

SR100-L20C

System Board User's Manual

935-SR1001-550G
104610833

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Trademarks

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FCC and DOC Statement on Class B

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

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

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

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Warranty

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

Static Electricity Precautions

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

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



Important:

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

Safety Measures

To avoid damage to the system:

- Use the correct AC input voltage range.

To reduce the risk of electric shock:

- Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:

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

About the Package

The system board package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

- ☑ The system board
- ☑ One IDE cable
- ☑ One USB cable
- ☑ One Serial ATA data cable
- ☑ One Serial ATA power cable
- ☑ Intel® Celeron® M 550 CPU
- ☑ One CPU cooler
- ☑ One “Main Board Utility” CD
- ☑ Two floppy diskettes
- ☑ One I/O shield
- ☑ One QR (Quick Reference)

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

Before Using the System Board

Before using the system board, prepare basic system components.

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

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

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

Chapter 1 - Introduction

Specifications

Processor	<ul style="list-style-type: none">• Intel® Celeron® M 550 2.0GHz 1MB cache mobile processor (bundled with board)<ul style="list-style-type: none">- 533MHz system data bus• Processor socket: mPGA478P
Chipset	<ul style="list-style-type: none">• Intel® chipset<ul style="list-style-type: none">- Intel® GLE960 Express chipset- Intel® 82801HBM I/O Controller Hub (ICH8M)
System Memory	<ul style="list-style-type: none">• One 200-pin SODIMM socket• Supports 533MHz DDR2 SDRAM• Supports maximum of 2GB system memory
Expansion Slots	<ul style="list-style-type: none">• 1 PCI slot for PCI expansion card or customized riser card for 1, 2 or 3 PCI slots expansion
Graphics	<ul style="list-style-type: none">• Internal graphics feature<ul style="list-style-type: none">- Mobile Intel® Graphics Media Accelerator X3100- Dynamic Video Memory Technology 4.0- Microsoft DirectX 9x- OpenGL 1.5• Integrated graphics interface<ul style="list-style-type: none">- Analog CRT<ul style="list-style-type: none">- 400MHz GFX render- Analog monitor supports up to QXGA (2048x1536@60Hz)- DVI (supports DVI-D signal only)- DVI 1.0 support for external digital monitor
Audio	<ul style="list-style-type: none">• Realtek ALC262 2-channel High Definition Audio• Two 24-bit stereo DACs and three 20-bit stereo ADCs• S/PDIF input/output interface
LAN	<ul style="list-style-type: none">• One Realtek RTL8111B PCI Express Gigabit controller• Supports 10Mbps, 100Mbps and 1Gbps data transmission• IEEE 802.3 (10/100Mbps) and IEEE 802.3ab (1Gbps) compliant
Serial ATA	<ul style="list-style-type: none">• Three Serial ATA ports, compliant with SATA 1.0a specification• Data transfer rate up to 3Gb/s• Supports Advanced Host Controller Interface (AHCI)
IDE	<ul style="list-style-type: none">• Supports up to two IDE devices• Supports Ultra ATA 100/66/33
Rear I/O	<ul style="list-style-type: none">• 1 mini-DIN-6 PS/2 mouse port• 1 mini-DIN-6 PS/2 keyboard port• 2 DB-9 serial ports• 1 DB-15 VGA port• 1 DVI-I port (DVI-D signal only)• 1 RJ45 LAN port• 4 USB 2.0/1.1 ports• Mic-in, line-in and line out jacks

I/O Connectors	<ul style="list-style-type: none"> • 2 connectors for 4 additional external USB 2.0/1.1 ports • 1 front audio connector for line-out and mic-in jacks • 1 CD-in internal audio connector • 1 S/PDIF connector • 3 Serial ATA connectors • 1 40-pin IDE connector • 1 20-pin ATX power connector • 1 front panel connector • 1 chassis intrusion connector • 2 fan connectors
BIOS	<ul style="list-style-type: none"> • AMI BIOS • 4Mbit flash memory
Energy Efficient Design	<ul style="list-style-type: none"> • Supports ACPI specification 2.0/1.0 • Supports ACPI STR (Suspend to RAM) function • Wake-On-Events include: <ul style="list-style-type: none"> - Resume-On-PS/2 Keyboard/Mouse - Resume-On-Onboard-LAN - Resume-On-Ring - Resume-On-PCI-PME# - RTC timer to power-on the system • Intel® Rapid Memory power management • AC power failure recovery
Damage Free Intelligence	<ul style="list-style-type: none"> • Monitors CPU/system temperature and overheat alarm • Monitors CPU(V)/3.3V/5V/12V/VBAT(V)/3VSB(V) voltages and failure alarm • Monitors CPU/system fan speed and failure alarm • Read back capability that displays temperature, voltage and fan speed • Watchdog timer function
Temperature	<ul style="list-style-type: none"> • 0°C to 60°C
Humidity	<ul style="list-style-type: none"> • 10% to 90%
PCB	<ul style="list-style-type: none"> • 8-layers, Mini-ITX form factor • 17cm (6.7") × 17cm (6.7")

Features

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.

DDR2

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

GRAPHICS

The Intel northbridge chip comes integrated with the Intel Graphics Media Accelerator X3100 delivering exceptional 3D graphics performance. It supports analog CRT and DVI interfaces.

DVI

DVI (Digital Visual Interface) is a form of video interface technology made to maximize the quality of flat panel LCD monitors and modern video graphics cards. Data is transmitted using the TMDS (Transition Minimized Differential Signaling) protocol, providing a digital signal from the PC's graphics subsystem to the display.

S/PDIF

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

SERIAL ATA

Serial ATA is a storage interface that is compliant with SATA 1.0a specification. With speed of up to 3Gbps, it improves hard drive performance faster than the standard parallel ATA whose data transfer rate is 100MB/s.

GIGABIT LAN

The Realtek RTL8111B PCI Express Gigabit controller supports up to 1Gbps data transmission.

USB

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

WAKE-ON-RING

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

**Important:**

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

WAKE-ON-LAN

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

**Important:**

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

WAKE-ON-PS/2

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

**Important:**

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

RTC TIMER

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. 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® 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:**

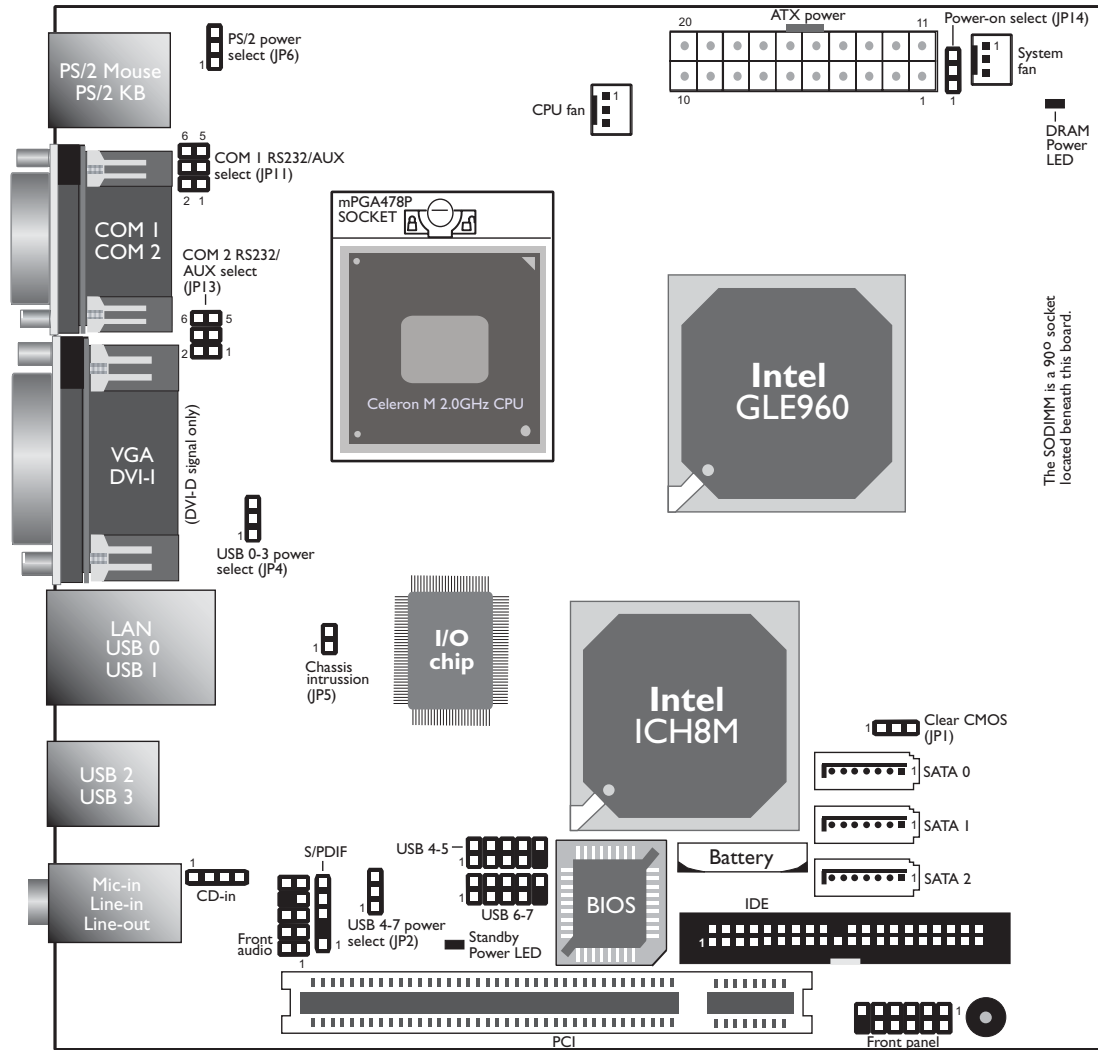
The 5V_standby power source of your power supply must support $\geq 720\text{mA}$.

POWER FAILURE RECOVERY

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

Chapter 2 - Hardware Installation

System Board Layout



Note:

The DVI-I port supports DVI-D signal only.

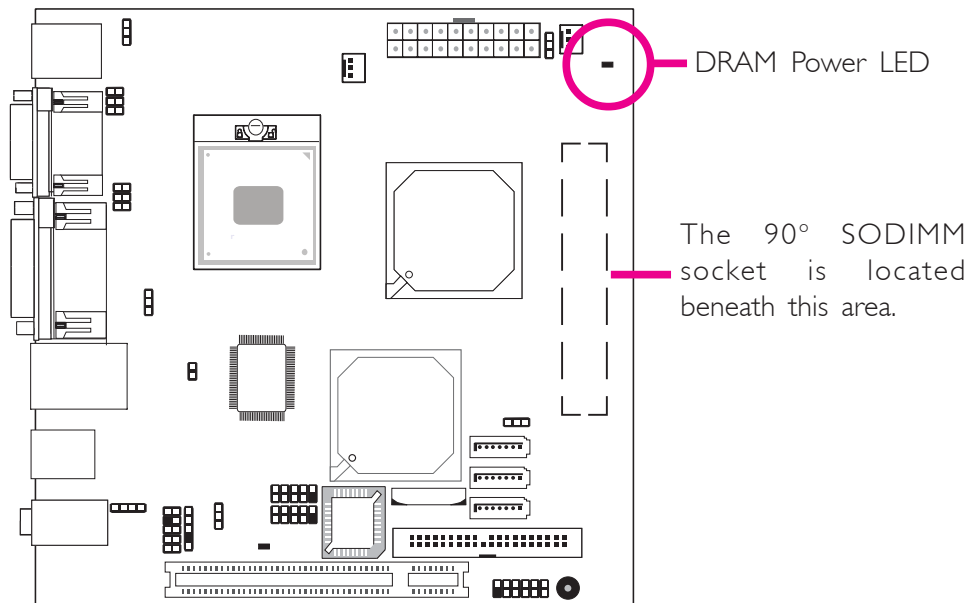
**Warning:**

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

System Memory

**Warning:**

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



BIOS Setting

Configure the system memory in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

Installing the DIM Module



Note:

The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the SODIMM socket on the system board.
4. Insert the module into the socket at an approximately 30 degrees angle. Note that the socket and module are both keyed, which means the module can be plugged into the socket in only one way.
5. To seat the module into the socket, apply firm even pressure to each end of the module until it slips down into the socket. The contact fingers on the edge of the module will almost completely disappear inside the socket.



2

Hardware Installation

6. Push down the module until the clips at each end of the socket lock into position. You will hear a distinctive “click”, indicating the module is correctly locked into position.



CPU

Overview

The system board is equipped with a surface mount mPGA478P CPU socket.

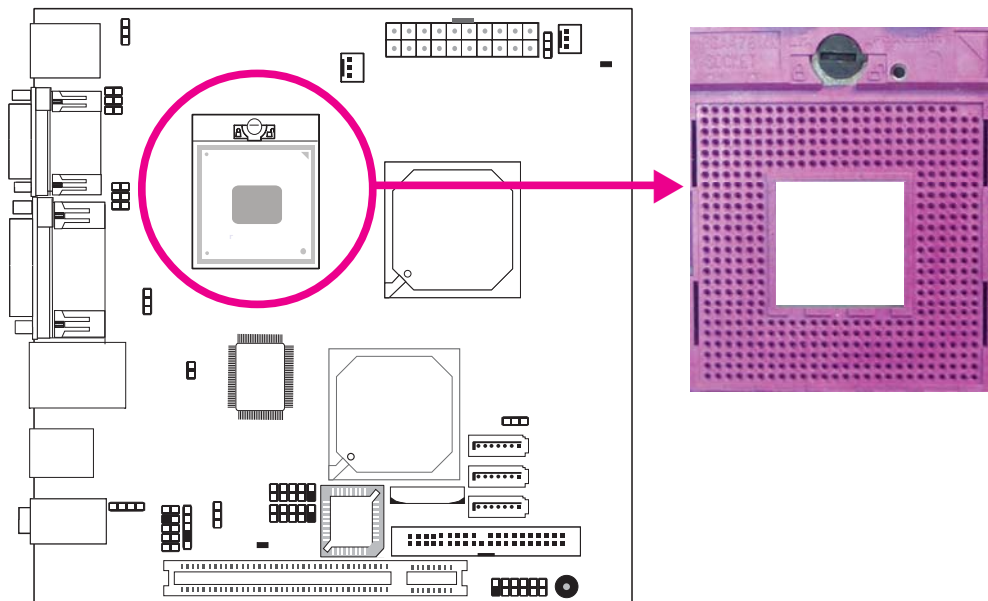


Note:

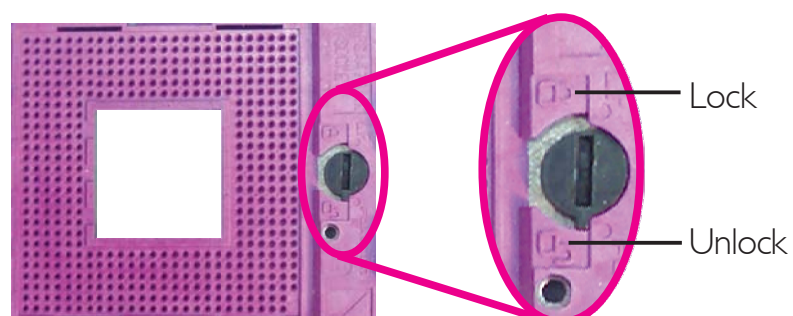
The system board used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

Installing the CPU

1. Make sure the PC and all other peripheral devices connected to it has been powered down.
2. Disconnect all power cords and cables.
3. Locate the mPGA478P socket on the system board.



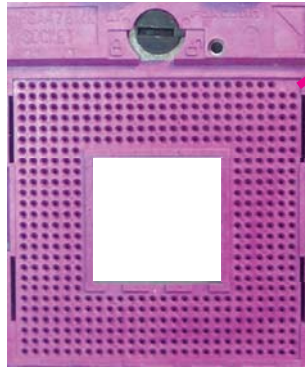
4. Use a screwdriver to turn the screw to its unlock position.



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

**Important:**

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



Pin 1 of the socket



Gold triangular mark

6. Insert the CPU into the socket until it is seated in place. The CPU will fit in only one orientation and can easily be inserted without exerting any force. Use a screwdriver to turn the screw to its lock position.

**Important:**

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



Installing the Fan and Heat Sink

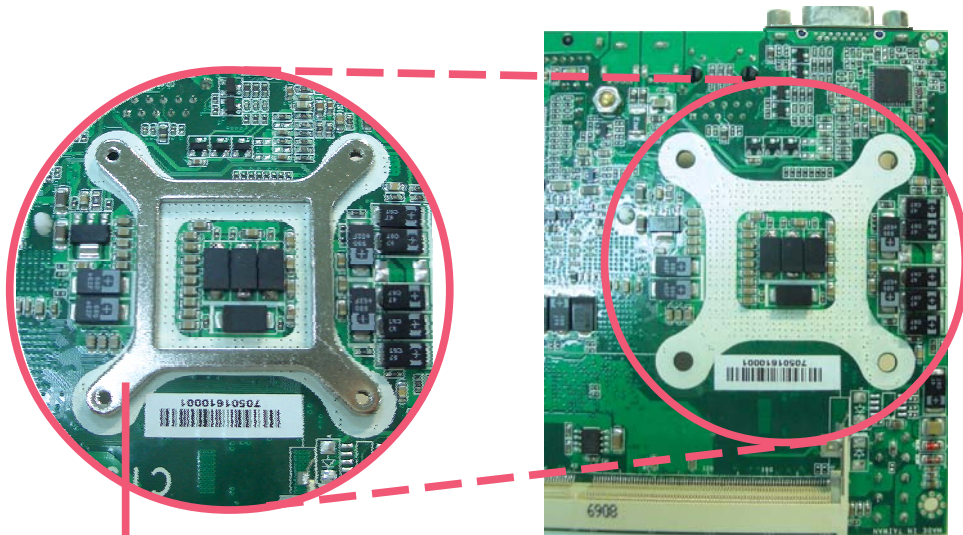
The CPU must be kept cool by using a CPU fan with heat sink. Without sufficient air circulation across the CPU and heat sink, the CPU will overheat damaging both the CPU and system board.



Note:

- Use only certified fan and heat sink.
- Your fan and heat sink package usually contains the fan and heat sink assembly, and an installation guide. If the installation procedure in the installation guide differs from the one in this section, please follow the installation guide in the package.
- The fan with heat sink assembly and the system board used in the following illustrations may not resemble the actual ones. These illustrations are for reference only.

- I. On the solder side of the board, match the screw holes of the retention module base to the mounting holes around the CPU socket.



Retention
module base

2. Apply a thin layer of thermal paste on top of the CPU. Do not spread the paste all over the surface. When you later place the heat sink on top, the compound will disperse evenly.
3. While holding the retention module base in position (step 1), place the fan / heat sink assembly on top of the CPU. The 4 screws around the heat sink must match the screw holes of the retention module base.

Turn each Phillips head screw half way down first to initially stabilize the heat sink onto the board, then finally tighten each screw.

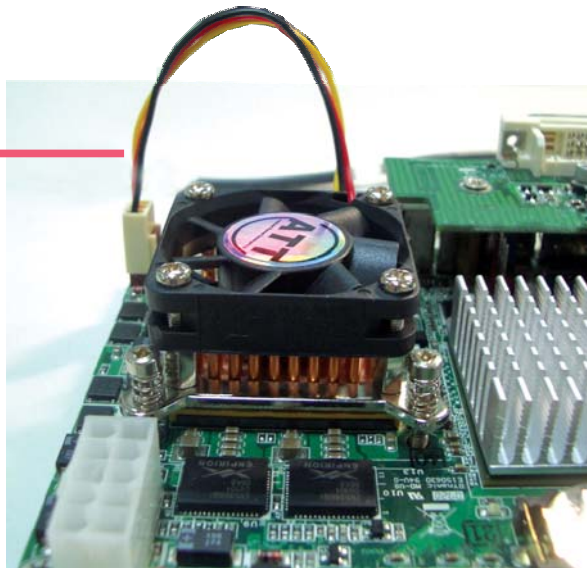


Important:

Do not turn the first screw all the way down followed by the next and so on. This is to avoid imbalance which might cause cracks or fractures to the CPU and/or heat sink assembly.

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

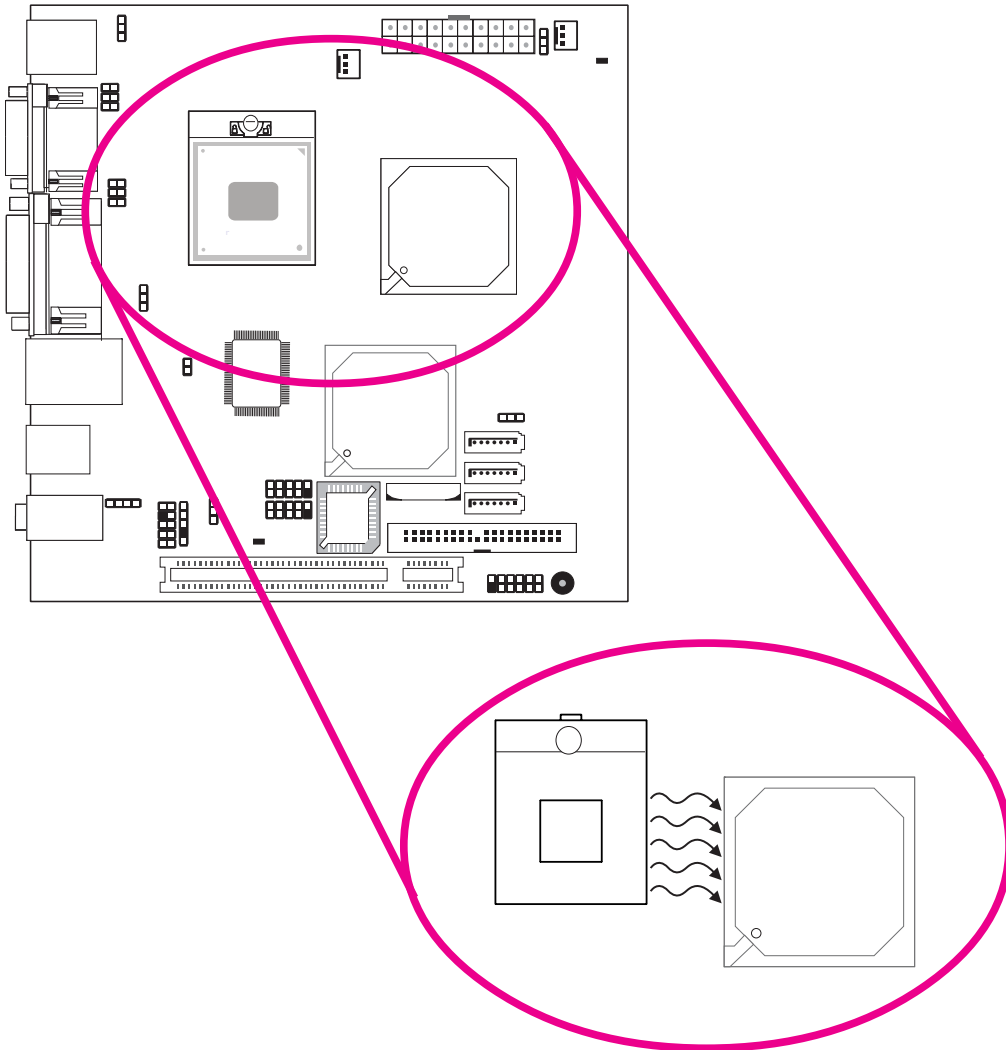
CPU fan cable





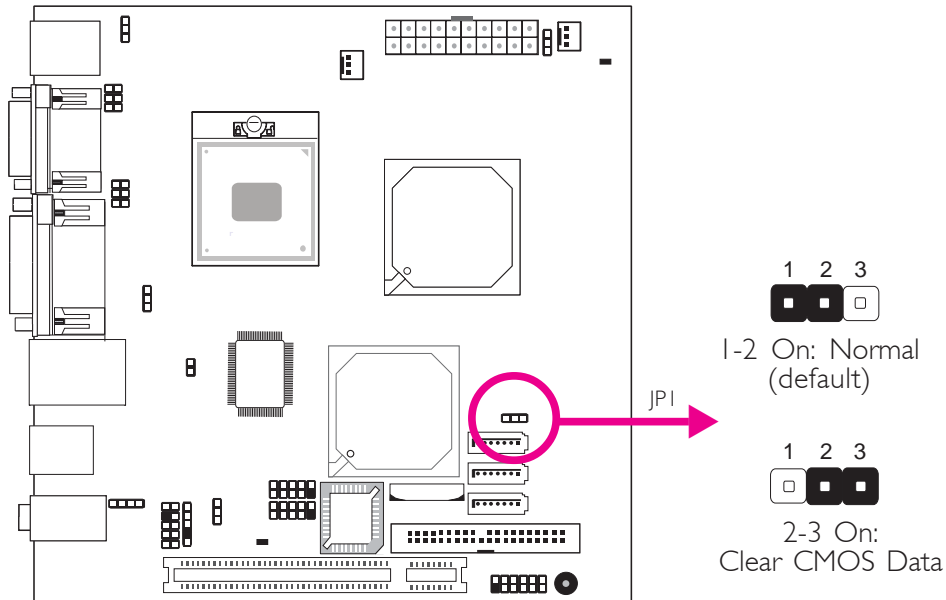
Important:

When you install the CPU fan and heat sink assembly, make sure the assembly is positioned in such a way that the direction of the airflow blows towards the Northbridge. This is to ensure optimum thermal condition and system performance.



