

# **FA-8653**

## **System Board**

### **User's Manual (V1.0)**

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## **Trademarks**

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.

**Notice:**

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

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# 1. **Introduction**

## 1.1 Features

### **Processor**

#### **KD2845\_8N45**

- 1.1.1 Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor with Hyper-Threading Technology-533MHz system data bus
- 1.1.2 Intel<sup>®</sup> Pentium<sup>®</sup> 4 Northwood processor-533MHz/400MHz system data bus
- 1.1.3 Intel<sup>®</sup> Celeron<sup>®</sup> Northwood processor-400MHz system data bus
- 1.1.4 Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor-M (478-pin)-400MHz system data bus
- 1.1.5 Supplies IMVP-III voltage current tolerances at VID=1.30V maximum performance mode

### **Chipset**

- 1.1.6 Intel<sup>®</sup> 845GV chipset
  - ◆ Intel<sup>®</sup> 845GV Graphics Memory Controller Hub (GMCH)-
  - ◆ Intel<sup>®</sup> 82801DB I/O Controller Hub (ICH4)

### **System Memory**

- 1.1.7 Two 184-pin DDR SDRAM DIMM sockets
- 1.1.8 2.5V unbuffered PC1600 (DDR200), PC2100 (DDR266) or PC2700 (DDR333) DDR SDRAM DIMM
- 1.1.9 Supports maximum of 2GB system memory using 64Mbit, 128Mbit, 256Mbit or 512Mbit technology-Double-sided x16 DDR SDRAM DIMM is not supported

### **BIOS**

- 1.1.10 Award BIOS, Windows<sup>®</sup> 98SE/2000/ME/XP Plug and Play compatible
- 1.1.11 Supports SCSI sequential boot-up
- 1.1.12 Supports DMI 2.0 function
- 1.1.13 4Mbit flash memory

## **Energy Efficient Design**

- 1.1.14 Supports ACPI specification and OS Directed Power Management
- 1.1.15 Supports ACPI STR (Suspend to RAM) function
- 1.1.16 Wake-On-Events include:-
  - ◆ Wake-On-PS/2 Keyboard/Mouse
  - ◆ Wake-On-USB Keyboard/Mouse
  - ◆ Wake-On-LAN
  - ◆ Wake-On-Ring
  - ◆ RTC timer to power-on the system
- 1.1.17 System power management supported
- 1.1.18 CPU stopped clock control
- 1.1.19 Hardware supports SMI green mode
- 1.1.20 Microsoft®/Intel® APM 1.2 compliant
- 1.1.21 Soft Power supported -ACPI v1.0a specification
- 1.1.22 AC power failure recovery

## **Damage Free Intelligence**

- 1.1.23 Monitors CPU/system temperature and overheat alarm
- 1.1.24 Monitor s 5VSB(V)/VBAT(V)/1.5V/3.3V/5V/±12V/CPU(V) voltages and failure alarm
- 1.1.25 Monitors CPU/chassis/2nd fan speed and failure alarm
- 1.1.26 Read back capability that displays temperature, voltage and fan speed
- 1.1.27 Watchdog timer function

## **Onboard Graphics Features**

- 1.1.28 Graphics memory –
  - ◆ Shares 512K/1MB/8MB of the system memory in DOS mode
  - ◆ Uses Dynamic Video Memory Technology (DVMT) in Windows mode
- 1.1.29 Graphics controller –
  - ◆ Core frequency of 200MHz
  - ◆ 350MHz integrated 24-bit RAMDAC
  - ◆ Analog display up to 2048x1536 @ 60Hz refresh
  - ◆ 3D setup and render engine -Discrete, Triangles, Strips and fans
  - ◆ Per pixel perspective corrected texture mapping
  - ◆ Software DVD at 30fps, full screen
- 1.1.30 2D graphics features
  - ◆ Optimized 256-bit BLT engine
  - ◆ 32-bit alpha blended cursor
  - ◆ Programmable 3-color transparent cursor

#### 1.1.31 3D graphics features

- ◆ 200 mega pixels/sec fill rate
- ◆ Maximum 3D resolution: 1600x1200x32 @ 85Hz
- ◆ Flat and Gouraud shading
- ◆ 16-and 24-bit Z-buffering and 16-and 24-bit W-buffering
- ◆ Vertex and programmable pixel fogging and atmospheric effects
- ◆ Double and triple render buffer

#### 1.1.32 Software drivers

- ◆ Windows<sup>®</sup> 98SE/2000/ME/XP
- ◆ Windows NT<sup>®</sup> 4.0

### **LVDS Transmitter**

#### 1.1.33 Chronitel CH7017

#### 1.1.34 Supports scale up to 1600x1200 pixels

#### 1.1.35 18-bit and 24-bit outputs

#### 1.1.36 2D dither engine

#### 1.1.37 Support for second CRT DAC bypass mode

#### 1.1.38 Dual LVDS supporting pixel rates up to 330M pixels/sec when both 12-bit input ports are ganged together

### **Onboard Audio Features**

#### 1.1.39 Realtek ALC202A

#### 1.1.40 18-bit stereo full-duplex codec with independent variable sampling rate

#### 1.1.41 High quality differential CD input

#### 1.1.42 True stereo line level outputs

#### 1.1.43 S/PDIF-out interface

#### 1.1.44 2-channel audio output

### **Onboard LAN Features**

#### 1.1.45 Uses Intel 82562 fast ethernet controller

#### 1.1.46 IEEE 802.3, 10BASE-T/100BASE-TX compliant physical layer interface

#### 1.1.47 IEEE 802.3u Auto-Negotiation

#### 1.1.48 Digital Adaptive Equalization control

#### 1.1.49 Link status interrupt capability

#### 1.1.50 10BASE-T auto-polarity correction

#### 1.1.51 Alert on LAN functionality

#### 1.1.52 LAN Connect I/F

#### 1.1.53 1:1 transmit transformer ratio support

#### 1.1.54 Automatic detection of “unplugged mode”

### **IDE Interface**

- 1.1.55 Supports ATA/33, ATA/66 and ATA/100 hard drives
- 1.1.56 PIO Mode 4 Enhanced IDE (data transfer rate up to 14MB/sec.)

### **Processor Socket**

- 1.1.57 Socket 478

### **Rear Panel I/O Ports**

- 1.1.58 2 USB 2.0/1.1 ports
- 1.1.59 1 RJ45 LAN port
- 1.1.60 2 DB-9 serial ports
- 1.1.61 1 DB-15 VGA port
- 1.1.62 1 DB-25 parallel port
- 1.1.63 1 mini-DIN-6 PS/2 mouse port
- 1.1.64 1 mini-DIN-6 PS/2 keyboard port
- 1.1.65 3 audio jacks: line-out, line-in and mic-in

### **I/O Connectors**

- 1.1.66 2 connectors for 4 additional external USB 2.0/1.1 ports
- 1.1.67 1 connector for COM 3 (RS232 or LVDS)
- 1.1.68 1 connector for COM 4 (RS232 or RS485)
- 1.1.69 1 44-pin connector for LVDS LCD panel
- 1.1.70 1 LCD/Inverter power connector
- 1.1.71 1 LCD brightness control connector
- 1.1.72 1 front audio connector for line-out and mic-in jacks
- 1.1.73 1 CD-in internal audio connector
- 1.1.74 1 S/PDIF-out connector
- 1.1.75 1 IrDA connector
- 1.1.76 1 40-pin IDE 1 connector for 3.5" HDD
- 1.1.77 1 44-pin IDE 2 connector for 2.5" HDD
- 1.1.78 1 floppy connector (FPC connector type)
- 1.1.79 2 ATX power supply connectors
- 1.1.80 1 Wake-On-LAN connector
- 1.1.81 1 chassis open connector
- 1.1.82 3 fan connectors

### **Expansion Slots**

- 1.1.83 1 PCI slot for PCI expansion card or customized riser card for 1, 2 or 3 PCI slots expansion (for low profile PCI card only)

### **Compatibility**

- 1.1.84 PCI 2.2 and AC '97 compliant

### **PCB**

- 1.1.85 6 layers, mini board (Mini-ITX compatible)
- 1.1.86 17cm (6.7") x 17cm (6.7")



## 1.2 Special Features of the System Board

### **Hyper-Threading Technology Functionality Requirements**

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

Components:

CPU -an Intel® Pentium® 4 Processor with HT Technology

Chipset –an Intel® chipset that supports HT Technology

BIOS -a BIOS that supports HT Technology and has it enabled

OS -an operating system that includes optimizations for HT Technology

Please refer to Appendix B for information about enabling the functionality of the Hyper-Threading Technology. For more information on Hyper-Threading Technology, go to: [www.intel.com/info/hyperthreading](http://www.intel.com/info/hyperthreading).

### **Watchdog Timer**

The Watchdog Timer function allows your application to regularly “clear” the system at the set time interval. If the system hangs or fails to function, it will reset at the set time interval so that your system will continue to operate.

### **DDR**

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.

### **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.

### **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.

### **Wake-On-Ring**

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

#### **Important:**

If you are using a modem add-in card, the 5VSB power source of your power supply must support a minimum of  $\geq 720\text{mA}$ .

### **Wake-On-LAN**

This feature allows the network to remotely wake up a Soft Power Down (Soft-Off) PC. It is supported via the onboard LAN port, via a PCI LAN card that uses the PCI PME (Power Management Event) signal or via a LAN card that uses the Wake-On-LAN connector. 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 a system from the S3 (STR -Suspend To RAM) state.

#### **Important:**

- ◆ If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support  $\geq 1.5\text{A}$ .
- ◆ 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 STR**

The system board is designed to meet the ACPI (Advanced Configuration and Power Interface) specification. ACPI has energy saving features that enables PCs to implement Power Management and Plug-and-Play with operating systems that support OS Direct Power Management. Currently, only Windows<sup>®</sup> 98/2000/ME/XP supports the ACPI function. ACPI when enabled in the Power Management Setup will allow you to use the Suspend to RAM function.

With the Suspend to RAM function enabled, you can power-off the system at once by pressing the power button or selecting “Standby” when you shut down Windows<sup>®</sup> 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  $\geq 1\text{A}$ .

## **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.

### 1.3 Package Checklist

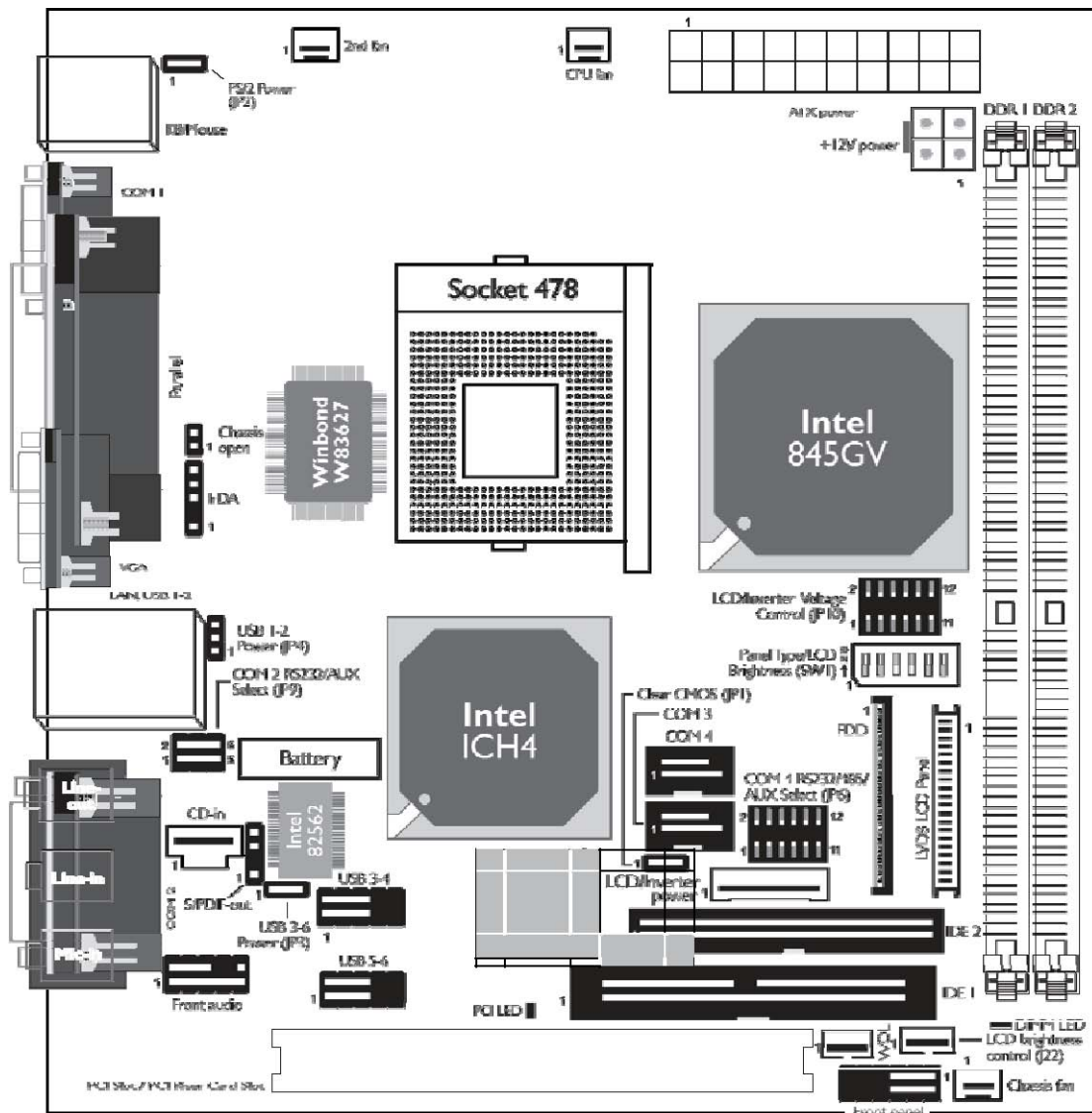
The system board package contains the following items:

- ◆ The system board
- ◆ A user's manual
- ◆ One IDE cable
- ◆ One FDD cable
- ◆ One I/O shield
- ◆ One “Main Board Utility” CD

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

## 2. Hardware Installation

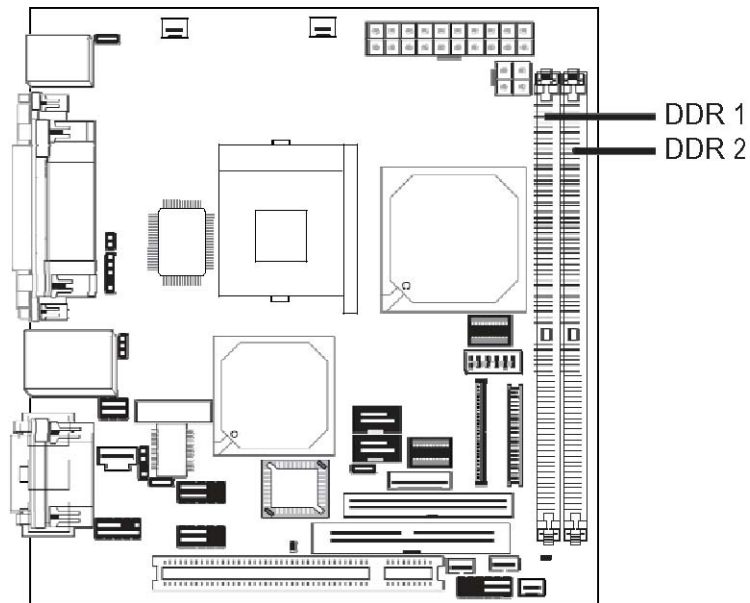
### 2.1 System Board Layout



#### 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



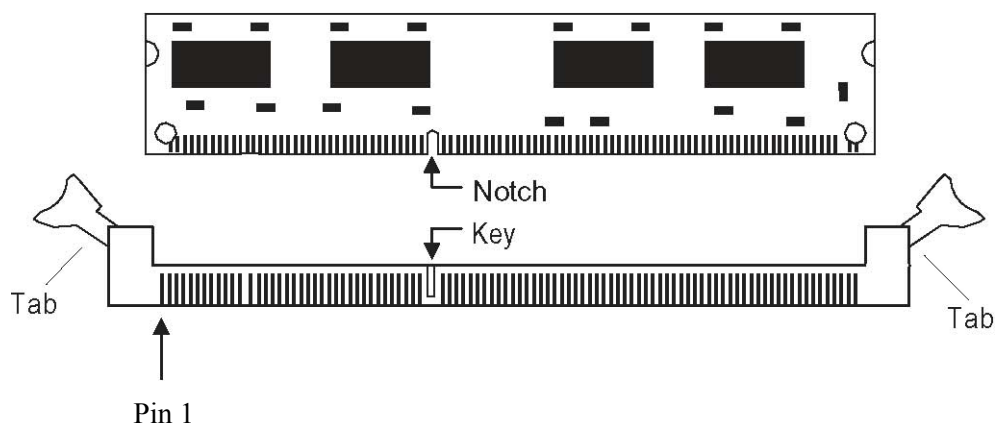
The system board supports DDR SDRAM DIMM. Double Data Rate SDRAM (DDR SDRAM) is a type of SDRAM that doubles the data rate through reading and writing at both the rising and falling edge of each clock. This effectively doubles the speed of operation therefore doubling the speed of data transfer.

