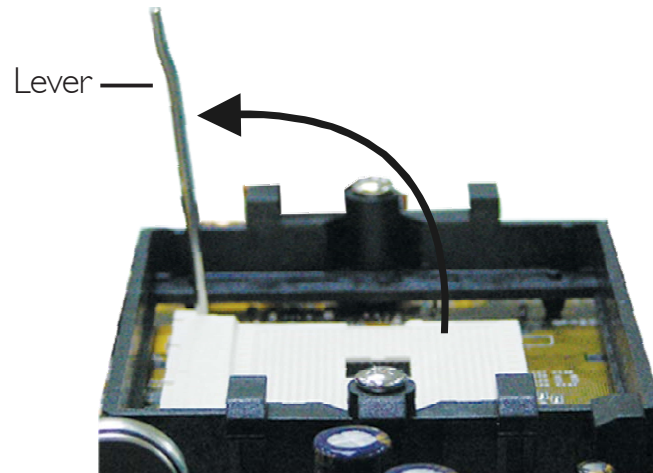
The system board is equipped with a surface mount 754-pin CPU socket. This socket is exclusively designed for installing an AMD CPU.

### 2.3.2 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 754-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.



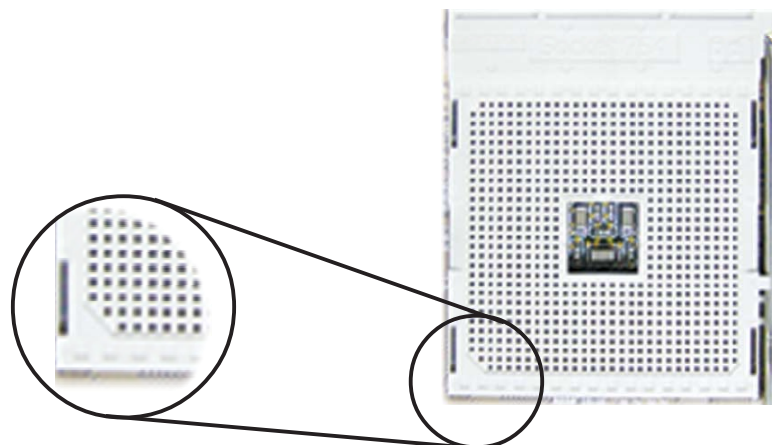
5. Position the CPU above the socket. The gold mark on the CPU must align with the corner of the CPU socket (refer to the enlarged view) shown below.

**Important:**

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



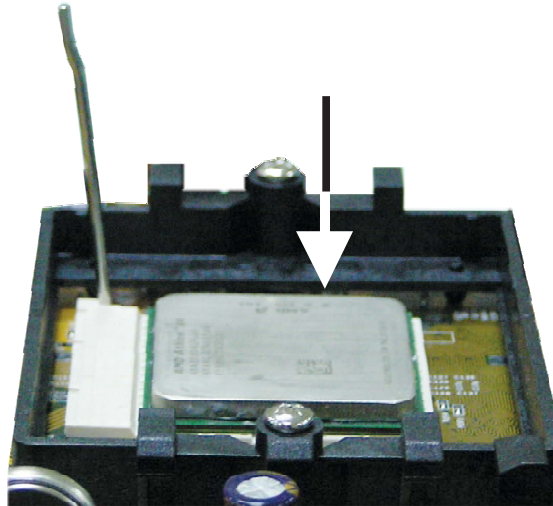
Gold mark —



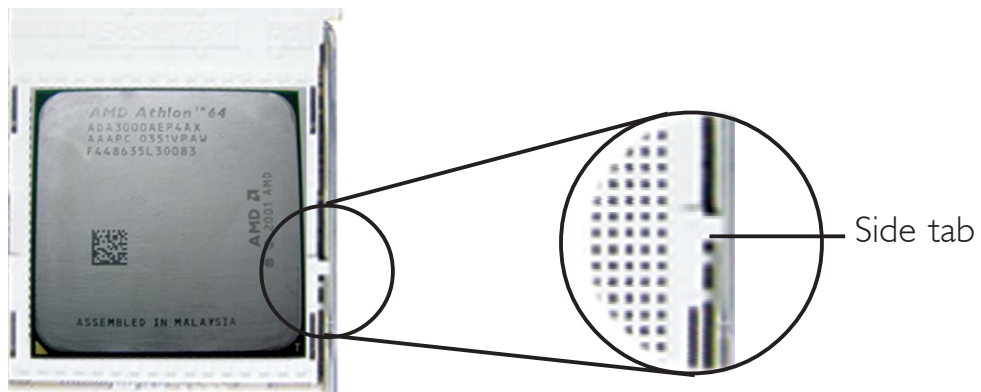
6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force.

**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.



### 2.3.3 Installing the Fan and Heat Sink

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



**Note:**

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

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

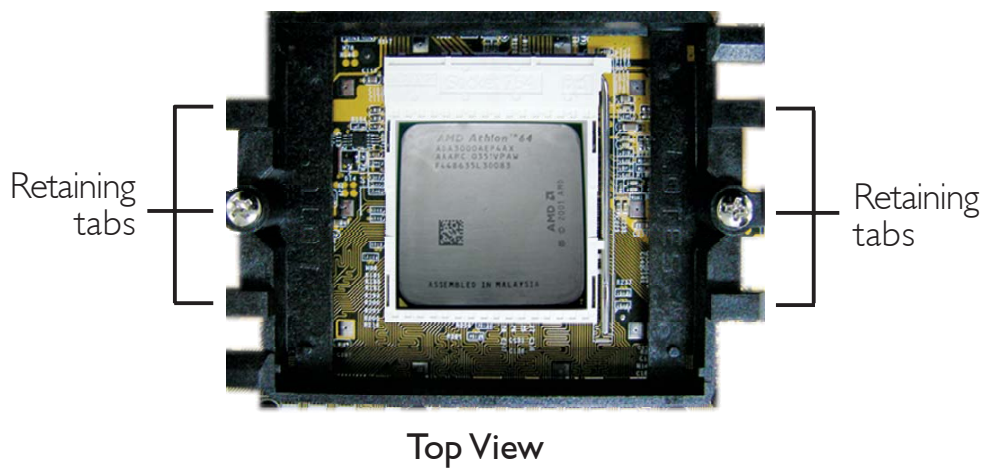
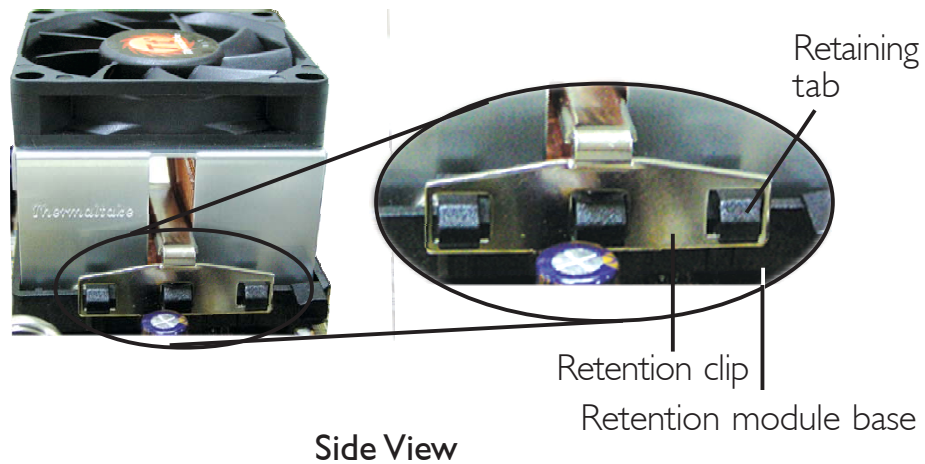
Do not apply the paste if the fan / heat sink already has a patch of thermal paste on its underside. Peel the strip that covers the paste before you place the fan / heat sink on top of the CPU.

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



Retention  
module base

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.



- 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



- 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.*

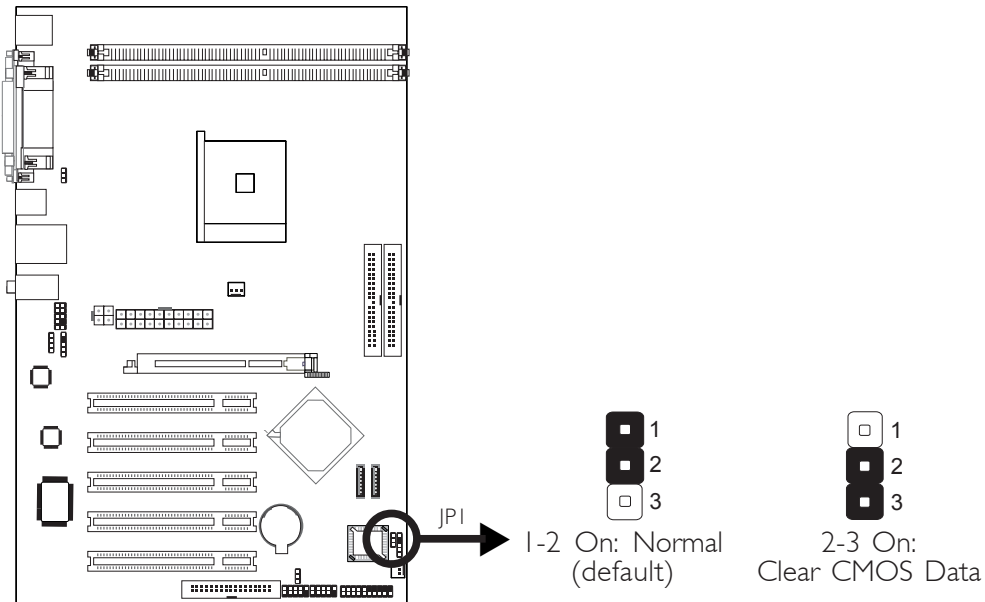


- Connect the CPU fan's cable connector to the CPU fan connector on the system board.



## 2.4 Jumper Settings

### 2.4.1 Clear CMOS Data



If you encounter the following,

- CMOS data becomes corrupted.*
- You forgot the password.*
- You are unable to boot-up the computer system because the processor's 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.

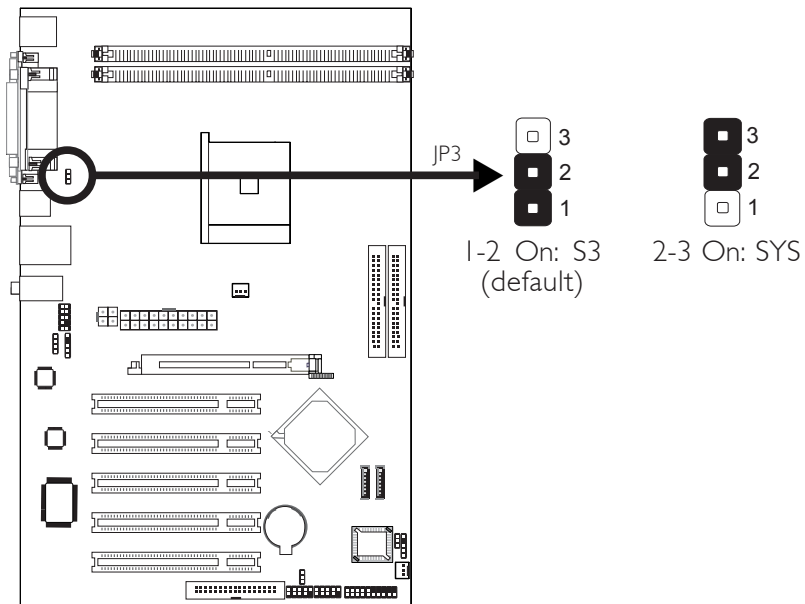
1. Power-off the system and unplug the power cord.
2. Set JPI pins 2 and 3 to On. Wait for a few seconds and set JPI back to its default setting, pins 1 and 2 On.
3. Plug the power cord and power-on the system.

If your reason for clearing the CMOS data is due to incorrect setting of the processor's clock 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 Frequency/Voltage Control submenu and press <Enter>.
6. Set the CPU clock to its default setting or an appropriate bus clock. Refer to the Frequency/Voltage Control 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>.

## 2.4.2 PS/2 Power Select



JP3 is used to select the power of the PS/2 keyboard/mouse port. Selecting S3 will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

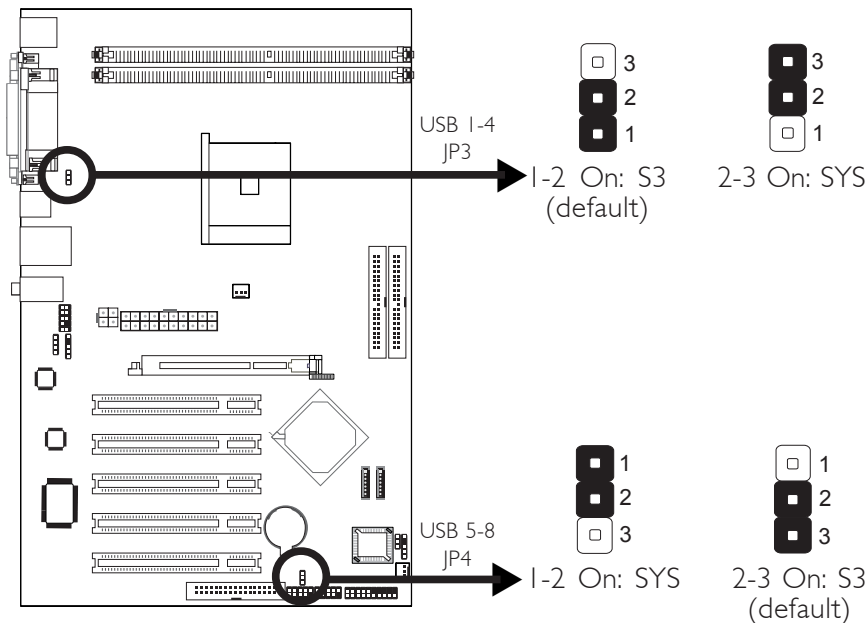
## BIOS Setting

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

**Important:**

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

### 2.4.3 USB Power Select



JP3 and JP4 are used to select the power of the USB ports. Selecting S3 will allow you to use the USB keyboard or USB mouse to wake up the system..