Jumper Settings

Clear CMOS Data



If you encounter the following,

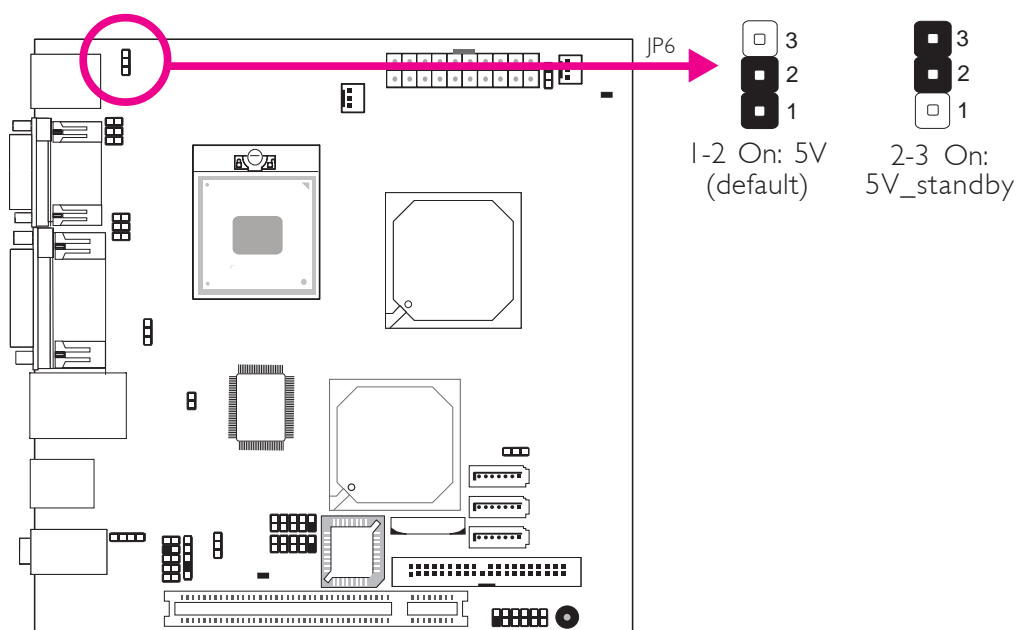
- a) CMOS data becomes corrupted.
- b) You forgot the supervisor or user password.

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

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

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

PS/2 Power Select



JP6 is used to select the power of the PS/2 keyboard/mouse port. Selecting 5V_standby will allow you to use the PS/2 keyboard or PS/2 mouse to wake up the system.

BIOS Setting

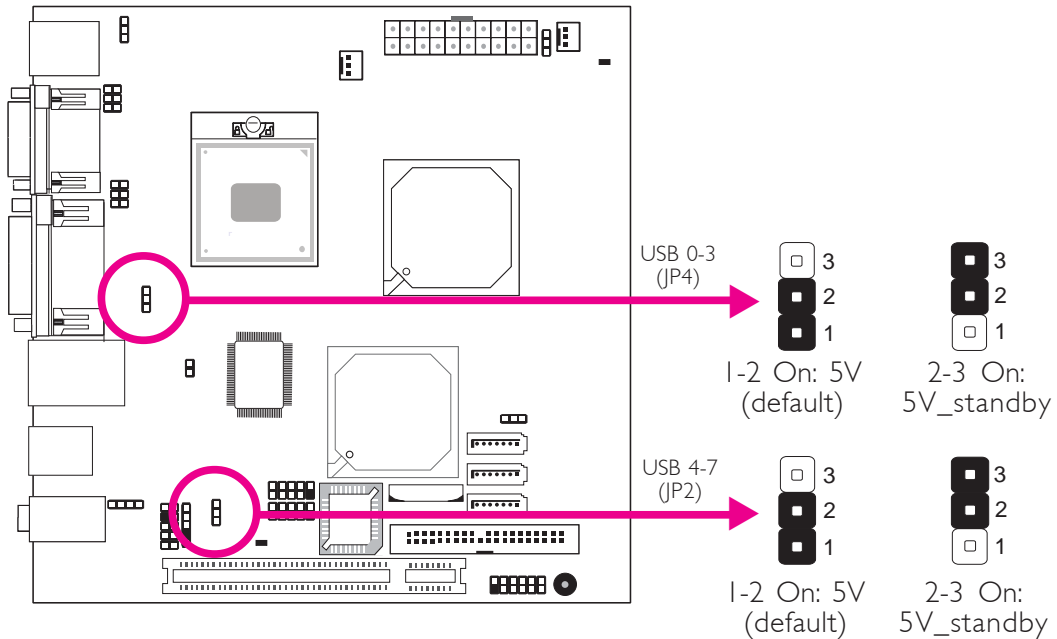
Configure the PS/2 keyboard/mouse wake up function in the Advanced menu of the BIOS. Refer to chapter 3 for more information.



Important:

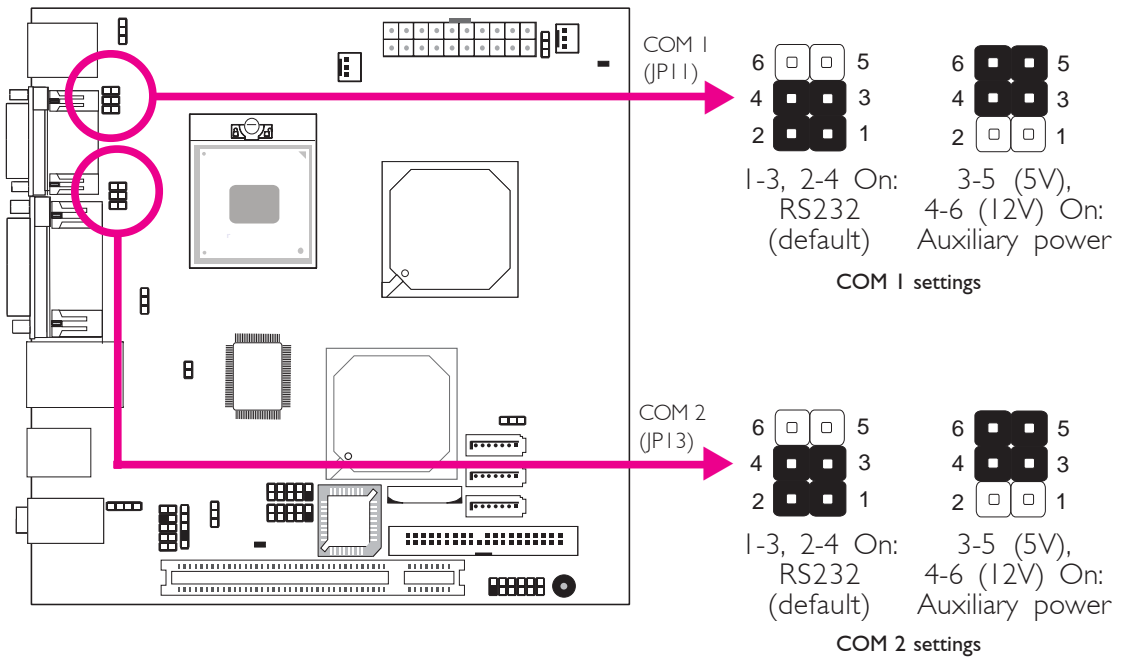
The 5V_standby power source of your power supply must support $\geq 720\text{mA}$.

USB Power Select



JP4 (for USB 0-3) and JP2 (for USB 4-7) are used to select the power of the USB ports. Selecting 5V_standby will allow you to use a USB device to wake up the system. If you want to use the optional wake up function, you must enable this function in the BIOS then set the jumpers' pins 2 and 3 to 5V_standby.

COM 1 and COM 2 RS232/AUX Select

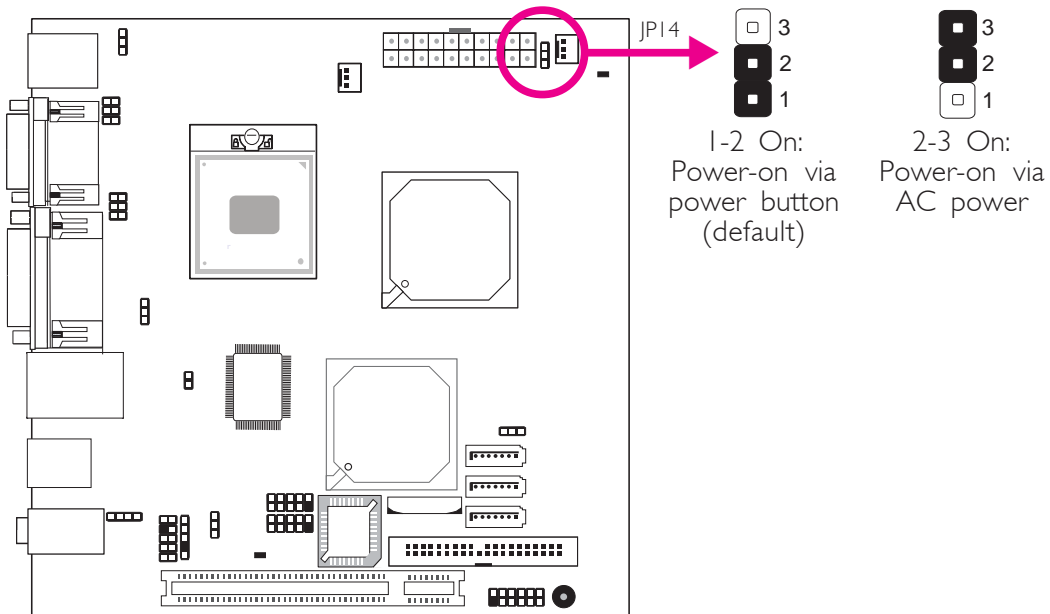


COM 1 and COM 2 are RS-232 ports. If the serial device connected to COM 1 and/or COM 2 requires 5V/12V power from the system board, set JP11 and/or JP13 pins 3-5 (5V) and 4-6 (12V) to On. Otherwise, leave the jumper's settings at 1-3, 2-4 On.

The table below shows the pin assignment of JP11 and JP13.

1	MRIX-	2	MDCDX-
3	X_MRIX-	4	X_MDCDX-
5	+5V	6	+12V

Power-on Select



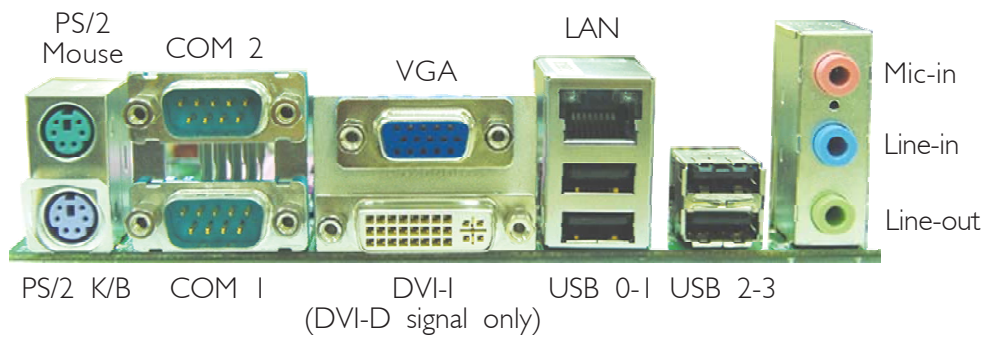
JPI4 is used to select the method of powering on the system. If you want the system to power-on whenever AC power comes in, set JPI4 pins 2 and 3 to On. If you want to use the power button, set pins 1 and 2 to On.

When using JPI4 "Power On" feature to power the system back on after a power failure occurs, may not power on the system if the power lost is resumed within 5 seconds (power flicker).

**Note:**

In order to ensure that power is resumed after a power failure that may occur within a 5 second period, JPI4 should be set to pins 2-3 and the "Restore on AC Power Loss" in CMOS is set to "Power On".

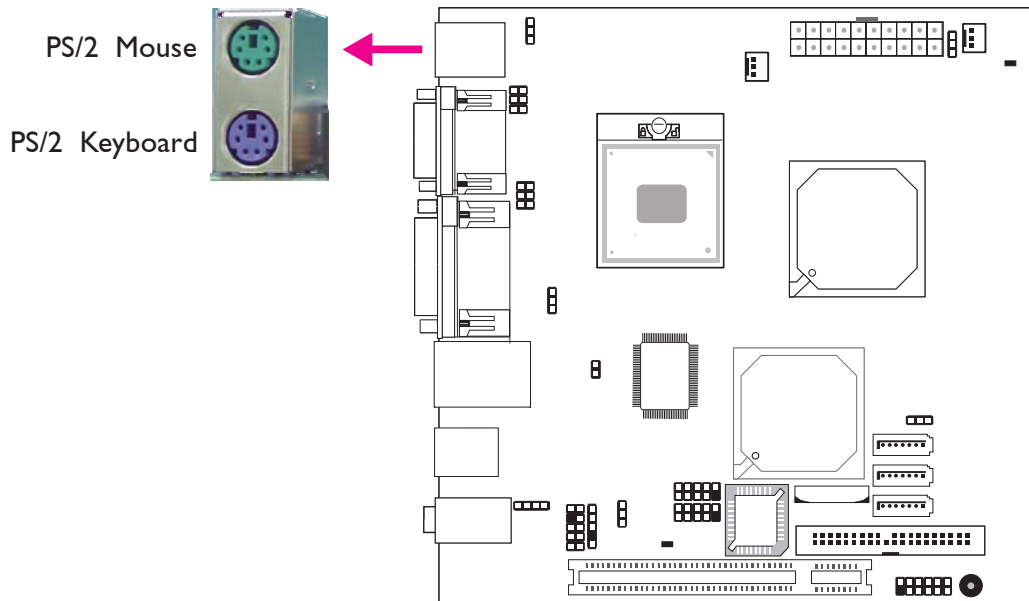
Rear Panel I/O Ports



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

- PS/2 mouse port
- PS/2 keyboard port
- 2 COM ports
- VGA port
- DVI-I port (DVI-D signal only)
- LAN port
- 4 USB ports
- Mic-in jack
- Line-in jack
- Line-out jack

PS/2 Mouse and PS/2 Keyboard Ports



These ports are used to connect a PS/2 mouse and a PS/2 keyboard. 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:**
JP6 must be set to “2-3 On: 5V_standby”. Refer to “PS/2 Power Select” in this chapter for more information.

- **BIOS Setting:**

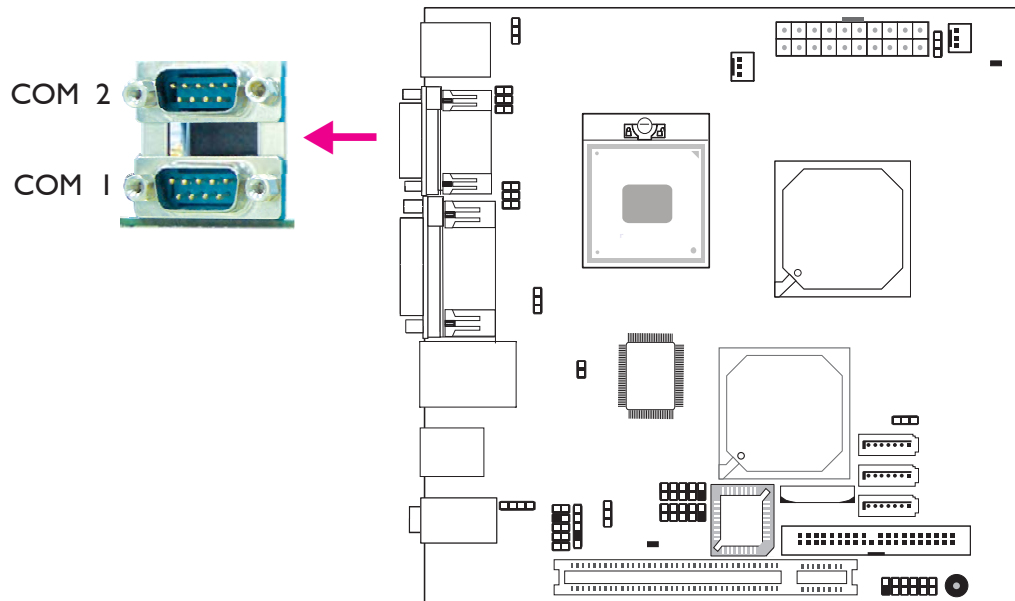
Configure the PS/2 keyboard/mouse wake up function in the Advanced menu of the BIOS. Refer to chapter 3 for more information.



Important:

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

Serial Ports



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

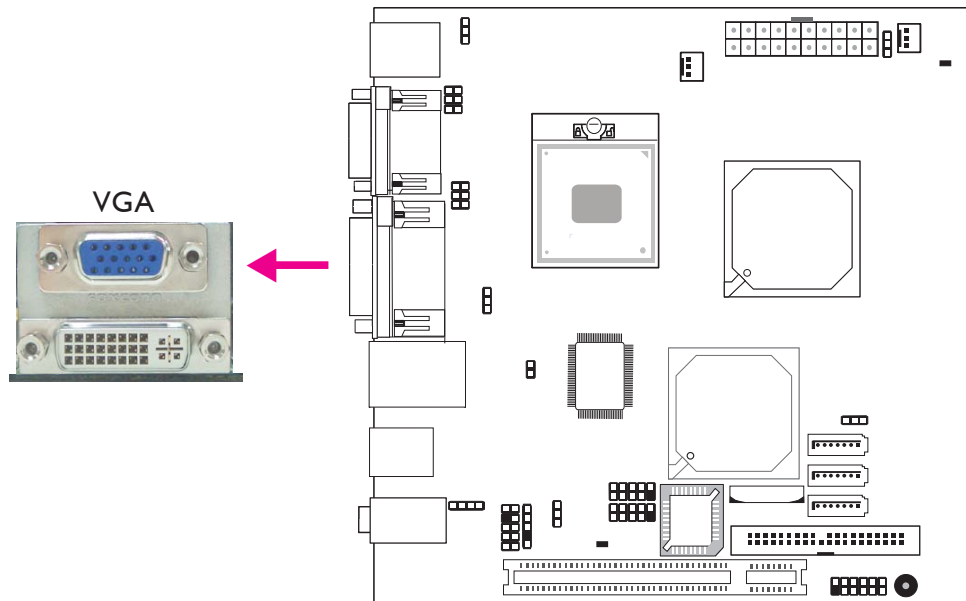
Jumper Setting

Refer to the “Jumper Settings” section in this chapter for settings relevant to the serial ports.

BIOS Setting

Configure the serial ports in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

VGA Port



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

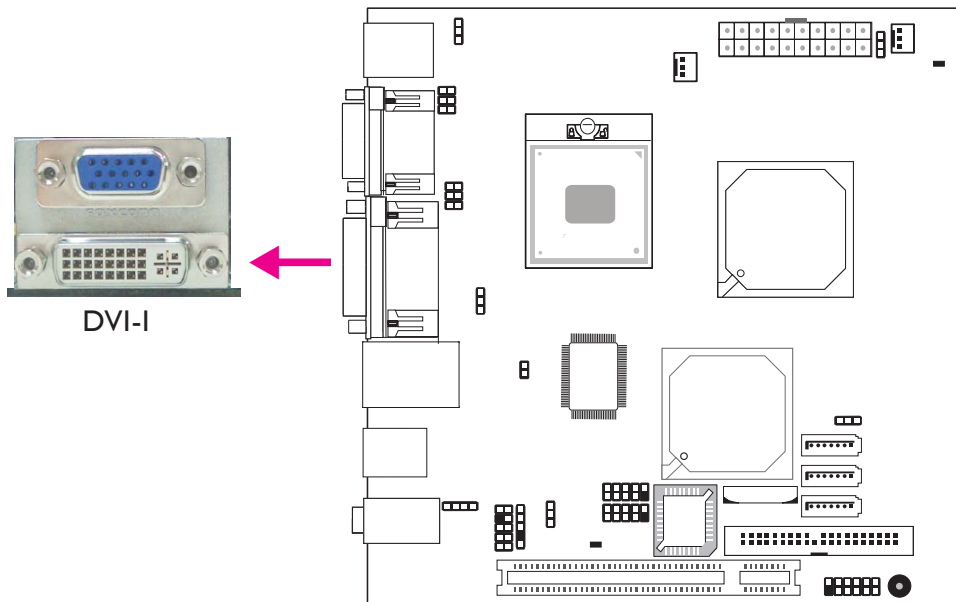
BIOS Setting

Configure the onboard VGA in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

DVI-I Port



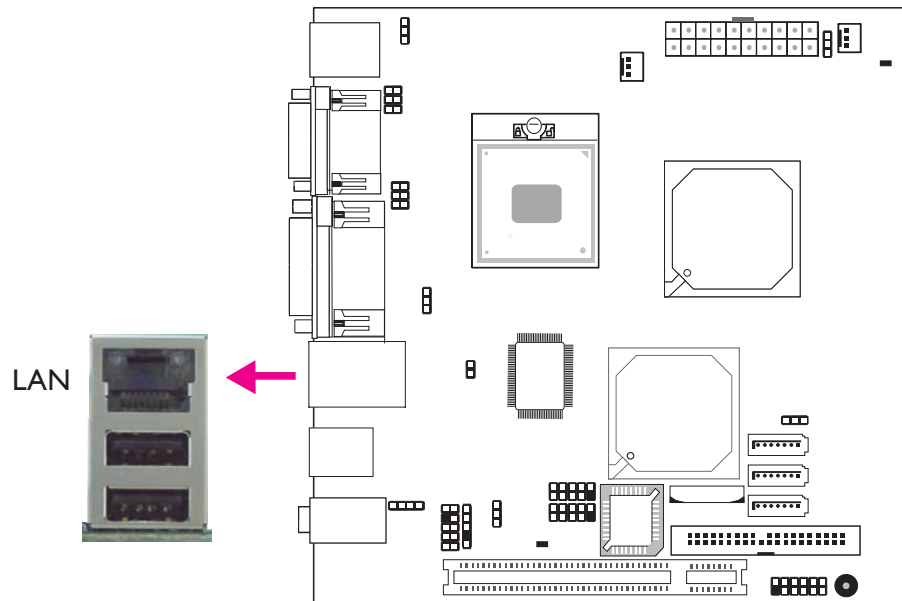
The DVI-I port is used to connect an LCD monitor. This port supports DVI-D signal only.

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

BIOS Setting

Configure the display device in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

RJ45 Fast-Ethernet Port



The LAN port allows the system board to connect to a local area network by means of a network hub.