### **BIOS Setting**

Configure the memory in the Advanced Chipset Features submenu 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.

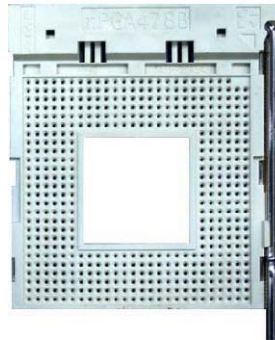


1. Pull the “tabs” which are at the ends of the socket to the side.
2. Position the DIMM above the socket with the “notch” in the module aligned with the “key” on the socket.
3. Seat the module vertically into the socket. Make sure it is completely seated. The tabs will hold the DIMM in place.

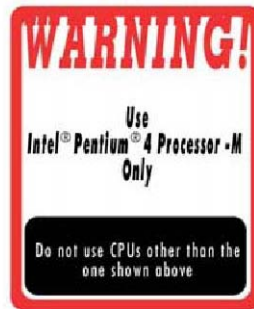
## 2.3 CPU

### 2.3.1 Overview

The system board is equipped with a surface mount 478-pin CPU socket. This socket is exclusively designed for installing an Intel processor.



CPU socket

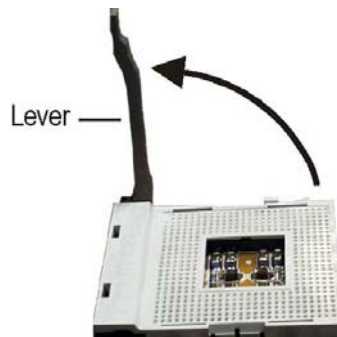


Warning Label

(This label is exclusively for only)

### 2.3.2 Installing the CPU

1. Locate Socket 478 on the system board.
2. Unlock the socket by pushing the lever sideways, away from the socket, then lifting it up to a 90° angle. Make sure the socket is lifted to at least this angle otherwise the CPU will not fit in properly.



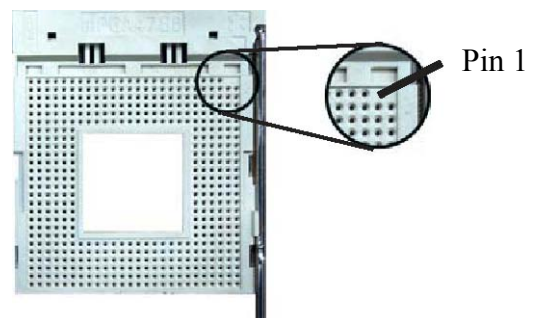
3. Position the CPU above the socket then align the gold mark on the corner of the CPU (designated as pin 1) with pin 1 of the socket.

#### **Important:**

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



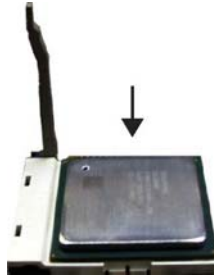
Gold mark



4. 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.



5. 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.

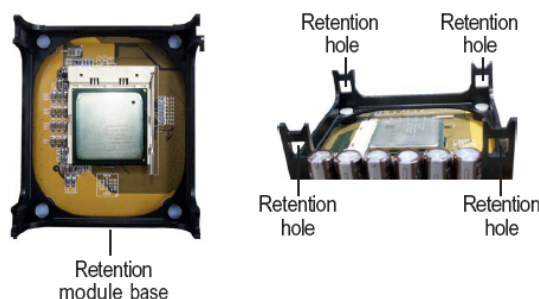


### 2.3.3 Installing the Fan and Heat Sink

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:**

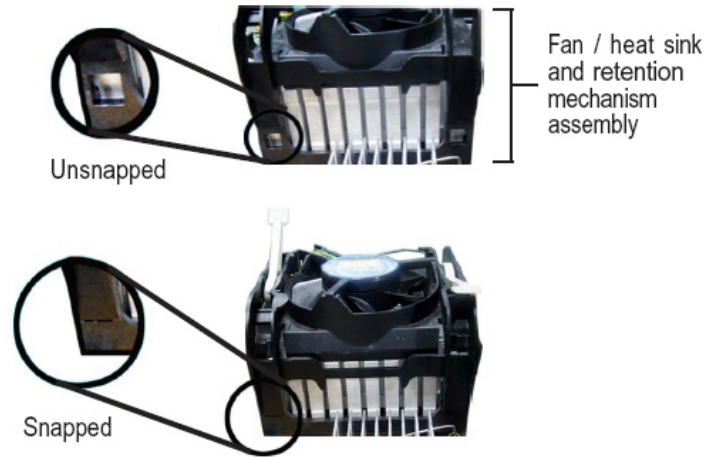
- ◆ Only use Intel<sup>®</sup> certified fan and heat sink.
  - ◆ An Intel<sup>®</sup> boxed processor package contains a retention mechanism, heat sink, fan and installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.
  - ◆ If you are installing a non-boxed processor, the heat sink, fan and retention mechanism assembly may look different from the one shown in this section but the procedure will more or less be the same.
1. The system board comes with the retention module base already installed



2. Position the fan / heat sink and retention mechanism assembly on the CPU, then align and snap the retention legs' hooks to the retention holes at the 4 corners of the retention module base.

**Note:**

You will not be able to snap the hooks into the holes if the fan / heat sink and retention mechanism assembly did not fit properly onto the CPU and retention module base.



3. The retention levers at this time remains unlocked as shown in the illustration below.



4. Move the retention levers to their opposite directions then push them down. This will secure the fan / heat sink and retention mechanism assembly to the retention module base.

**Note:**

You will not be able to push the lever down if the direction is incorrect.

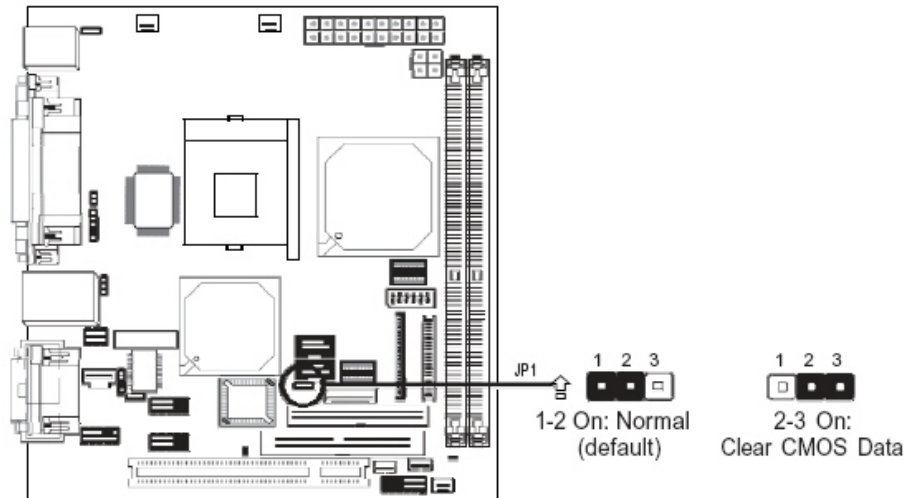


5. Connect the CPU fan's cable connector to the CPU fan connector on the system board.



## 2.4 Jumper Settings

### 2.4.1 Clear CMOS Data



If you encounter the following,

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

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

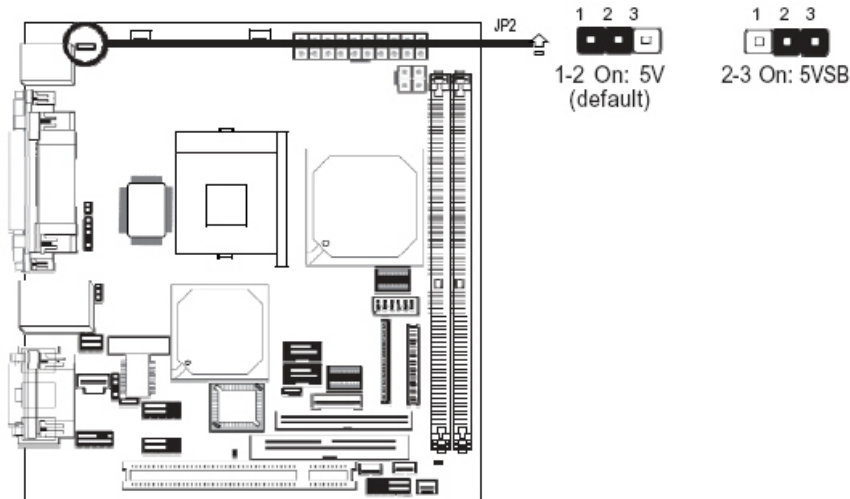
To load the default values stored in the ROM BIOS, please follow the steps below.

1. Power-off the system and unplug the power cord.
2. Set JP1 pins 2 and 3 to On. Wait for a few seconds and set JP1 back to its default setting, pins 1 and 2 On.
3. Now plug the power cord and power-on the system.

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

4. After powering-on the system, press <Del> to enter the main menu of the BIOS.
5. Select the CPU Frequency Control submenu and press <Enter>.
6. Set the "CPU Clock Ratio" or "CPU Clock" field to its default setting or an appropriate ratio or bus clock. Refer to the CPU Frequency 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



JP2 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5VSB will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

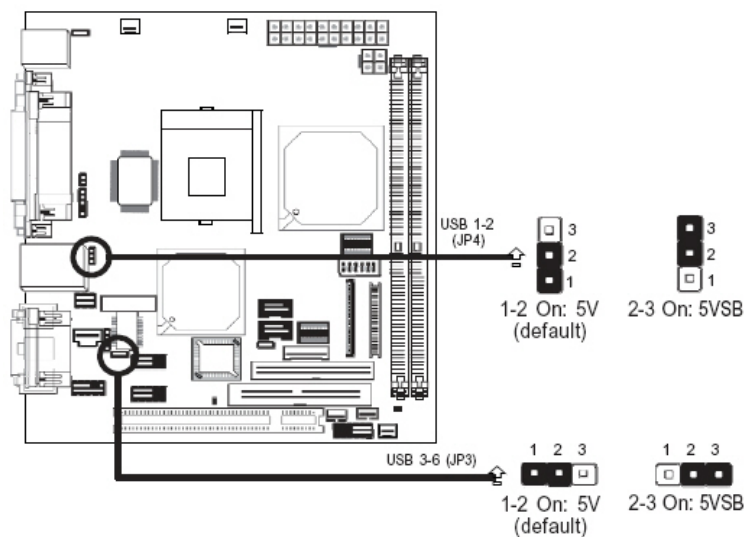
#### **BIOS Setting**

Configure the PS/2 keyboard/mouse wake up function in the Integrated Peripherals submenu (“Onboard Super IO Device” section) 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



JP4 (for USB 1-2) and JP3 (for USB 3-6) are used to select the power of the USB ports. Selecting 5VSB will allow you to use the USB keyboard or USB mouse to wake up the system.

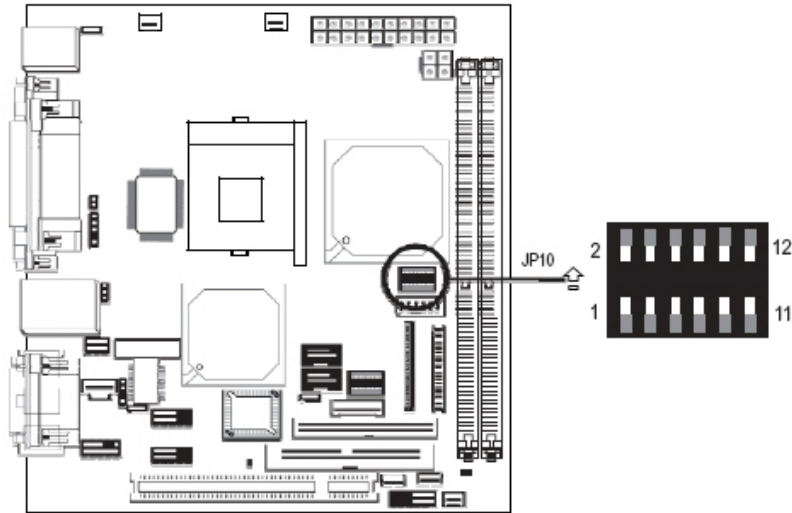
#### **BIOS Setting**

“USB KB Wake Up From S3(S4)” in the Power Management Setup submenu of the BIOS must be set to Enabled. Refer to chapter 3 for more information.

**Important:**

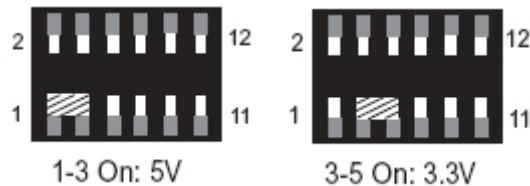
- ◆ If you are using the Wake-On-USB Keyboard/Mouse function for 2 USB ports, the 5VSB power source of your power supply must support  $\geq 1.5A$ .
- ◆ If you are using the Wake-On-USB Keyboard/Mouse function for 3 or more USB ports, the 5VSB power source of your power supply must support  $\geq 2A$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

#### 2.4.4 LCD/Inverter Settings

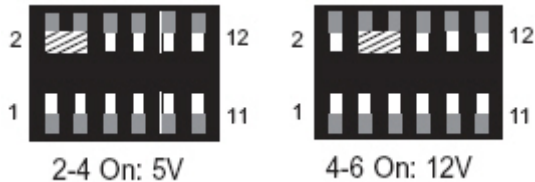


JP10 is used to select the power supplied to the LCD panel as well as configure the inverter.