#### BIOS Setting:

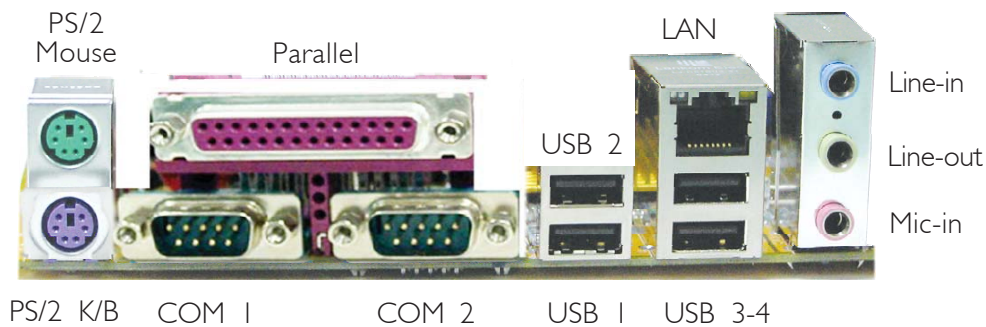
“USB Dev WakeUp From Sx” in the Power Management Setup submenu of the BIOS must be set to Enabled. Refer to chapter 3 for more information.



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

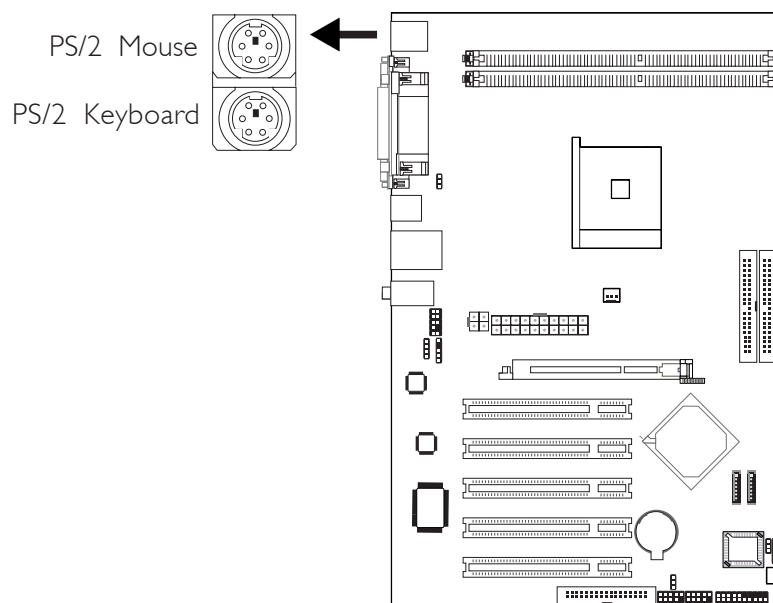
## 2.5 Rear Panel I/O Ports



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

- PS/2 mouse port
- PS/2 keyboard port
- Parallel port
- COM ports
- USB ports
- LAN port
- Line-in jack
- Line-out jack
- Mic-in jack

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



The system board is equipped with an onboard PS/2 mouse (Green) and PS/2 keyboard (Purple) ports - both at location CN17 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:

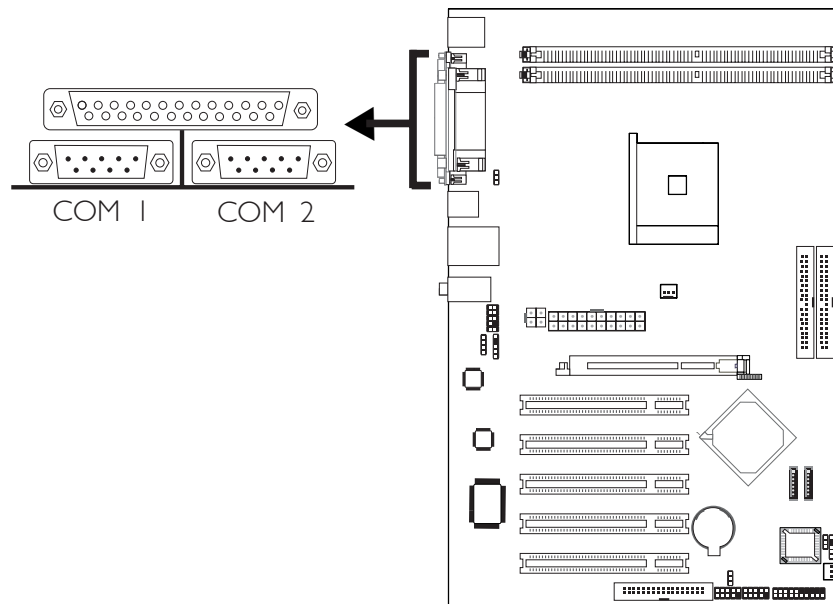
*Make sure to turn off your computer prior to connecting or disconnecting a mouse or keyboard. Failure to do so may damage the system board.*

### 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:**  
JP3 must be set to "1-2 On: S3". Refer to "PS/2 Power Select" in this chapter for more information.
- **BIOS Setting**  
Configure the PS/2 keyboard/mouse wake up function in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

### 2.5.2 Serial Ports

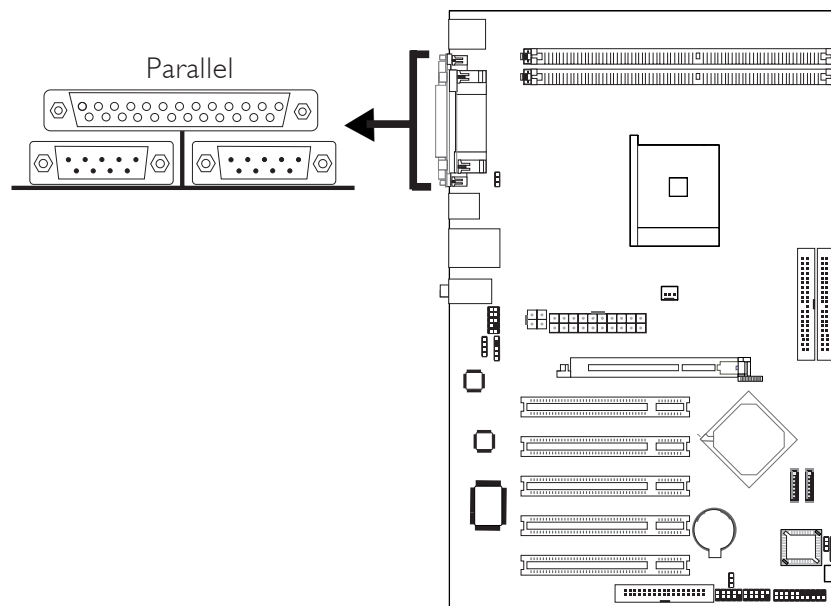


The system board is equipped with two onboard serial ports (Teal/Turquoise) at locations CN13 for COM 1 and CN14 for COM 2. The serial ports are RS-232C asynchronous communication ports with 16C550A-compatible UARTs that can be used with a modem, serial printer, remote display terminal or other serial devices.

#### BIOS Setting

Select the serial ports' I/O address in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

### 2.5.3 Parallel Port



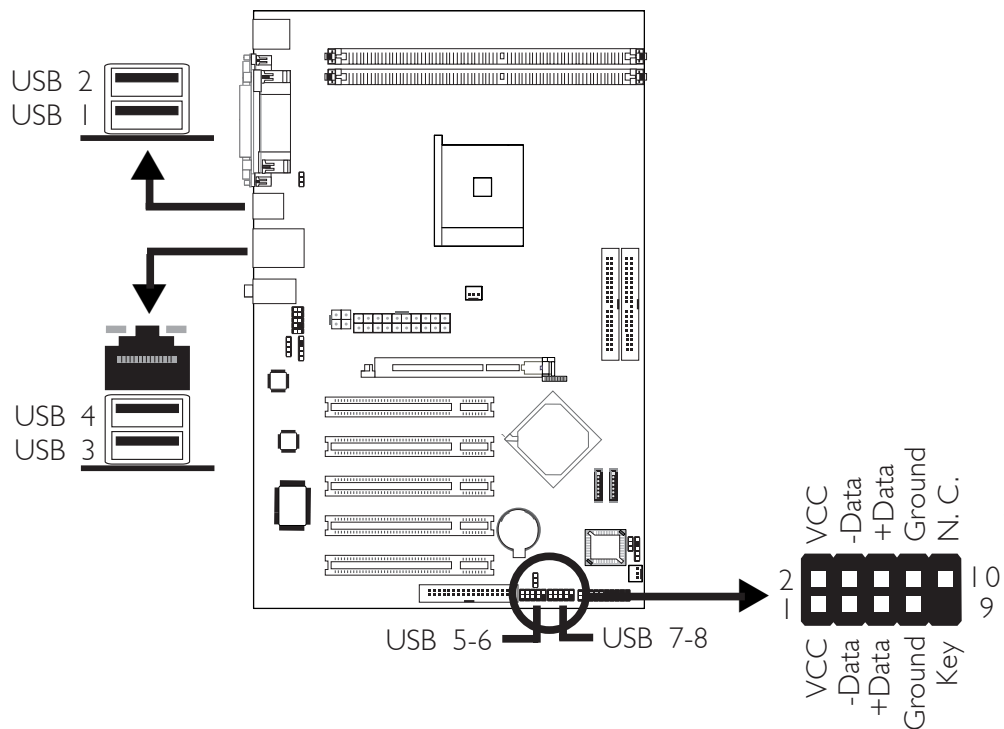
The system board has a standard parallel port (Burgundy) at location CN16 for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP.

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

#### BIOS Setting

Select the parallel port's mode in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

### 2.5.4 Universal Serial Bus Ports



Four onboard USB 2.0/1.1 ports (Black) are at locations CN6 (USB 1-2) and CN24 (USB 3-4) of the system board.

J26 (USB 5-6) and J27 (USB 7-8) connectors allow you to connect 4 additional USB 2.0/1.1 ports. The USB ports may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then insert the connector that is attached to the USB port cables to J26 or J27.

#### BIOS Setting

Configure the onboard USB in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.



## Driver Installation

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

## Wake-On-USB Keyboard/Mouse

The Wake-On-USB Keyboard/Mouse function allows you to use a USB keyboard or USB mouse to wake up the system.

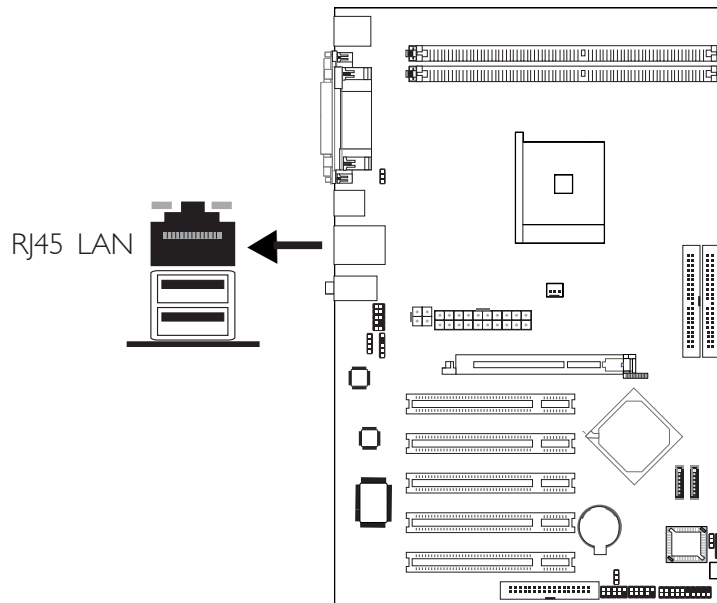
- **Jumper Setting:**  
JP3 and/or JP4 must be set to "S3". Refer to "USB Power Select" in this chapter for more information.
- **BIOS Setting:**  
"USB Dev WakeUp From Sx" in the Power Management Setup submenu of the BIOS must be set to Enabled. Refer to chapter 3 for more information.



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

### 2.5.5 RJ45 Fast-Ethernet Port

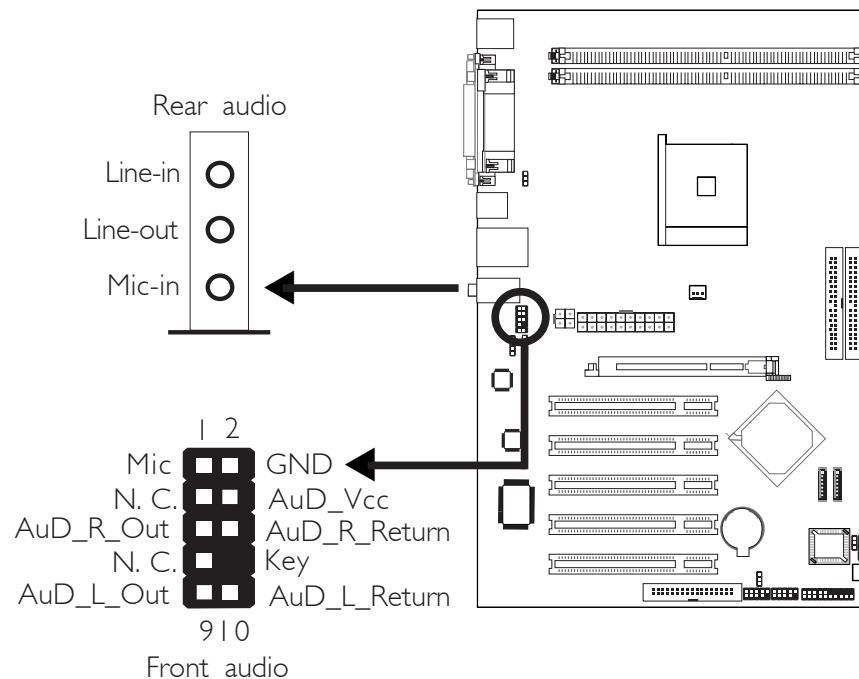


The system board is equipped with an onboard RJ45 fast-ethernet LAN port at location CN24 of the system board. It allows the system board to connect to a local area network by means of a network hub.