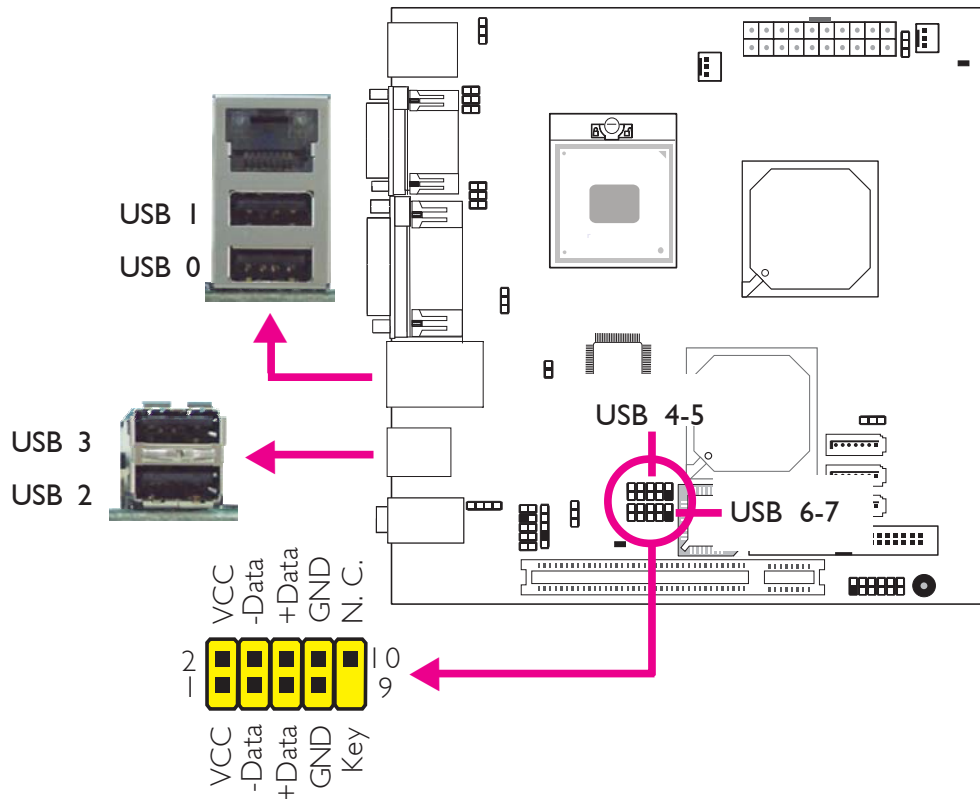
BIOS Setting

Configure the onboard LAN in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

Universal Serial Bus Connectors



USB allows data exchange between your computer and a wide range of simultaneously accessible external Plug and Play peripherals.

The system board is equipped with four onboard USB 2.0/1.1 ports. The USB 4-5 and USB 6-7 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 an available slot at the rear of the system chassis then insert the USB port cables to a USB connector.

BIOS Setting

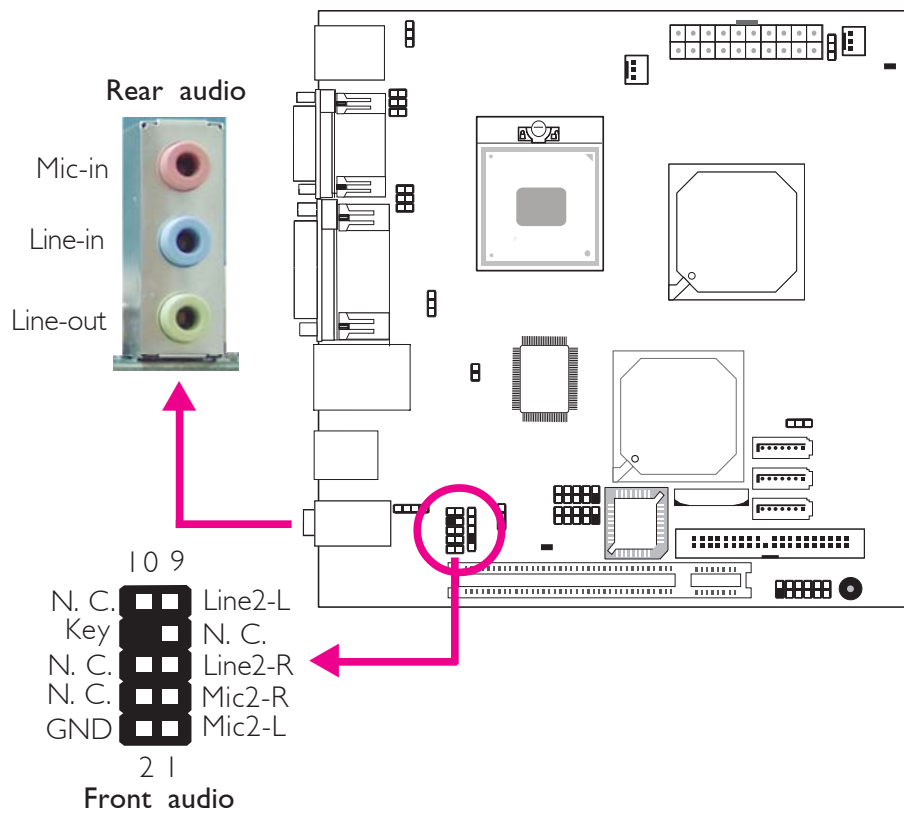
Configure the onboard USB in the Advanced menu of the BIOS. Refer to chapter 3 for more information.

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.

Audio



Rear Audio

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

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

Front Audio

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

BIOS Setting

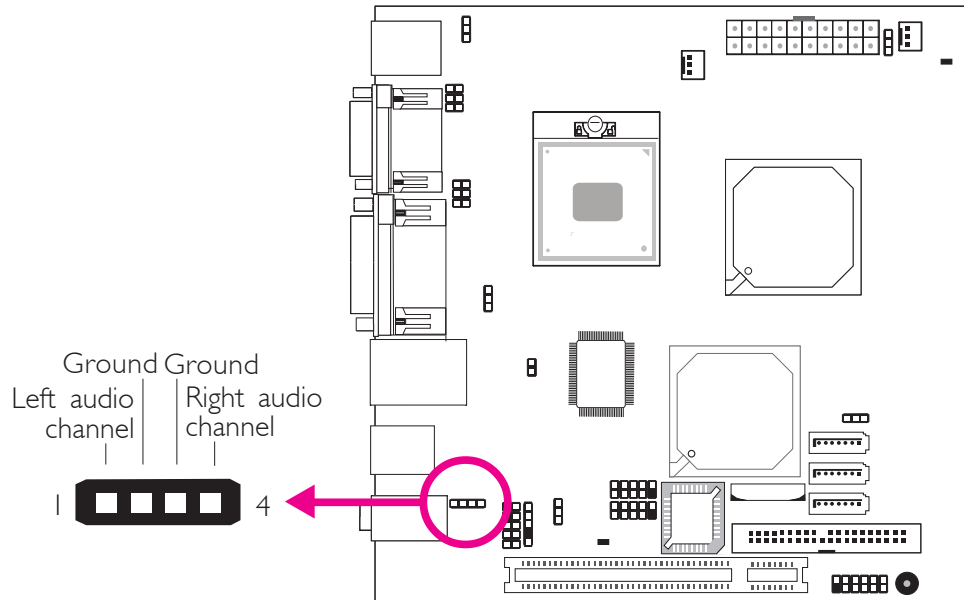
Configure the onboard audio in the Chipset menu of the BIOS. Refer to chapter 3 for more information.

Driver Installation

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

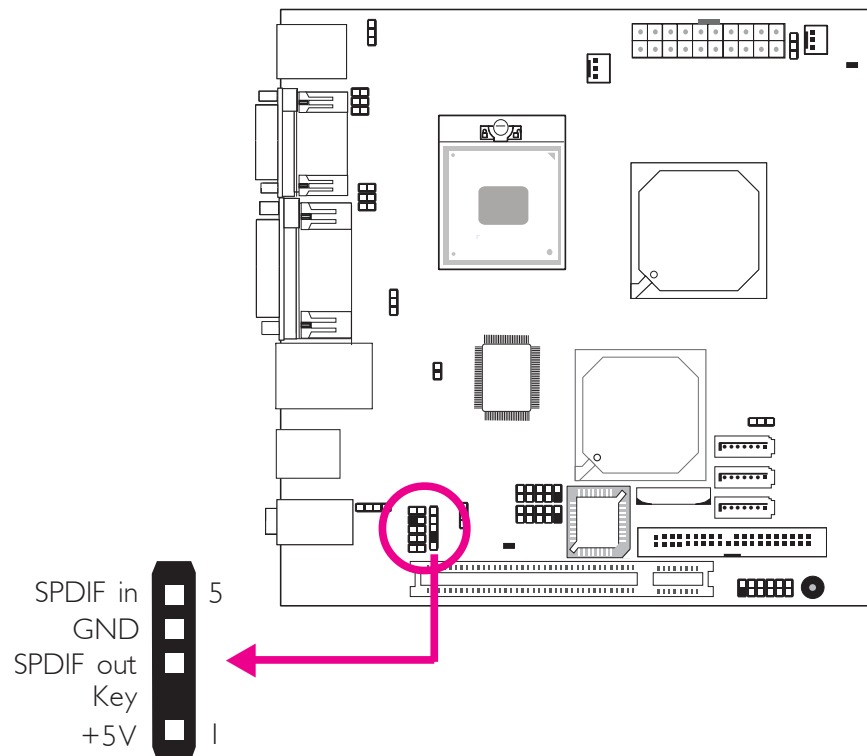
I/O Connectors

CD-in Internal Audio Connector



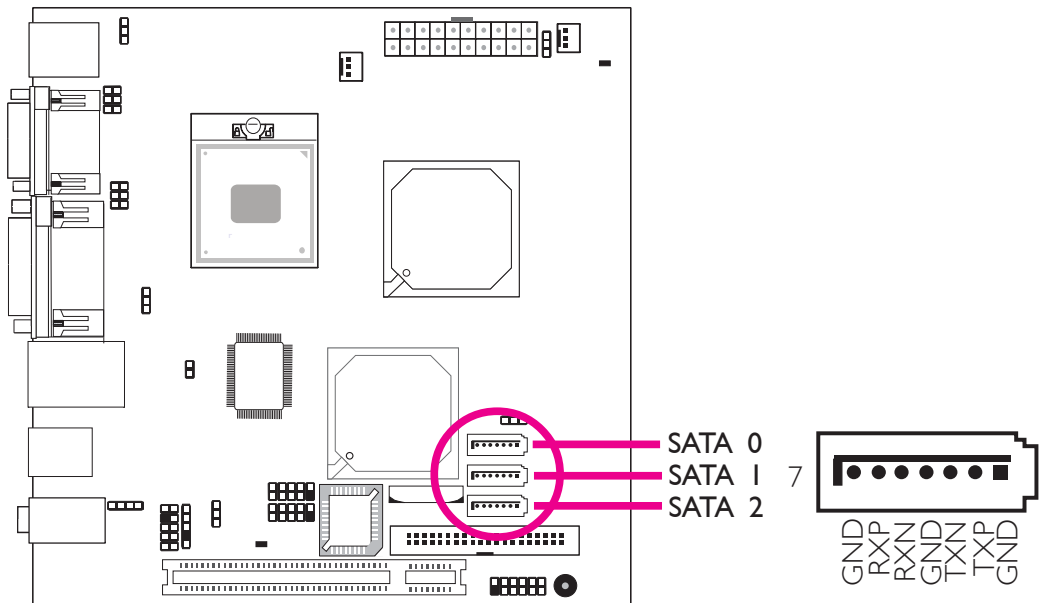
The CD-in connector is used to receive audio from a CD-ROM drive, TV tuner or MPEG card.

S/PDIF Connector



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

Serial ATA Connectors

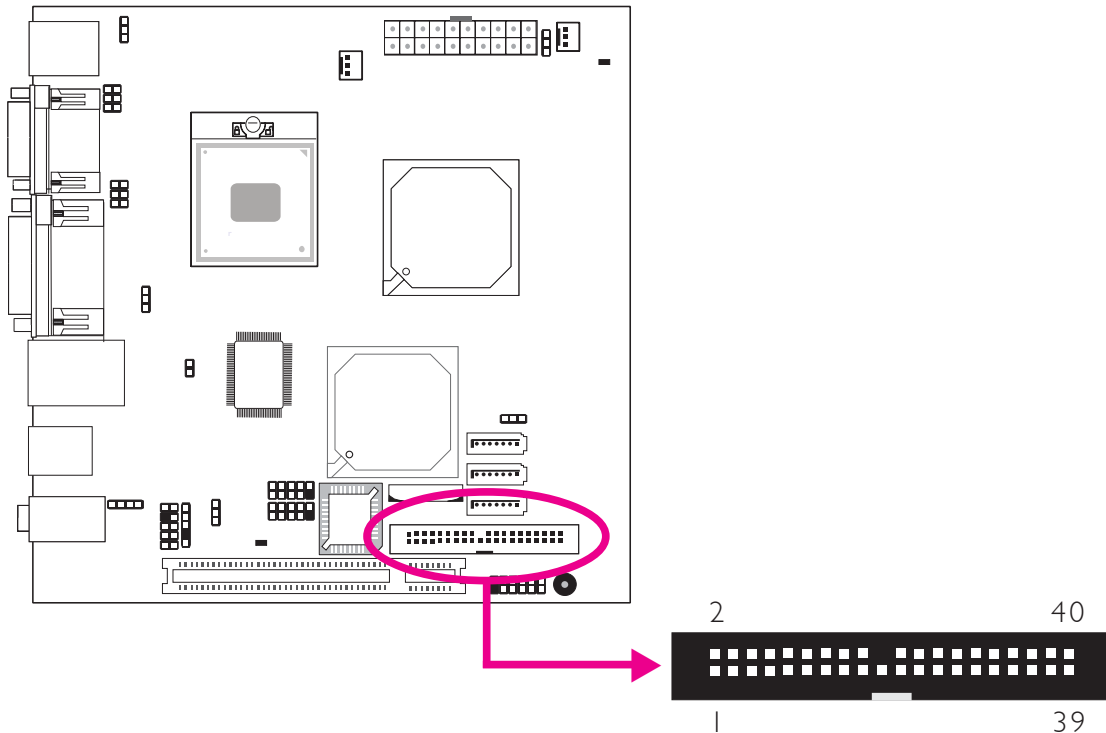


The Serial ATA ports are used to connect Serial ATA devices. Connect one end of the Serial ATA cable to a SATA port and the other end to your Serial ATA device.

BIOS Setting

Configure the Serial ATA drives in the Main menu of the BIOS. Refer to chapter 3 for more information.

IDE Disk Drive Connectors



The 40-pin IDE connector is used to connect hard drives. The connector on the IDE cable can be inserted into this connector only if pin 1 of the cable is aligned with pin 1 of the IDE connector.

The IDE connector supports 2 devices, a Master and a Slave. Use an IDE ribbon cable to connect the drives to the system board. An IDE ribbon cable 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

Connect one end of the IDE cable into the IDE connector 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.



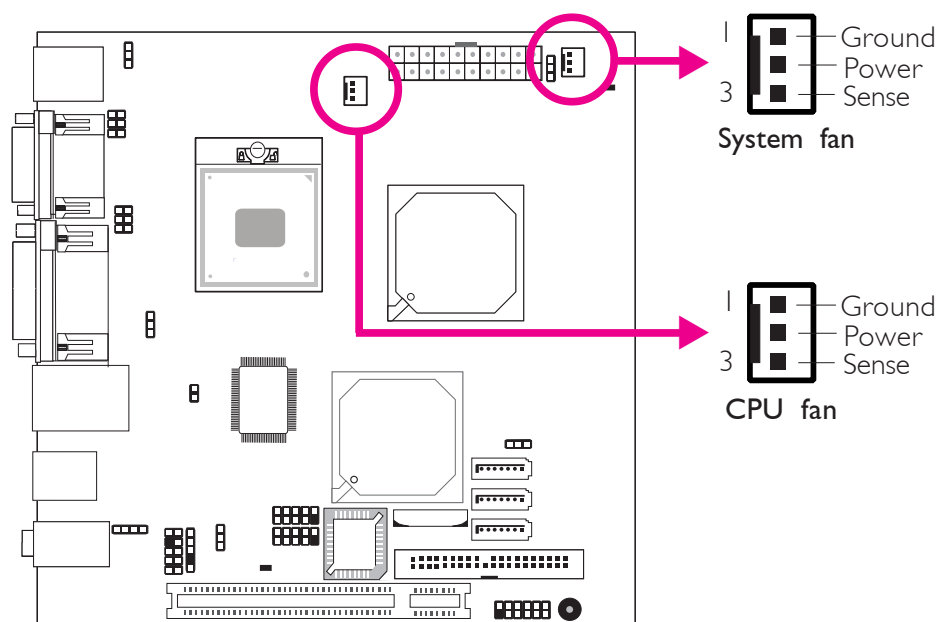
Important:

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

Configure the onboard IDE in the Main menu of the BIOS. Refer to chapter 3 for more information.

Cooling Fan Connectors

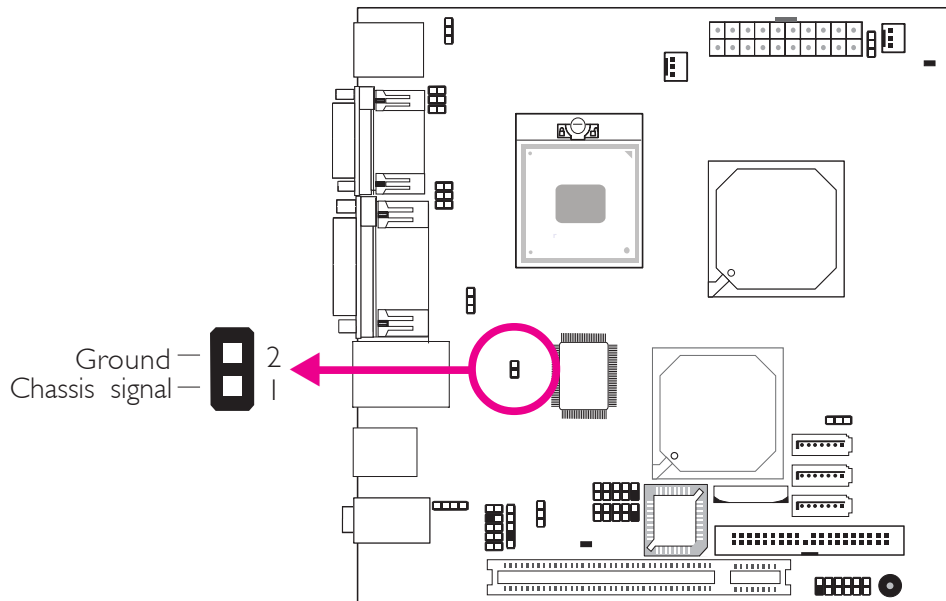


Connect the CPU fan's cable connector to the CPU fan connector on the system board. The system fan connector is used to connect an additional cooling fan. The cooling fans will provide adequate air-flow throughout the chassis to prevent overheating the CPU and system board components.

BIOS Setting

The Advanced menu of the BIOS will display the current speed of the cooling fans. Refer to chapter 3 for more information.

Chassis Intrusion Connector

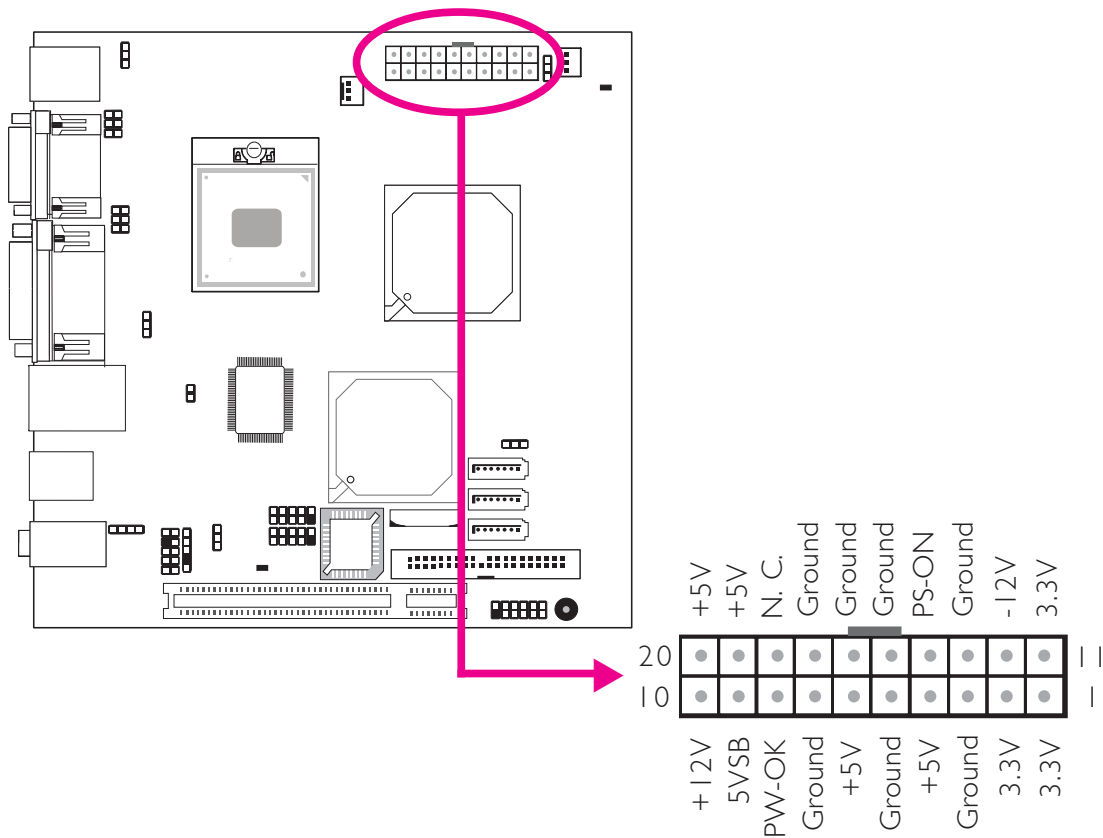


The system board supports the chassis intrusion detection function. Connect the chassis intrusion sensor cable from the chassis to the chassis intrusion connector. Whenever a chassis component has been removed, the sensor sends signal to the connector alerting you of a chassis intrusion event.

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.

Power Connector



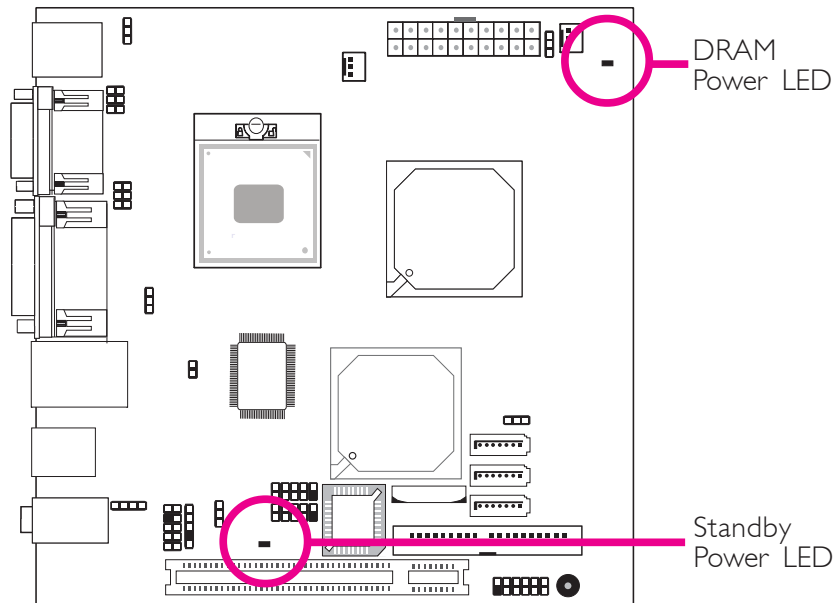
Connect a 20-pin ATX main power connector from the power supply unit to the ATX connector. The system board requires a minimum of 120 Watt power supply to operate. We recommend that you use a power supply that complies with the ATX12V Power Supply Design Guide Version 1.1.