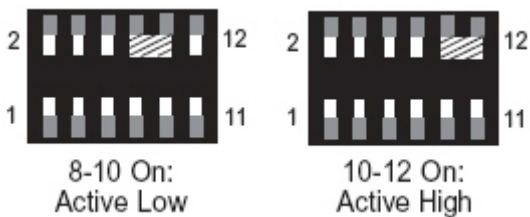
##### LCD Panel Power Select



##### Inverter On Level Select

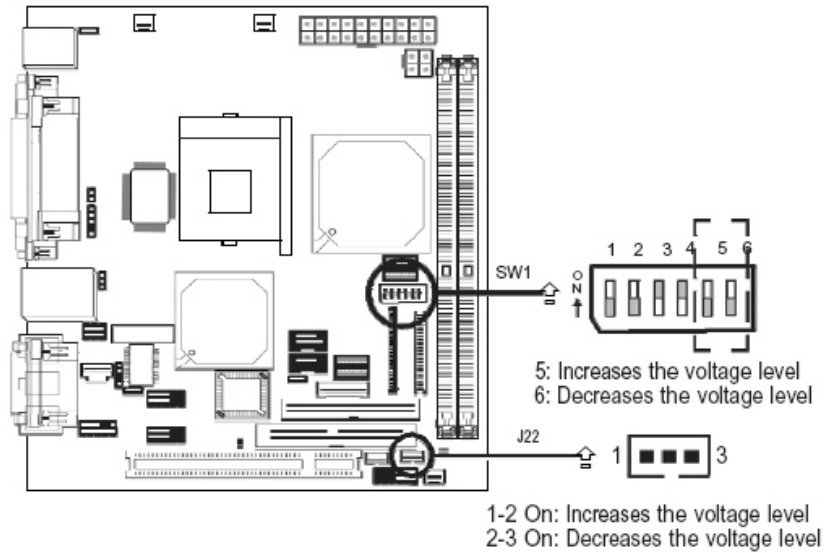


##### Inverter On/Off Select

**Important:**

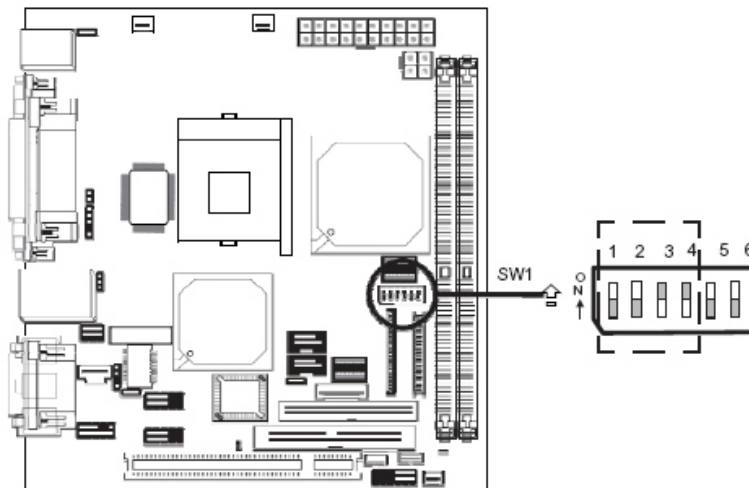
Before powering-on the system, make sure JP10's setting matches the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

#### 2.4.5 LCD Brightness Control (Voltage Level Adjust)



Use SW1's pins 5 and 6 or J22 to connect to the LCD Brightness Control button of the LCD Display Panel. It is used to adjust the brightness of the LCD Display Panel. Increasing or decreasing the voltage to control the LCD panel's brightness varies among Inverters. You must refer to the Inverter's specification to make the appropriate adjustment to the brightness of the LCD panel.

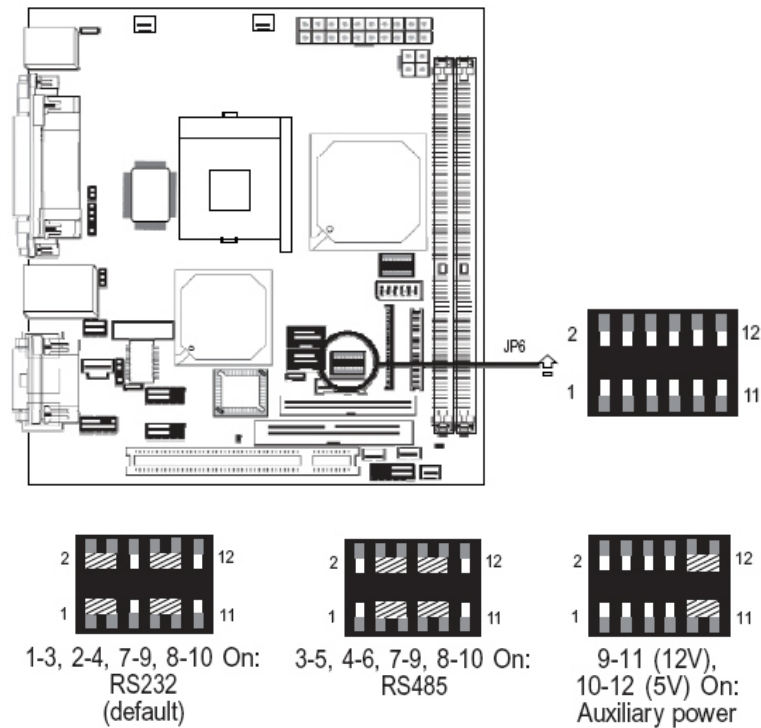
#### 2.4.6 Panel Type Select



Set SW1 pins 1 to 4 according to the type of LCD panel connected to the system. Please contact technical support for more information about the panel type settings.

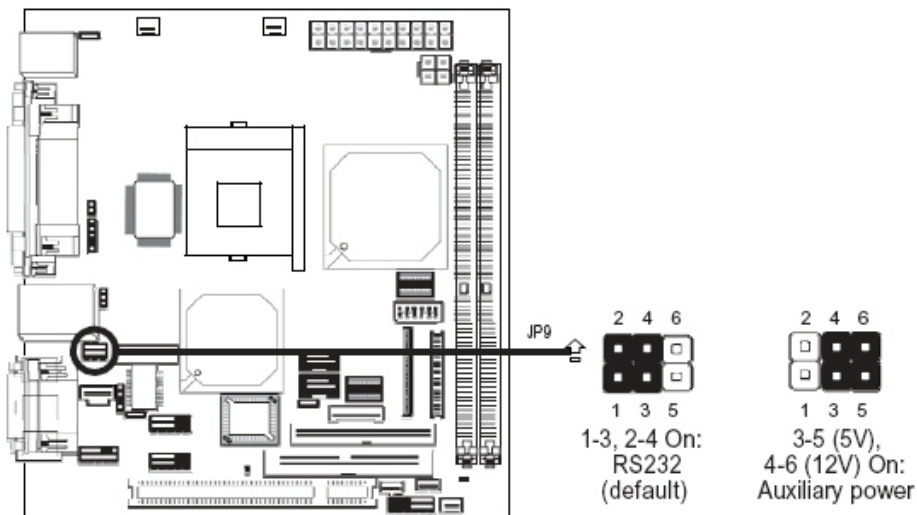
Panel Type	1	2	3	4
1024x768, 18-bit	On	On	On	On
1024x768, 36-bit	Off	On	On	On
1280x1024, 36-bit	On	Off	On	On
800x600, 18-bit	Off	Off	On	On
1024x768, 24-bit	On	On	Off	On

#### 2.4.7 COM 4 RS232/RS485/AUX Select



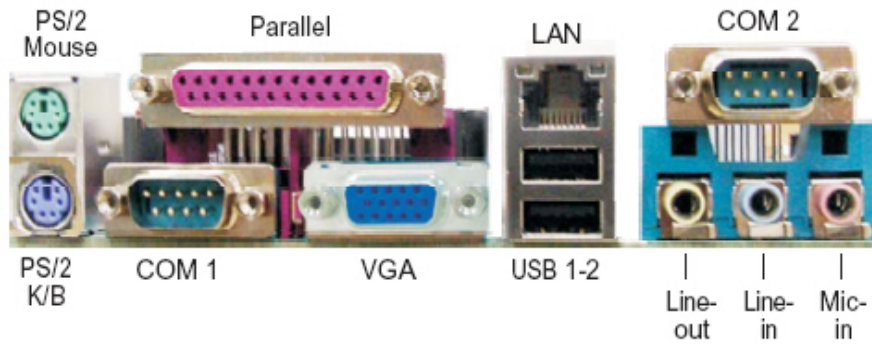
JP6 is used to set COM 4 to RS-232 or RS-485. If the serial device connected to this port requires 5V/12V power from the system board, set JP6 pins 9-11 and 10-12 to On. This setting automatically sets COM 4 at RS-232.

#### 2.4.8 COM 2 RS232/AUX Select



COM 2 is an RS-232 port. If the serial device connected to this port requires 5V/12V power from the system board, set JP9 pins 3-5 and 4-6 to On. Otherwise, leave this jumper's setting at 1-3, 2-4 On.

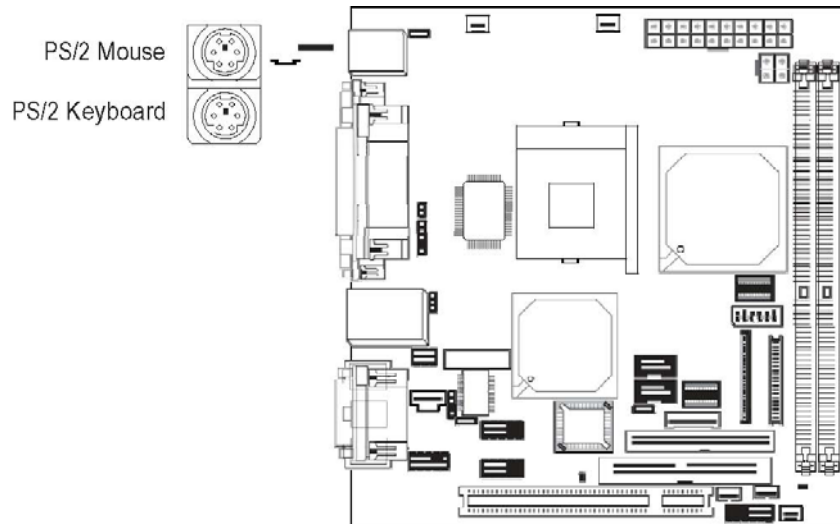
## 2.5 Rear Panel I/O Ports



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

- ◆ PS/2 mouse port
- ◆ PS/2 keyboard port
- ◆ Parallel port
- ◆ COM ports
- ◆ VGA port
- ◆ LAN port
- ◆ USB ports
- ◆ Line-out jack
- ◆ Line-in 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 CN5 of the system board. The PS/2 mouse port uses IRQ12. If a mouse is not connected to this port, the system will reserve IRQ12 for other expansion cards.

#### **Warning:**

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

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

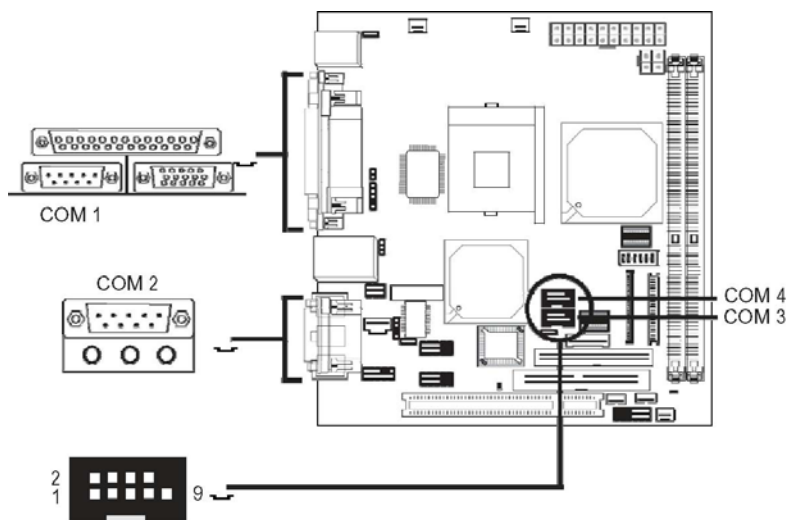
The Wake-On-PS/2 Keyboard/Mouse function allows you to use the PS/2 keyboard or PS/2 mouse to power-on the system. To use this function:

- ◆ Jumper Setting: JP2 must be set to “2-3 On: 5VSB”. Refer to “PS/2 Power Select” in this chapter for more information.
- ◆ BIOS Setting: Configure the PS/2 wake up function in the Integrated Peripherals submenu (“Onboard Super IO Device” section) of the BIOS. Refer to chapter 3 for more information.

### **Important:**

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

## 2.5.2 Serial Ports



The system board is equipped with two onboard serial ports at locations CN13 (COM 1) and CN14 (COM 2). It is also equipped with two 9-pin connectors at locations J14 (COM 3) and J15 (COM 4). These serial ports are RS-232 and/or RS-485 asynchronous communication ports with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

To connect COM 3 and/or COM 4, please refer to the following description. The serial ports may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then insert the cable connector to J14 or J15. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of J14 or J15.

### **Important:**

If the LCD Display Panel that is connected to the LVDS LCD Panel connector supports touch screen, DO NOT connect a serial device to COM 3 because the touch screen function is internally connected to COM 3.

### **Jumper Setting**

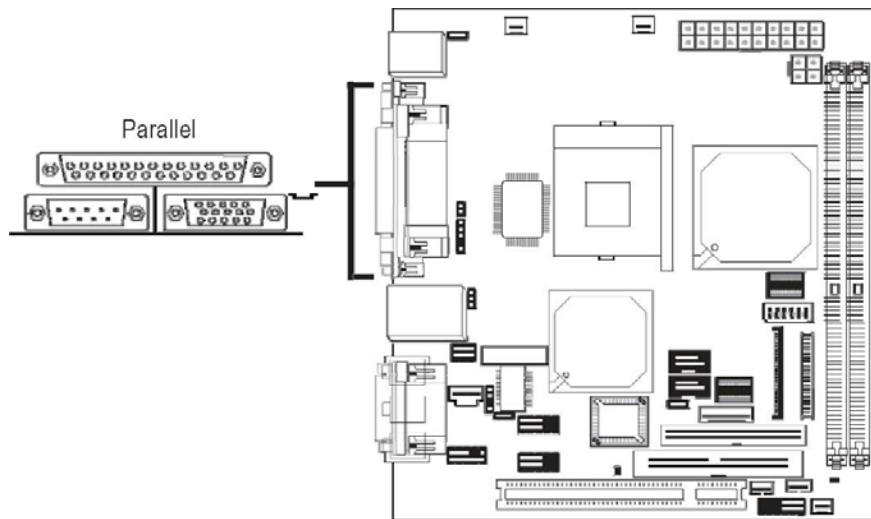
If the serial device connected to COM 2 and/or COM 4 requires auxiliary power from the system board, set JP6 and/or JP9 appropriately. Refer to “COM 2’s RS232/AUX Select” and “COM 4’s RS232/RS485/AUX Select” in this chapter for more information.



## **BIOS Setting**

Select the serial ports' I/O address in the Integrated Peripherals submenu ("Onboard Super IO Device" section) 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 CN3 for interfacing your PC to a parallel printer. It supports SPP, ECP and EPP.