#### BIOS Setting

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

## 2.5.6 Audio (Rear Audio and Front Audio)



### Rear Audio

The rear audio jacks are at location CN21 of the system board. A jack is a one-hole connecting interface for inserting a plug.

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

	2-channel	4-channel	6-channel
Light Blue	Line-in	Line-in	Center/Subwoofer
Lime	Line-out	Front R/L	Front R/L
Pink	Mic-in	Rear R/L	Rear R/L

### Front Audio

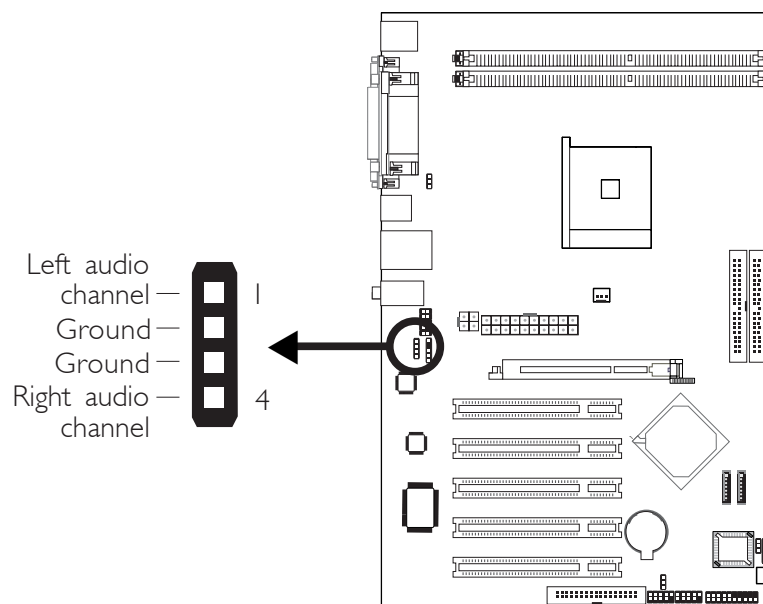
The front audio connector (J39) allows you to connect to the line-out and mic-in jacks that are at the front panel of your system. Using this connector will disable the rear audio's line-out and mic-in functions.

Remove the jumper caps from pins 5-6 and pins 9-10 of J39 prior to connecting the front audio cable connector. Make sure pin 1 of the cable connector is aligned with pin 1 of J39.. 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.

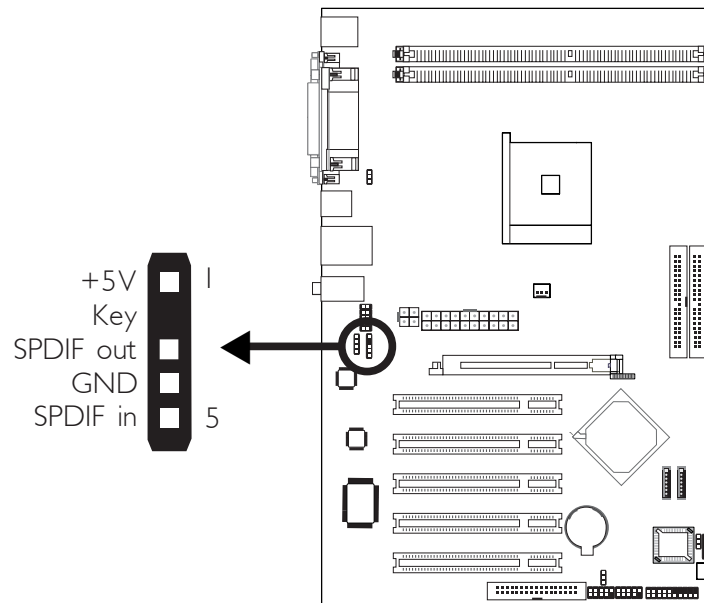
## 2.6 I/O Connectors

### 2.6.1 CD-in Internal Audio Connector



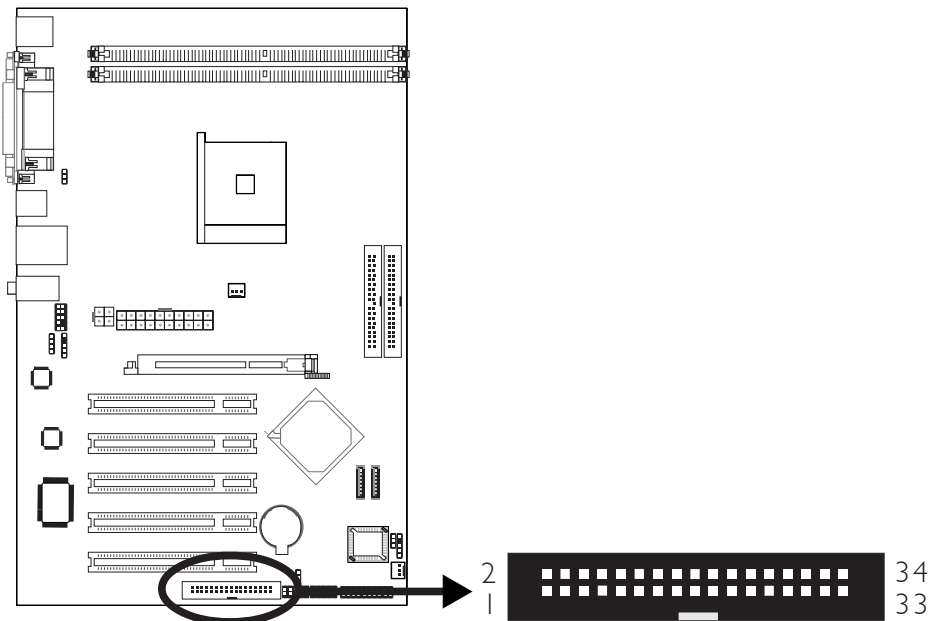
The CD-in (J37) connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

## 2.6.2 S/PDIF Connector



The system board is equipped with a S/PDIF connector. One card-edge bracket, mounted with S/PDIF ports, may be provided with the system board. Install the card-edge bracket to the system chassis then connect the audio cable connector to the S/PDIF connector. Make sure pin 1 of the audio cable connector is aligned with pin 1 of the connector.

### 2.6.3 Floppy Disk Drive Connector



The system board is equipped with a shrouded floppy disk drive connector for connecting two standard floppy disk drives. To prevent improper floppy cable installation, the shrouded 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.

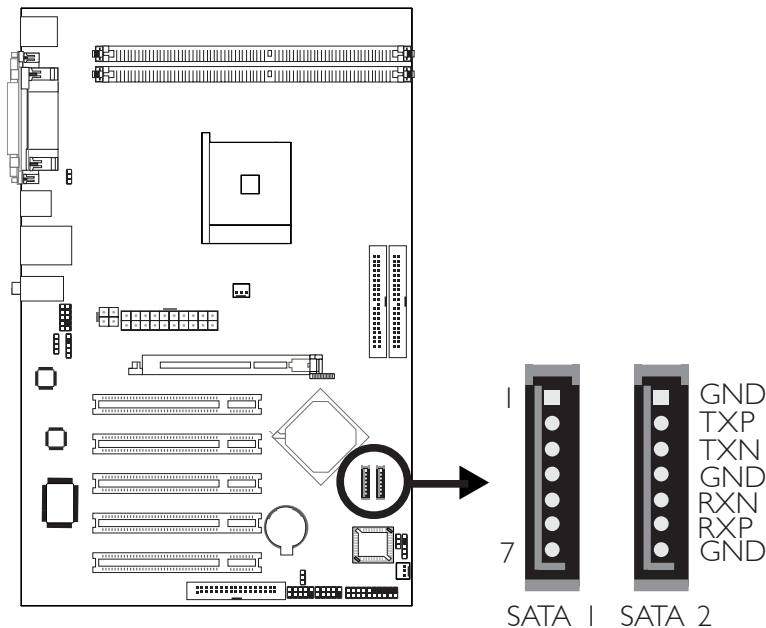
#### Connecting the Floppy Disk Drive Cable

Install one end of the floppy disk drive cable into the shrouded floppy disk header (J32) on the system board and the other end-most connector to the drive you want to designate as Drive A. If you are connecting another drive (Drive B), install the middle connector of the cable to the drive. The colored edge of the daisy chained ribbon cable should be aligned with pin 1 of J32.

#### BIOS Setting

Enable or disable this function in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

### 2.6.4 Serial ATA Connectors



The system board is equipped with two Serial ATA connectors for connecting Serial ATA devices. Connect one end of the Serial ATA cable to J30 (SATA 1) or J31 (SATA 2) and the other end to your Serial ATA device.

#### BIOS Setting

Configure the onboard Serial ATA in the Advanced Chipset Features submenu of the BIOS. Refer to chapter 3 for more information.

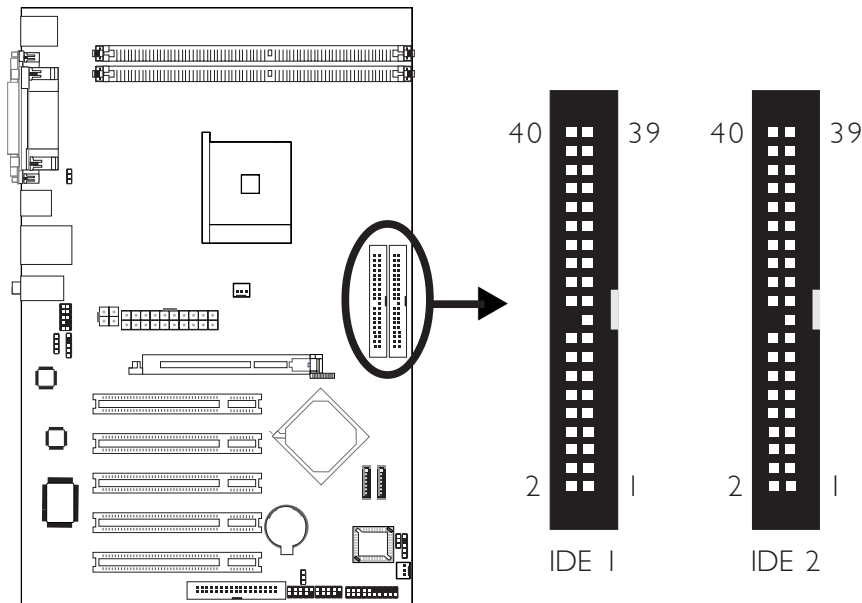
#### Configuring RAID on Serial ATA Drives

The system board allows configuring RAID on Serial ATA drives. It supports RAID 0, RAID 1 and JBOD. The following must be set accordingly.

- BIOS Setting**  
 Configure RAID (e.g. creating or deleting RAID) in the ULI RAID BIOS. You can enter this utility by pressing the <Ctrl> and <A> keys simultaneously during system boot up. Refer to chapter 3 for more information.
- Drivers and Utility**  
 Install the ULI SATA RAID Drivers and Utility. Refer to chapter 4 for more information.



## 2.6.5 IDE Disk Drive Connectors



The system board is equipped with two shrouded PCI IDE headers that 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 has 3 connectors on them, one that plugs into an IDE connector on the system board and the other 2 connect to IDE devices. The connector at the end of the cable is for the Master drive and the connector in the middle of the cable is for the Slave drive.

### Connecting the IDE Disk Drive Cable

Install one end of the IDE cable into the IDE 1 header (J28) 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 (J29) 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.

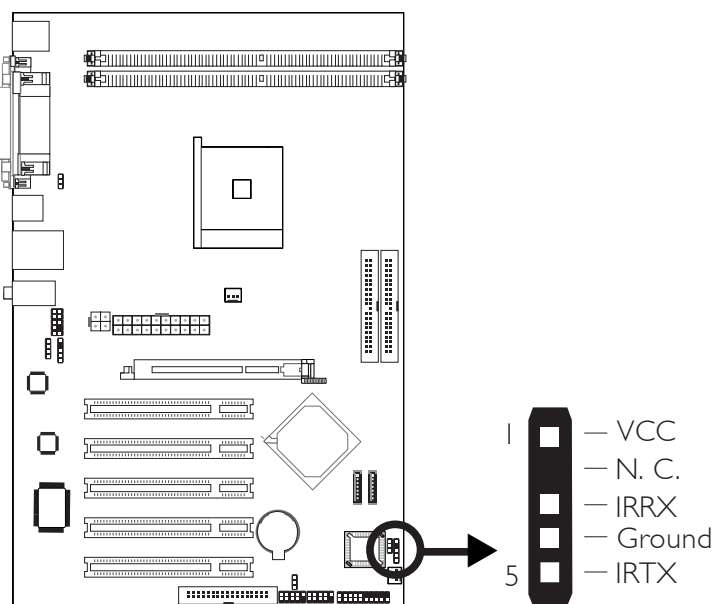
**Important:**

*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

Enable or disable the onboard primary or secondary IDE in the Integrated Peripherals submenu of the BIOS. Refer to chapter 3 for more information.

## 2.6.6 IrDA Connector



Connect your IrDA cable to connector J35 on the system board.