Important:

*The system board consumes a minimal amount of power. Due to its low power consumption, you only need a **120W to 150W** power supply. Every power supply has its minimum load of power. If you use a greater than 150W power supply, the power consumed by the system board may not attain its minimum load causing instability to the entire system.*

DRAM Power LED and Standby Power LED



DRAM Power LED

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

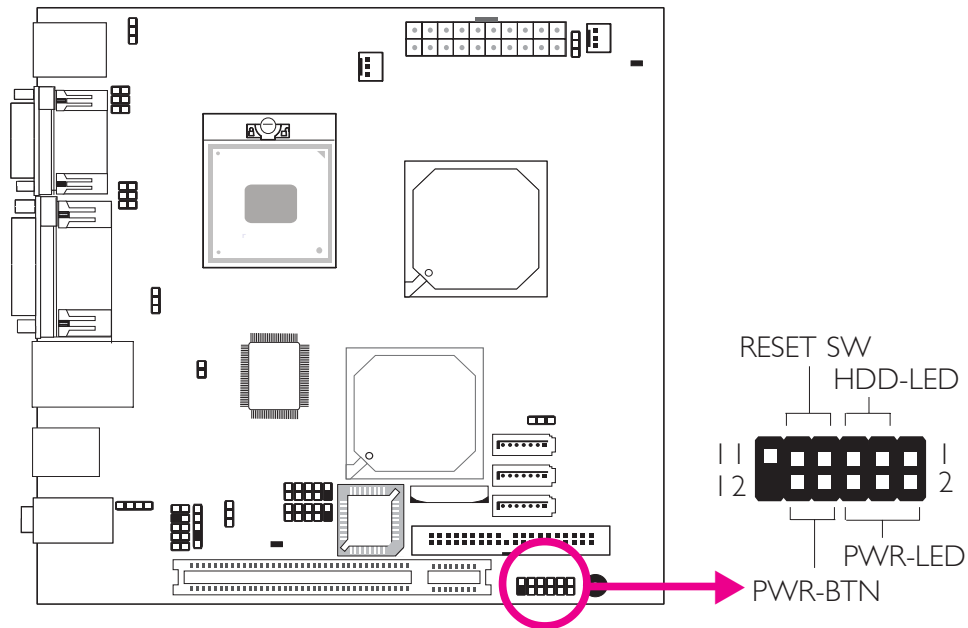
Standby Power LED

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

**Warning:**

When the DRAM Power LED and/or Standby Power LED lit red, it indicates that power is present on the DIMM socket and/or PCI slot. Power-off the PC then unplug the power cord prior to installing a memory module or add-in card. Failure to do so will cause severe damage to the motherboard and components.

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

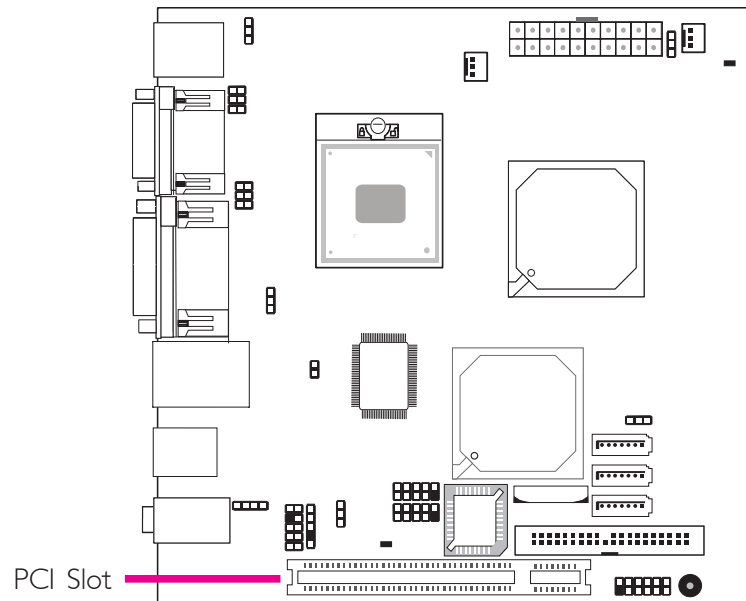
This switch is used to power on or off the system.

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.

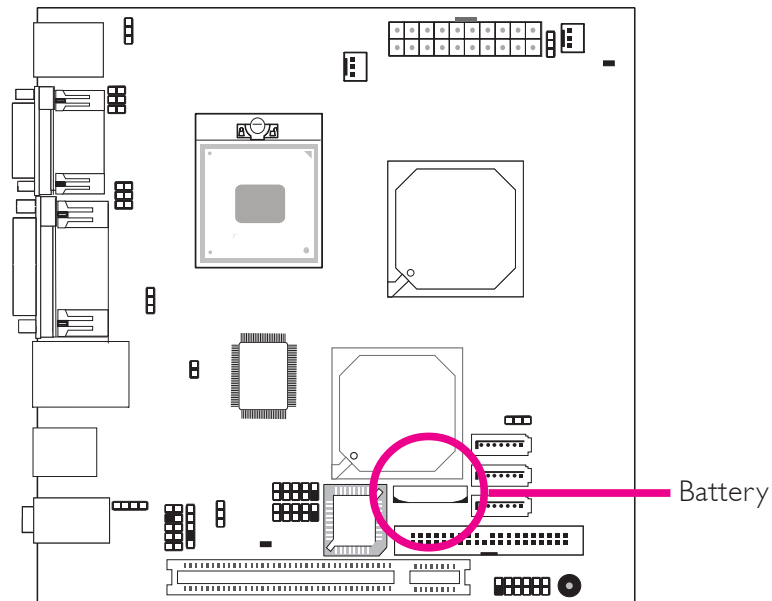
	Pin	Pin Assignment		Pin	Pin Assignment
N. C.	1	N. C.	PWR-LED	2	LED Power
				4	LED Power
				6	Signal
HDD-LED	3	HDD Power	PWR-BTN	8	3V_DUAL
	5	Signal		10	Signal
RESET SW	7	Ground			
	9	RST Signal			
N. C.	11	N. C.	Key	12	Key

PCI 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) into the PCI slot.

Battery



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

Safety Measures

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

Chapter 3 - BIOS Setup

Overview

The BIOS is a program that takes care of the basic level of communication between the CPU and peripherals. It contains codes for various advanced features found in this system board. The BIOS allows you to configure the system and save the configuration in a battery-backed CMOS so that the data retains even when the power is off. In general, the information stored in the CMOS RAM of the EEPROM will stay unchanged unless a configuration change has been made such as a hard drive replaced or a device added.

It is possible that the CMOS battery will fail causing CMOS data loss. If this happens, you need to install a new CMOS battery and reconfigure the BIOS settings.



Note:

The BIOS is constantly updated to improve the performance of the system board; therefore the BIOS screens in this chapter may not appear the same as the actual one. These screens are for reference purpose only.

Default Configuration

Most of the configuration settings are either predefined according to the Load Optimal Defaults settings which are stored in the BIOS or are automatically detected and configured without requiring any actions. There are a few settings that you may need to change depending on your system configuration.

Entering the BIOS Setup Utility

The BIOS Setup Utility can only be operated from the keyboard and all commands are keyboard commands. The commands are available at the right side of each setup screen.

The BIOS Setup Utility does not require an operating system to run. After you power up the system, the BIOS message appears on the screen and the memory count begins. After the memory test, the message “Press DEL to enter setup” will appear on the screen. 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 keys simultaneously.

Legends

Keys	Function
Right and Left arrows	Moves the highlight left or right to select a menu.
Up and Down arrows	Moves the highlight up or down between submenus or fields.
<Esc>	Exits to the BIOS Setup Utility.
+ (plus key)	Scrolls forward through the values or options of the highlighted field.
- (minus key)	Scrolls backward through the values or options of the highlighted field.
Tab	Selects a field.
<F1>	Displays General Help.
<F10>	Saves and exits the Setup program.
<Enter>	Press <Enter> to enter the highlighted submenu.

Scroll Bar

When a scroll bar appears to the right of the setup screen, it indicates that there are more available fields not shown on the screen. Use the up and down arrow keys to scroll through all the available fields.

Submenu

When “▶” appears on the left of a particular field, it indicates that a submenu which contains additional options are available for that field. To display the submenu, move the highlight to that field and press <Enter>.

Main

The Main menu is the first screen that you will see when you enter the BIOS Setup Utility.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
System Date			[Mon 05/26/2008]			Use [ENTER] to select a field.
System Time			9 : 3 : 54			Use [+] or [-] to configure system Date.
ATA/IDE Configuration			[Enhanced]			
Configure SATA as			[IDE]			
▶ Primary IDE Master			[Hard Disk]			
▶ Primary IDE Slave			[Not Detected]			
▶ Secondary IDE Master			[Not Detected]			
▶ Secondary IDE Slave			[Not Detected]			
▶ Tertiary IDE Master			[Not Detected]			
▶ Tertiary IDE Slave			[ATAPI CDROM]			
▶ AHCI Configuration						
▶ System Information						
					← →	Select Screen
					↑↓	Select Item
					+ -	Change Field
					Tab	Select Field
					F1	General Help
					F10	Save and Exit
					ESC	Exit
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System 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.

System 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.

ATA/IDE Configuration

This field is used to configure the IDE drives. The options are Disabled, Compatible and Enhanced.

Configure SATA As

- IDE* This option configures the Serial ATA drives as Parallel ATA physical storage device.
- AHCI* This option configures the Serial ATA drives to use AHCI (Advanced Host Controller Interface). AHCI allows the storage driver to enable the advanced Serial ATA features which will increase storage performance.

Primary IDE Master to Tertiary IDE Slave

When you enter the BIOS Setup Utility, the BIOS will auto detect the existing IDE devices then displays the status of the detected devices.

To configure an IDE drive, move the cursor to a field then press <Enter>. The parameters of the drive will appear on the screen.

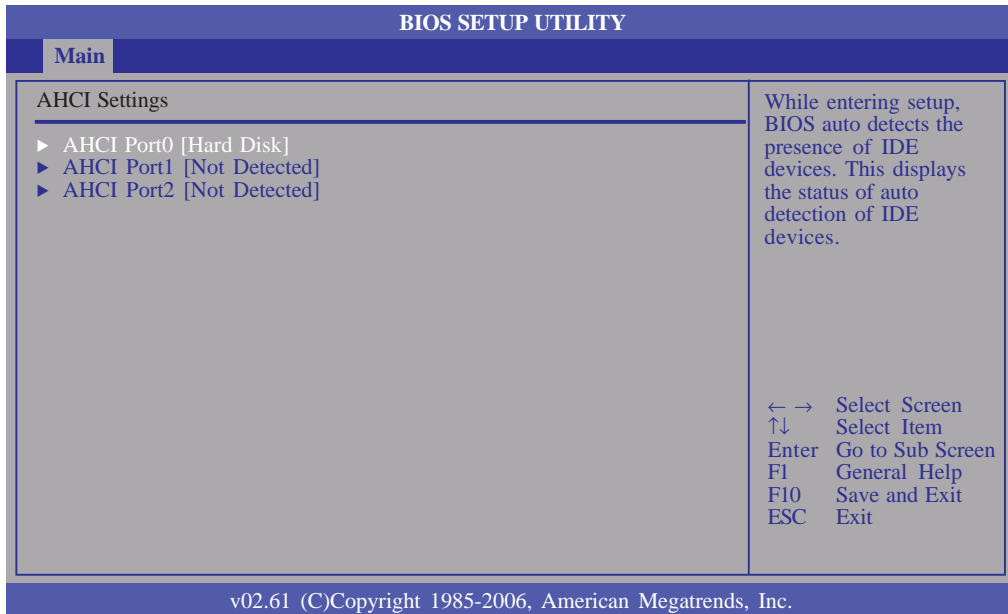
BIOS SETUP UTILITY	
Main	
Primary IDE Master	Select the type of device connected to the system.
Device : Hard Disk	
Vendor : ST380811AS	
Size : 80.0GB	
LBA Mode : Supported	
Block Mode : 16 Sectors	
PIO Mode : 4	
Async DMA : MultiWord DMA-2	
Ultra DMA : Ultra DMA-6	
S.M.A.R.T. : Supported	
Type [Auto]	
	← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit
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Type

Selects the type of IDE drive.

AHCI Configuration

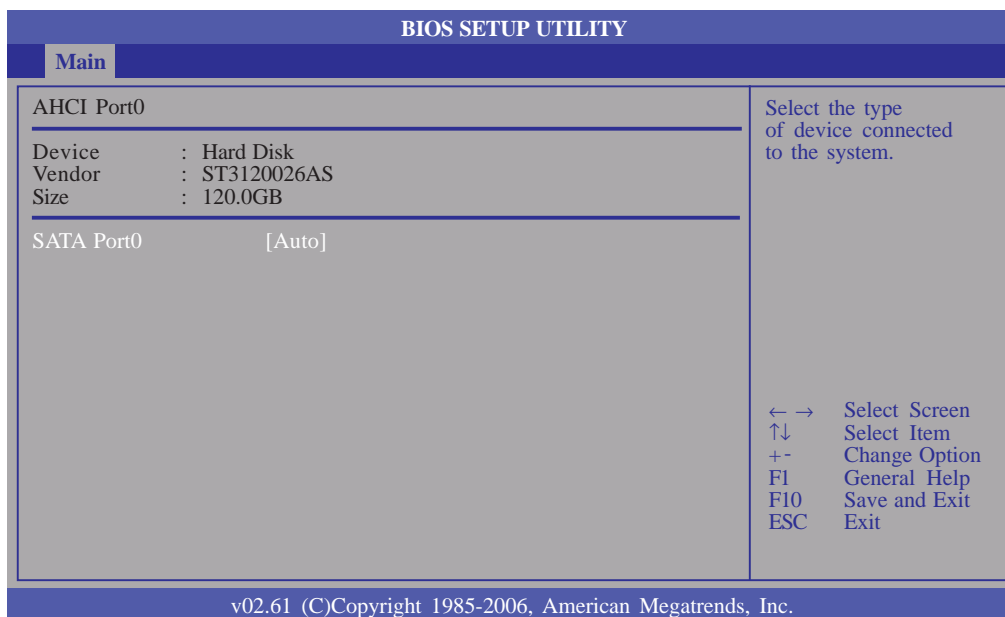
This section is available only when the Configure SATA As field is set to AHCI. Press <Enter> to go to the next submenu.



AHCI Port 0 to AHCI Port 2

Displays the status of the detected SATA drives. To configure a SATA drive, move the cursor to a field then press <Enter>.

The parameters of the drive will appear on the screen.

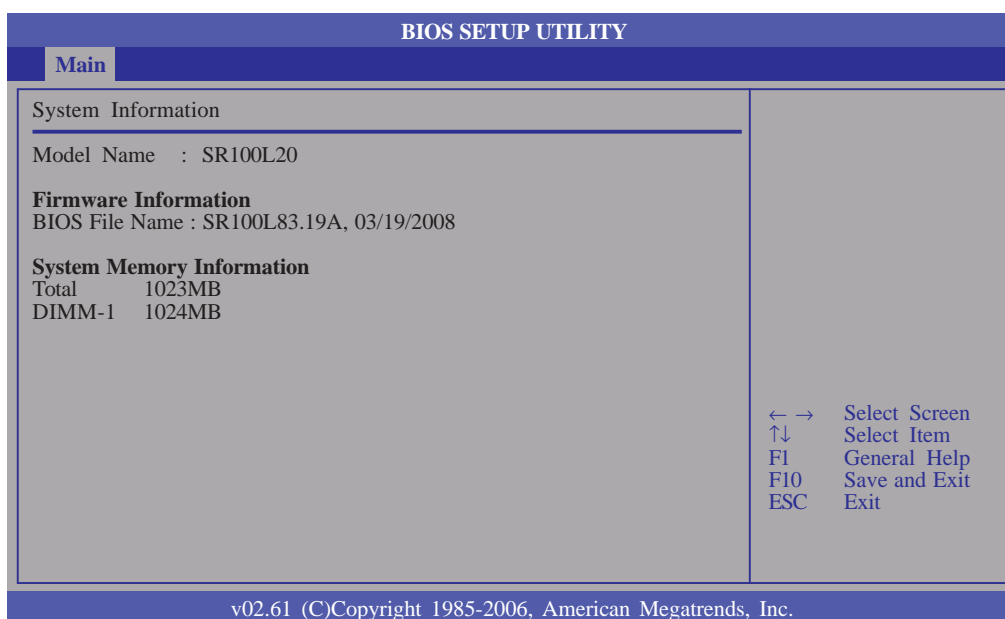


SATA Port0

Selects the type of SATA drive.

System Information

This section displays general system specifications. The BIOS automatically detects the information in this section.

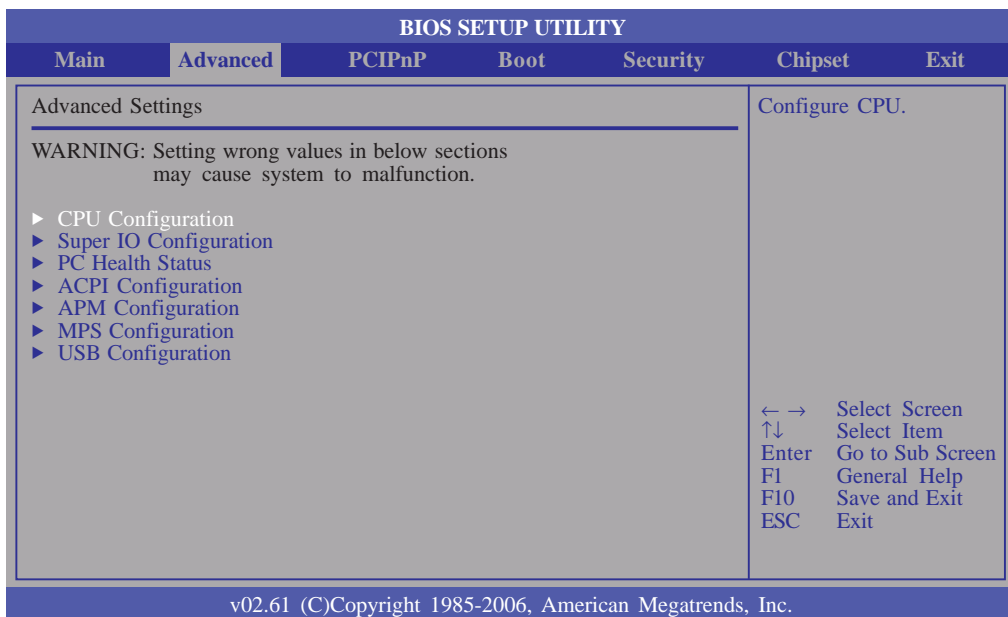


Advanced

The Advanced menu 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.

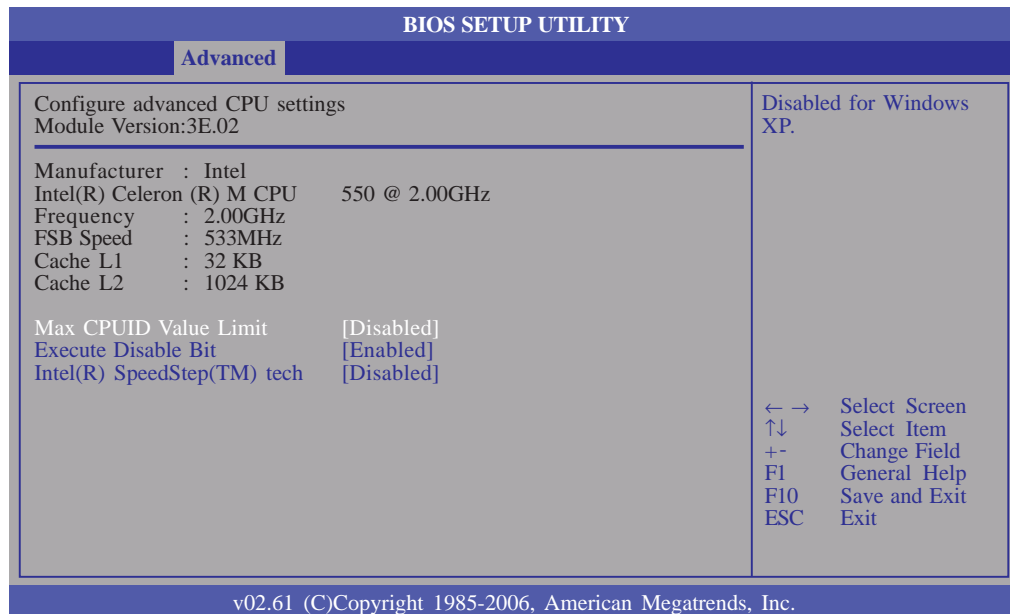
**Important:**

Setting incorrect field values may cause the system to malfunction.



CPU Configuration

This section is used to configure the CPU. It will also display detected CPU information.



Max CPUID Value Limit

Set this field to Disabled when using Windows XP. Set this field to Enabled when using legacy operating systems so that the system will boot even when it doesn't support CPUs with extended CPUID function.

Execute Disable Bit

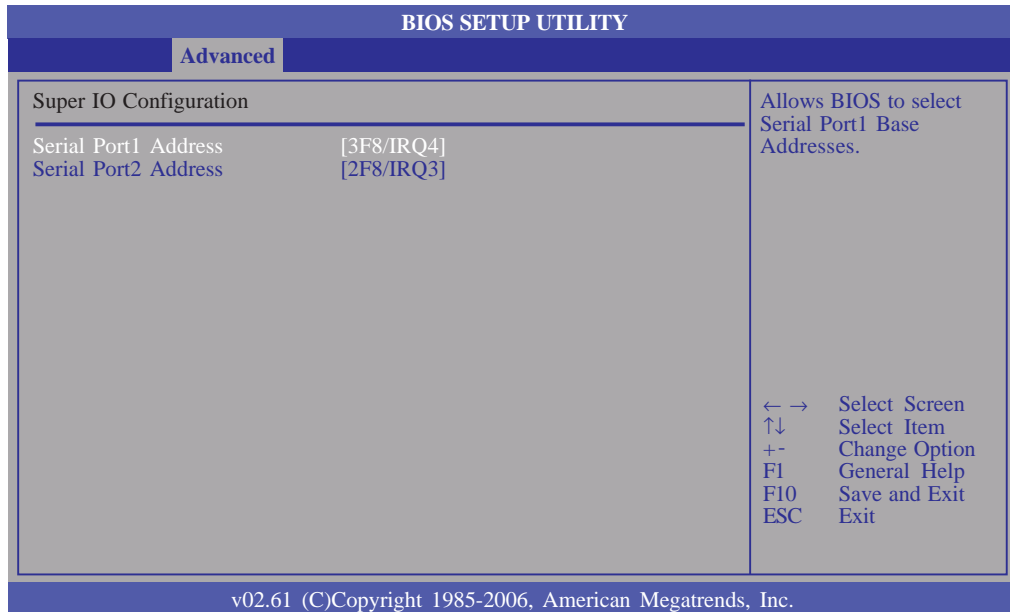
When this field is set to Disabled, it will force the XD feature flag to always return to 0.

Intel(R) SpeedStep(TM) Tech

Enables or disables GV3.

Super IO Configuration

This section is used to configure the I/O functions supported by the onboard Super I/O chip.



Serial Port1 Address

*3F8/IRQ4, 3E8/IRQ4,
2E8/IRQ3* Selects the serial port's base address.

Disabled Disables the serial port.

Serial Port2 Address

*2F8/IRQ3, 3E8/IRQ4,
2E8/IRQ3* Selects the serial port's base address.

Disabled Disables the serial port.

PC Health Status

This section is used to configure the hardware monitor function.