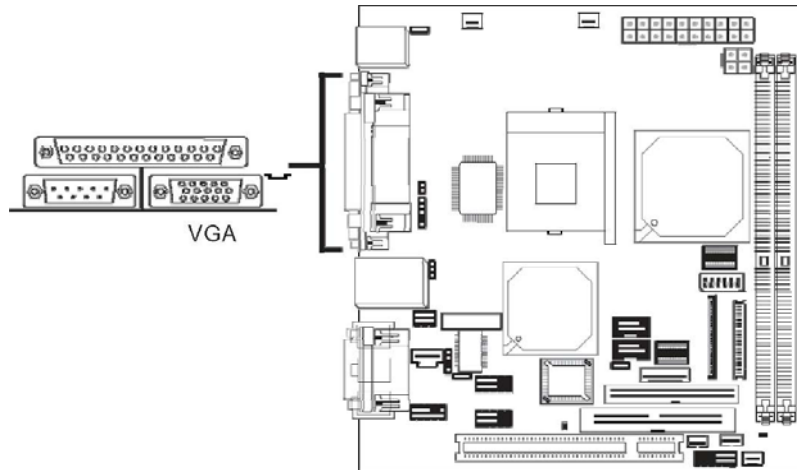
Setting	Function
SPP (Standard Parallel Port)	Allows normal speed operation but in one direction only.
ECP (Extended Capabilities Port)	Allows parallel port to operate in bidirectional mode and at a speed faster than the SPP's data transfer rate.
EPP (Enhanced Parallel Port)	Allows bidirectional parallel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

## **BIOS Setting**

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



## 2.5.4 VGA Port

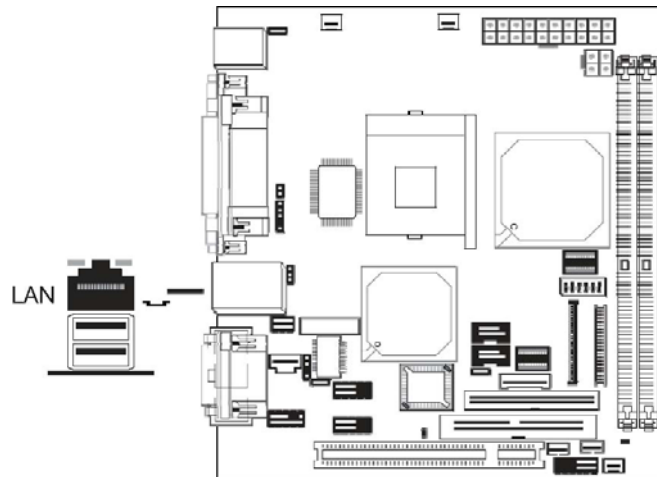


The system board can only be used with an analog video monitor. Connect the monitor's 15-pin D-shell cable connector to the VGA port (Blue) at location CN2. If your monitor supports analog video but does not have a 15-pin D-shell connector, see your monitor dealer for the adapter or optional cable. After you plug the monitor cable into the VGA port, gently tighten the cable screws to hold the connector in place. Some monitors have a switch that chooses between analog and TTL (or digital) operation. If your monitor has such a switch, set it for analog.

### **Driver Installation**

Install the "Intel Graphics Drivers". Refer to chapter 4 for more information.

## 2.5.5 RJ45 Fast-Ethernet Port



The system board is equipped with an onboard RJ45 LAN port. This port allows the system board to connect to a local area network by means of a network hub.

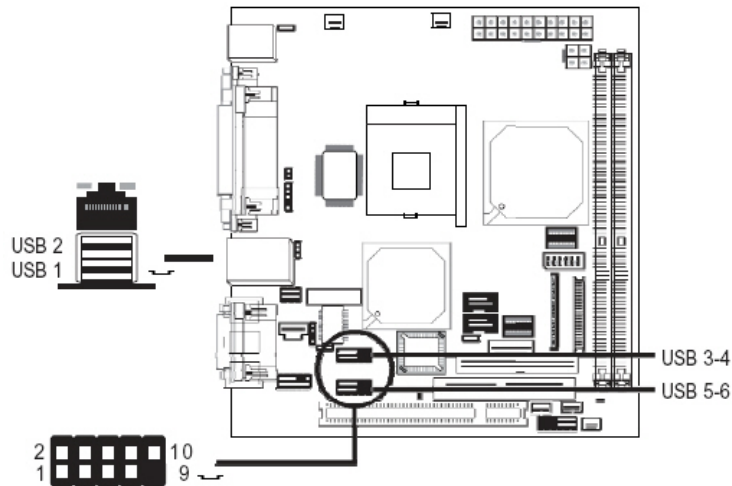
### **BIOS Setting**

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

### **Driver Installation**

Install the "LAN Drivers". Refer to chapter 4 for more information.

## 2.5.6 Universal Serial Bus Connectors



The system board supports 6 USB 2.0/1.1 ports. USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

Two onboard USB 2.0/1.1 ports (Black) are at location CN9 (USB 1-2) of the system board.

The J1 (USB 3-4) and J9 (USB 5-6) connectors allow you to connect 4 additional USB 2.0/1.1 ports. The additional 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 J1 or J9.

### **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.

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

### **Wake-On-USB Keyboard/Mouse**

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

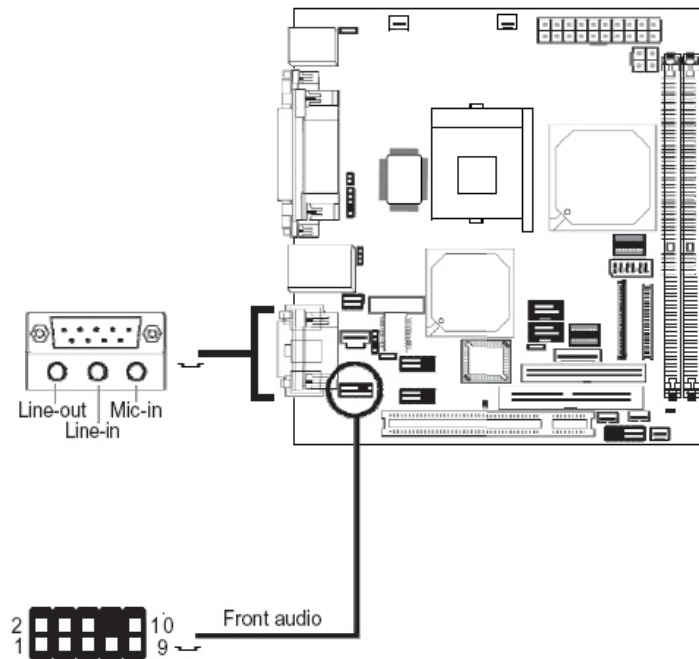
- ◆ Jumper Setting: JP3 and/or JP4 must be set to “2-3 On: 5VSB”. Refer to “USB Power Select” in this chapter for more information.
- ◆ BIOS Setting: “USB KB Wake Up From S3(S4)” in the Power Management Setup submenu of the BIOS must be set to Enabled. Refer to chapter 3 for more information.

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

## 2.5.7 Audio



### **Audio Jacks**

The system board is equipped with 3 audio jacks. A jack is a one-hole connecting interface for inserting a plug.

- ◆ Line-out Jack (Lime -CN7)

This jack is used to connect external speakers for audio output from the system board. Using this jack disables the front audio's line-out function.

- ◆ Line-in Jack (Light Blue -CN6)

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

- ◆ Mic-in Jack (Pink -CN8)

This jack is used to connect an external microphone.

### **Front Audio**

The front audio connector (J6) allows you to connect to the line-out and mic-in jacks that are at the front panel of your system. Using the line-out and mic-in jacks 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 J2 prior to connecting the front audio cable connector. Make sure pin 1 of the cable connector is aligned with pin 1 of J2. 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	The front audio is disabled.
(default)	The rear audio is enabled.

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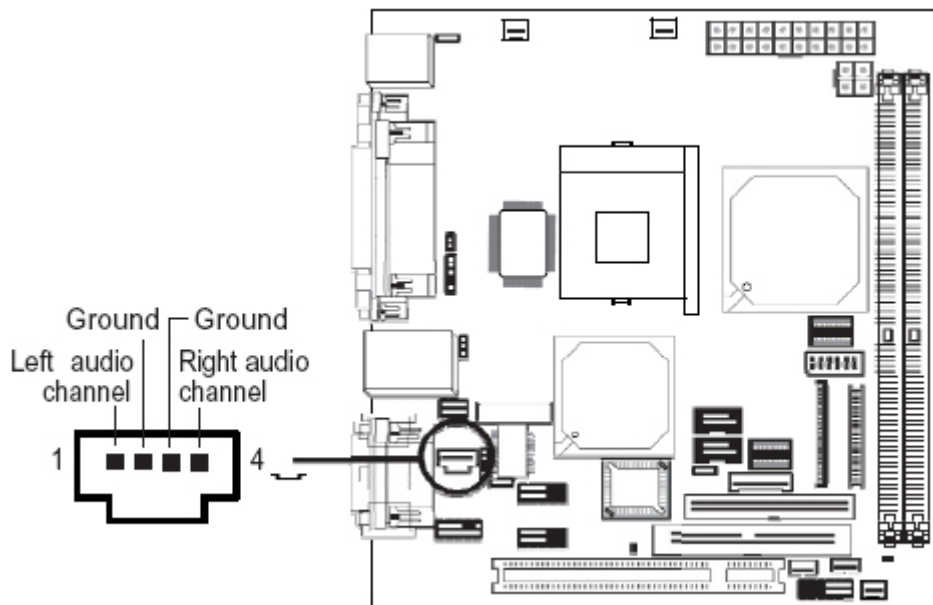
Pins 5-6 and 9-10 open	The front audio is enabled.
	The rear audio is disabled.

### **Driver Installation**

Install the "Audio Drivers". Refer to chapter 4 for more information.

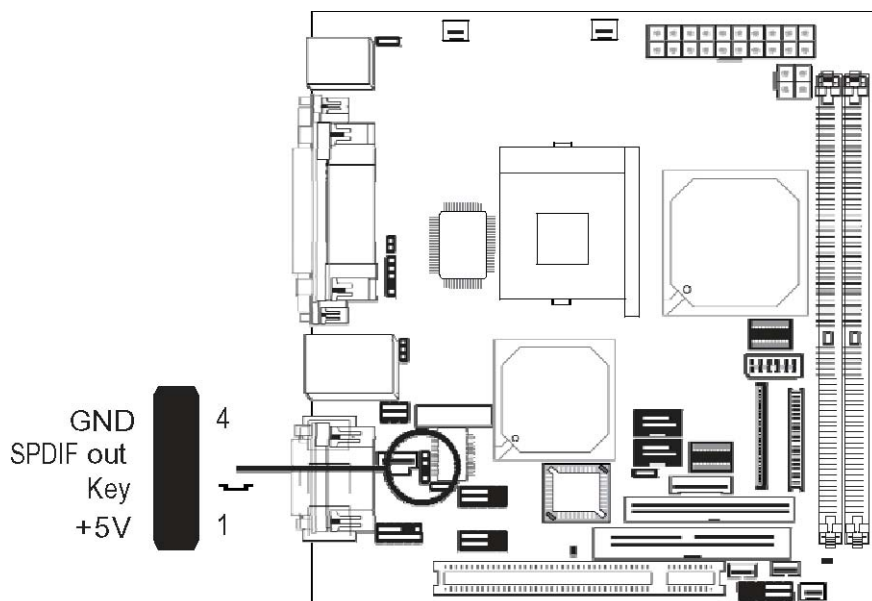
## 2.6 I/O Connectors

### 2.6.1 CD-in Internal Audio Connector



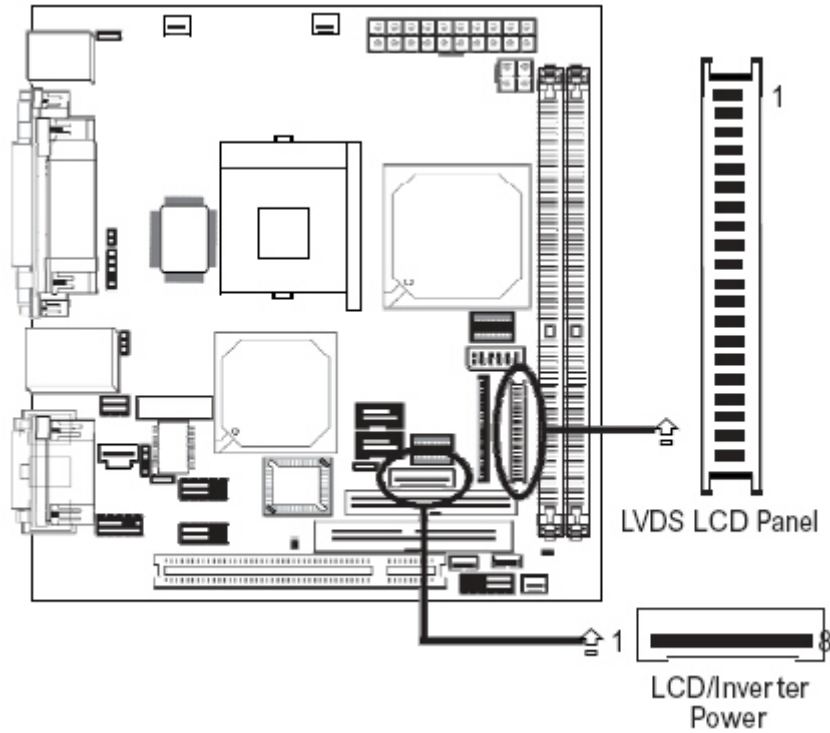
The CD-in (J5) connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

### 2.6.2 S/PDIF-out Connector



The S/PDIF-out connector (J7) is used to connect an external S/PDIF-out port. Your S/PDIF-out port may be mounted on a card-edge bracket. Install the card-edge bracket to the system chassis then connect the audio cable connector to J7. Make sure pin 1 of the audio cable connector is aligned with pin 1 of J7.

### 2.6.3 LVDS LCD Panel Connector and LCD/Inverter Power Connector



The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector (CN12) and the LCD/ Inverter power connector (CN11). These connectors transmit video signals and power from the system board to the LCD Display Panel. Refer to the next page for the pin functions of these connectors.

#### **Jumper Settings**

Refer to the “Jumper Settings” section in this chapter for settings relevant to the LCD panel.

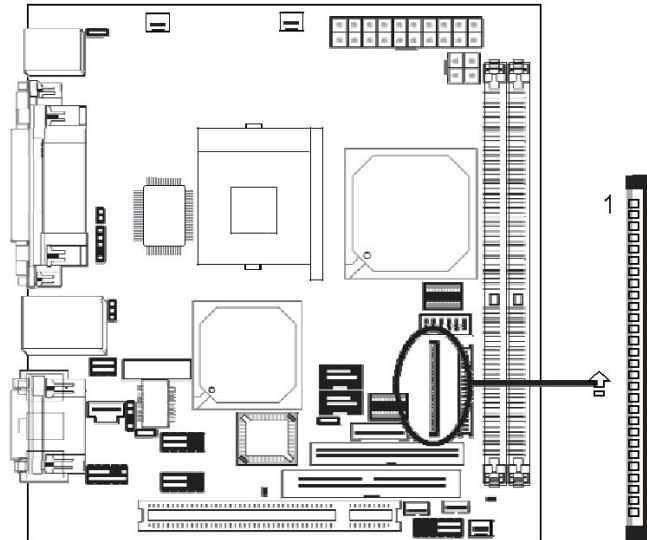
### **LVDS LCD Panel Connector**

<b>Pins</b>	<b>Function</b>	<b>Pins</b>	<b>Function</b>
1	GND	2	GND
3	LVDS_Out3+	4	LVDS_Out7+
5	LVDS_Out3	6	LVDS_Out7
7	GND	8	GND
9	LVDS_Out2+	10	LVDS_Out6+
11	LVDS_Out2	12	LVDS_Out6
13	GND	14	GND
15	LVDS_Out1+	16	LVDS_Out5+
17	LVDS_Out1	18	LVDS_Out5
19	GND	20	GND
21	LVDS_Out0+	22	LVDS_Out4+
23	LVDS_Out0	24	LVDS_Out4
25	GND	26	GND
27	LVDS_CLK1+	28	LVDS_CLK2+
29	LVDS_CLK1	30	LVDS_CLK2
31	GND	32	GND
33	COM3_DTR	34	COM3_TD
35	COM3_RTS	36	COM3_RI
37	COM3_RD	38	COM3_DSR
39	COM3_CTS	40	COM3_DCD

### **LCD/Inverter Power Connector**

<b>Pins</b>	<b>Function</b>	<b>Pins</b>	<b>Function</b>
1	+12V	5	Panel Power
2	+12V	6	Panel Inverter Brightness Voltage Control
3	Panel Backlight On/Off Control	7	GND
4	+3.3V	8	GND

## 2.6.4 Floppy Disk Drive Connector



The system board is equipped with a 26-pin FPC type floppy disk drive connector. Only connect a 1.44MB slim-type floppy disk drive. Floppy drives other than the one mentioned above are optional. Refer to the next page for the pin function of this connector.