### 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 to the IrDA connector according to their pin functions.*

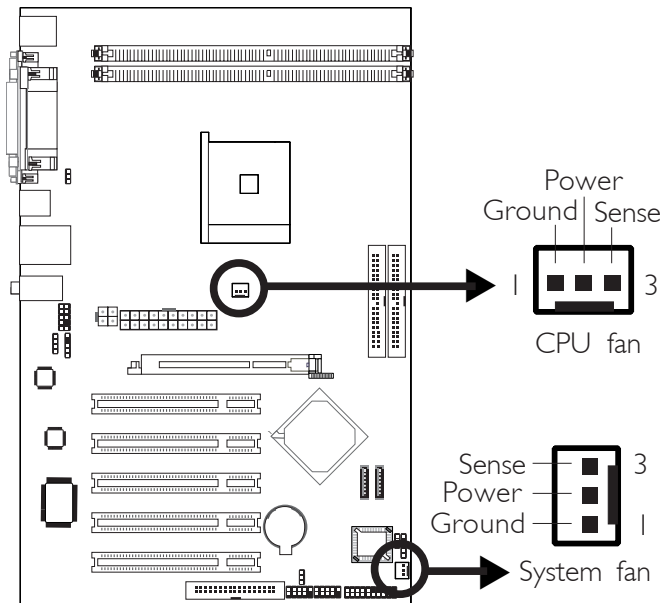
## BIOS Setting

Configure IrDA in the Integrated Peripherals submenu 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 IrDA function. Refer to your operating system's manual or documentation for more information.

### 2.6.7 Cooling Fan Connectors

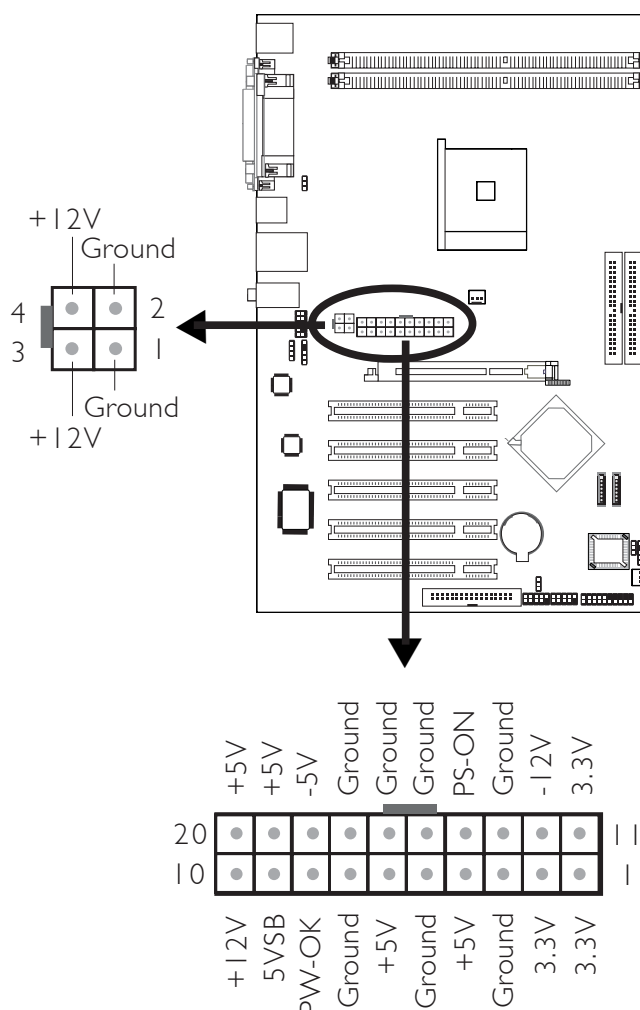


Connect the CPU fan's cable connector to the CPU fan connector (J2) on the system board. The system fan connector (J1) is used to connect an additional cooling fan. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board components.

#### 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.

## 2.6.8 Power Connectors

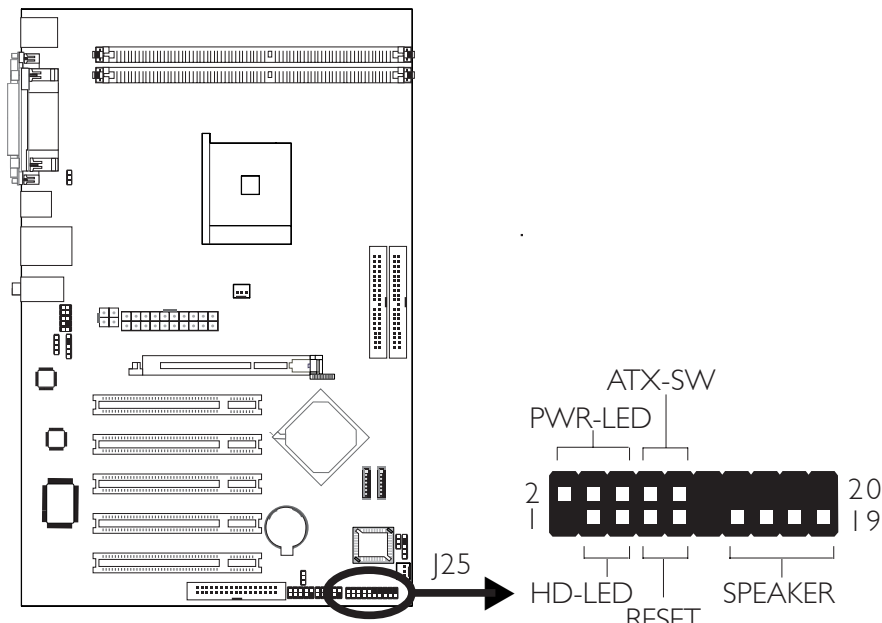


Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply has a standard 20-pin ATX main power connector and a 4-pin +12V power connector that must be inserted onto CN22 and CN23 connectors respectively.

The 4-pin +12V power connector enables the delivery of more +12VDC current to the processor's Voltage Regulator Module (VRM).

The system board requires a minimum of 250 Watt power supply to operate. Your system configuration (amount of memory, add-in cards, peripherals, etc.) may exceed the minimum power requirement. To ensure that adequate power is provided, use a 300 Watt (or greater) power supply.

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

## Chapter 3 - BIOS Setup

### 3.1 Award BIOS Setup Utility

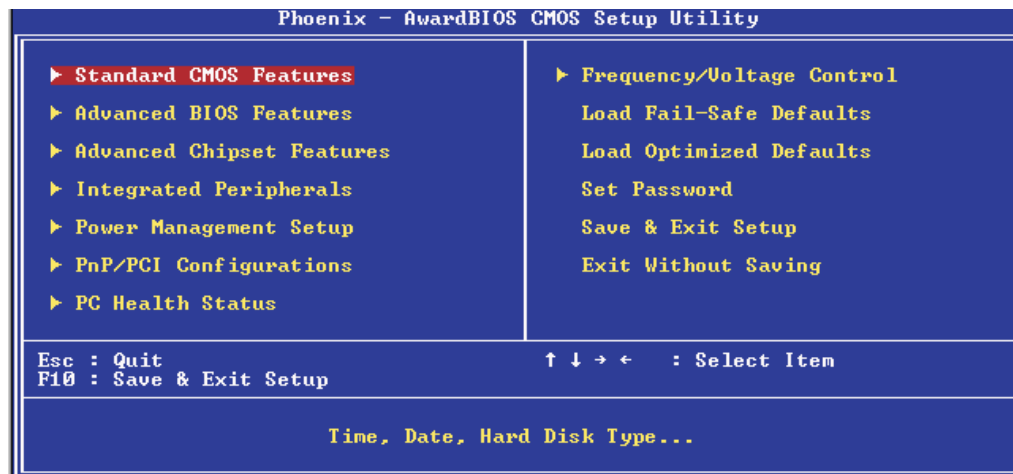
The Basic Input/Output System (BIOS) is a program that takes care of the basic level of communication between the processor and peripherals. In addition, the BIOS also contains codes for various advanced features found in this system board. This chapter explains the Setup Utility for the Award BIOS.

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

Press DEL to enter setup

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

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





### 3.1.1 Standard CMOS Features

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



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

#### 3.1.1.1 Date

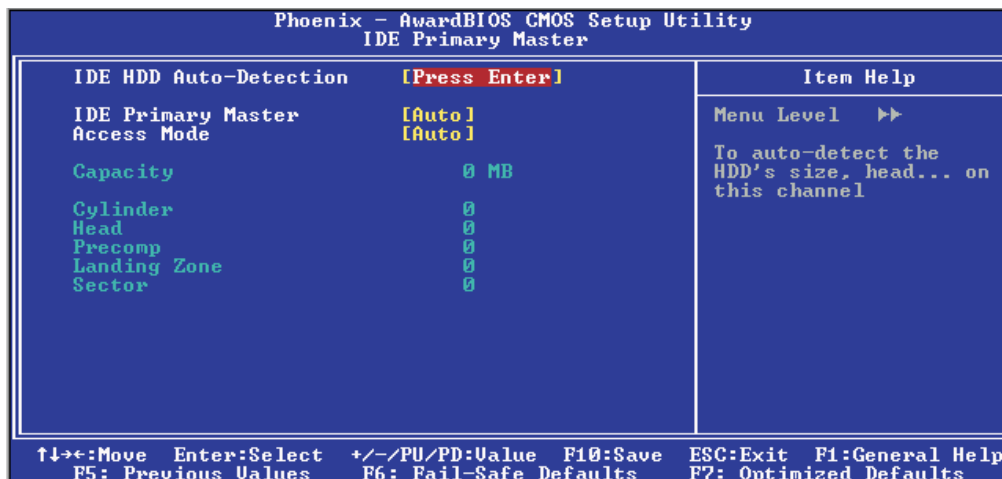
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1994 to 2079.

#### 3.1.1.2 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.

### 3.1.1.3 IDE Primary Master, IDE Primary Slave, IDE Secondary Master and IDE Secondary Slave

Move the cursor to the “IDE Primary Master”, “IDE Primary Slave”, “IDE Secondary Master” or “IDE Secondary Slave” field, then press <Enter>. The following screen will appear:



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

#### IDE HDD Auto-Detection

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

#### IDE Primary Master/Slave and IDE Secondary 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.

#### 3.1.1.4 Drive A and Drive B

These fields identify the types of floppy disk drives installed.

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

### 3.1.1.5 Video

This field selects the type of video adapter used for the primary system monitor. Although secondary monitors are supported, you do not have to select the type. The default setting is EGA/VGA.

<i>EGA/VGA</i>	Enhanced Graphics Adapter/Video Graphics Array. For EGA, VGA, SVGA and PGA monitor adapters.
<i>CGA 40</i>	Color Graphics Adapter. Power up in 40-column mode.
<i>CGA 80</i>	Color Graphics Adapter. Power up in 80-column mode.
<i>Mono</i>	Monochrome adapter. Includes high resolution monochrome adapters.

### 3.1.1.6 Halt On

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

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

### 3.1.1.7 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.

#### 3.1.1.8 Extended Memory

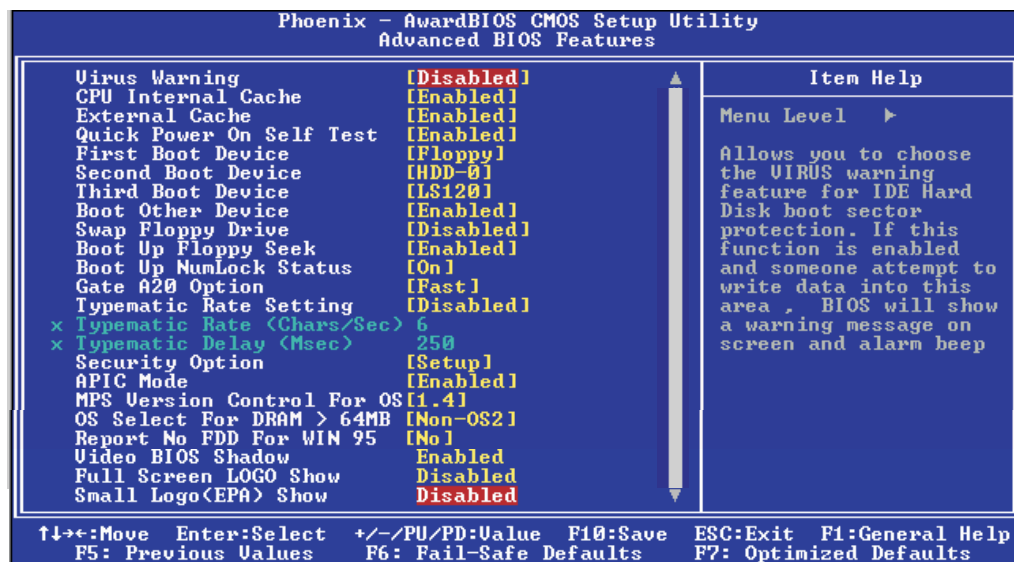
Displays the amount of extended memory detected during boot-up.

#### 3.1.1.9 Total Memory

Displays the total memory available in the system.

### 3.1.2 Advanced BIOS Features

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



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

#### 3.1.2.1 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® 98/2000/ME/XP or the operating system may not install nor work.

### 3.1.2.2 CPU Internal Cache and External Cache

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

### 3.1.2.3 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”.

### 3.1.2.4 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.

### 3.1.2.5 Swap Floppy Drive

When this field is enabled and the system is booting from the floppy drive, the system will boot from drive B instead of drive A. When this field is disabled and the system is booting from the floppy drive, the system will boot from drive A. You must have two floppy drives to use this function.

### 3.1.2.6 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.

### 3.1.2.7 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.

### 3.1.2.8 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.

- |               |   |
|---------------|---|
| <i>Fast</i>   | The chipset controls Gate A20.                      |
| <i>Normal</i> | A pin in the keyboard controller controls Gate A20. |

### 3.1.2.9 Typematic Rate Setting

- |                 |  |
|-----------------|--|
| <i>Disabled</i> | Continually holding down a key on your keyboard will cause the BIOS to report that the key is down.  |
| <i>Enabled</i>  | 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. |

### 3.1.2.10 Typematic Rate (Chars/Sec)

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

### 3.1.2.11 Typematic Delay (Msec)

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



### 3.1.2.12 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.

- |               |   |
|---------------|---|
| <i>System</i> | The system will not boot and access to Setup will be denied unless the correct password is entered at the prompt. |
| <i>Setup</i>  | The system will boot, but access to Setup will be denied unless the correct password is entered at the prompt.    |

### 3.1.2.13 APIC Mode

Leave this field in its default setting.

### 3.1.2.14 MPS Version Control for OS

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

### 3.1.2.15 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.

### 3.1.2.16 Report No FDD For WIN 95

The options are Yes and No.