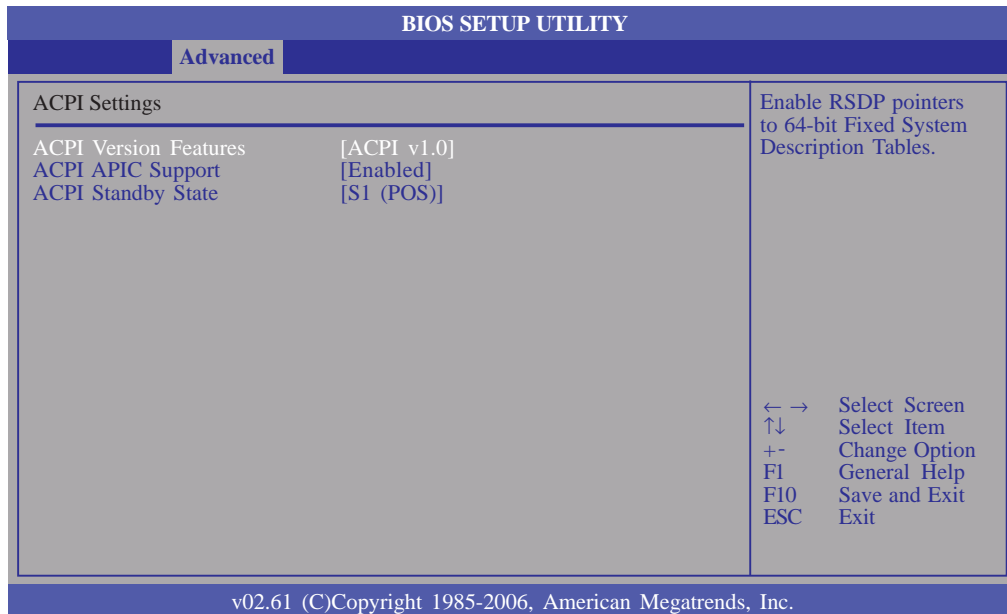
BIOS SETUP UTILITY	
Advanced	
PC Health Status	
Current System Temp	: 37°C/98°F
Current CPU Temperature	: 35°C/95°F
System Fan	: NA
CPU Fan	: 6490 RPM
Vcore	: 1.208 V
+3.3V	: 3.264 V
+12V	: 11.932 V
+5V	: 5.017 V
3VSB (V)	: 3.248 V
VBAT (V)	: 3.200 V
	← → Select Screen
	↑↓ Select Item
	F1 General Help
	F10 Save and Exit
	ESC Exit
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Current System Temp to VBAT (V)

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

ACPI Configuration

This section is used to configure the Advanced ACPI configuration.



ACPI Version Features

Selects the ACPI version.

ACPI APIC Support

Enables or disables the Advanced Configuration and Power Interface (ACPI) of the Advanced Programmable Interrupt Controller (APIC). When enabled, the ACPI APIC table pointer is included in the RSDT pointer list.

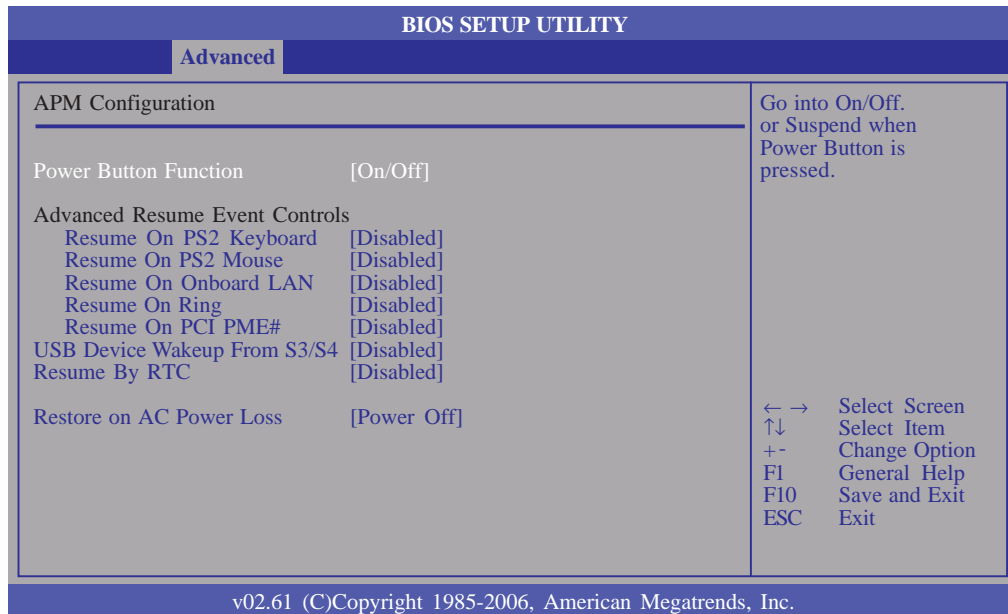
ACPI Standby State

Selects the ACPI state to be used for system suspend.

- S1 (POS)* Enables the Power On Suspend function.
- S3 (STR)* Enables the Suspend to RAM function.

APM Configuration

This section is used to configure your system to most effectively save energy.



Power Button Function

- On/Off* When the power button is pressed, it turns the system on or off.
- Suspend* When the power button is pressed, the system goes into Suspend mode.

Resume On PS2 Keyboard

Enables the PS/2 keyboard to wake up the system.

Resume On PS2 Mouse

Enables the PS/2 mouse to wake up the system.

Resume On Onboard LAN

Enables the LAN to wake up the system.

Resume On Ring

Enables the system to wake up to respond to calls coming from an external modem.

Resume On PCI PME#

Enables the system to wake up to respond to PCI card such as LAN card or modem card that 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.

USB Device Wakeup From S3/S4

This field, when enabled, allows you to use a USB device to wake up a system that is in the S3 or S4 state.

Resume By RTC

Enables the RTC to wake up the system.

RTC Alarm Date (Days)

This is used to select a date you would like the system to power-on.

RTC Alarm Time

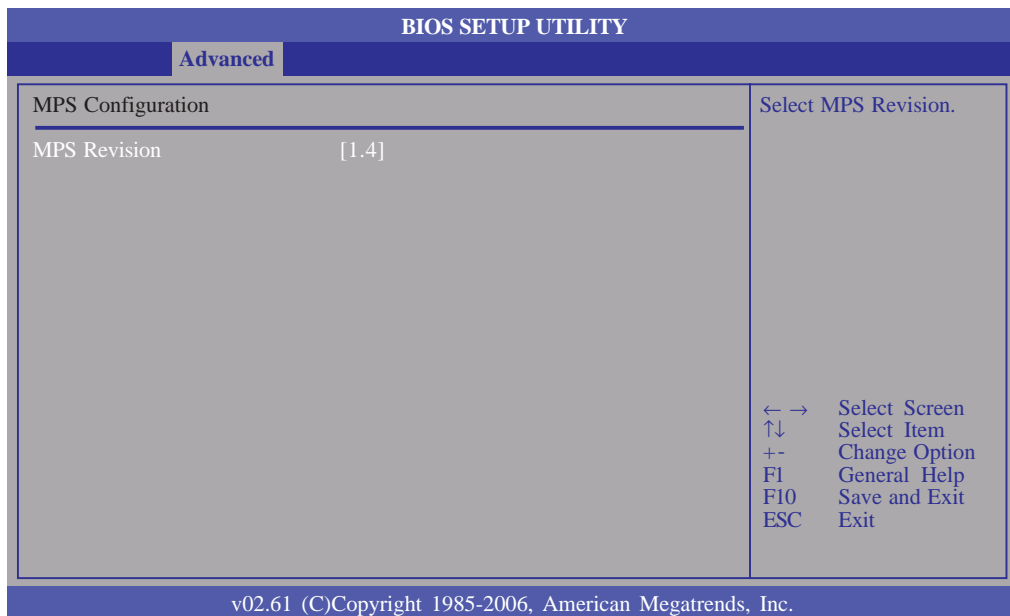
This is used to set the time you would like the system to power-on.

Restore on AC Power Loss

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

MPS Configuration

This section is used to configure the multi-processor table.

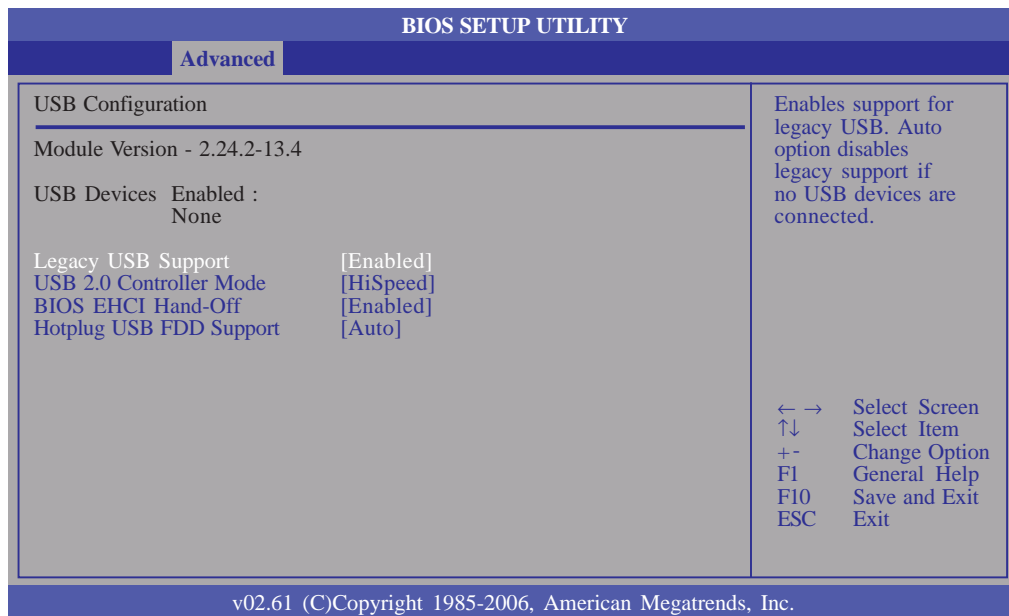


MPS Revision

Select the MPS revision used by the system.

USB Configuration

This section is used to configure USB devices.



Legacy USB Support

Due to the limited space of the BIOS ROM, the support for legacy USB keyboard (in DOS mode) is by default set to Disabled. With more BIOS ROM space available, it will be able to support more advanced features as well as provide compatibility to a wide variety of peripheral devices.

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

USB 2.0 Controller Mode

Sets the USB 2.0 controller mode to HiSpeed (480 Mbps) or FullSpeed (12 Mbps).

BIOS EHCI Hand-Off

Enable this field when using operating systems without the EHCI hand-off support.

Hotplug USB FDD Support

If no USB FDD is present, a dummy FDD device is created that will be associated with the hotplugged FDD later.

PCIPnP

This section is used to configure settings for PCI/PnP devices.



Important:

Setting incorrect field values may cause the system to malfunction.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced PCI/PnP Settings				NO: lets the BIOS configure all the devices in the system. YES: lets the operating system configure Plug and Play (PnP) devices not required for boot if your system has a Plug and Play operating system.		
WARNING: Setting wrong values in below sections may cause system to malfunction.						
Plug & Play O/S		[No]				
PCI Latency Timer		[64]				
Allocate IRQ to PCI VGA		[Yes]				
				← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit		
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Plug & Play O/S

- Yes Configures Plug and Play (PnP) devices that are not required to boot in a Plug and Play supported operating system.
- No The BIOS configures all the devices in the system.

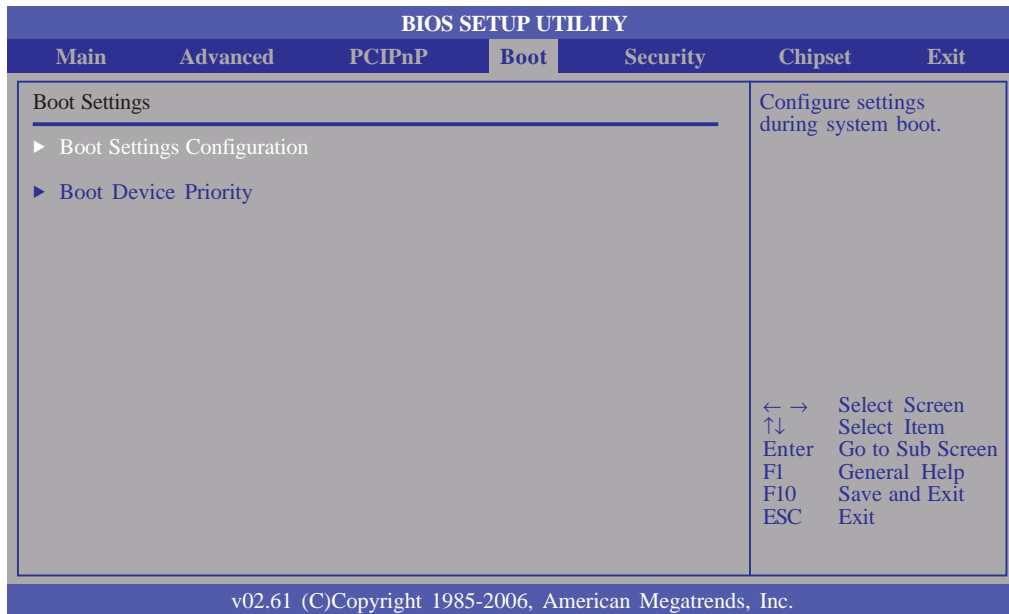
PCI Latency Timer

This feature is used to select the length of time each PCI device will control the bus before another takes over. The larger the value, the longer the PCI device can retain control of the bus.

Allocate IRQ to PCI VGA

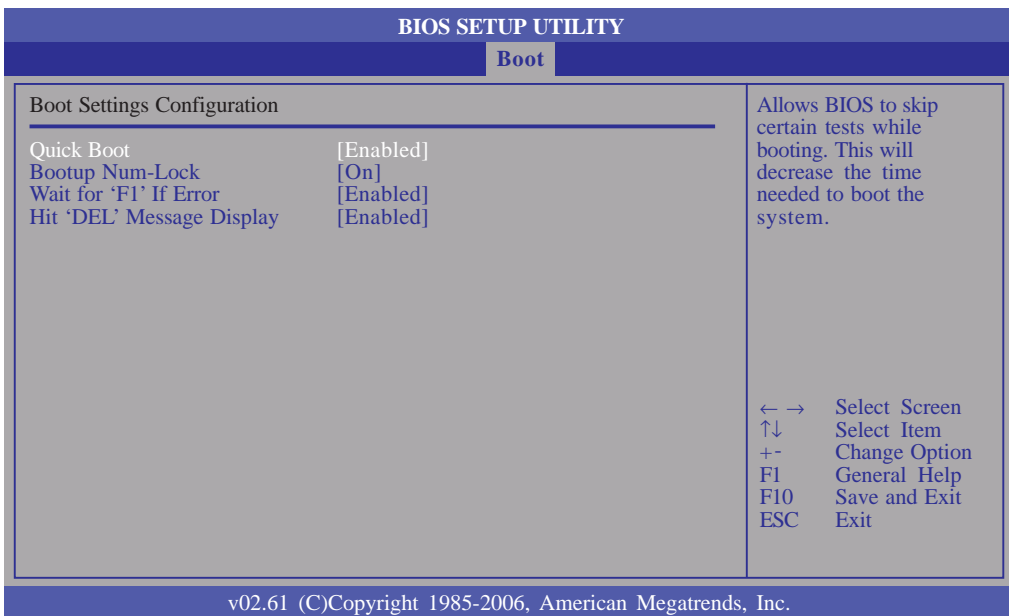
- Yes Assigns an IRQ to the PCI VGA card if the card requested for one.
- No Will not assign an IRQ to the PCI VGA card even when the card requested for one.

Boot



Boot Settings Configuration

This section is used to configure settings during system boot.



Quick Boot

When Enabled, the BIOS will shorten or skip some check items during POST. This will decrease the time needed to boot the system.

Bootup Num-Lock

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.

Wait for 'F1' If Error

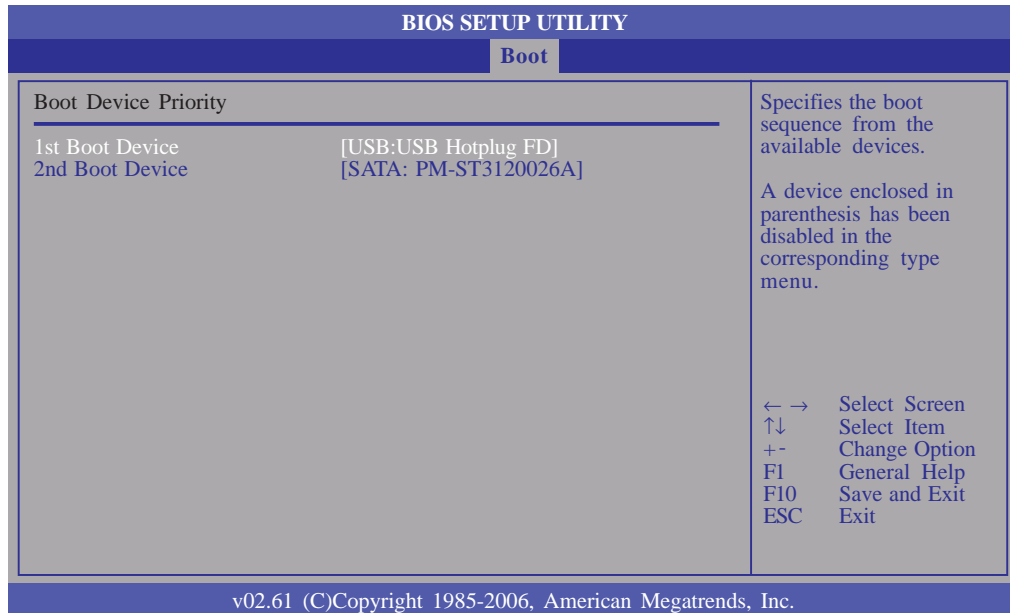
When enabled, the system will wait for the <F1> key to be pressed when an error occurs.

Hit 'DEL' Message Display

When enabled, the system displays the "Press DEL to run Setup" message during POST.

Boot Device Priority

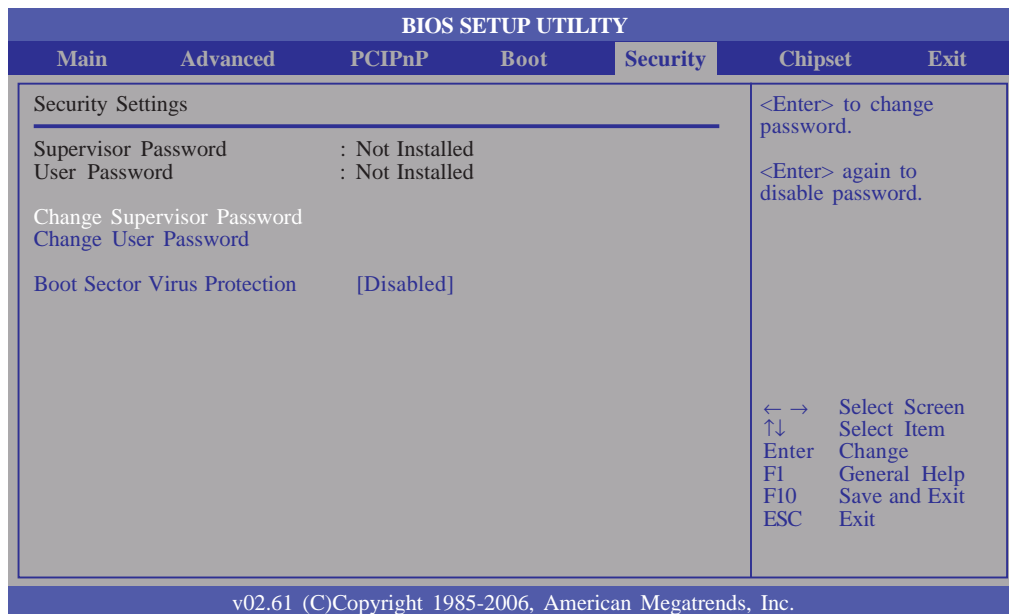
This section is used to select the boot priority sequence of the devices.



1st Boot Device and 2nd Boot Device

Select the drive to boot first and second in the "1st Boot Device" and "2nd Boot Device" fields respectively. The BIOS will boot the operating system according to the sequence of the drive selected.

Security



Change Supervisor Password

This field is used to set or change the supervisor password.

To set a new password:

1. Select the Change Supervisor Password field then press <Enter>.
2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.
3. Press <Enter> to confirm the new password.
4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

To clear the password, select Change Supervisor Password then press <Enter>. The Password Uninstalled dialog box will appear.

If you forgot the password, you can clear the password by erasing the CMOS RTC (Real Time Clock) RAM using the Clear CMOS jumper. Refer to the Jumper Settings section in chapter 2 for more information.

After you have set the supervisor password, the User Access Level field will appear.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Security Settings				Limited: only limited fields to be changed. No Access: prevent user access Setup Utility. View Only: allow access but the fields can not be changed. Full: allow change except Supervisor password.		
Supervisor Password	: Installed					
User Password	: Not Installed					
Change Supervisor Password						
User Access Level	[Full Access]					
Change User Password						
Password Check	[Setup]					
Boot Sector Virus Protection				[Disabled]		
				← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit		
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User Access Level

Selects the access level to the fields in the Setup utility.

- Limited* Allows you to change settings to some fields such as Date and Time.
- No Access* Prevents access to the Setup utility.
- View Only* Allows you to view the settings but does not allow you to change the settings.
- Full Access* Allows you to change settings to all the fields in the utility.

Change User Password

This field is used to set or change the user password.

To set a new password:

1. Select the Change User Password field then press <Enter>.
2. Type your password in the dialog box then press <Enter>. You are limited to eight letters/numbers.
3. Press <Enter> to confirm the new password.
4. When the Password Installed dialog box appears, select OK.

To change the password, repeat the same steps above.

After you have set the user password, the Clear User Password and Password Check fields will appear.

Clear User Password

To clear the password, select Clear User Password then press <Enter>. The Password Uninstalled dialog box will appear:

Password Check

- | | |
|---------------|--|
| <i>Setup</i> | The BIOS checks for the user password whenever accessing the Setup utility. |
| <i>Always</i> | The BIOS checks for the user password when accessing the Setup utility and booting the system. |

Boot Sector Virus Protection

Enables or disables the boot sector virus protection function.

Chipset

This section is used to configure the system based on the specific features of the chipset.



Important:

Setting incorrect field values may cause the system to malfunction.