### **Connecting the Floppy Disk Drive Cable**

Install one end of the floppy disk drive cable into the floppy disk connector (CN4) on the system board and the other end connector to the floppy drive. Pin 1 of the cable must align with pin 1 of CN4.

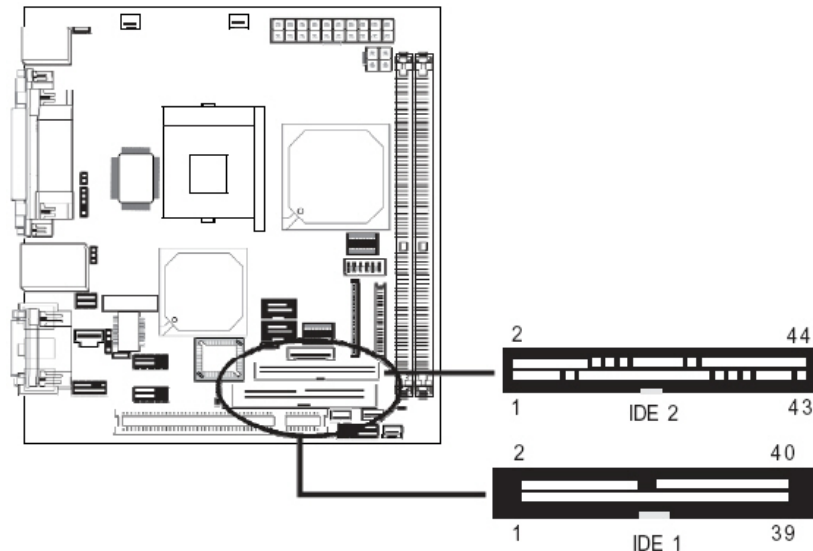
### **BIOS Setting**

Enable or disable this function in the Integrated Peripherals submenu (“Onboard Super I/O Device” section) of the BIOS. Refer to chapter 3 for more information.

### **FPC Type FDD Connector**

Pins	Function	Pins	Function
1	5V	2	INDEX#
3	5V	4	DR0#
5	5V	6	DSKCH#
7	N. C.	8	N. C.
9	N. C.	10	MTR0#
11	N. C.	12	DIR#
13	DRVDE0	14	STEP#
15	GND	16	WDATA#
17	GND	18	WGATE#
19	GND	20	TRK0#
21	GND	22	WRPRO#
23	GND	24	RDATA#
25	GND	26	HDSEL#

## 2.6.5 IDE Disk Drive Connectors



The system board is equipped with a 40-pin (IDE 1) and a 44-pin (IDE 2) IDE connectors. To prevent improper IDE cable installation, the IDE 1 connector has a keying mechanism. The connector on the IDE cable can be inserted into IDE 1 only if pin 1 of the cable connector is aligned with pin 1 of IDE 1.

The 40-pin IDE 1 connector is used for connecting 3.5" hard drives while the 44-pin IDE 2 connector is used for connecting 2.5" hard drives (2.0 pitch).

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 IDE 1 (J21) or IDE 2 (J20) 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 and ATA/100 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.



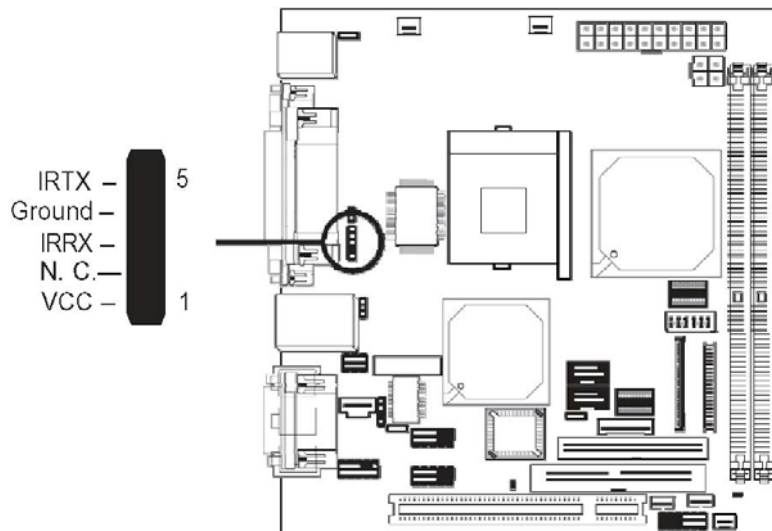
**Important:**

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 IDE in the Integrated Peripherals submenu (“Intel OnChip IDE Device” section) of the BIOS. Refer to chapter 3 for more information.

### 2.6.6 IrDA Connector



Connect your IrDA cable to connector J4 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.

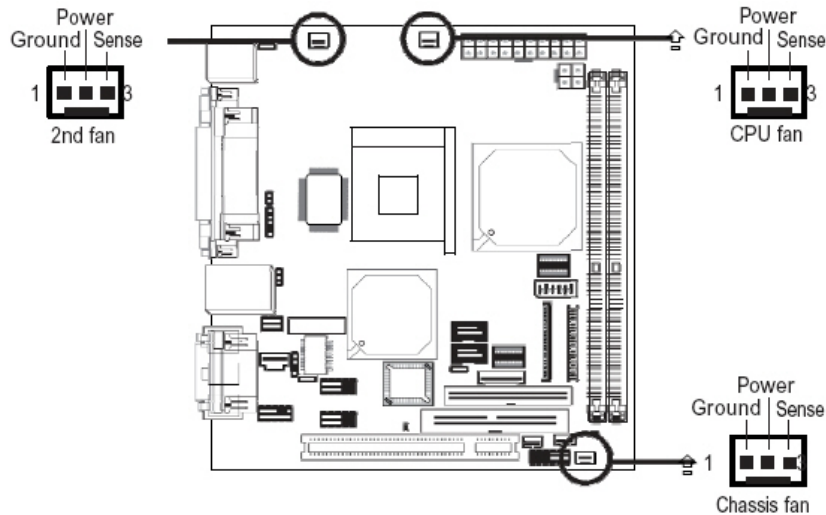
**BIOS Setting**

Set the “Serial Port 1 Mode” field in the Integrated Peripherals submenu (“Onboard Super IO Device” section) of the BIOS to the type of IrDA standard supported by your device.

**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

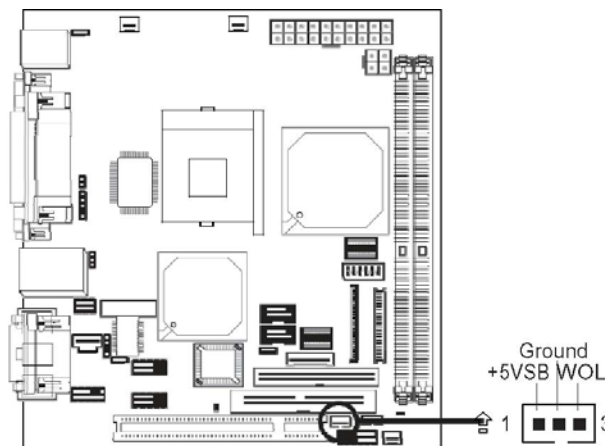


Connect the CPU fan's cable connector to the CPU fan connector (J2) on the system board. The chassis fan (J1) and 2nd fan (J3) connectors are used to connect an additional cooling fan. The cooling fans will provide adequate airflow throughout the chassis to prevent overheating the CPU and system board 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 Wake-On-LAN Connector



Your LAN card package should include a cable. Connect one end of the cable to the wakeup header on the card and the other end to location J12 on the system board. The network will detect Magic Packet and assert a wakeup signal to power-up the system. Refer to the add-in card's manual for details. Note: Your LAN card must support the remote wake up function.

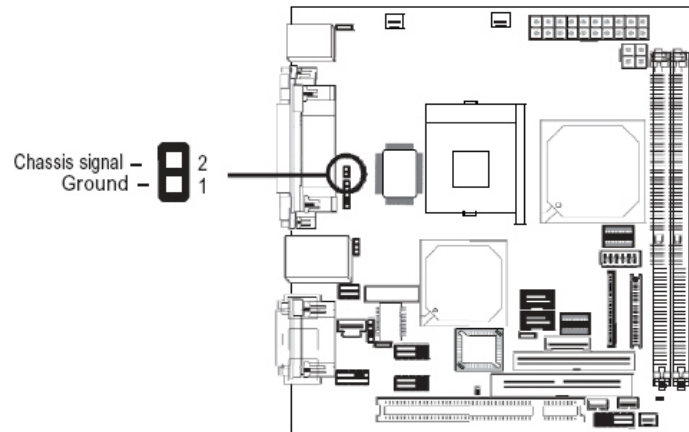
#### **Important:**

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

#### **BIOS Setting**

To use the Wake-On-LAN function, you must enable the "Resume On LAN" field in the Power Management Setup submenu of the BIOS.

### 2.6.9 Chassis Open Connector

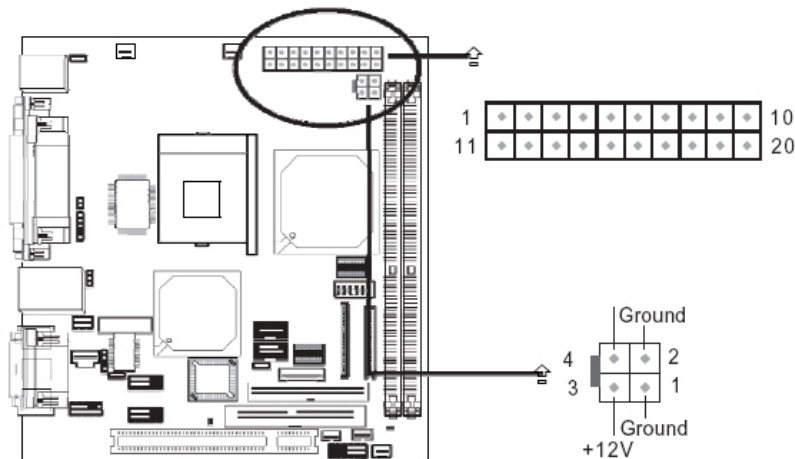


The system board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to J8. Whenever a chassis component has been removed, the sensor sends signal to J8 alerting you of a chassis intrusion event. To disable this function, place a jumper cap over J8.

#### **Hardware Monitor for Windows**

Install the “Hardware Monitor for Windows” utility. By default, the chassis intrusion detection function is disabled. When enabled, a warning message will appear when the chassis is open. The utility can also be configured so that a beeping alarm will sound when the chassis is open. Refer to the “Hardware Monitor for Windows” section in chapter 4 for more information.

### 2.6.10 Power Connector

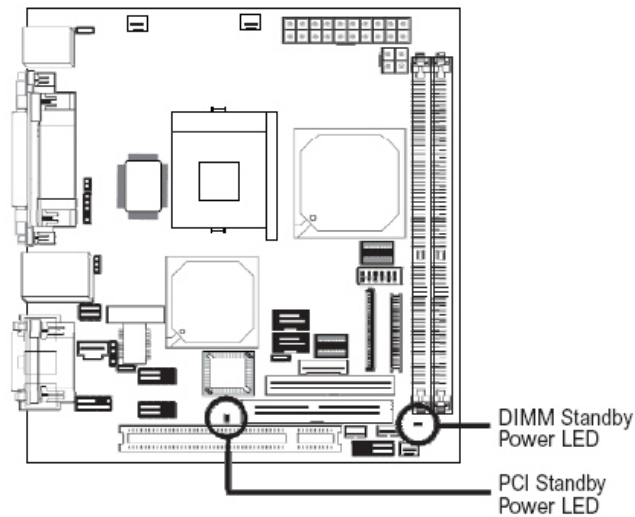


Use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1. An ATX12V power supply has a standard 20-pin ATX main power connector and a 4-pin +12V power connector that must be inserted onto CN10 and CN1 connectors respectively.

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.

### 2.6.11 DIMM and PCI Standby Power LEDs



#### **DIMM Standby Power LED**

This LED will turn red when the system's power is on or when it is in the Suspend state (Power On Suspend or Suspend to RAM). It will not light when the system is in the Soft-Off state.

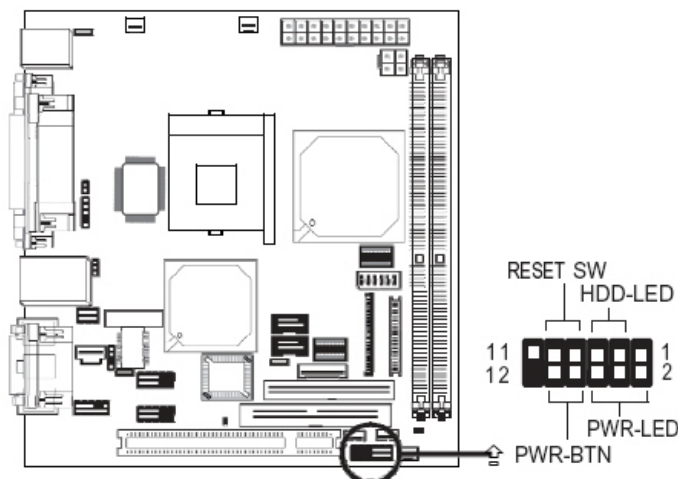
#### **PCI Standby Power LED**

This LED will turn red when the system is in the power-on, Soft-Off or Suspend (Power On Suspend or Suspend to RAM) state.

#### **Important:**

If the DIMM Standby Power LED or PCI Standby Power LED is lighted, you must power-off the system then turn off the power supply's switch or unplug the power cord prior to installing any memory modules or add-in cards.

### 2.6.12 Front Panel Connectors



#### **HDD-LED -HDD LED**

This LED will light when the hard drive is being accessed.

#### **RESET SW -Reset Switch**

This switch allows you to reboot without having to power off the system.

### **PWR-BTN -Power Switch**

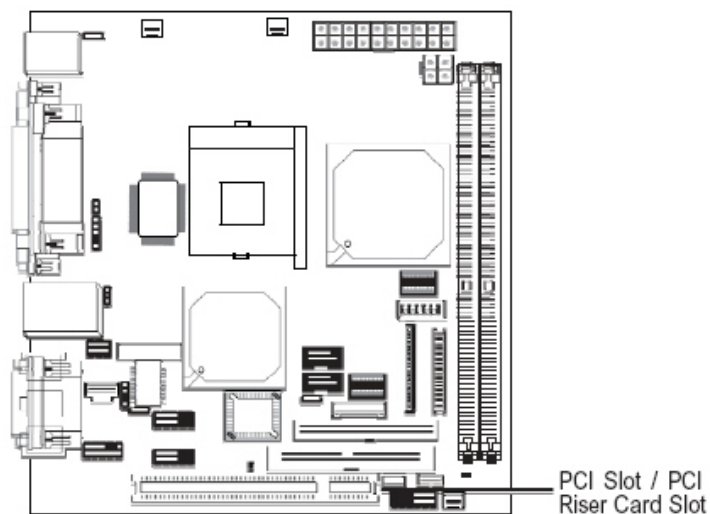
This switch is used to power on or off the system.