### 3.1.2.17 Video BIOS Shadow

Determines whether video BIOS will be copied to RAM. Video Shadow will increase the video speed. Note that some graphics boards require that this option be disabled. The default value is Enabled.

*Enabled* Video shadow is enabled.

*Disabled* Video shadow is disabled.

### 3.1.2.18 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.

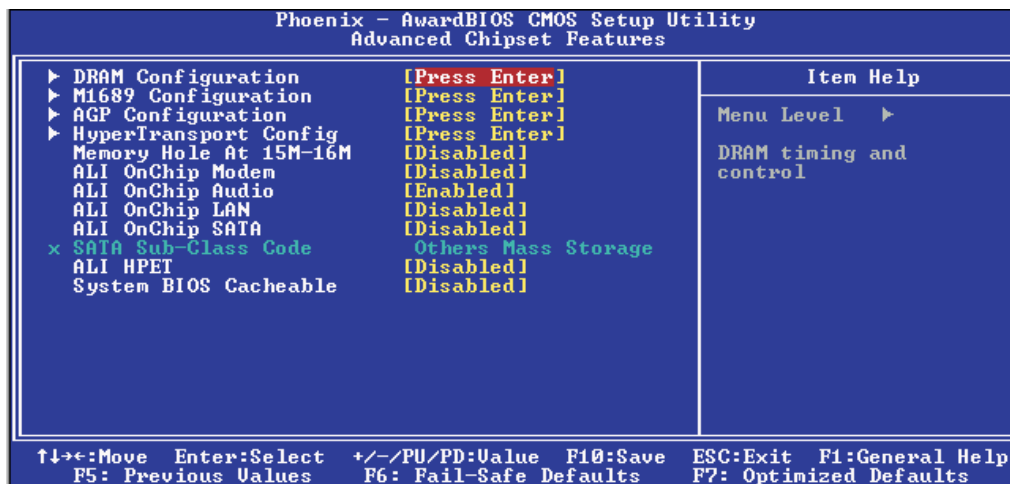
*Disabled* The logo will not appear during system boot-up.

### 3.1.2.19 Small Logo(EPA) Show

*Enabled* The EPA logo will appear during system boot-up.

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

### 3.1.3 Advanced Chipset Features



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

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

### 3.1.3.1 DRAM Configuration

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



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

#### Max Memclock (Mhz)

This field is used to select the maximum memory clock. This is to prevent the system from running at a frequency that is faster than the speed set in this field.

#### 1T/2T Memory Timing

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

- Auto* Automatically detects the memory timing.
- 1T* Sets the memory timing to Performance mode. Select this mode for better system performance.
- 2T* Sets the memory timing to Normal mode. Select this mode if you encounter system instability. (default)

### CAS# Latency (Tcl)

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

### RAS# to CAS# Delay (Trcd)

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

### Min RAS# Active Time (Tras)

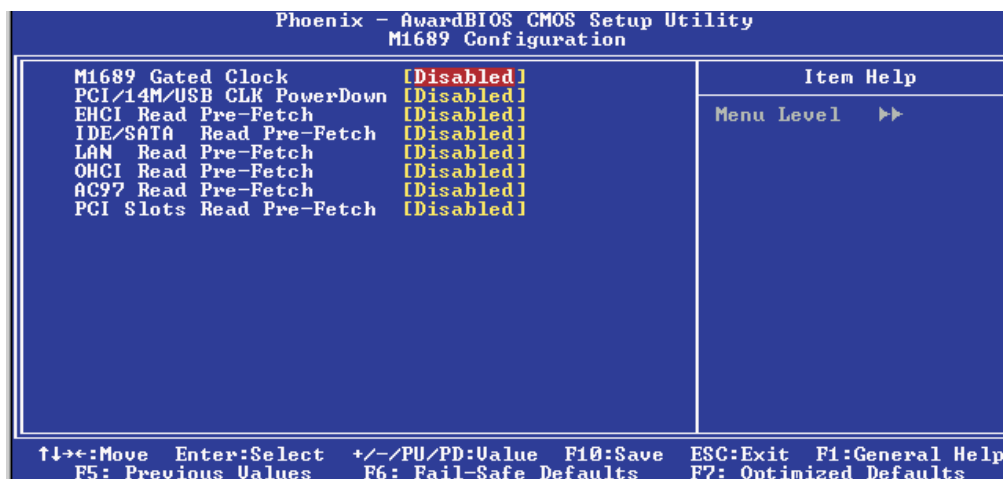
This field is used to select the minimum RAS# active time.

### Row Precharge Time (Trp)

The field is used to select the row precharge time (precharge to active or auto-refresh of the same bank.)

### 3.1.3.2 M1689 Configuration

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



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

#### M1689 Gated Clock

This field is used to enable or disable the gated clock.

#### PCI/14M/USB CLK PowerDown

This field is used to enable or disable the PCI/14M/USB clock power down function.

#### EHCI Read Pre-Fetch

This field is used to enable or disable the EHCI Read Pre-Fetch function.

#### IDE/SATA Read Pre-Fetch

This field is used to enable or disable the IDE/SATA Read Pre-Fetch function.

#### LAN Read Pre-Fetch

This field is used to enable or disable the LAN Read Pre-Fetch function.

### OHCI Read Pre-Fetch

This field is used to enable or disable the OHCI Read Pre-Fetch function.

### AC97 Read Pre-Fetch

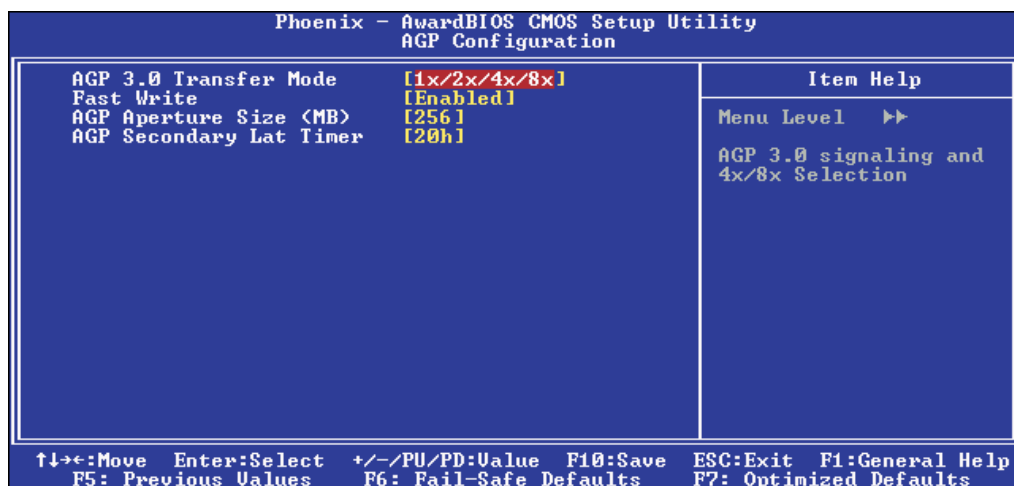
This field is used to enable or disable the AC97 Read Pre-Fetch function.

### PCI Slots Read Pre-Fetch

This field is used to enable or disable the PCI slots Read Pre-Fetch function.

### 3.1.3.3 AGP Configuration

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



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

#### AGP 3.0 Transfer Mode

- 1x/2x/4x/8x      Select this option if you are using an AGP 3.0 card that supports AGP 8x.
- 1x/2x/4x        Select this option if you are using an AGP card that supports AGP 4x.

#### Fast Write

Select Enabled to support the AGP Fast Write function.

#### AGP Aperture Size (MB)

This field is relevant to the memory-mapped graphics data of the AGP card installed in your system. Leave this in its default setting.

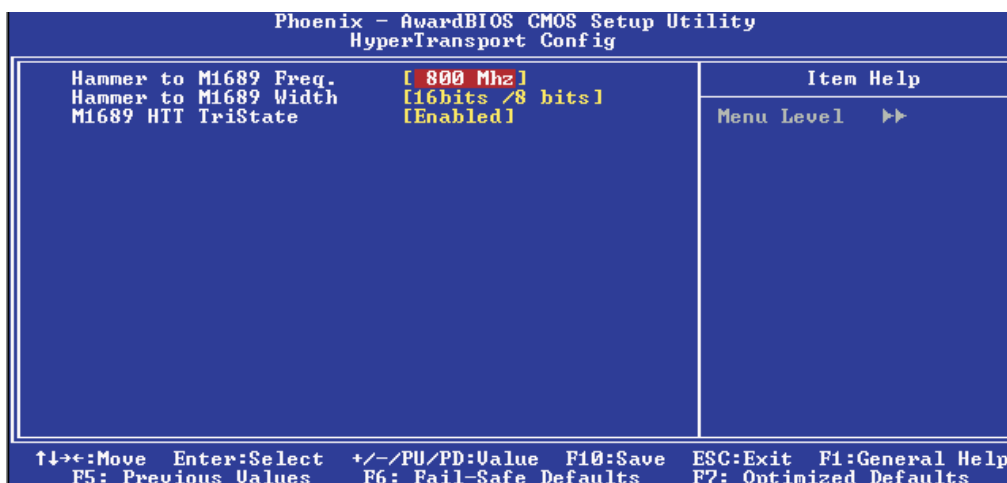
#### AGP Secondary Lat Timer

The options are 00h, 20h, 40h, 60h, 80h, C0h and FFh.



### 3.1.3.4 HyperTransport Config

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



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

#### Hammer to M1689 Freq.

The options are 200Mhz, 400Mhz, 600Mhz, 800Mhz and 1000Mhz.

#### Hammer to M1689 Width

The options are 2 bits, 4 bits, 8 bits and 16bits/8bits.

#### M1689 HTT TriState

The options are Enabled and Disabled.

### 3.1.3.5 Memory Hole At 15M-16M

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.

### 3.1.3.6 ALI OnChip Audio

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

### 3.1.3.7 ALI OnChip LAN

This field is used to enable or disable the onboard LAN

### 3.1.3.8 ALI OnChip SATA

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

### 3.1.3.9 SATA Sub-Class Code

This field is used to select the sub-class code of the OS drivers.

<i>Others Mass Storage</i>	80h
<i>IDE Controller</i>	01h

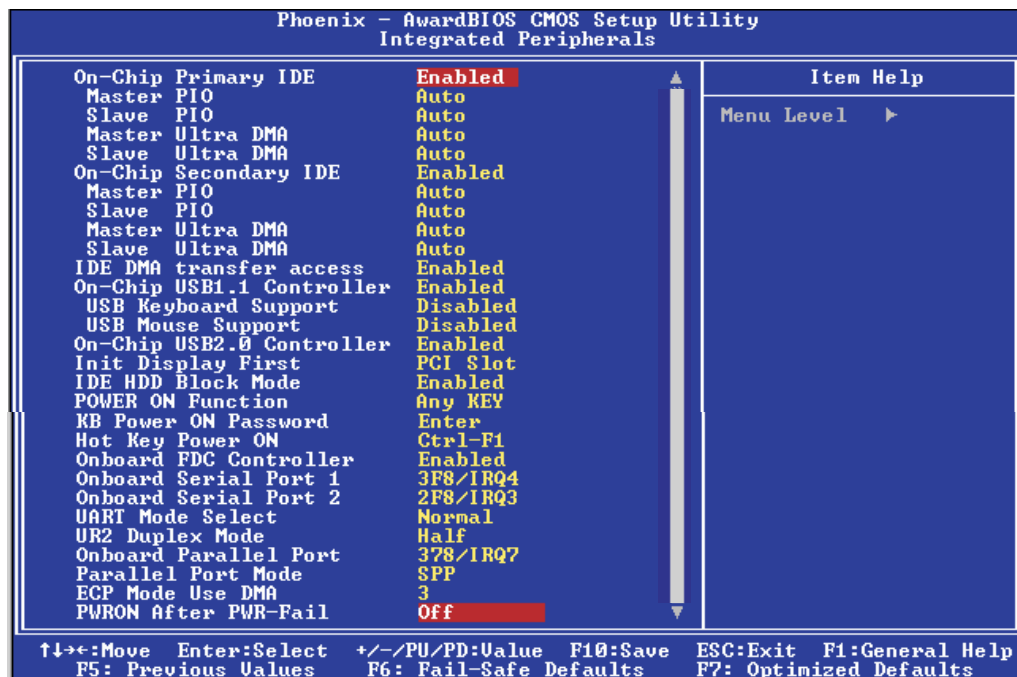
### 3.1.3.10 ALI HPET

The options are Enabled and Disabled.

### 3.1.3.11 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.

### 3.1.4 Integrated Peripherals



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

#### 3.1.4.1 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.

#### 3.1.4.2 Master PIO and 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.

### 3.1.4.3 Master Ultra DMA and Slave Ultra DMA

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

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

### 3.1.4.4 IDE DMA Transfer Access

This field, when Enabled, will enhance the IDE DMA transfer of an IDE hard disk drive.

### 3.1.4.5 On-Chip USB 1.1 Controller

This field is used to enable or disable USB 1.1.

### 3.1.4.6 USB Keyboard Support

This field is used to enable or disable USB keyboard.

### 3.1.4.7 USB Mouse Support

This field is used to enable or disable USB mouse.

### 3.1.4.8 On-Chip USB 2.0 Controller

If you are using USB 2.0, this field must be set to Enabled.

### 3.1.4.9 Init Display First

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

<i>AGP</i>	When the system boots, it will first initialize the AGP.
<i>PCI Slot</i>	When the system boots, it will first initialize PCI.

#### 3.1.4.10 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.

#### 3.1.4.11 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* When this option is selected, select the function key you would like to use to power-on the system in the “Hot Key Power On” field.

*Mouse Move* When this option is selected, move the mouse to power-on the system.

*Mouse Click* When this option is selected, click a button of the mouse to power-on the system.

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

*Keyboard 98* When this option is selected, press the “wake up” key of the Windows® 98 compatible keyboard to power-on the system.