BIOS SETUP UTILITY						
Main	Advanced	PCIPnP	Boot	Security	Chipset	Exit
Advanced Chipset Settings <hr/> WARNING: Setting wrong values in below sections may cause system to malfunction. ▶ North Bridge Configuration ▶ South Bridge Configuration					Configure North Bridge features. ← → Select Screen ↑↓ Select Item Enter Go to Sub Screen F1 General Help F10 Save and Exit ESC Exit	
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

North Bridge Configuration

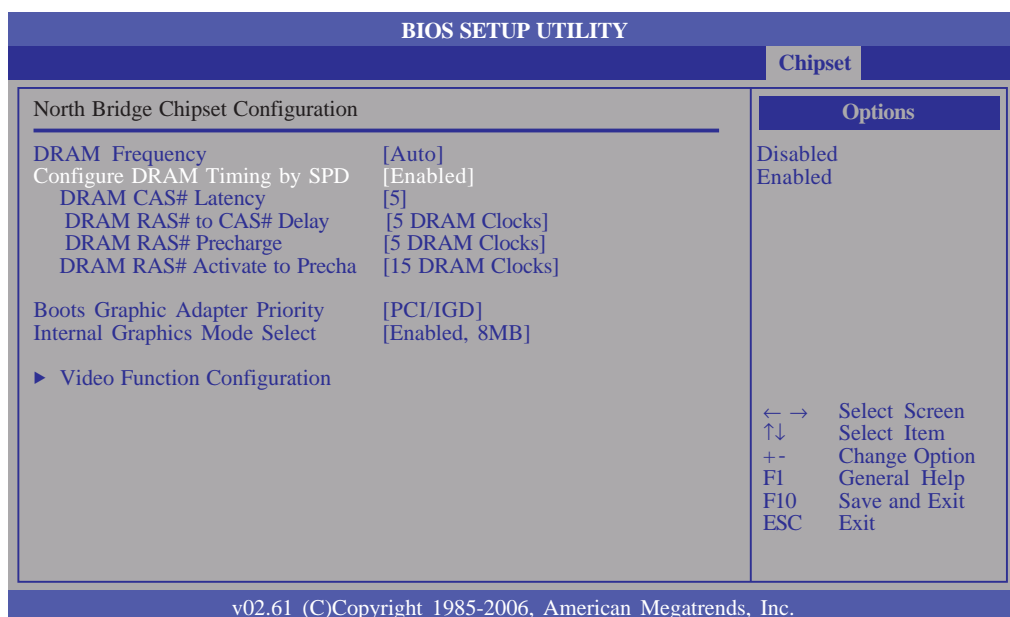
BIOS SETUP UTILITY						
		Chipset				
North Bridge Chipset Configuration <hr/> DRAM Frequency [Auto] Configure DRAM Timing by SPD [Enabled] Boots Graphic Adapter Priority [PCI/IGD] Internal Graphics Mode Select [Enabled, 8MB] ▶ Video Function Configuration		<table border="1"> <thead> <tr> <th>Options</th> </tr> </thead> <tbody> <tr> <td>Auto</td> </tr> <tr> <td>533 MHz</td> </tr> <tr> <td>667 MHz</td> </tr> </tbody> </table> ← → Select Screen ↑↓ Select Item +- Change Option F1 General Help F10 Save and Exit ESC Exit	Options	Auto	533 MHz	667 MHz
Options						
Auto						
533 MHz						
667 MHz						
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

DRAM Frequency

Selects the operating frequency of the DRAM.

Configure DRAM Timing 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 field is enabled, the system will run according to the information in the EEPROM.



DRAM CAS# Latency

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

DRAM RAS# to CAS# Delay

This field is used to select the latency between the DRAM active command and the read/write command.

DRAM RAS# Precharge

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

DRAM RAS# Activate to Precha

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

Boots Graphic Adapter Priority

Selects which graphics controller to use as the primary boot device.

Internal Graphics Mode Select

Selects the amount of system memory used by the internal graphics device.

Video Function Configuration

BIOS SETUP UTILITY		Chipset
Video Function Configuration		Options
DVMT Mode Select	[DVMT Mode]	Fixed Mode
DVMT/FIXED Memory	[256MB]	DVMT Mode
Boot Display Device	[VBIOS-Default]	
Boot Display Preferences	[Auto]	
Spread Spectrum Clock	[Disabled]	
		← → Select Screen
		↑↓ Select Item
		+ - Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit
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DVMT Mode Select

DVMT Mode Memory that is dynamically allocated based on memory requests made by an application and are released back to the system once the requesting application has been terminated.

Fixed Mode Non-contiguous pagedlocked memory allocated during driver initialization to provide a static amount of memory.

DVMT/FIXED Memory

Selects the graphics memory size used by the DVMT/Fixed mode.

Boot Display Device

Selects the type of display to use when the system boots.

Boot Display Preferences

Selects the boot priority sequence of the display devices.

Spread Spectrum Clock

The options are Enabled and Disabled.

South Bridge Configuration

BIOS SETUP UTILITY		Chipset
South Bridge Chipset Configuration		Options
USB Functions	[Enabled]	Disabled
USB 2.0 Controller	[Enabled]	Enabled
HDA Controller	[Enabled]	
OnBoard GLAN 1	[Enabled]	
Initial OnBoard GLAN ROM	[Disabled]	
Clock Generator SPREAD	[Disabled]	
		← → Select Screen
		↑↓ Select Item
		+ - Change Option
		F1 General Help
		F10 Save and Exit
		ESC Exit
v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.		

USB Functions

Enables or disables the USB function.

USB 2.0 Controller

Enables or disables the USB 2.0 controller.

HDA Controller

Enables or disables the High Definition Audio controller.

OnBoard GLAN 1

Enables or disables the onboard Gigabit LAN 1.

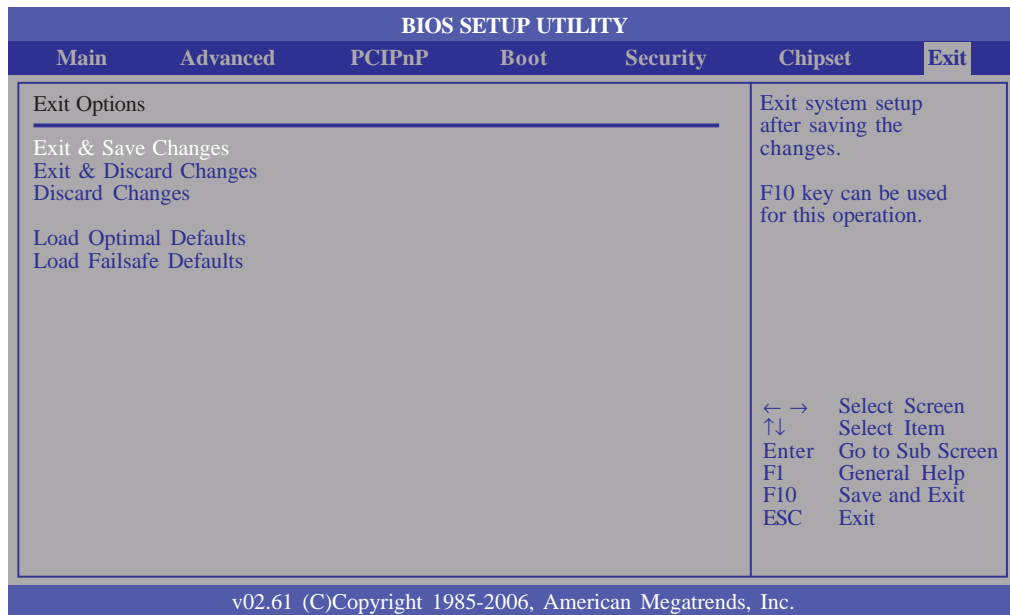
Initial OnBoard GLAN ROM

Enables or disables the onboard Gigabit LAN ROM.

Clock Generator SPREAD

The default is Disabled. If this field was Enabled and a connected device caused instability to the system, set this field to Disabled.

Exit



Exit & Save Changes

To save the changes and exit the Setup utility, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes.

You can also press <F10> to save and exit Setup.

Exit & Discard Changes

To exit the Setup utility without saving the changes, select this field then press <Enter>. You may be prompted to confirm again before exiting.

You can also press <ESC> to exit without saving the changes.

Discard Changes

To discard the changes, select this field then press <Enter>. A dialog box will appear. Confirm by selecting Yes to discard all changes made and restore the previously saved settings.

You can also press <F7> to discard the changes.

Load Optimal Defaults

Loads the optimal default values from the BIOS ROM.

You can also press <F9> to load optimal default values.

Load Failsafe Defaults

Loads the fail-safe default values from the BIOS ROM.

You can also press <F8> to load the fail-safe default values.

Updating the BIOS

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

To execute the utility, type:

```
A:> AFUDOS BIOS_File_Name /b /n /c /p
```

then press <Enter>.

```
C:\>AFUDOS.EXE SR100N78.29A /P /B /N /C
-----+-----
                AMI Firmware Update Utility Ver. 4.14
                Copyright (C) 2007 American Megatrends Inc. All Rights Reserved.
-----+-----
- Bootblock checksum ..... ok
- Module checksums ..... ok
- Erasing flash ..... done
- Writing flash ..... done
- Verifying flash ..... done
- Erasing NVRAM ..... done
- Writing NVRAM ..... done
- Verifying NVRAM ..... done
- Erasing Bootblock ..... done
- Writing Bootblock ..... done
- Verifying Bootblock ..... done
- CMOS checksum destroyed
- Program ended normally

C:\>_
```


Chapter 4 - Supported Software

Drivers for Windows Vista System

The CD that came with the system board contains drivers, utilities and software applications required to enhance the performance of the system board. Insert the CD into a CD-ROM drive. The autorun screen (Mainboard Utility CD) will appear. If after inserting the CD, "Autorun" did not automatically start, please go directly to the root directory of the CD and double-click "Setup".



Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click “Intel Chipset Software Installation Utility” on the main menu.

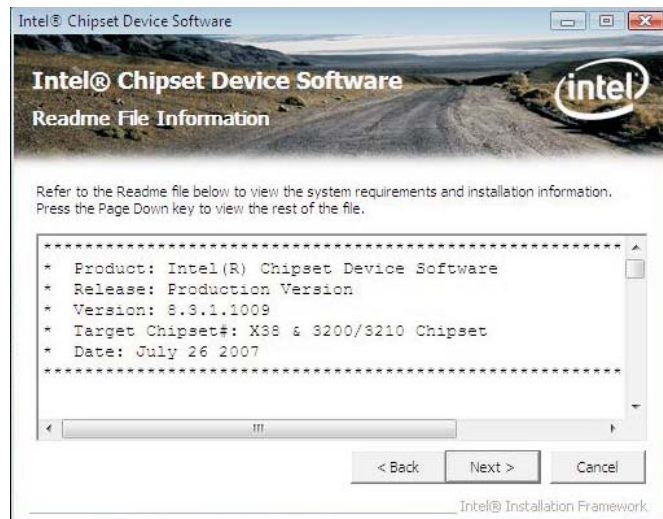
1. Setup is now ready to install the utility. Click Next.



2. Read the license agreement then click Yes.



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



- Setup is now installing the driver. Click Next to continue.



- After completing installation, click Finish to exit setup.



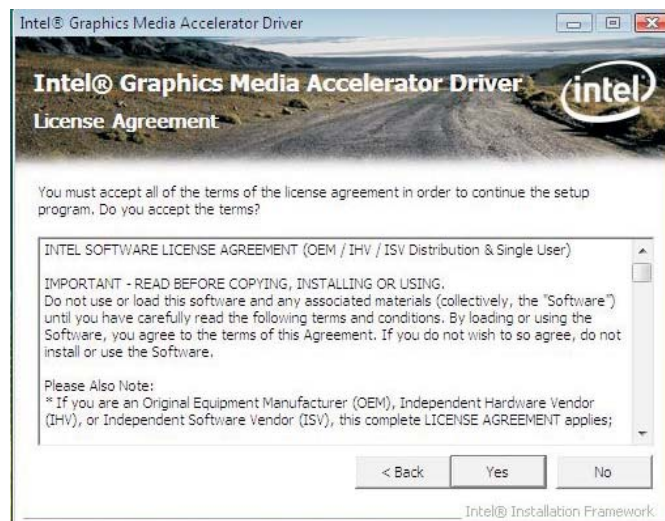
Intel Graphics Drivers

To install the driver, click “Intel Graphics Drivers” on the main menu.

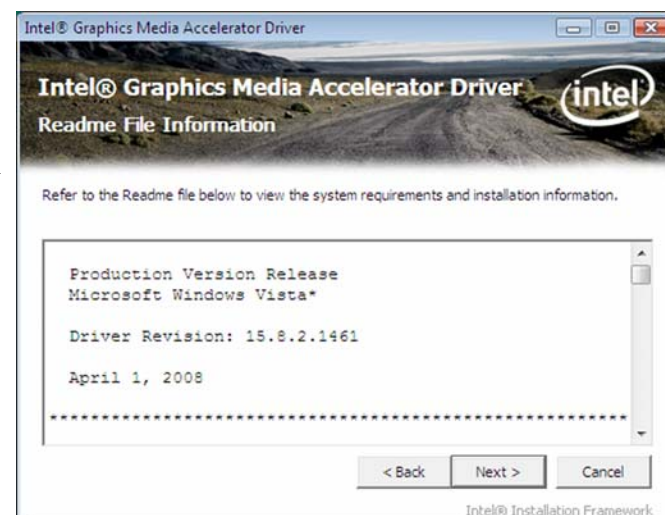
1. Setup is now ready to install the graphics driver. Click Next.



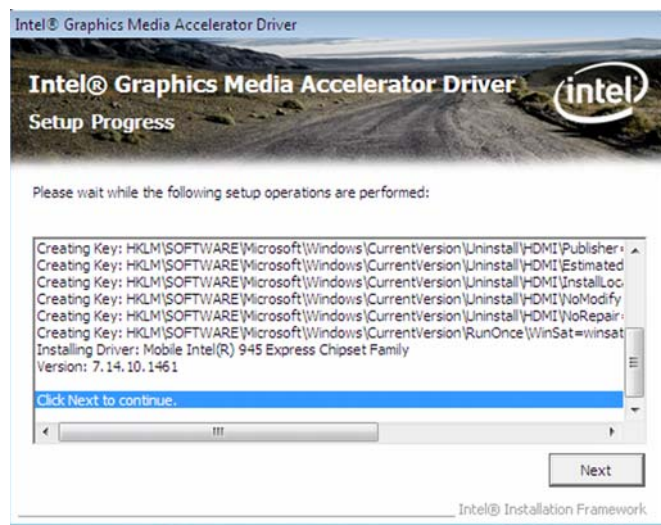
2. Read the license agreement then click Yes.



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



4. Setup is now installing the driver. Click Next to continue.



5. Click “Yes, I want to restart this computer now” then click Finish.

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



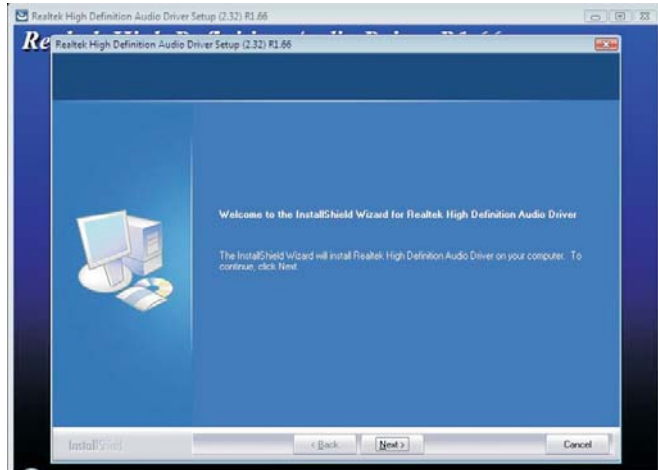
Note:

After installing the graphics driver and the system rebooted, the screen will turn black for 1 to 2 minutes (while WinSAT is running) before the Windows Vista desktop appears. This will happen the first time you reboot after installing the graphics driver as this is the time when the system will automatically detect and mount the graphics driver.

Audio Drivers

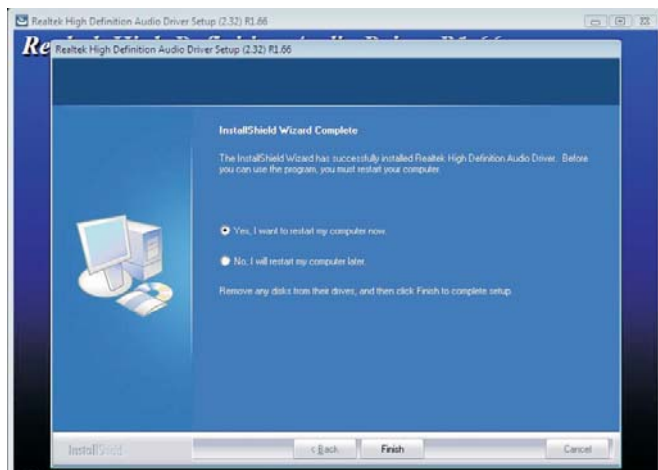
To install the driver, click “Audio Drivers” on the main menu.

1. Click Next to start the installation.
2. Follow the remainder of the steps on the screen; clicking “Next” each time you finish a step.



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

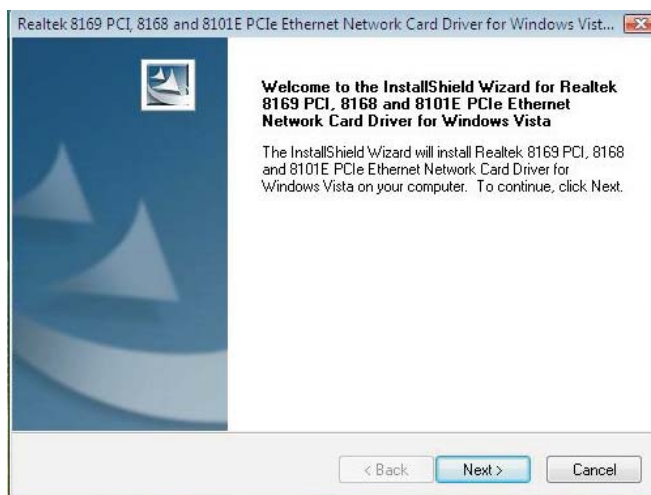
Restarting the system will allow the new software installation to take effect.



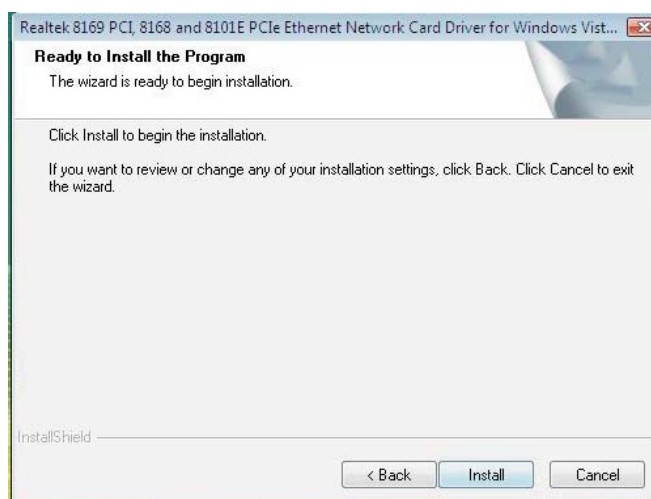
LAN Drivers

To install the driver, click “LAN Drivers” on the main menu.

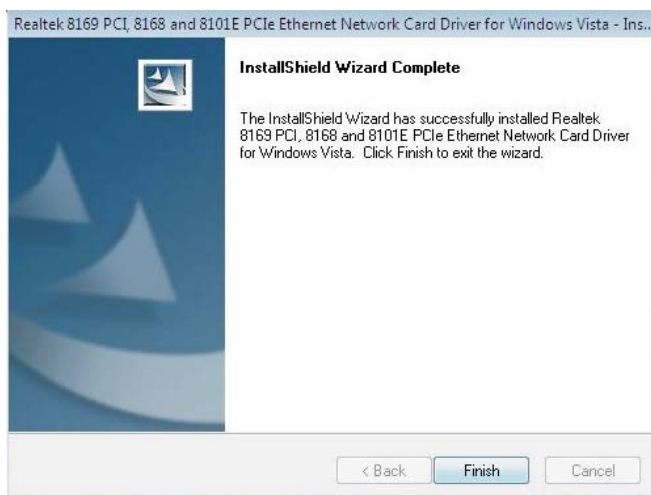
1. Setup is now ready to install the driver. Click Next.



2. Click Install to begin installation.



3. After completing installation, click Finish to exit setup.

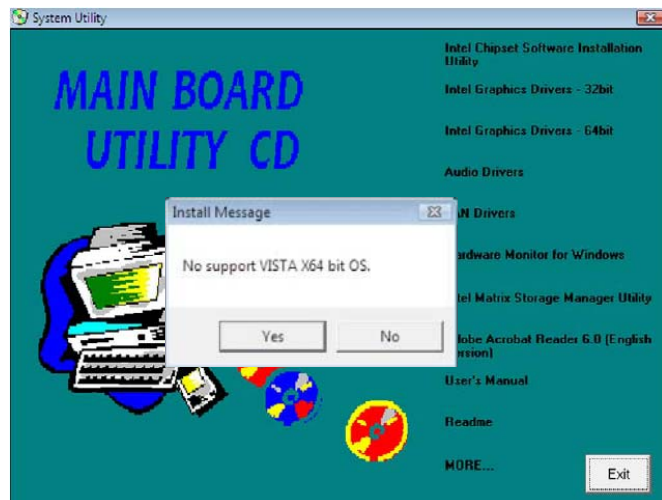


Hardware Monitor for Windows

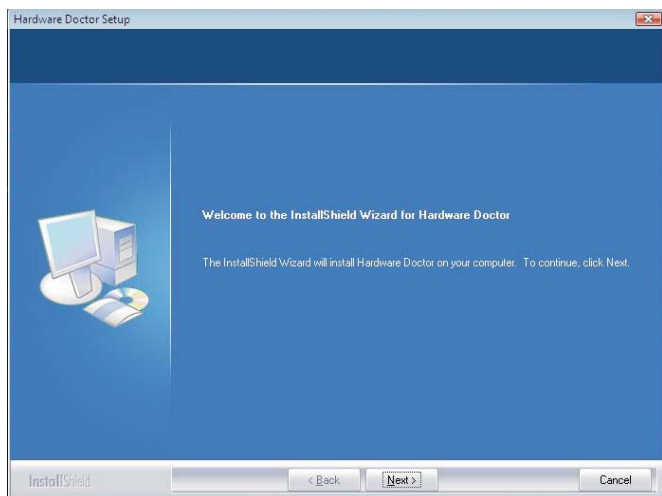
The Hardware Monitor for Windows utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

To install the utility, click "Hardware Monitor for Windows" on the main menu.

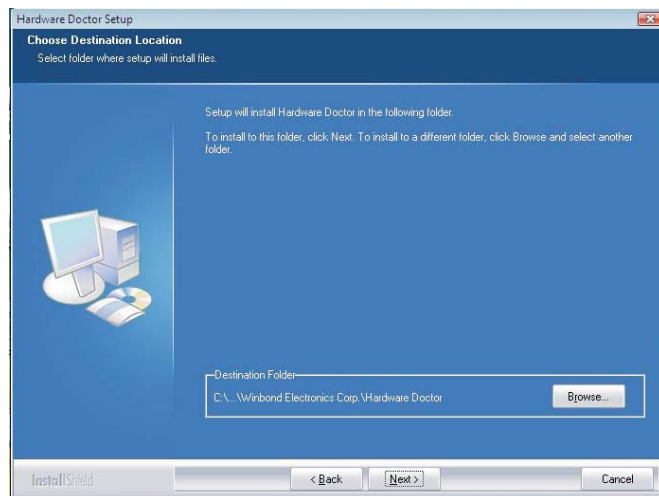
1. Click Yes to continue.



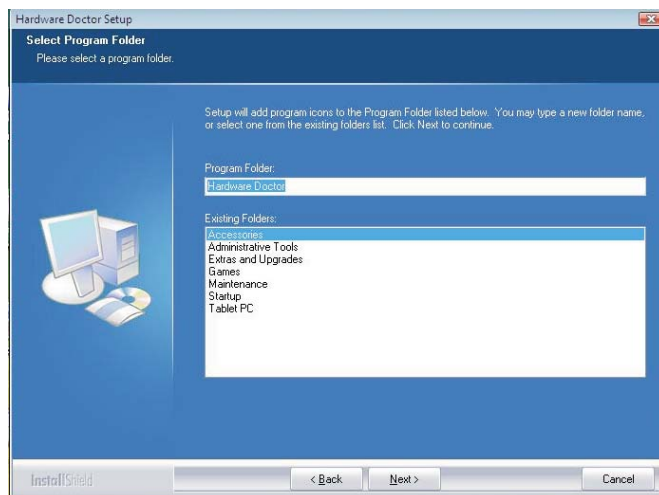
2. Setup is now ready to install the utility. Click Next.



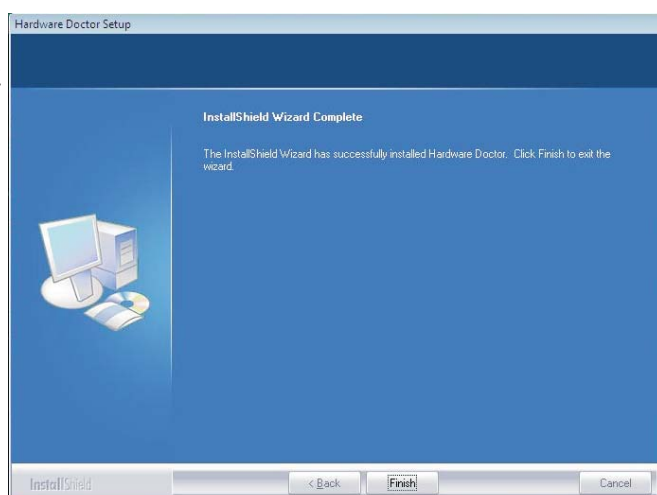
- Click Next to install or click Browse to select another folder.