### **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) state, it will blink every second. When the system is in the S3 (STR -Suspend To RAM) state, it will blink every 4 seconds.

	Pin	Pin Assignment		Pin	Pin Assignment
N. C.	1	N. C.	PWR-LED	2	LED Power
				4	LED Power
				6	Signal
HDD-LED	3	HDD Power	PWR-BTN	8	Ground Signal
	5	Signal		10	
RESET SW	7	Ground RST			
	9	Signal			
N. C.	11	N. C.	Key	12	Key

#### 2.6.13 PCI Slot / PCI Riser Card Slot



You can install a PCI expansion card or a customized riser card designed for 1, 2 or 3 PCI slots expansion (for low profile PCI card only).

## 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.

- **Date**

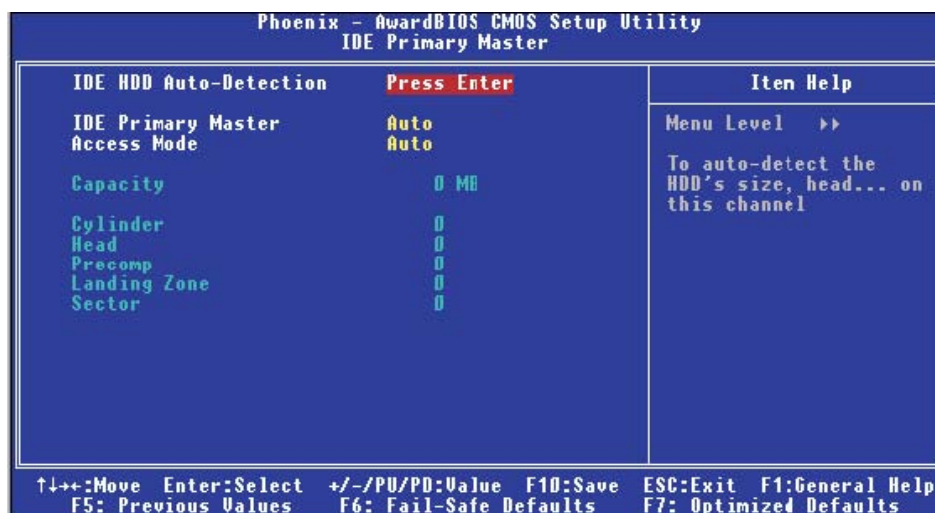
The date format is <day>, <month>, <date>, <year>. Day displays a day, from Sunday to Saturday. Month displays the month, from January to December. Date displays the date, from 1 to 31. Year displays the year, from 1999 to 2099.

- **Time**

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

- **IDE 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 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**

If you wish to define your own drive type manually, select “Manual”. 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 Normal or Large. Please check your operating system’s manual or Help desk on which one to select.

### **Capacity**

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

### **Cylinder**

This field displays the number of cylinders.



## **Head**

This field displays the number of read/write heads.

## **Precomp**

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

## **Landing Zone**

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

## **Sector**

This field displays the number sectors per track.

### ● **Drive A and Drive B**

These fields identify the types of floppy disk drives installed.

None	No floppy drive is installed
360K, 5.25 in.	5-1/4 in. standard drive; 360KB capacity
2M, 5.25 in.	5-1/4 in. AT-type high-density drive; 1.2MB capacity
720K, 3.5 in.	3-1/2 in. double-sided drive; 720KB capacity
44M, 3.5 in.	3-1/2 in. double-sided drive; 1.44MB capacity
2.88M, 3.5 in.	3-1/2 in. double-sided drive; 2.88MB capacity

### ● **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.

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

### ● **Halt On**

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

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



- **Base Memory**

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

- **Extended Memory**

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

- **Total Memory**

Displays the total memory available in the system.

### 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.

- **CPU Feature**

This field is used to configure the CPU that is installed on the system board. Move the cursor to this field then press <Enter>.

- **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<sup>®</sup> 98/2000/ME/XP or the operating system may not install nor work.

- **CPU L1 and L2 Cache**

This field is used to speed up the memory access. Enable the external cache for better performance.

- **CPU L3 Cache**

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

- **Hyper-Threading Technology (for Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor with Hyper-Threading Technology)**

This field is used to enable the functionality of the Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor with Hyper-Threading Technology and will appear only when using this processor.

- **Quick Power On Self Test**

This field speeds up Power On Self Test (POST) after you power on the system. When Enabled, the BIOS will shorten or skip some check items during POST.

- **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.

- **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.

- **Boot Up Floppy Seek**

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

- **Boot Up NumLock Status**

This allows you to determine the default state of the numeric keypad. By default, the system boots up with NumLock on wherein the function of the numeric keypad is the number keys. When set to Off, the function of the numeric keypad is the arrow keys.

- **Typematic Rate Setting**

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

- **Typematic Rate (Chars/Sec)**

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

- **Typematic Delay (Msec)**

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

- **Security Option**

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

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

- **APIC Mode**

Leave this field in its default setting.

- **MPS Version Control for OS**

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

- **OS Select for DRAM > 64MB**

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

- **Report No FDD For WIN 95**

The options are Yes and No.

- **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.

- **DRAM Timing Selectable**

This field is used to select the timing of the DRAM.

- |        |  |
|--------|--|
| By SPD | The EEPROM on a DIMM has SPD (Serial Presence Detect) data structure that stores information about the module such as the memory type, memory size, memory speed, etc. When this option is selected, the system will run according to the information in the EEPROM. This option is the default setting because it provides the most stable condition for the system. The “CAS Latency Time” and “Active to Precharge Delay” fields will show the default settings by SPD. |
| Manual | If you want better performance for your system other than the one “by SPD”, select “Manual” then select the best option in the “CAS Latency Time” and “Active to Precharge Delay” fields.  |

- **CAS Latency Time**

This field is used to select the local memory clock periods.

- **Active to Precharge Delay**

The options are 5, 6 and 7.

- **DRAM RAS# to CAS# Delay**

The options are 2 and 3.

- **DRAM RAS# Precharge**

This field controls RAS# precharge (in local memory clocks).

- **Memory Frequency For**

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

- **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.

- **Video BIOS Cacheable**

As with caching the system BIOS, enabling the Video BIOS cache will allow access to video BIOS addressed at C0000H to C7FFFH to be cached, if the cache controller is also enabled. The larger the range of the Cache RAM, the faster the video performance.

- **Delayed Transaction**

When enabled, this function frees up the PCI bus for other PCI masters during the PCI-to-ISA transactions. This allows PCI and ISA buses to be used more efficiently and prevents degradation of performance on the PCI bus when ISA accesses are made.

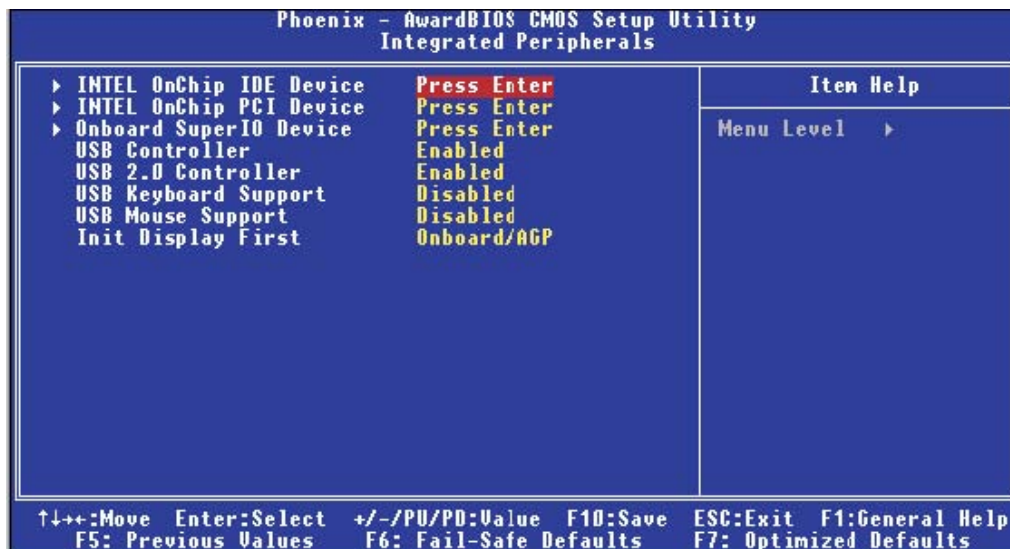
- **Delay Thermal Mode Time**

This field is used to select the time that would force the CPU to a 50% duty cycle when it exceeds its maximum operating temperature therefore protecting the CPU and the system board from overheating to ensure a safe computing environment.. The “Auto Thermal Control” field in the Advanced BIOS Features setup must be enabled.

- **On-Chip Frame Buffer Size**

This field is used to select the frame buffer size.

### 3.1.4 Integrated Peripherals



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

- **Intel OnChip IDE Device**

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.

### **On-Chip Primary PCI IDE and On-Chip Secondary PCI IDE**

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

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

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

Auto            The BIOS will automatically set the system according to your hard disk drive's timing.

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

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

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

Auto            The BIOS will automatically detect the settings for you.

Disabled        The BIOS will not detect these categories.

### **IDE HDD Block Mode**

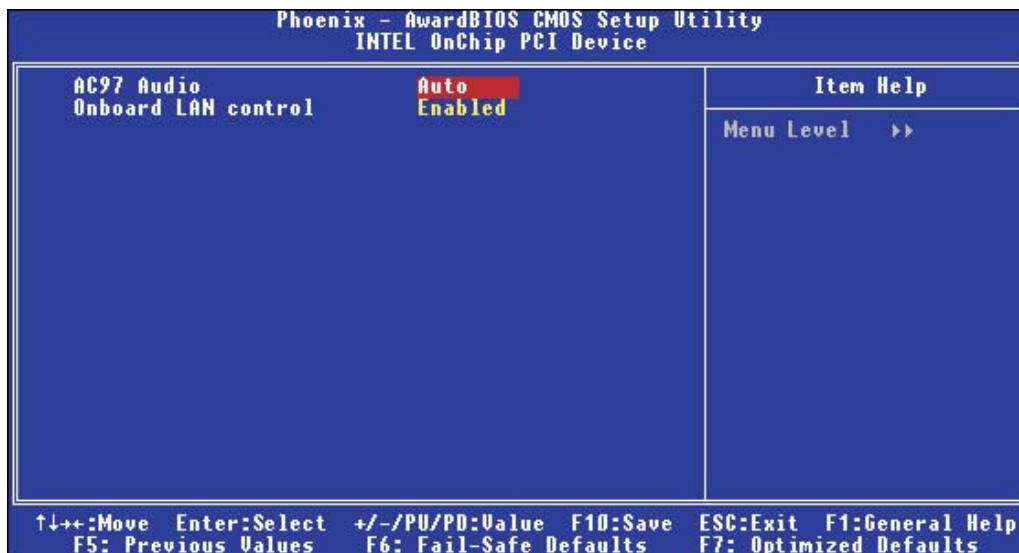
Enabled        The IDE HDD uses the block mode. The system BIOS will check the hard disk drive for the maximum block size the system can transfer. The block size will depend on the type of hard disk drive.

Disabled        The IDE HDD uses the standard mode.

## ● **Intel OnChip PCI Device**

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.

### AC97 Audio

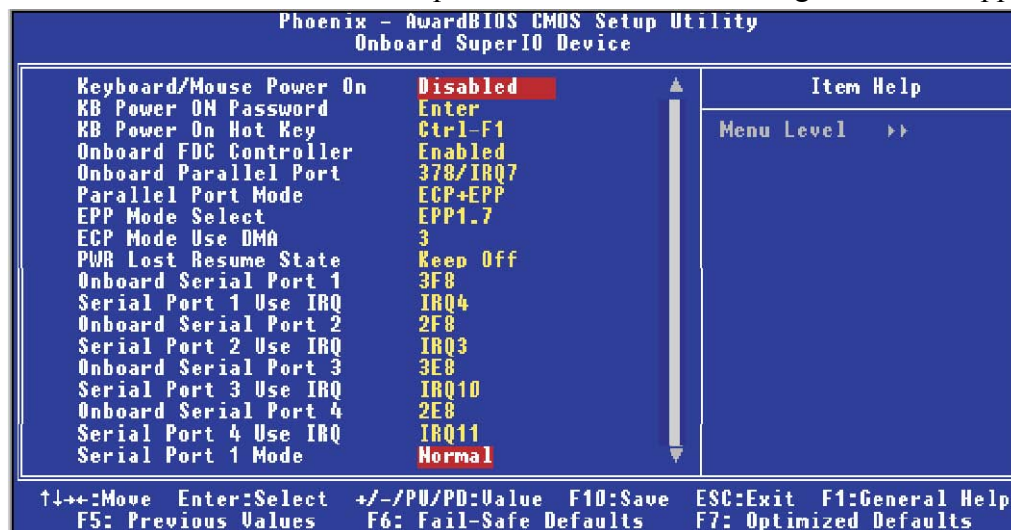
- Auto Select this option when using the onboard audio codec.
- Disabled Select this option when using a PCI sound card.

### Onchip LAN Control

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

### ● Onboard Super IO Device

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



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.

### **Keyboard/Mouse Power On**

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

Disabled Disables the keyboard/mouse wake up function.

Keyboard 98 When this option is selected, press the “wake up” key of the Windows 98 compatible keyboard 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 Left When this option is selected, double-click the left button of the mouse to power-on the system.

Mouse Right When this option is selected, double-click the right button of the mouse to power-on the system.

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

### **KB Power On Password**

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

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

### **KB Power On Hot Key**

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

### **Onboard FDC Controller**

Enabled Enables the onboard floppy disk controller.

Disabled Disables the onboard floppy disk controller.

### **Onboard Parallel Port**

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

Disabled Disables the onboard parallel port.

### **Parallel Port Mode**

The options are SPP, EPP, ECP and ECP+EPP. These apply to standard specifications 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.

### **EPP ModeSelect**

This field is used to select the EPP mode.



### **ECP ModeUse DMA**

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

### **PWR LostResume State**

- |            |  |
|------------|--|
| Keep Off   | When power returns after an AC power failure, the system's power is off. You must press the Power button to power-on the system.   |
| Turn On    | When power returns after an AC power failure, the system will automatically power-on.  |
| Last State | 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. |

### **Onboard Serial Port 1, Onboard Serial Port 2, Onboard Serial Port 3 and Onboard Serial Port 4**

- |                    |  |
|--------------------|--|
| 3F8, 2F8, 3E8, 2E8 | Allows you to manually select an I/O address for the onboard serial port 1, 2, 3 or 4. |
| Disabled           | Disables the onboard 1, 2, 3 or 4.   |

### **Serial Port 1 Use IRQ, Serial Port 2 Use IRQ, Serial Port 3 Use IRQ and Serial Port 4 Use IRQ**

These fields are used to select an IRQ for the onboard serial port 1, 2, 3 or 4.

### **Serial Port1 Mode**

COM 1 functions as either a serial port or IrDA. You cannot use both at the same time.

- |        |  |
|--------|--|
| Normal | This option sets COM 1 as serial port. |
| IrDA   | This option sets COM 1 as IrDA.        |

- **USB Controller**

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

- **USB 2.0 Controller**

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

- **USB Keyboard Support**

If you are using a USB keyboard under DOS, set this field to Enabled.

- **USB Mouse Support**

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

- **Init Display First**

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

- |             |  |
|-------------|--|
| Onboard/AGP | When the system boots, it will first initialize the onboard VGA. |
| PCI Slot    | When the system boots, it will first initialize PCI.             |

### 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.

- **ACPI Function**

This function should be enabled only in operating systems that support ACPI. Currently, only Windows<sup>®</sup> 98/2000/ME/XP supports this function. If you want to use the Suspend to RAM function, make sure this field is enabled then select “S3(STR)” in the “ACPI Suspend Type” field.