#### 3.1.4.12 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.

### 3.1.4.13 Hot Key Power On

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

### 3.1.4.14 Onboard FDC Controller

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

### 3.1.4.15 Onboard Serial Port 1 and Onboard Serial Port 2

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

### 3.1.4.16 UART Mode Select

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

### 3.1.4.17 UR2 Duplex Mode

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

### 3.1.4.18 Onboard Parallel Port

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

#### 3.1.4.19 Parallel Port Mode

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

##### **SPP**

Allows normal speed operation but in one direction only.

##### **ECP (Extended Capabilities Port)**

Allows parallel port to operate in bidirectional mode and at a speed faster than the normal mode's data transfer rate.

##### **EPP (Enhanced Parallel Port)**

Allows bidirectional parallel port operation at maximum speed.

#### 3.1.4.20 ECP Mode Use DMA

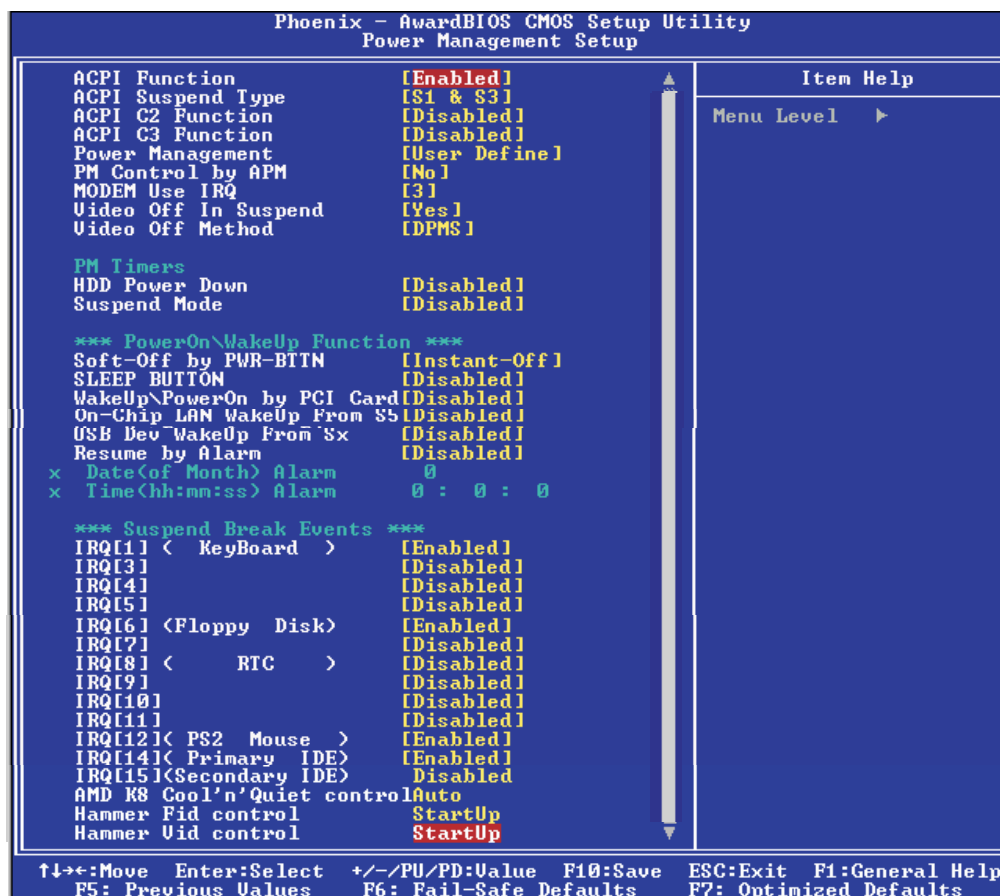
This is used to select the DMA channel of the parallel port.

#### 3.1.4.21 PWRON After PWR-Fail

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

### 3.1.5 Power Management Setup

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



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

#### 3.1.5.1 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 the appropriate option in the field below.

#### 3.1.5.2 ACPI Suspend Type

This field is used to select the type of system suspend mode.



### 3.1.5.3 ACPI C2 Function

The options are Enabled and Disabled.

### 3.1.5.4 ACPI C3 Function

The options are Enabled and Disabled.

### 3.1.5.5 Power Management

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

<i>Min Saving</i>	Minimum power saving time for the "Suspend Mode" = 1 hour.
<i>Max Saving</i>	Maximum power saving time for the "Suspend Mode" = 1 min.
<i>User Define</i>	Allows you to set the power saving time in the "Suspend Mode" field.

### 3.1.5.6 PM Control by APM

- Yes An Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU's internal clock. Use this option in Windows® 98/2000/ME. (default)
- No The system BIOS will ignore APM when initiating the Power Management mode.

### 3.1.5.7 MODEM Use IRQ

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

### 3.1.5.8 Video Off In Suspend

This field is used to activate the video off feature when the system enters the Suspend mode.

### 3.1.5.9 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* Initializes display power management signaling. Use this option if your video board supports it.

### 3.1.5.10 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.

### 3.1.5.11 Suspend Mode

This is configurable only when the Power Management field is set to "User Define". When the system enters the power saving time set in this field, the CPU and onboard peripherals will be shut off.

### 3.1.5.12 Soft-Off by PWR-BTTN

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

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

### 3.1.5.13 Sleep Button

The options are Enabled and Disabled.

### 3.1.5.14 WakeUp\PowerOn by PCI Card

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

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

### 3.1.5.15 On-Chip LAN WakeUp From S5

Set this field to Enabled to wake up the system via the onboard LAN.

### 3.1.5.16 USB Dev WakeUp From Sx

This field when enabled allows you to use a USB device to wake up the system.

### 3.1.5.17 Resume by Alarm

*Enabled* When Enabled, you can set the date and time you would like the Soft Power Down (Soft-Off) PC to power-on in the "Date (of Month)" and "Resume Time (hh:mm:ss)" fields. However, if the system is being accessed by incoming calls or the network prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

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

### 3.1.5.18 Date (of Month) Alarm

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

### 3.1.5.19 Time (hh:mm:ss) Alarm

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

### 3.1.5.20 Suspend Break Events

When enabled, access to the specified IRQ will cause the system to wake up completely from the power management mode. When disabled, the system will not wake up from the power management mode despite access to the specified IRQ.

### 3.1.5.21 AMD K8 Cool 'n' Quiet Control

- Auto* Enables the AMD 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 lowering its CPU speed and voltage, subsequently decreasing its noise level.
- Disabled* Disables the AMD Cool'n'Quiet™ technology.

### 3.1.5.22 Hammer Fid Control

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

### 3.1.5.23 Hammer Vid Control

This field is used to manually select the CPU's voltage.

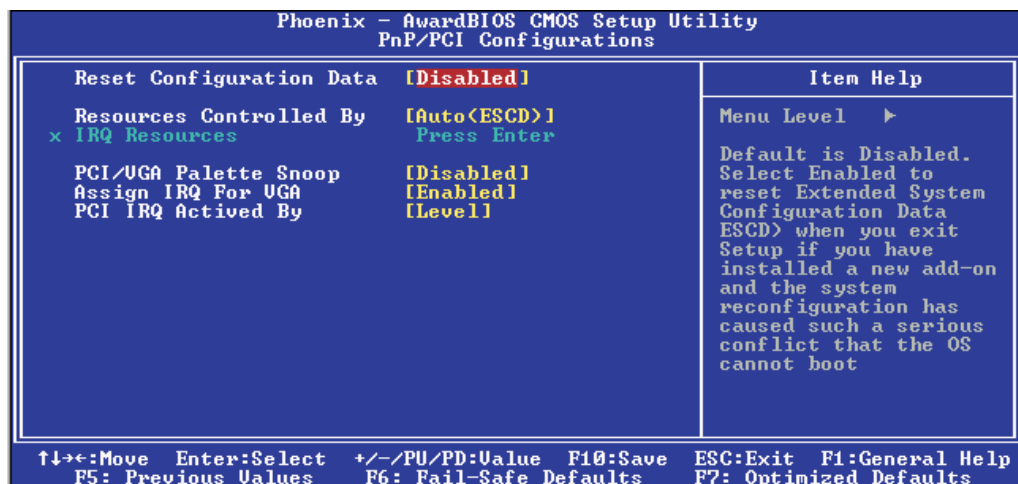


#### Important:

*Manually changing the CPU's operating frequency and/or voltage are not guaranteed to provide better system performance. It may cause damage or result to the CPU's or system's instability.*

### 3.1.6 PnP/PCI Configurations

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



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

#### 3.1.6.1 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.

#### 3.1.6.2 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.

### 3.1.6.3 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			Item Help
IRQ Resources			
IRQ-3	assigned to	[PCI Device]	Menu Level ▶▶  Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture
IRQ-4	assigned to	[PCI Device]	
IRQ-7	assigned to	[PCI Device]	
IRQ-9	assigned to	[PCI Device]	
IRQ-10	assigned to	[PCI Device]	
IRQ-11	assigned to	[PCI Device]	
IRQ-12	assigned to	[PCI Device]	
IRQ-14	assigned to	[PCI Device]	
IRQ-15	assigned to	[PCI Device]	
↑↓→←: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.

### 3.1.6.4 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.

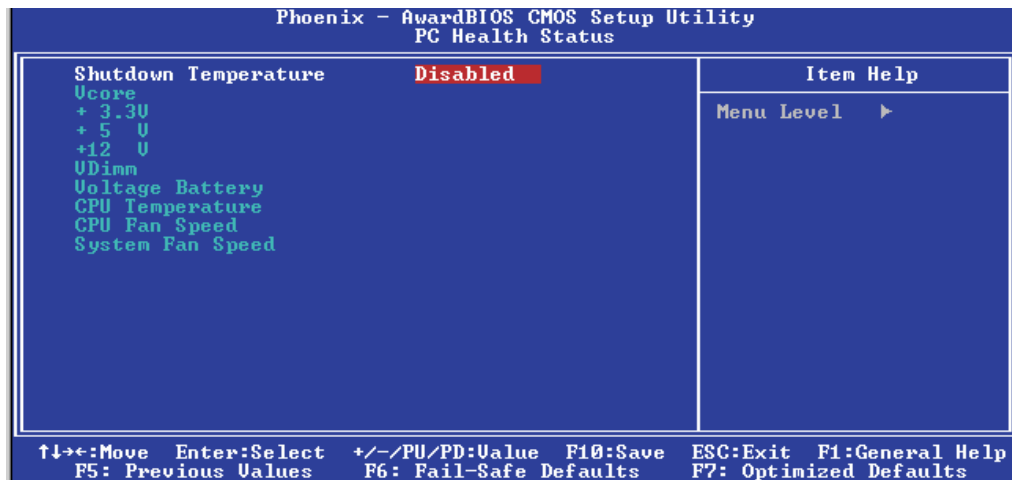
### 3.1.6.5 Assign IRQ for VGA

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.

#### 3.1.6.6 PCI IRQ Activated By

This field is used to set the method by which the PCI bus recognizes that an IRQ service is being requested by a device. Under all circumstances, you should retain the default configuration unless a different setting is needed.

### 3.1.7 PC Health Status



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

#### 3.1.7.1 Shutdown Temperature

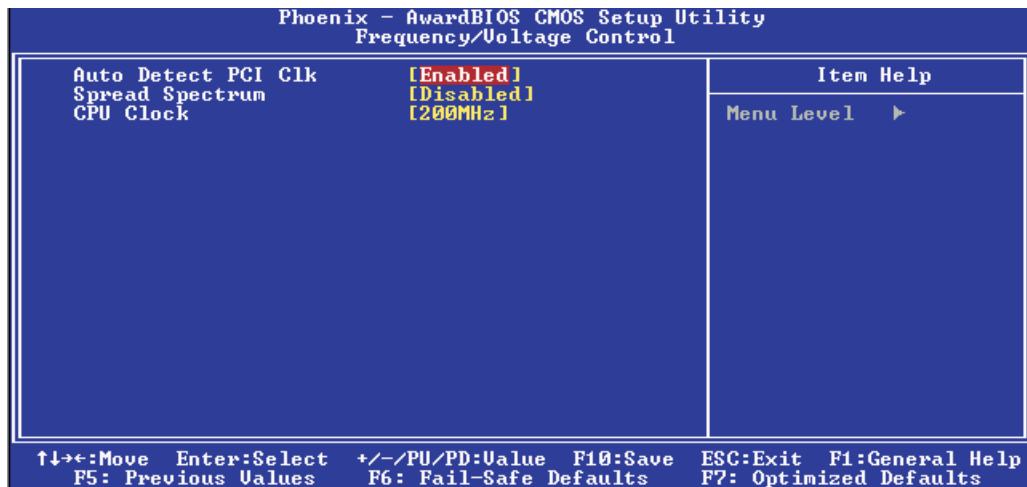
You can prevent the system from overheating by selecting a temperature in this field. If the system detected that its temperature exceeded the one set in this field, it will automatically shutdown.

#### 3.1.7.2 Vcore, +3.3V, +5V, +12V, VDimm, Voltage Battery, CPU Temperature, CPU Fan Speed and System Fan Speed

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



### 3.1.8 Frequency/Voltage Control



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

#### 3.1.8.1 Auto Detect PCI Clk

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

#### 3.1.8.2 Spread Spectrum

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

#### 3.1.8.3 CPU Clock

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.