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



- After completing installation, click Finish to exit setup.

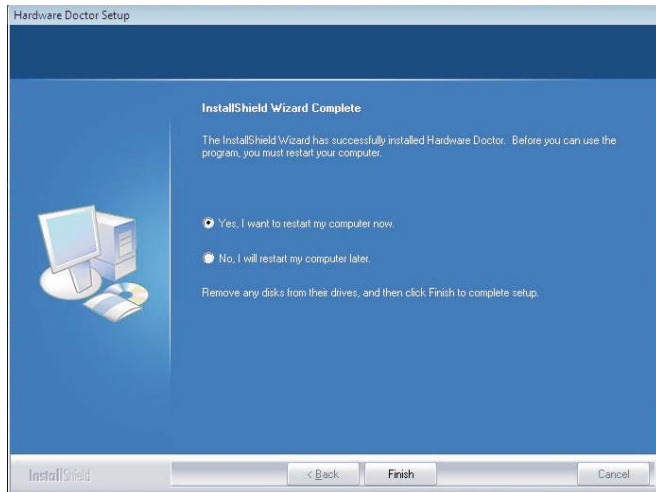


- Click Yes if you want to create a Hardware Doctor shortcut at your desktop.



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

Restarting the system will allow the utility to take effect.

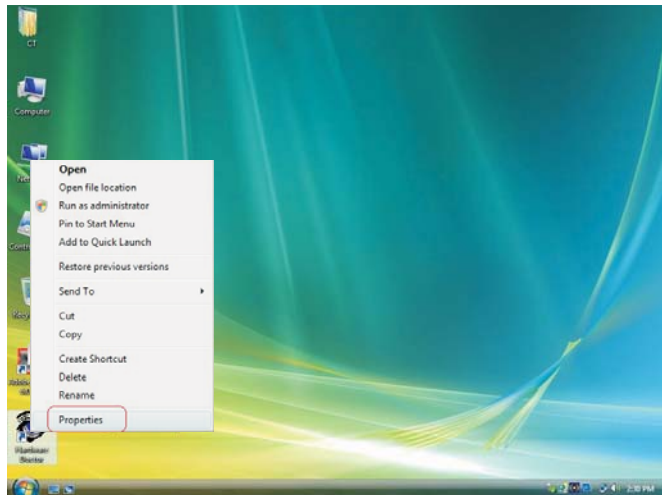


Using the Hardware Monitor for Windows Utility

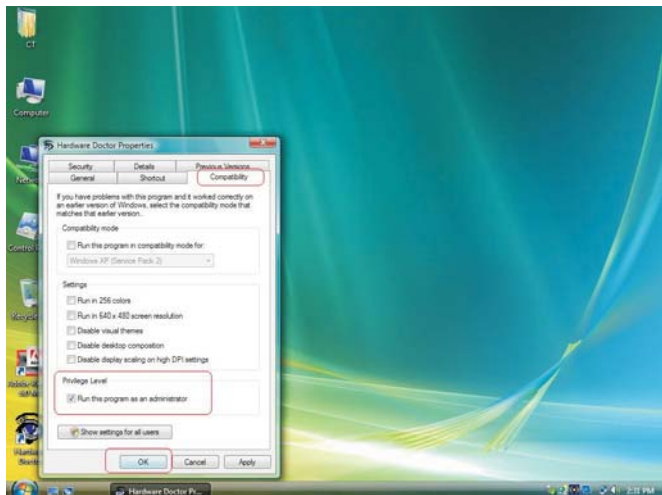
1. When you try to run the utility, which is usually done by double-clicking the Hardware Doctor shortcut, an error message will appear.



2. To solve this problem, right-click the Hardware Doctor shortcut, then select Properties.



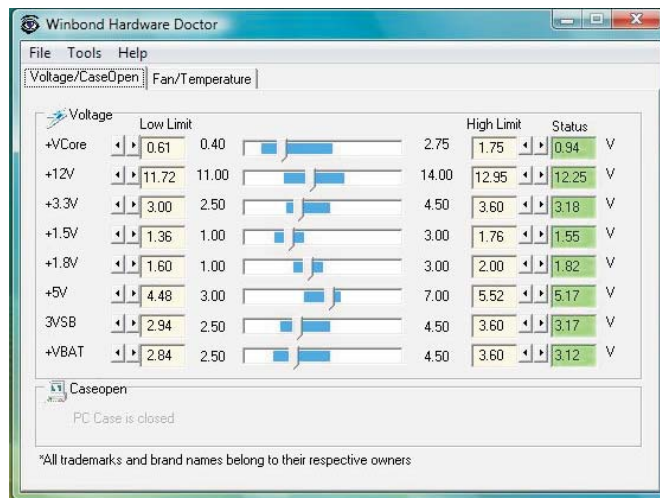
3. Select the Compatibility tab, click "Run this program as an administrator" then click OK.



4

Supported Software

4. You can now access the utility.



Intel Matrix Storage Manager Utility

Intel Matrix Storage Manager is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

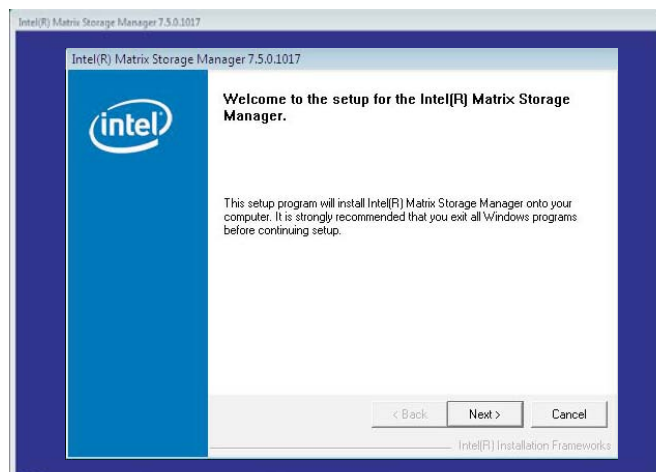


Note:

This utility is supported only when the Configure SATA As field is set to AHCI. (The Configure SATA As field is in the Main menu of the BIOS utility.)

To install the utility, click “Intel Matrix Storage Manager Utility” on the main menu.

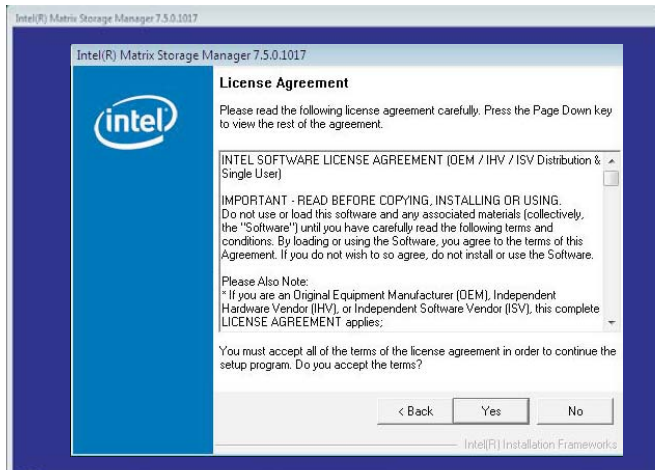
1. Setup is now ready to install the utility. Click Next.



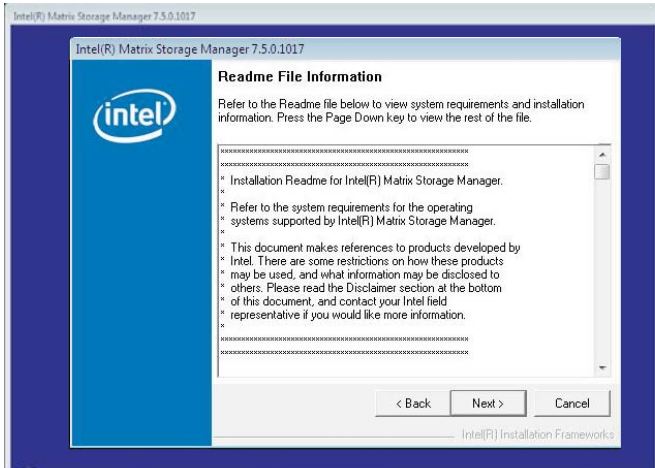
2. Read the Warning information carefully then click Next to begin installation.



3. Read the license agreement then click Yes.

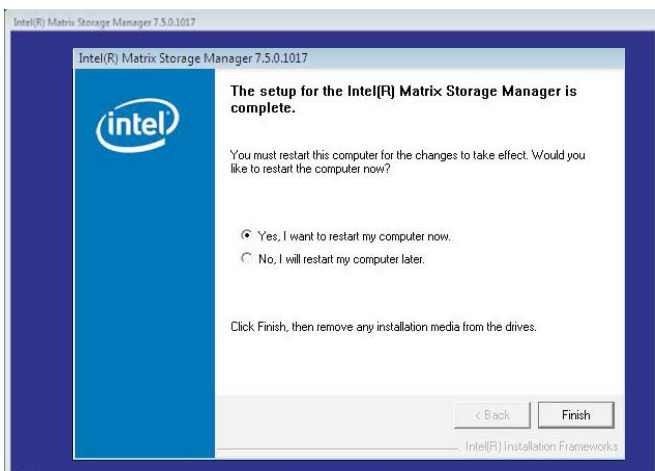


4. Go through the readme document for system requirements and installation tips then click Next.



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

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



Adobe Acrobat Reader 6.0 (English Version)

To install, click “Adobe Acrobat Reader 6.0 (English Version)” on the main menu.

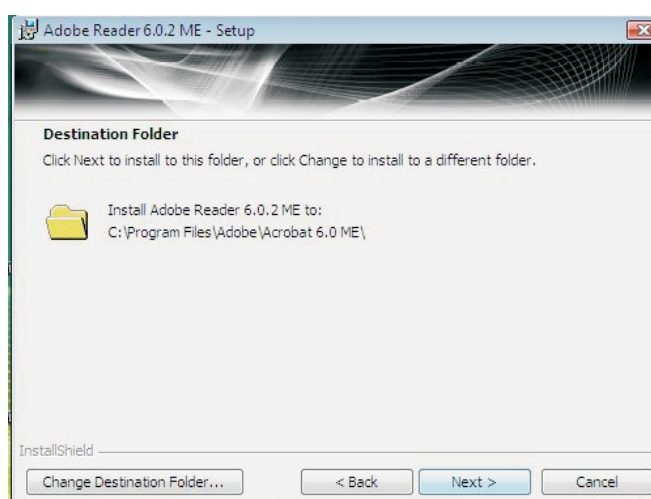
1. Click Next to continue.



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



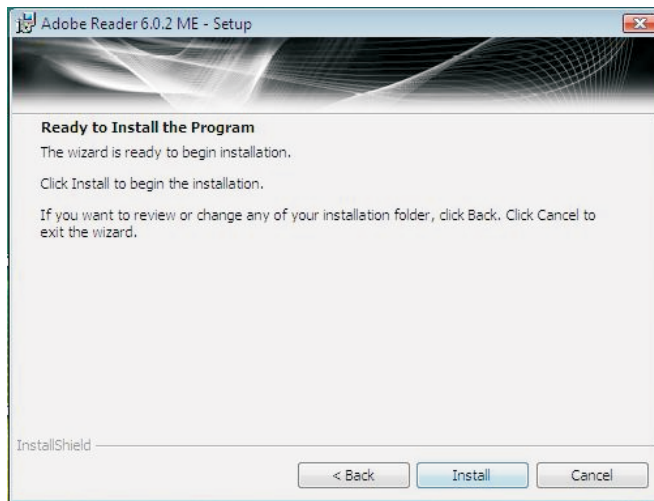
3. Click Next to install or click Change Destination Folder to select another folder.



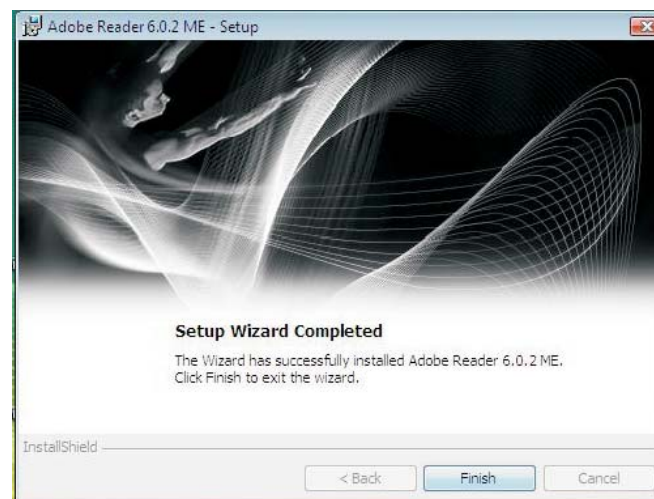
4

Supported Software

4. Click Install to begin installation.



5. Click Finish to exit installation.

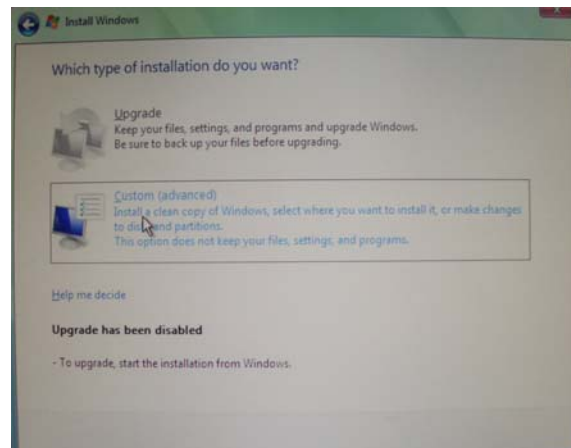


Installing the AHCI Driver During Windows Vista Installation

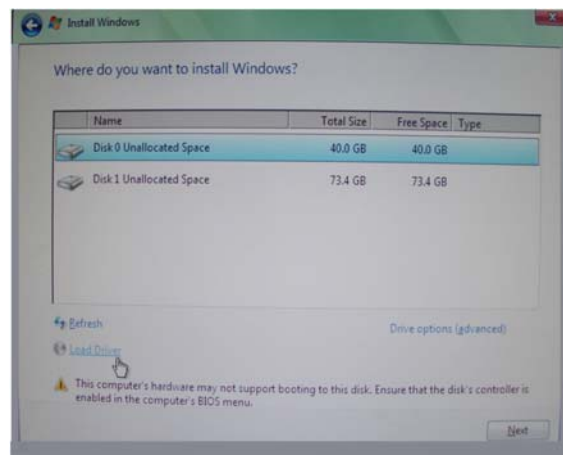
The AHCI driver must be installed during Windows® Vista installation. This is required in order to install the operating system onto a hard drive when in AHCI mode.

1. Start Windows Setup by booting from the installation CD. Follow the steps on the screen.

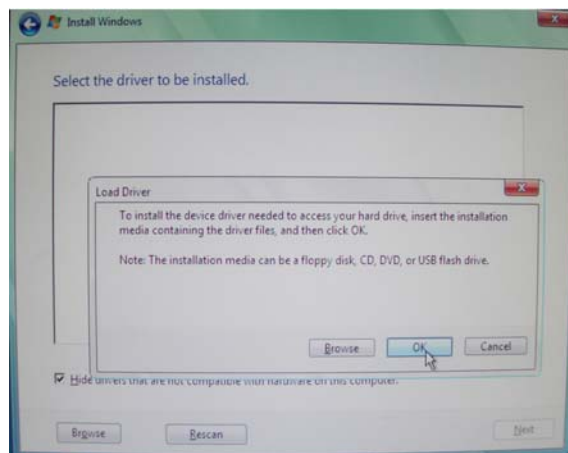
When the screen on the right appears, click Custom (advanced).



2. Select Load Driver:



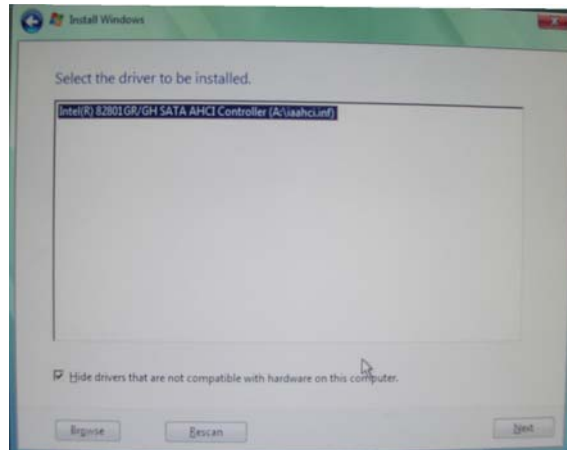
3. Insert the provided floppy diskette then click OK.



4

Supported Software

4. The screen on the right will appear. Select the driver:



Creating an AHCI Driver Floppy Diskette under Vista

The system board package includes floppy diskettes which are needed when you install the AHCI driver during Windows Vista installation. If in any case you lost the diskette, you can create another one by following the steps below.

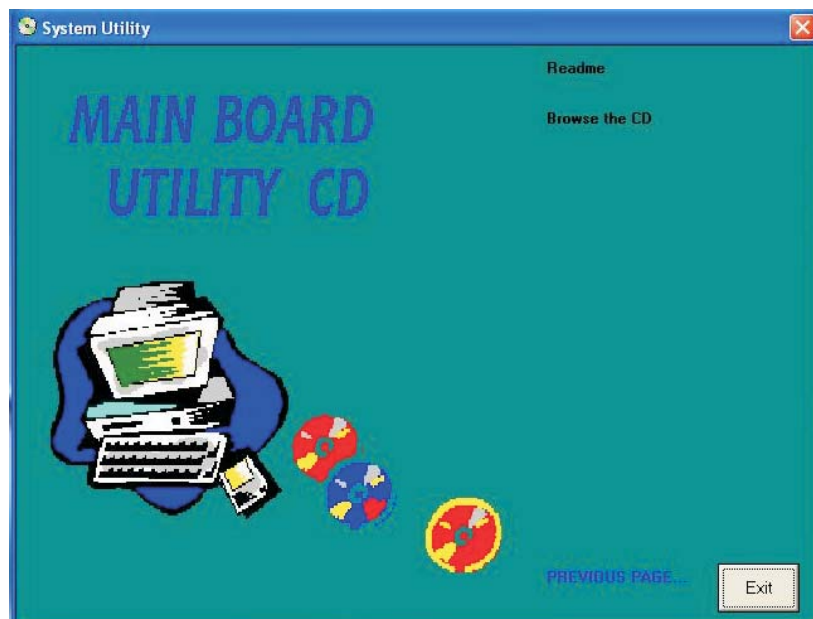
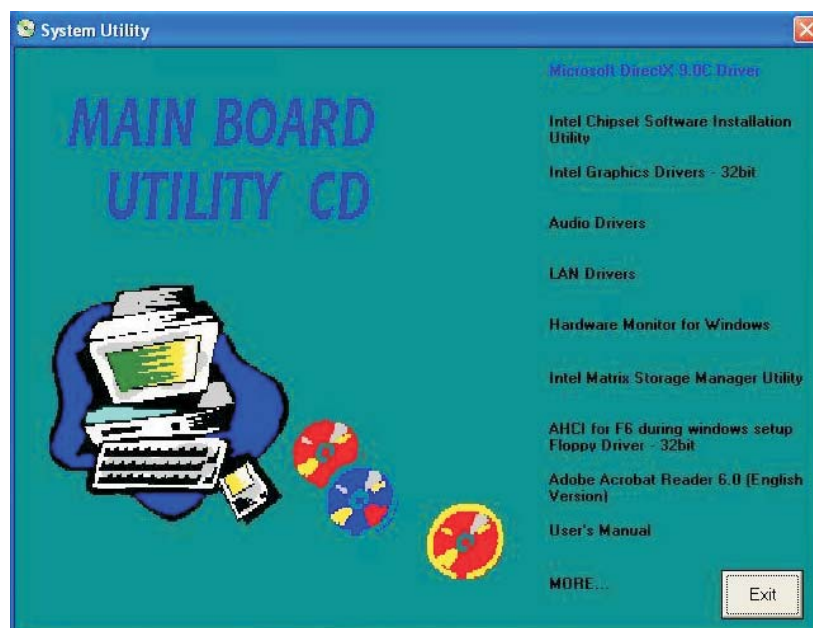
1. Insert the provided CD into a CD-ROM drive.
2. The execution files are located in:

```
drive:>\AHCI_RAID\F6FLOPPY
```
3. Run `f6flpy32.exe` (for 32-bit system) or `f6flpy64.exe` (for 64-bit system).
4. Insert a blank floppy diskette then click OK.
5. The system will format and write the necessary driver files into the diskette.

Drivers for Windows XP System

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

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



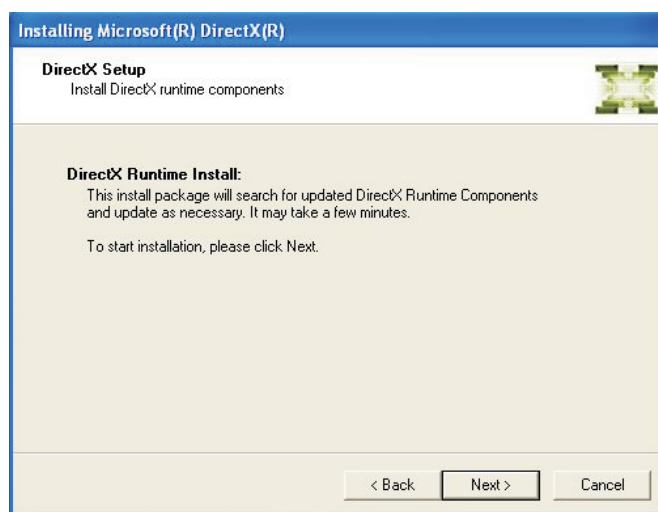
Microsoft DirectX 9.0C Driver

To install the driver, click “Microsoft DirectX 9.0C Driver” on the main menu.

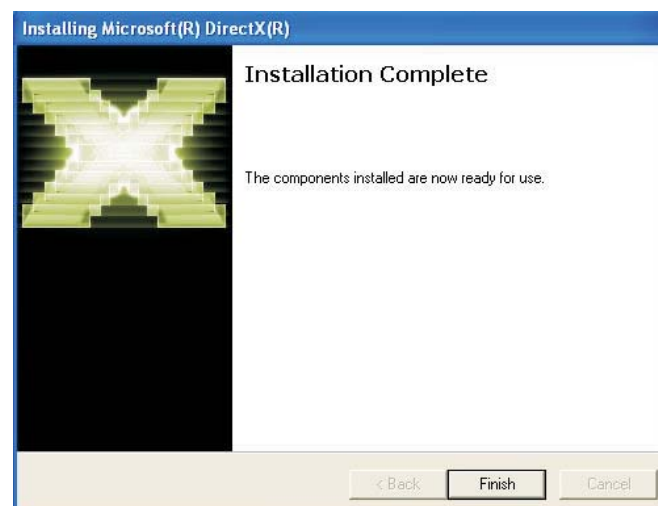
1. Click “I accept the agreement” then click Next.



2. To start installation, click Next.



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



Intel Chipset Software Installation Utility

The Intel Chipset Software Installation Utility is used for updating Windows® INF files so that the Intel chipset can be recognized and configured properly in the system.

To install the utility, click “Intel Chipset Software Installation Utility” on the main menu.