- **ACPI Suspend Type**

This field is used to select the type of Suspend mode.

S1(POS) Enables the Power On Suspend function.

S3(STR) Enables the Suspend to RAM function.

- **Power Management**

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

Min Saving Minimum power saving time for Suspend mode = 1 hr.

Max Saving Maximum power saving time for Suspend mode = 1 min.

User Define Allows you to set the power saving time in the “Suspend Mode” field.

- **Video Off Method**

This determines the manner in which the monitor is blanked.

V/H SYNC + Blank This will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.

Blank Screen This only writes blanks to the video buffer.

DPMS Support Initializes display power management signaling. Select this if your video board supports it.

- **Video Off In Suspend**

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

- **Suspend Mode**

When the system enters the Suspend mode, the CPU and onboard peripherals will be shut off.

- **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.

- **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.

- **Resume on PCI Event**

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.

- **Resume On LAN**

If you are using a LAN card that supports the remote wake up function, set this field to Enabled. This will allow the network to remotely wake up a Soft Power Down (Soft-Off) PC. However, if your system is in the Suspend mode, you can wake up the system only through an IRQ or DMA interrupt. Refer to “Wake-On-LAN Connector” in chapter 2 for more information.

- **USB KB WakeUp From S3(S4)**

This field, when enabled, allows you to use a USB keyboard or USB mouse to wake up a system that is in the S3 (STR -Suspend To RAM) state. This can be configured only if the “ACPI Suspend Type” field is set to “S3(STR)”.

- **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) Alarm” and “Time (hh:mm:ss) Alarm” fields. However, if the system is being accessed by incoming calls or the network (Resume On Ring/LAN) prior to the date and time set in these fields, the system will give priority to the incoming calls or network.

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

- **Date (of Month) Alarm**

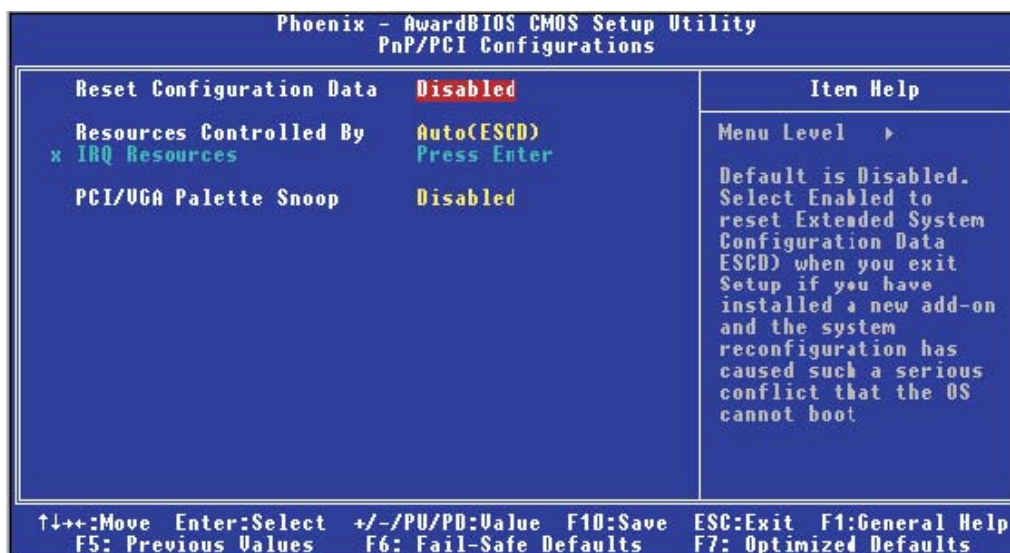
- 0 The system will power-on everyday according to the time set in the “Time (hh:mm:ss) Alarm” field.
- 1-31 Select a date you would like the system to power-on. The system will power-on on the set date, and time set in the “Time (hh:mm:ss) Alarm” field.

- **Time (hh:mm:ss) 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) Alarm” field, the time set in this field must be later than the time of the RTC set in the Standard CMOS Features submenu.

### 3.1.6 PnP/PCI Configurations

This section shows how to configure 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.

- **Reset Configuration Data**

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

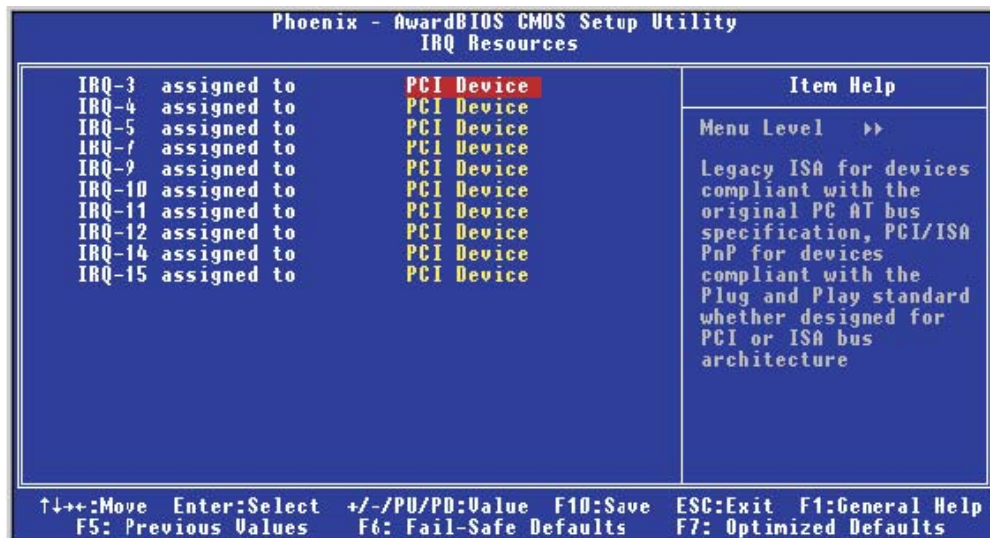
- **Resources Controlled By**

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

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

- **IRQ Resources**

Move the cursor to this field and press <Enter>. The “IRQ-3” to “IRQ-15” fields will appear. Set each system interrupt to either PCI Device or Reserved.



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

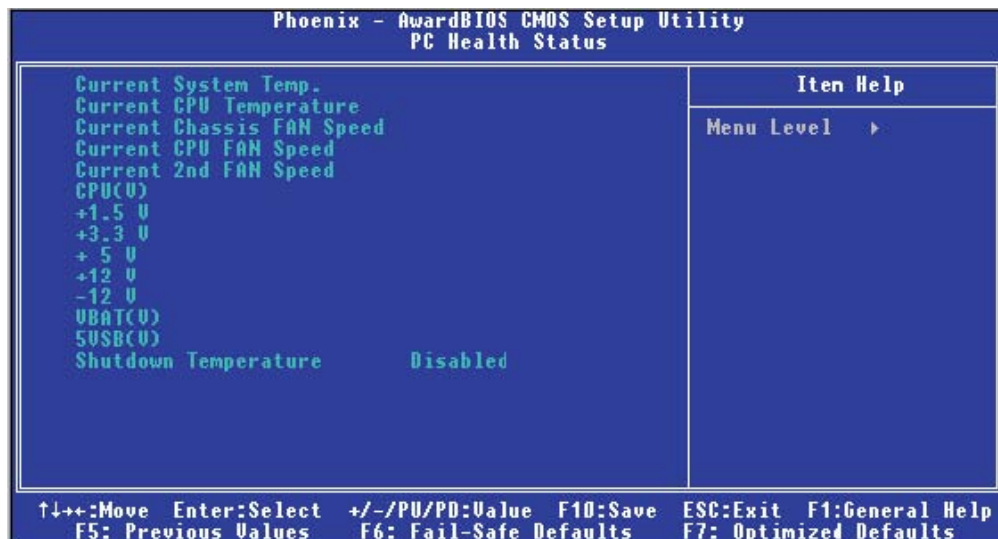
- **PCI/VGA Palette Snoop**

This field determines whether the MPEG ISA/VESA VGA cards can work with PCI/VGA or not. The default value is Disabled.

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

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

### 3.1.7 PC Health Status



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

- **Current System Temp., Current CPU Temperature, Current Chassis Fan Speed, Current CPU Fan Speed and Current 2nd Fan Speed**

These fields will show the internal temperature of the system, current temperature of the CPU, and the current fan speed of the cooling fans in RPM (Revolutions Per Minute).

- **CPU(V)**

This field will show the detected voltage of the processor.

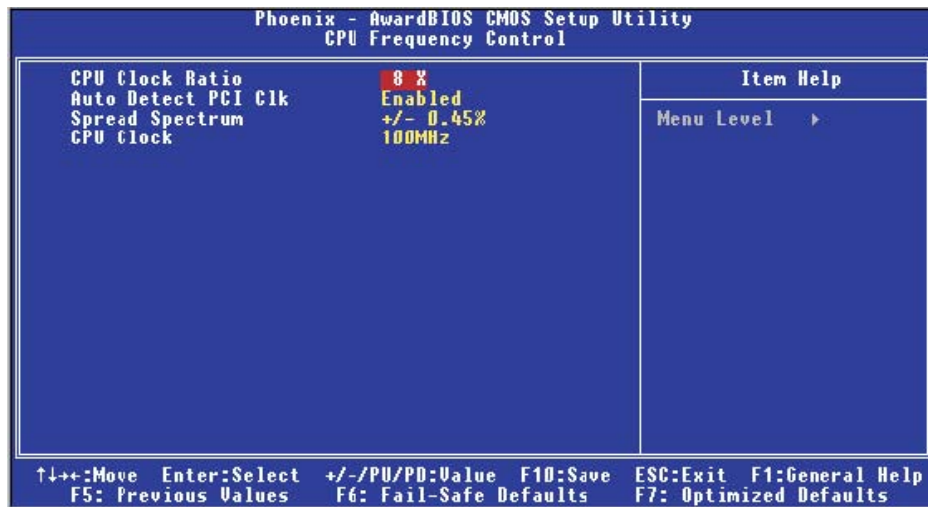
- **+1.5V, +3.3V, +5V, +12V, -12V, -5V, VBAT(V) and 5VSB(V)**

These fields show the output voltage of the power supply.

- **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. This function will work only when you enable this function in the Hardware Monitor for Windows utility.

### 3.1.8 CPU Frequency Control



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

- **CPU Clock Ratio**

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

**Important:**

The frequency ratio of some processors may have been locked by the manufacturer. If you are using this kind of processor, setting an extended ratio for the processor will have no effect. The system will instead use its factory default ratio.

- **Auto Detect PCI Clk**

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

- **Spread Spectrum**

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

- **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.

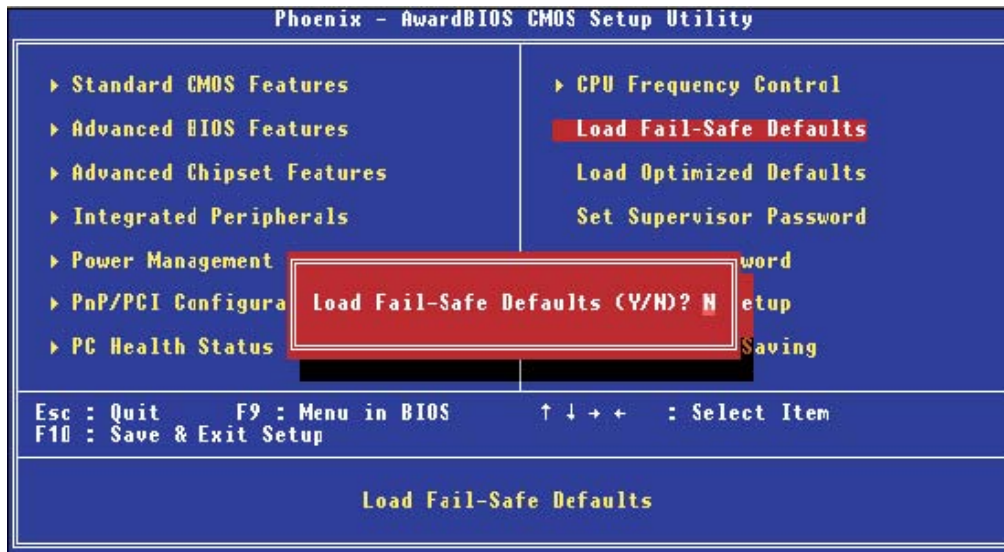
**Important:**

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

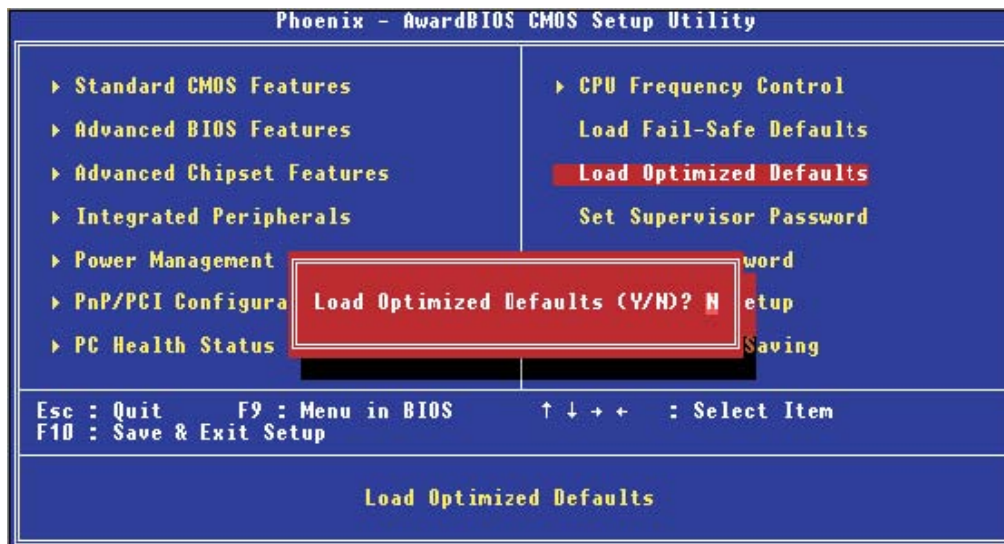
The “Load Fail-Safe Defaults” option loads the troubleshooting default values permanently stored in the ROM chips. These settings are not optimal and turn off all high performance features. You should use these values only if you have hardware problems. Highlight this option in the main menu and press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

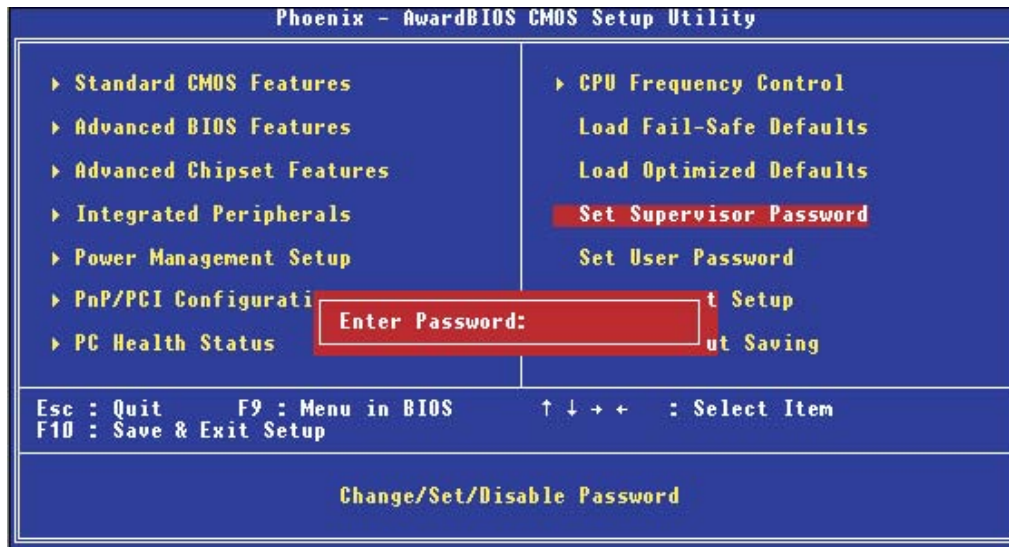


Type <Y> and press <Enter> to load the Setup default values.