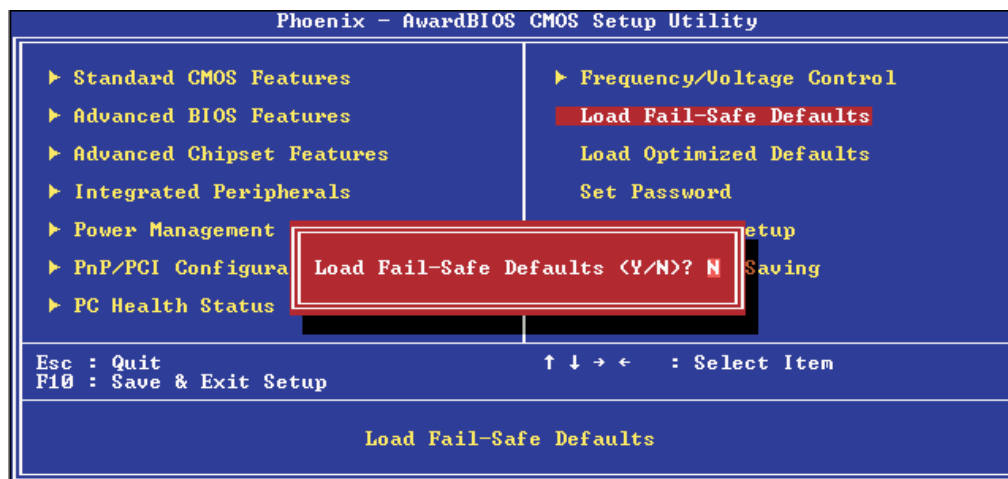


#### Important:

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.

### 3.1.9 Load Fail-Safe Defaults

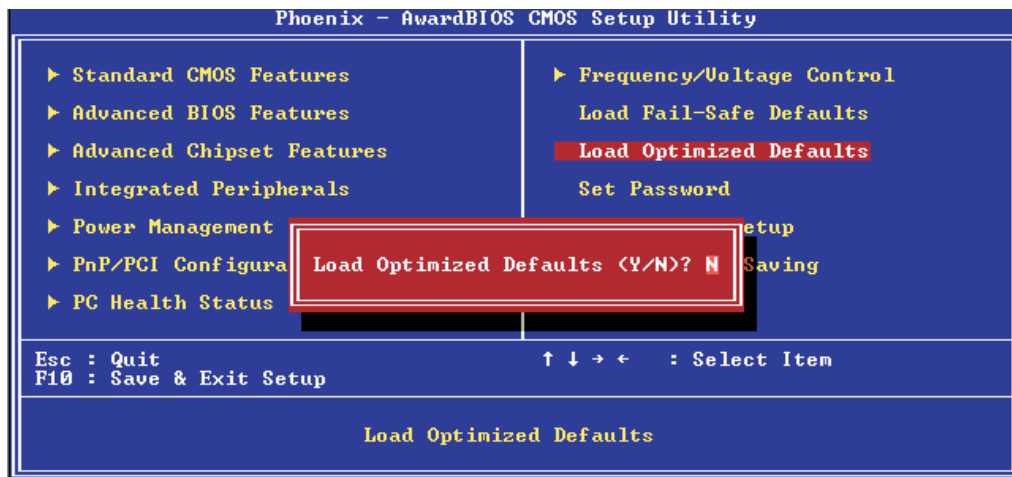
The “Load Fail-Safe Defaults” option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press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



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

### 3.1.10 Load Optimized Defaults

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

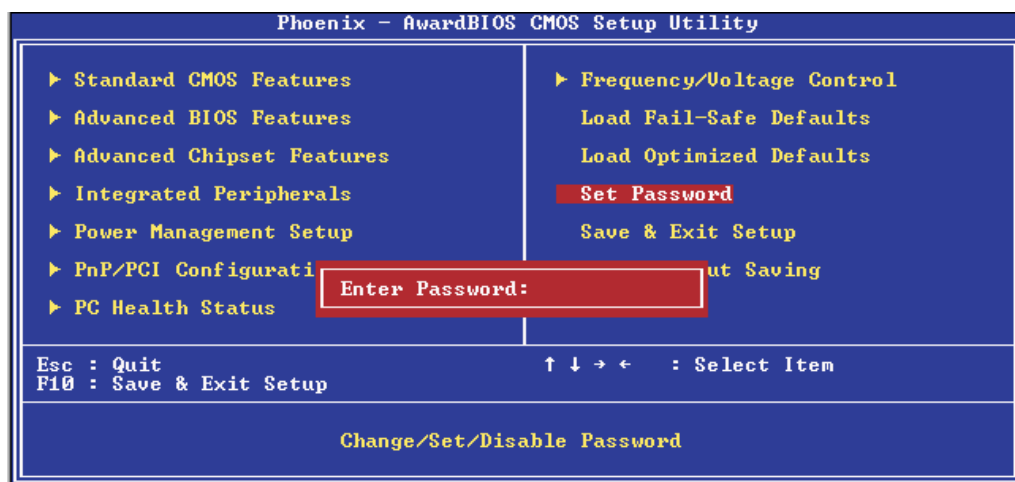


Type <Y> and press <Enter> to load the Setup default values.

### 3.1.11 Set Password

If you want to protect your system and setup from unauthorized entry, set a 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 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 Password” and press <Enter>.



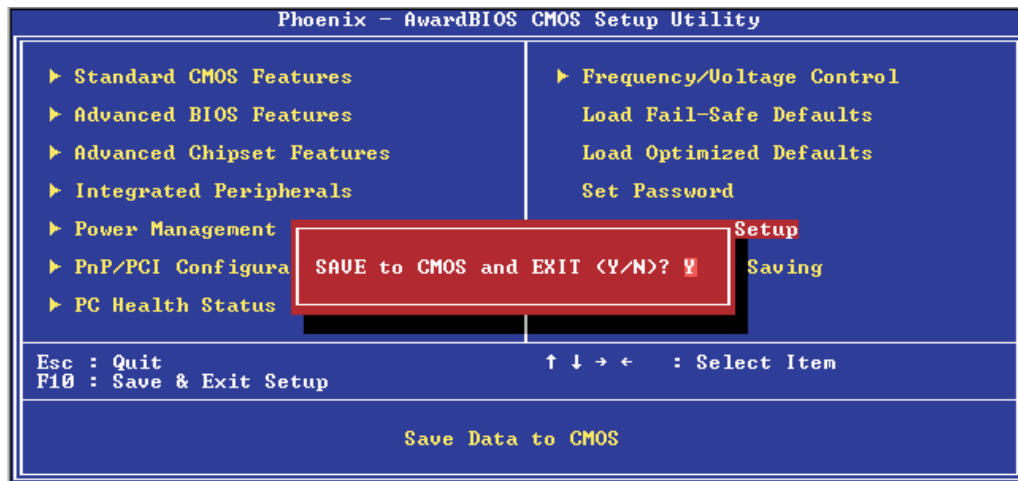
Type in the password. You are limited to eight characters. When done, the message below will appear:

Confirm Password:

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

### 3.1.12 Save & Exit Setup

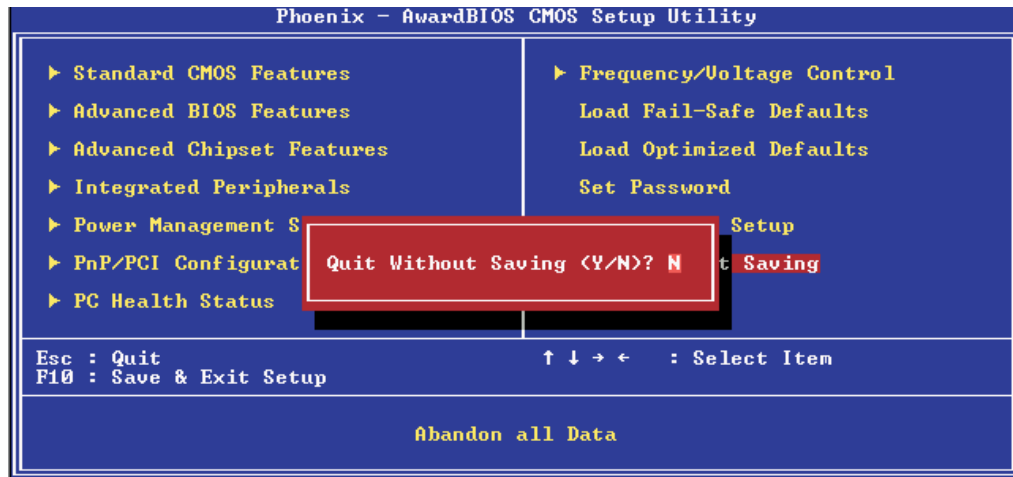
When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>.



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

### 3.1.13 Exit Without Saving

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



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

## 3.2 ULI RAID BIOS

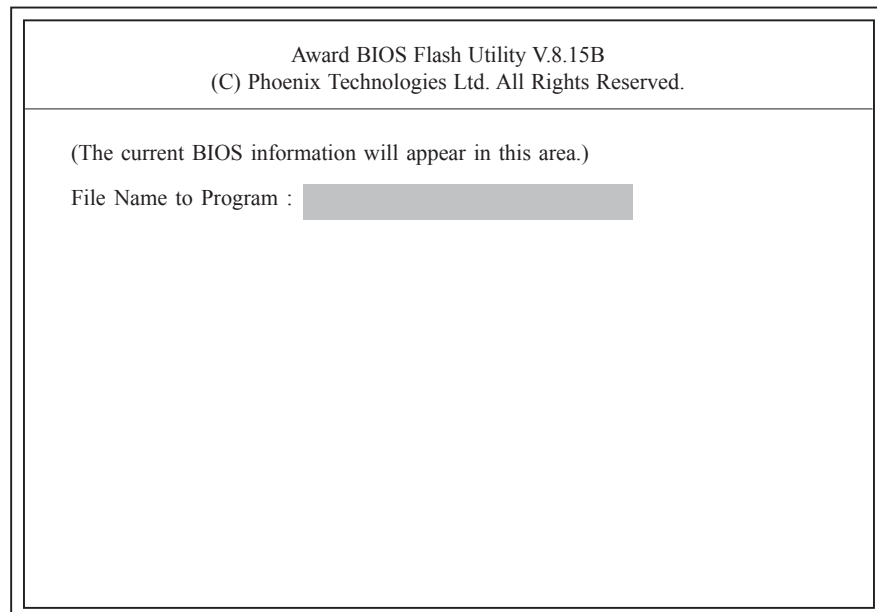
The ULI RAID BIOS utility is used to configure and manage RAID on Serial ATA drives.

After you power up the system and all drives have been detected, the VIA RAID BIOS status message screen will appear. Press the <Ctrl> and <A> keys simultaneously to enter the utility. The utility allows you to build a RAID system using two Serial ATA hard drives.

### 3.3 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

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### 4.1 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".

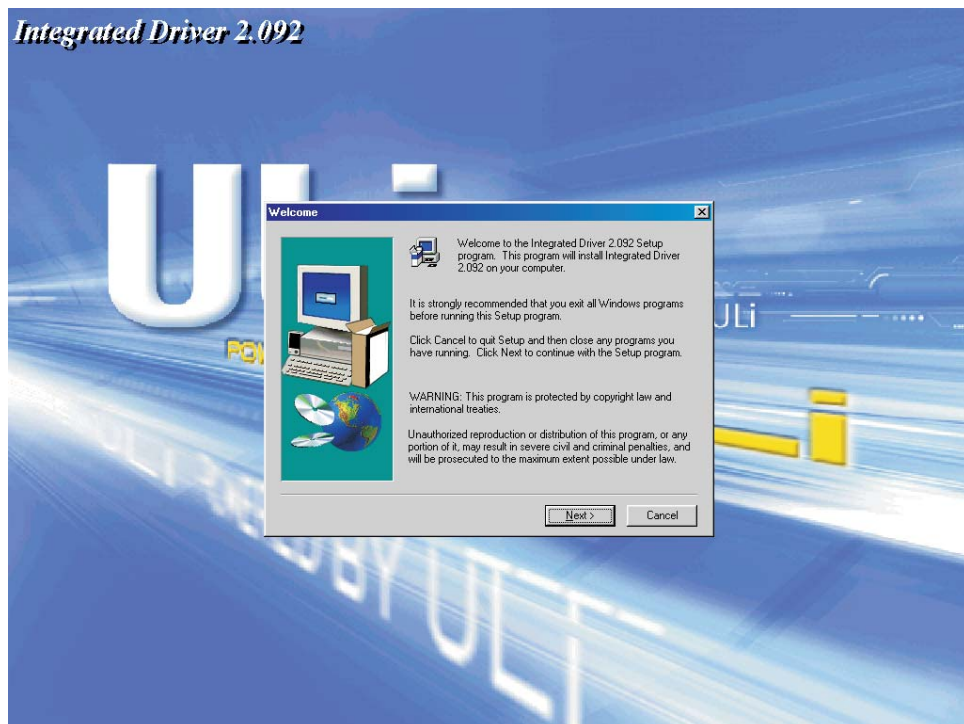


### 4.1.1 ULI Integrated Driver

The ULI integrated driver contains the chipset driver, audio driver, LAN driver and USB driver.

To install the ULI integrated driver, please follow the steps below.

1. On the left side of the autorun screen, click the “CHIPSET” icon.
2. Click “ULI Integrated Driver” on the main menu. The following screen will appear. Click “Next”.



3. The following screen will appear. Click "Next".

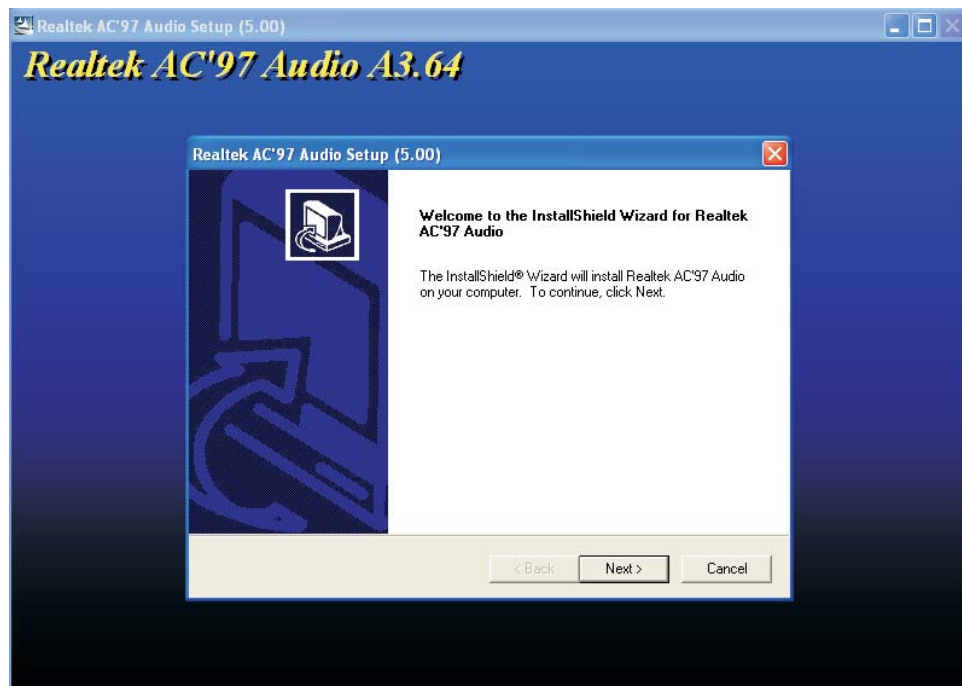


4. Follow the prompts on the screen to complete installation.
5. Restart the system.

### 4.1.2 Audio Drivers

If you are using S/PDIF-in, you must install the Realtek audio driver. To install the driver, please follow the steps below.

1. On the left side of the autorun screen, click the “AUDIO” icon.
2. Click “Audio Drivers” on the main screen. The following screen will appear:



3. Follow the prompts on the screen to complete installation.
4. Restart the system.

### 4.1.3 RAID Configuration

The following describes the basic steps on configuring RAID.

1. Enable the onboard Serial ATA in the Advanced Chipset Features submenu of the Award BIOS.
2. Reboot the PC.
3. When the system powers-up, press the <Ctrl> and <A> keys simultaneously to run the ULI RAID BIOS utility. The utility is used to configure the Serial ATA drives to RAID 0, RAID 1 and JBOD.
4. Install the ULI RAID driver. Refer to the next section.

#### Installing the RAID Driver While 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 "RAID Driver" diskette.
5. Locate for the drive where you inserted the diskette then select "ALI SATA/RAID Controller". Press <Enter> to install the driver.
6. Now press <S> again to specify another device.
7. This time, select "ALI ATA/RAID Controller". Press <Enter> to install the driver.

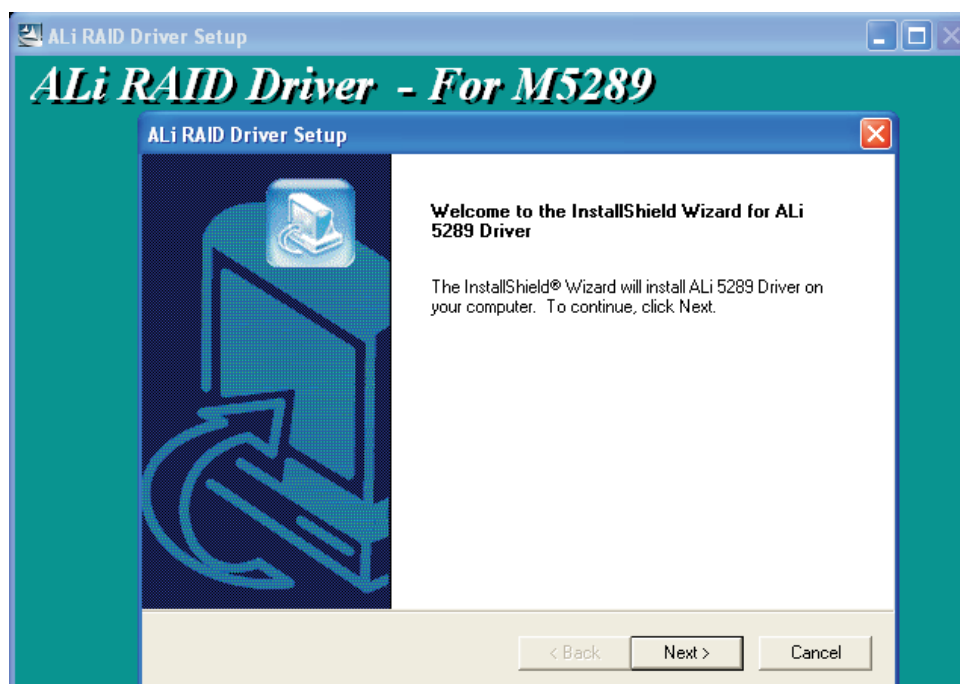
8. If you need to install other devices, please do so at this time otherwise please proceed to the next step.
9. Follow the prompts on the screen to complete installation.

### Installing the RAID Driver Under Existing Windows® XP or Windows® 2000

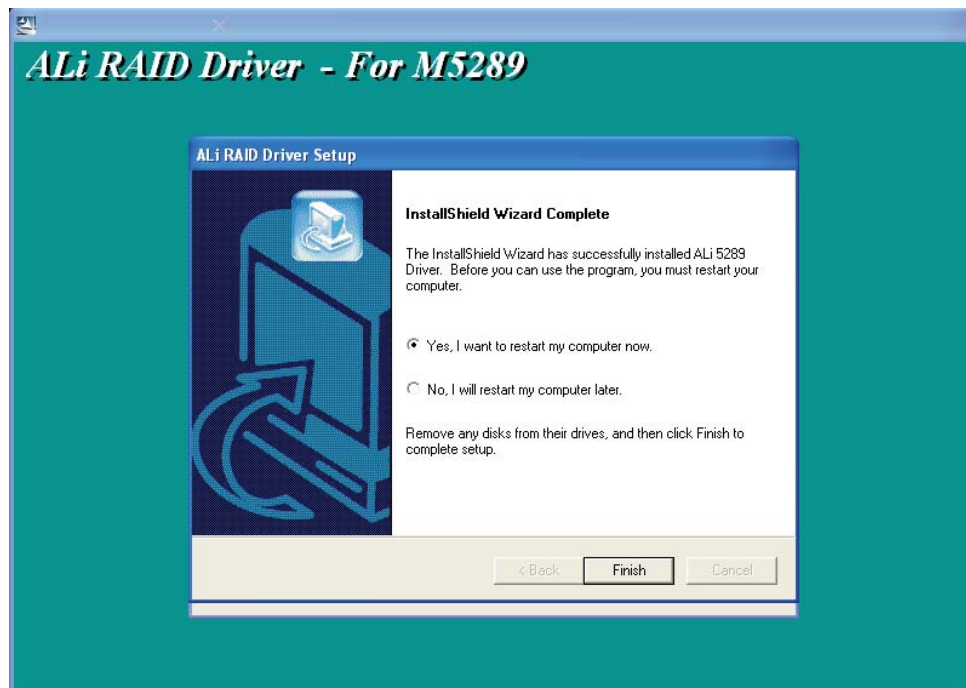
When Windows® XP or Windows® 2000 boots-up, it will automatically find the new hardware and prompt you to install the driver.

#### Quick Installation

1. When the Found New Hardware Wizard window appears, select Cancel to end the Wizard.
2. Locate for the M5289 RAID driver directory that is in the provided CD then double-click Setup.exe. The following screen will appear. Click Next.



2. The driver will now install. Click Finish to restart the computer.



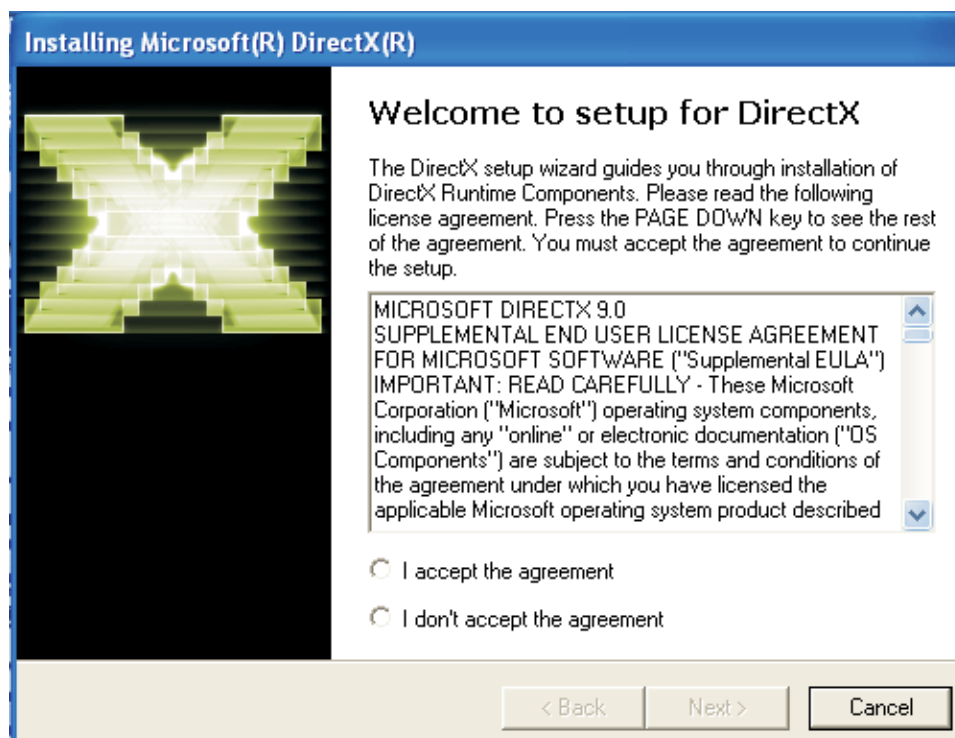
### Installing Manually

1. When the Found New Hardware Wizard window appears, select Install - from a list or specify location (Advanced) then click Next.
2. Select "Don't search, I will choose the driver to install" then click Next.
3. Select "SCSI and RAID" then click Next.
4. Select "Have Disk..." then locate for the CD-ROM drive where you inserted the provided CD and browse for the M5289 RAID driver subdirectory. Select Setup.exe then click OK.
5. Select "ALI SATA/RAID Controller" then click Next.
6. Select Continue Anyway then click Finish.
7. Windows will find the ALI SATA/RAID device. Confirm the Digital Signature Not Found window when it appears.
8. Restart the computer.
9. Repeat the steps above to install the ALI ATA/RAID Controller.

#### 4.1.4 Microsoft DirectX 9

To install, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "Microsoft DirectX 9" on the main menu. The following screen will appear:



3. Click "I accept the agreement" then click "Next".
4. Follow the prompts on the screen to complete installation.
5. Reboot the system for the driver to take effect.

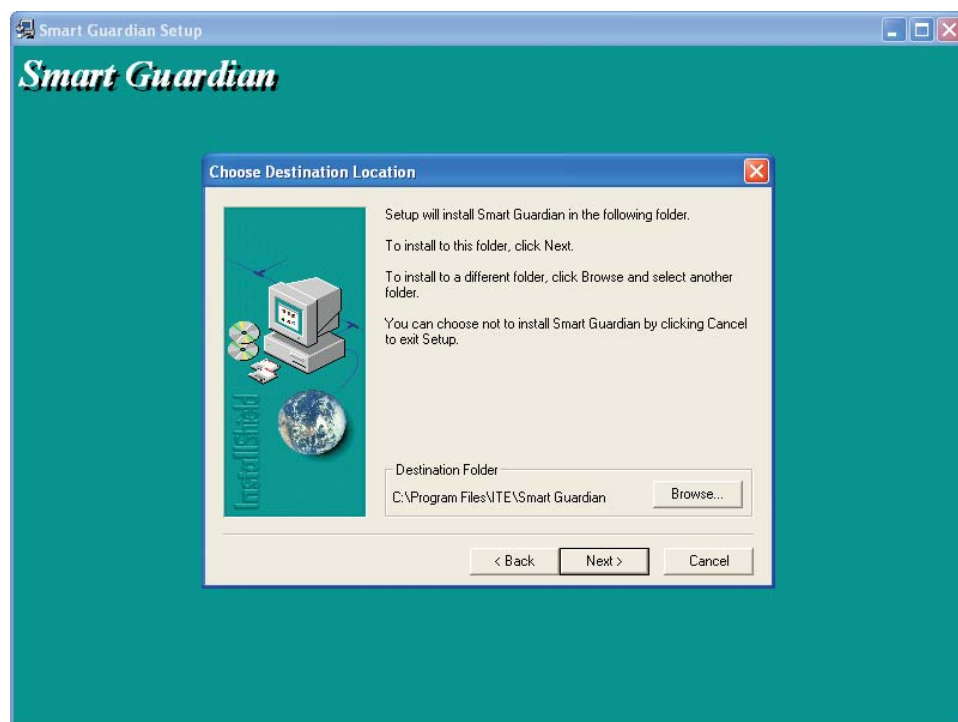


### 4.1.5 Hardware Monitor

The system board comes with the Hardware Monitor utility contained in the provided CD. 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.

To install, please follow the steps below.

1. On the left side of the autorun screen, click the "TOOLS" icon.
2. Click "Hardware Monitor" on the main menu.



3. Follow the prompts on the screen to complete installation.
4. Reboot the system for the driver to take effect.

## 4.2 Installation Notes

1. "Autorun" ONLY supports the Windows® 98, Windows® 98 SE, Windows® ME, Windows® 2000 and Windows® XP operating systems. If after inserting the CD, "Autorun" did not automatically start (which is, the Mainboard Utility CD screen did not appear), please go directly to the root directory of the CD and double-click "Setup".
2. All steps or procedures to install software drivers are subject to change without notice as the softwares are occasionally 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.

## Appendix A - System Error Message

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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.

### A.1 POST Beep

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

### A.2 Error Messages

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

#### CMOS BATTERY HAS FAILED

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



#### Caution:

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

#### CMOS CHECKSUM ERROR

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

#### DISPLAY SWITCH IS SET INCORRECTLY

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

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

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

Unable to reset floppy subsystem.

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

Floppy type mismatch.

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

HDD reset failed.

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

HDD controller diagnostics failed.

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

HDD initialization error.

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

Unable to recalibrate fixed disk.

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

Sector Verify failed.

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

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

**Keyboard error or no keyboard present**

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

**Manufacturing POST loop**

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

**BIOS ROM checksum error - System halted**

The checksum of ROM address F0000H-FFFFFFH is bad.

**Memory test fail**

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

## Appendix B - Troubleshooting

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### B.1 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.