### 3.1.11 Set Supervisor Password

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

Use the arrow keys to highlight "Set Supervisor Password" and press <Enter>.



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

#### **Confirm Password:**

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

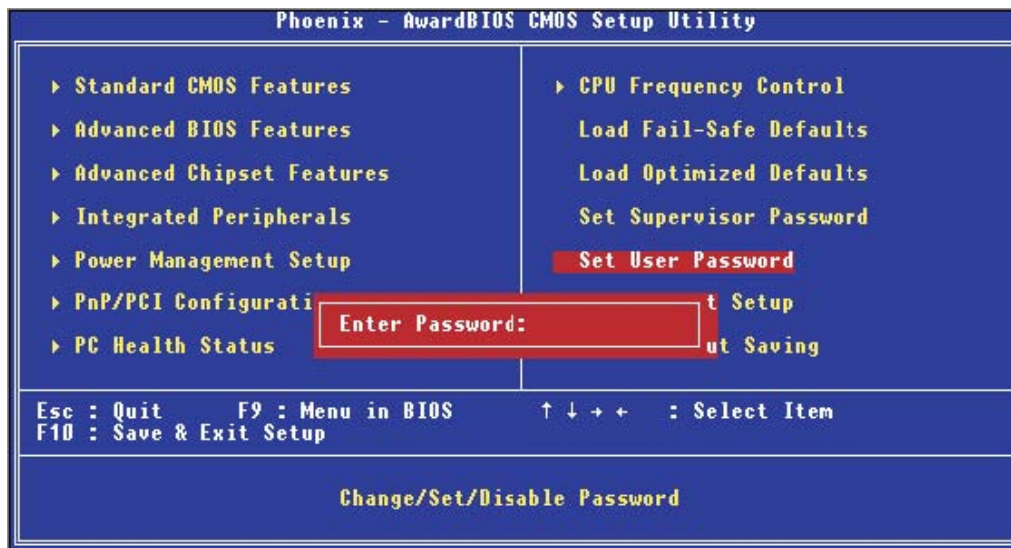
### 3.1.12 Set User Password

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

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

Use the arrow keys to highlight "Set User Password" and press <Enter>.





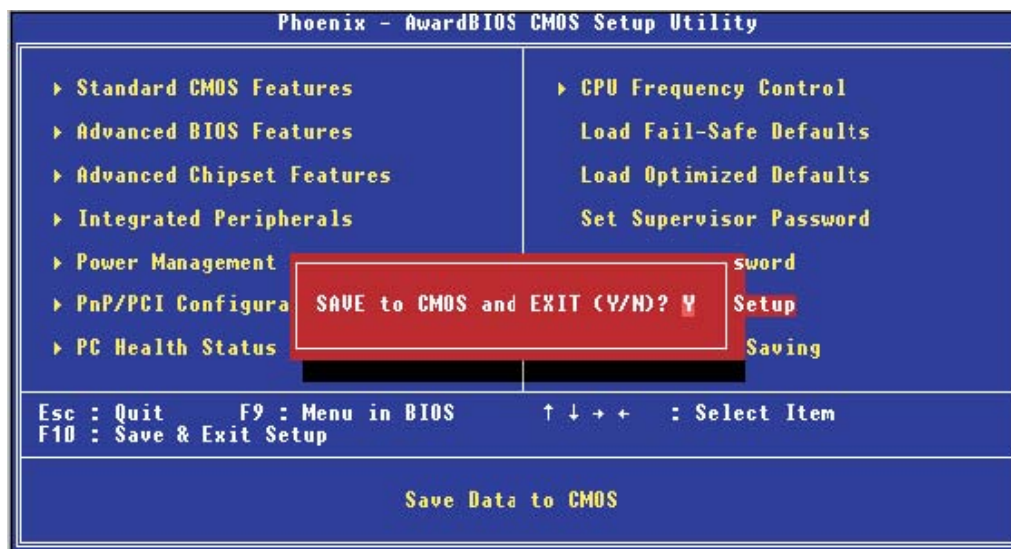
Type in the password. You are limited to eight characters. When done, the message below will appear:

#### **Confirm Password:**

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

#### 3.1.13 Save & Exit Setup

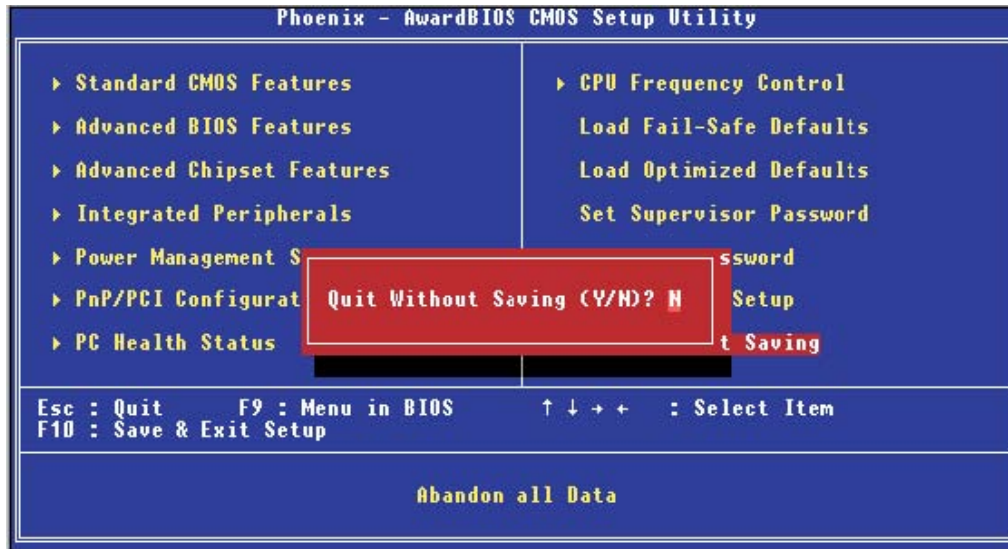
When all the changes have been made, highlight “Save & Exit Setup” and press <Enter>.



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.

### 3.1.14 Exit Without Saving

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

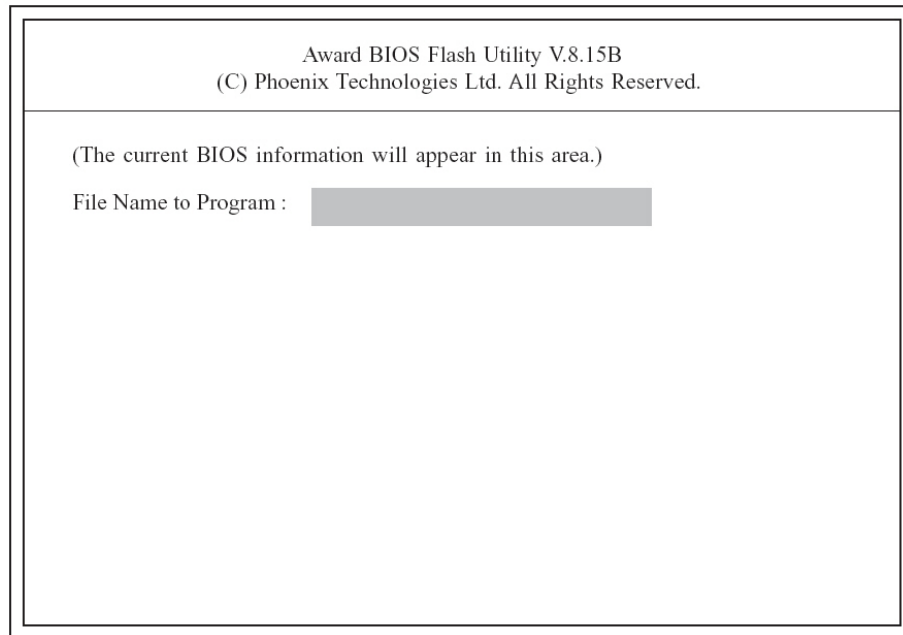


Type “Y” and press <Enter>. The system will reboot and you will once again see the initial diagnostics on the screen. If you wish to make any changes to the setup, press <Ctrl> <Alt> <Esc> simultaneously or <Del> after memory testing is done.

### 3.2 Updating the BIOS

To update the BIOS, you will need the new BIOS file and a flash utility, AWDFLASH.EXE. Please contact technical support or your sales representative for the files.

1. Save the new BIOS file along with the flash utility AWDFLASH.EXE to a floppy disk.
2. Reboot the system and enter the Award BIOS Setup Utility to set the first boot drive to “Floppy”.
3. Save the setting and reboot the system.
4. After the system booted from the floppy disk, execute the flash utility by typing AWDFLASH.EXE. The following screen will appear.



5. Type the new BIOS file name onto the gray area that is next to “File Name to Program” then press <Enter>.
6. The following will appear.

Do You Want to Save BIOS (Y/N)

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

7. The following will then appear.  
ress “Y” to Program or “N” to Exit
8. Press <Y> to flash the new BIOS.

## 4. **Appendix A –Watchdog Timer**

### 4.1 Watchdog Timer

The following parameters are references for setting the time interval of the Watchdog Timer function. The system will regularly be “cleared” according to the set time interval. If the system hangs or fails to function, it will also reset according to the time interval so that your system will continue to operate.

```
mov dx,04e <Enter> mov al,87
<Enter> out dx,al <Enter>
out dx,al <Enter> mov dx,04e
<Enter> mov al,07 <Enter> out
dx,al <Enter>
inc dx <Enter>
inc al <Enter>
out dx,al <Enter> dec dx
<Enter> mov al,f6 <Enter>
out dx,al <Enter> inc dx
<Enter> mov al,xy <Enter>
out dx,al <Enter>
```

“XY” is the Watchdog Time count value for the “00h to “FFh” range wherein the time can be set from 0 sec. to 255 sec.

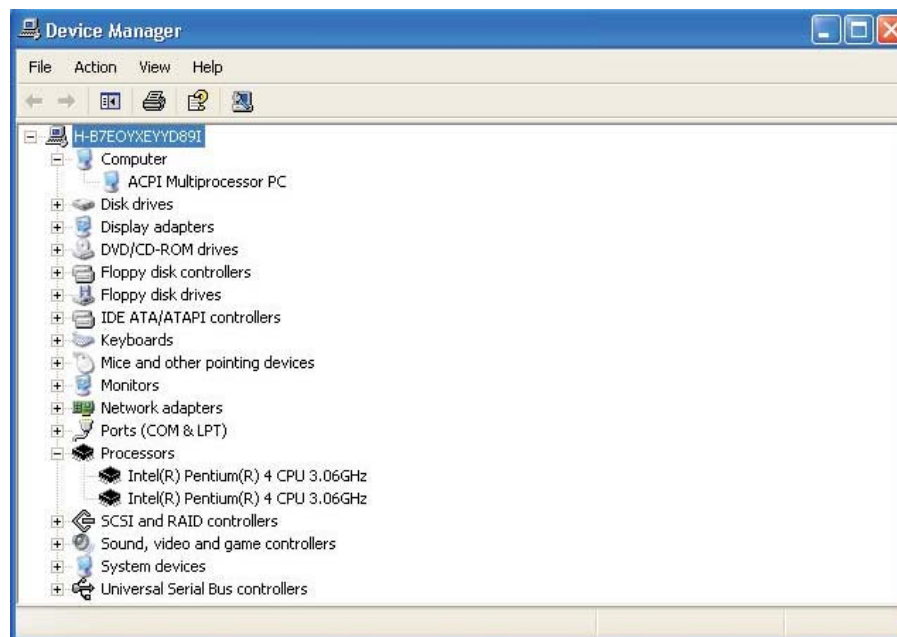
## 5. Appendix B -Enabling Hyper-Threading Technology

### 5.1 Enabling Hyper-Threading Technology

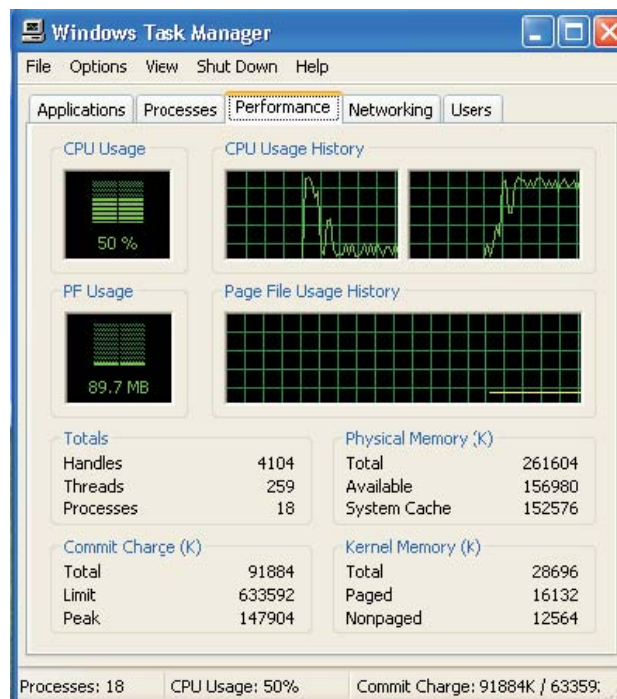
To enable the functionality of the Hyper-Threading Technology, please follow the requirements and steps below. Basically, the following presumes that you have already installed an Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor with Hyper-Threading Technology.

1. The system requires a minimum of 300 Watt ATX 12V power supply.
2. Aside from installing a CPU fan on the Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor with Hyper-Threading Technology, make sure to install cooling fans. The system requires adequate airflow throughout the chassis to prevent overheating the processor.
3. The “CPU Hyper-Threading” field in the Advanced BIOS Features submenu of the Award BIOS setup will appear. Make sure this field is set to Enabled.
4. Currently, only Windows<sup>®</sup> XP supports the Hyper-Threading Technology. If this OS has been previously installed, you must **REINSTALL** it.
5. After installing Windows<sup>®</sup> XP, please check the following to ensure that the operating system has been properly installed.
  - a. Click Start, point to Settings then click Control Panel.
  - b. Double-click the System icon. The System Properties dialog box will appear.
  - c. Click the General tab. The processor shown under Computer should resemble the one shown below.
  - d. Now click the Hardware tab then click Device Manager. The items shown under Computer and Processors should resemble the ones shown below.





- e. Lastly, press the <Ctrl> <Alt> and <Del> keys simultaneously. The Windows Task Manager dialog box will appear. Click the Performance tab. The diagram under CPU Usage History should resemble the one shown below.



## 6. **Appendix C -System Error Message**

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

### 6.1 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.

### 6.2 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-FFFFFH is bad.

**Memory test fail**

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



## 7. **Appendix D -Troubleshooting**

### 7.1 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.**
  1. 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**

1. The serial device (modem, printer) doesn't output anything or is outputting garbled characters.
2. Make sure that the serial device's power is turned on and that the device is on-line.
3. Verify that the device is plugged into the correct serial port on the rear of the computer.
4. 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.

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 socket 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.