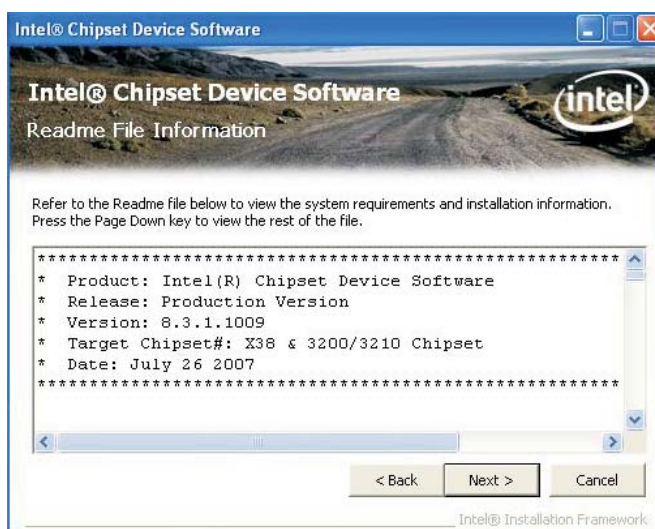
1. Setup is now ready to install the utility. Click Next.



2. Read the license agreement then click Yes.



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



- Setup is now installing the driver. Click Next to continue.



- Click "Yes, I want to restart this computer now" then click Finish.

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



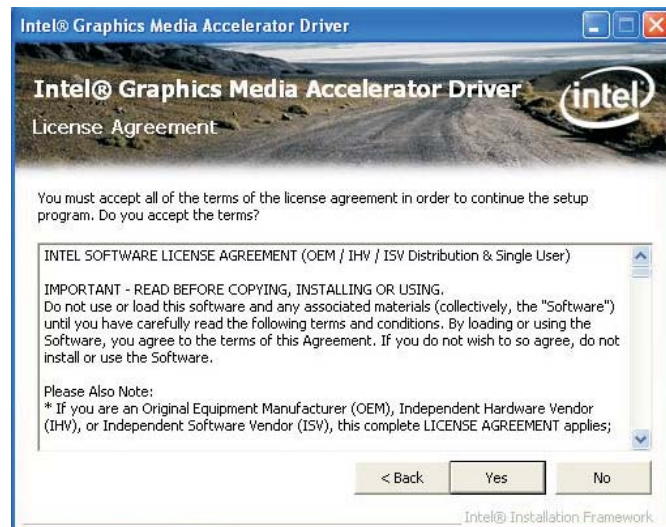
Intel Graphics Drivers

To install the driver, click “Intel Graphics Drivers” on the main menu.

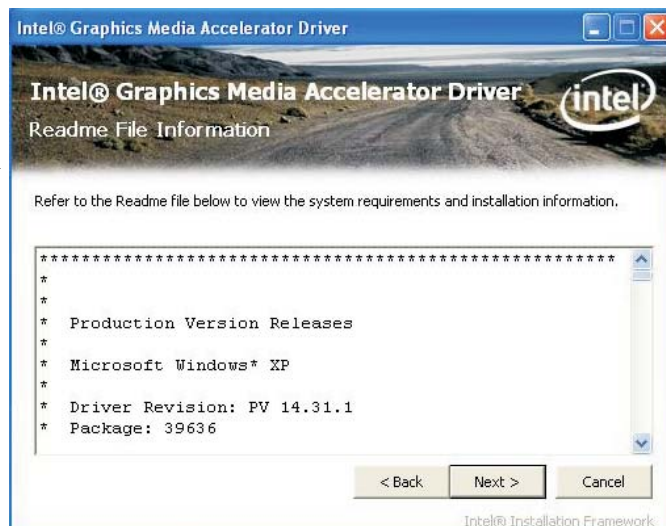
1. To start installation, click Next.



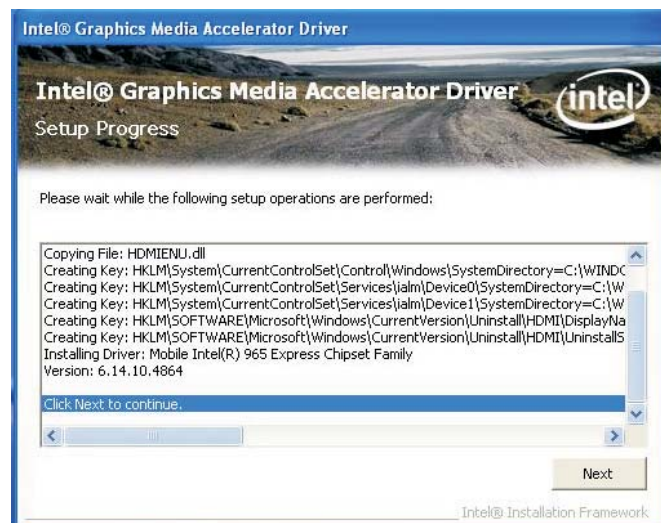
2. Read the license agreement then click Yes.



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

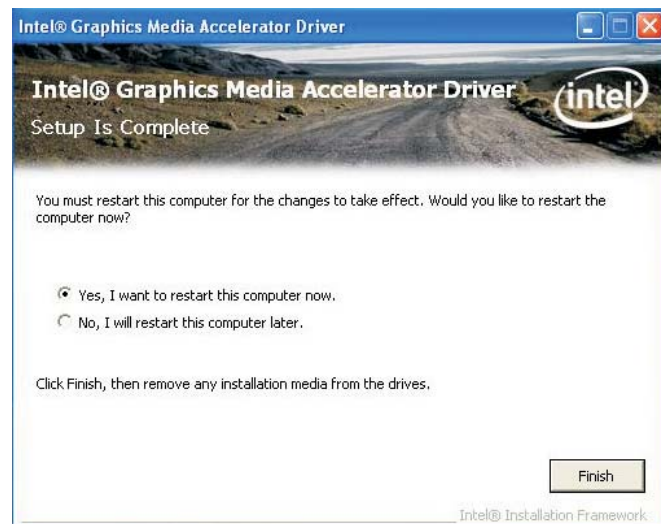


4. Setup is now installing the driver. Click Next to continue.



5. Click “Yes, I want to restart this computer now” then click Finish.

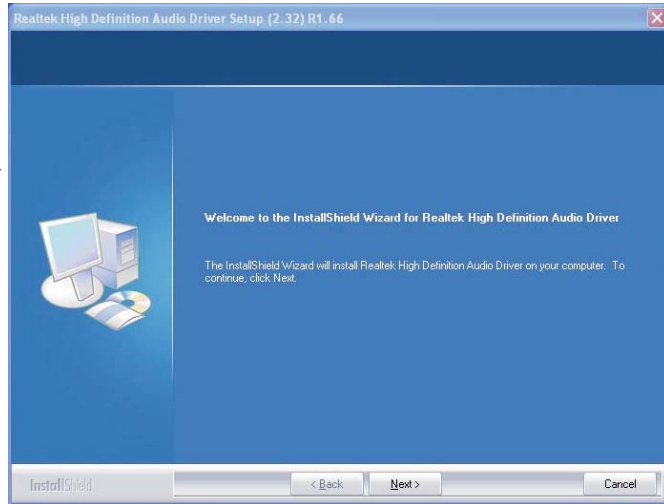
Restarting the system will allow the new software installation to take effect.



Audio Drivers

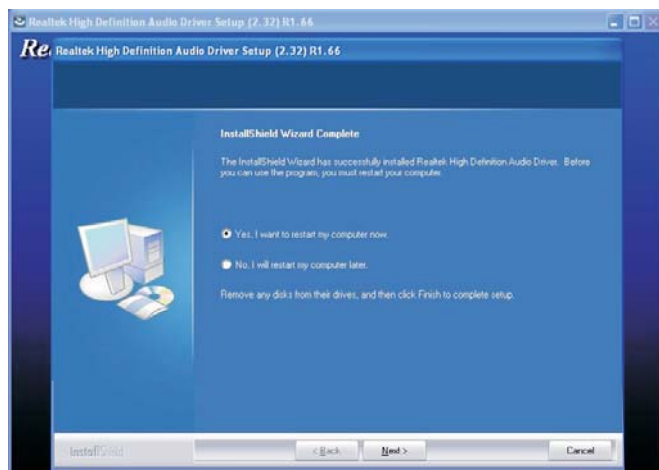
To install the driver, click “Audio Drivers” on the main menu.

1. Setup is now ready to install the audio driver. Click Next.
2. Follow the remainder of the steps on the screen; clicking “Next” each time you finish a step.



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

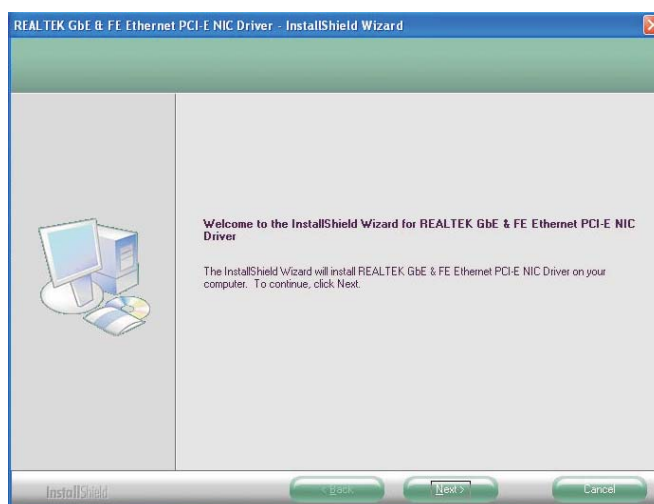
Restarting the system will allow the new software installation to take effect.



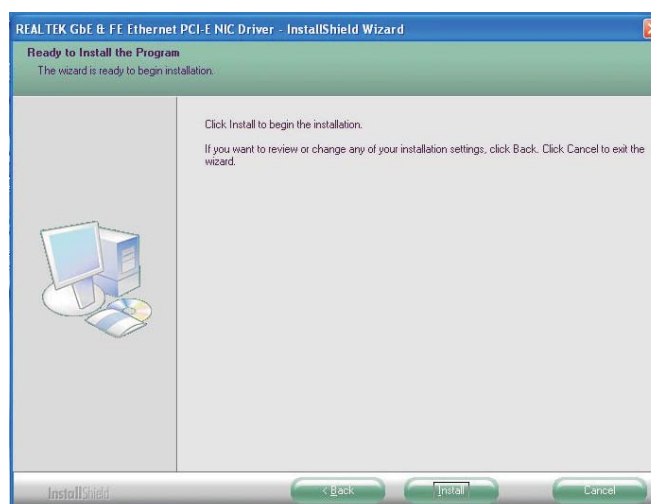
LAN Drivers

To install the driver, click “LAN Drivers” on the main menu.

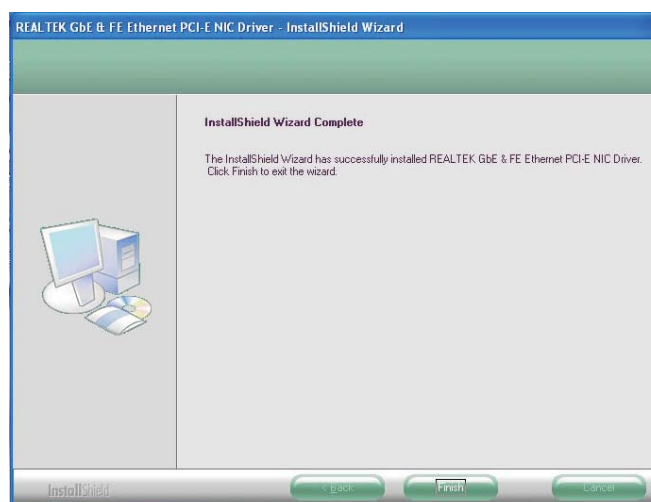
1. Setup is now ready to install the driver. Click Next.



2. Click Install to begin installation.



3. After completing installation, click Finish to exit setup.

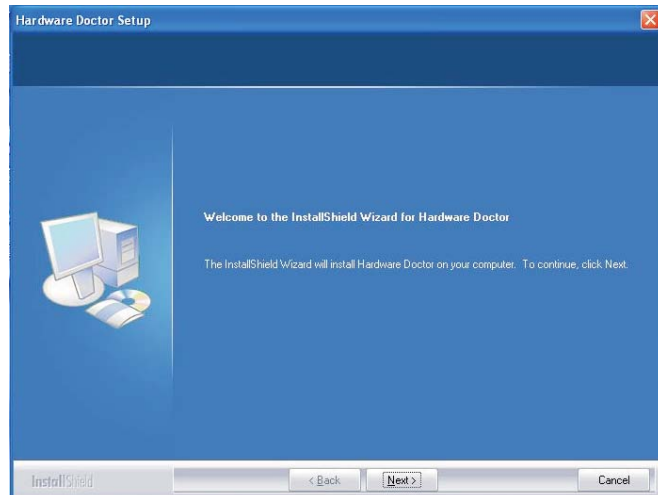


Hardware Monitor for Windows

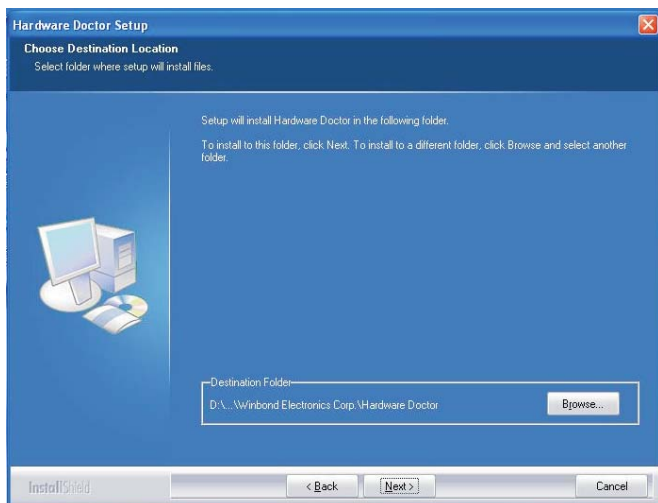
The Hardware Monitor for Windows utility is capable of monitoring the system's temperature, fan speed, voltage, etc. and allows you to manually set a range (Highest and Lowest Limit) to the items being monitored. If the settings/values are over or under the set range, a warning message will pop-up. The utility can also be configured so that a beeping alarm will sound whenever an error occurs. We recommend that you use the "Default Setting" which is the ideal setting that would keep the system in good working condition.

To install the utility, click "Hardware Monitor for Windows" on the main menu.

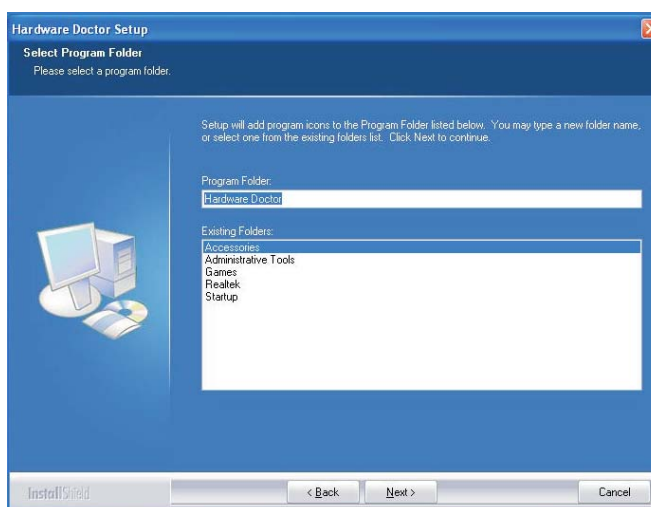
1. Setup is now ready to install the utility. Click Next.



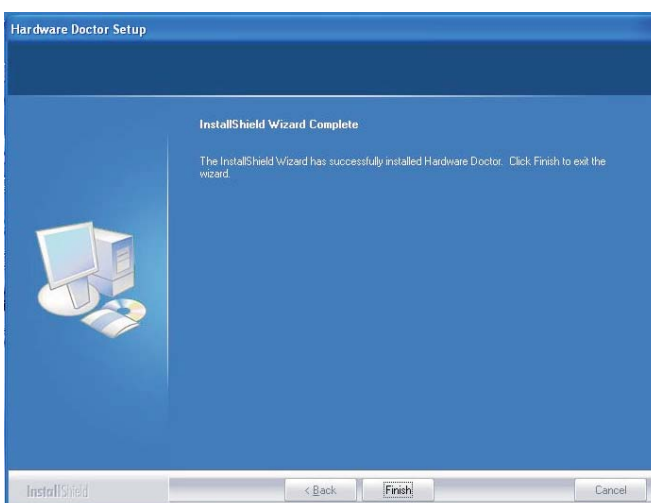
2. Click Next to install or click Browse to select another folder.



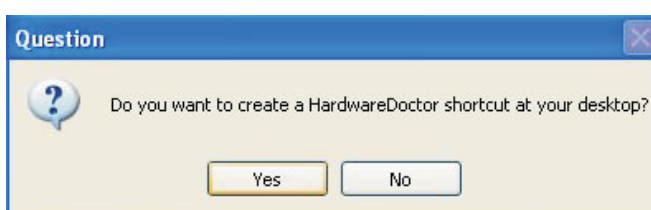
- Click Next to add the program icon to the Program Folder.



- After completing installation, click Finish to exit setup.



- Click Yes if you want to create a Hardware Doctor shortcut at your desktop.

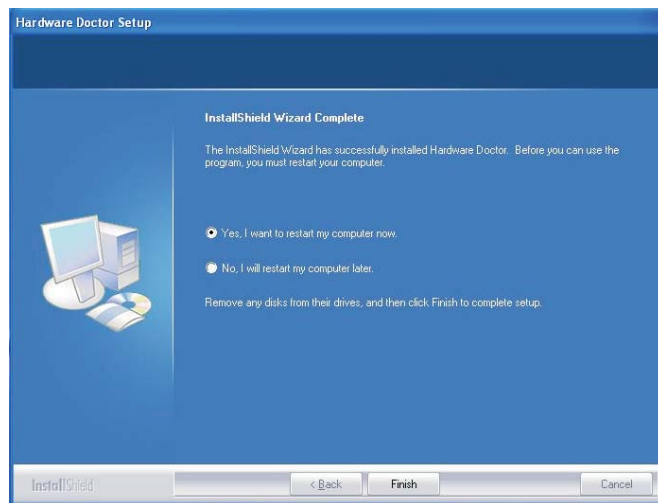


4

Supported Software

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

Restarting the system will allow the driver to take effect.



Intel Matrix Storage Manager Utility

Intel Matrix Storage Manager is a utility that allows you to monitor the current status of the SATA drives. It enables enhanced performance and power management for the storage subsystem.

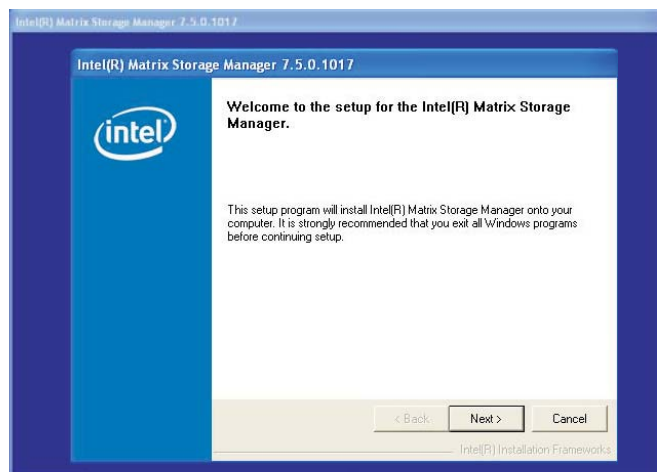


Note:

This utility is supported only when the Configure SATA As field is set to AHCI. (The Configure SATA As field is in the Main menu of the BIOS utility.)

To install the utility, click “Intel Matrix Storage Manager Utility” on the main menu.

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



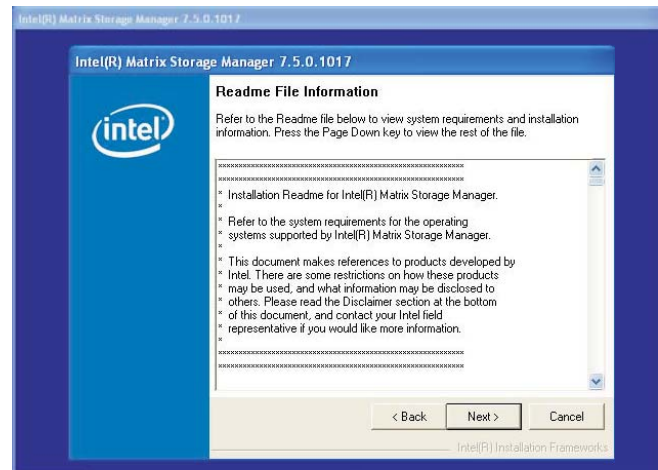
2. Read the Warning information carefully then click Next.



3. Read the license agreement then click Yes.



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



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

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

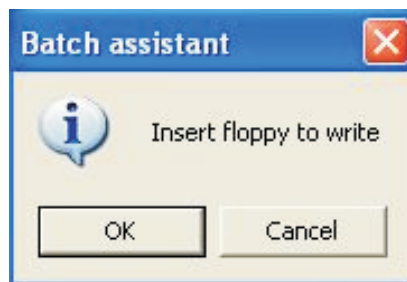


AHCI for F6 During Windows Setup Floppy Driver

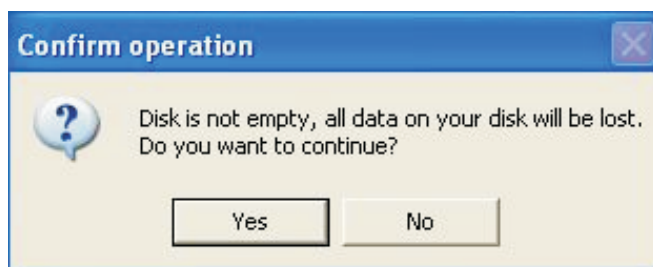
This is used to create a floppy driver diskette needed when you install Windows® XP using the F6 installation method. This will allow you to install the operating system onto a hard drive when in AHCI mode.

Click “AHCI for F6 During Windows Setup Floppy Driver” on the main menu.

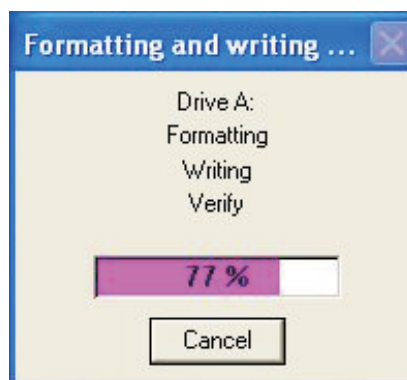
1. Insert a blank floppy diskette then click OK.



2. Make sure you have a backup of the data in the disk. Clicking Yes will erase all data.



3. The system is currently formatting and writing the necessary driver files into the diskette.



Adobe Acrobat Reader 6.0 (English Version)

To install, click “Adobe Acrobat Reader 6.0 (English Version)” on the main menu.

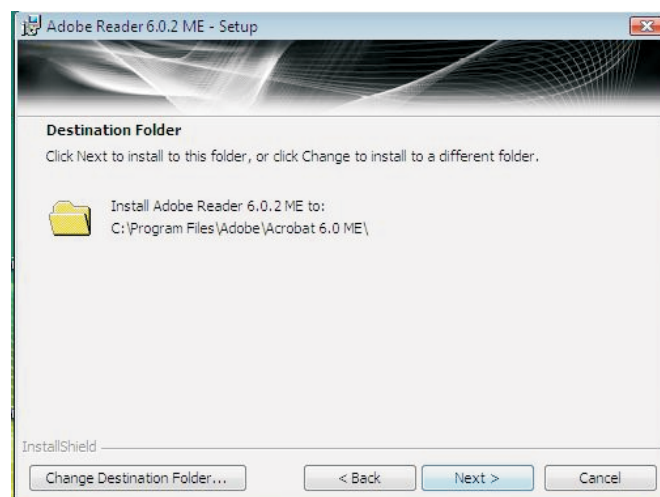
1. Click Next to continue.



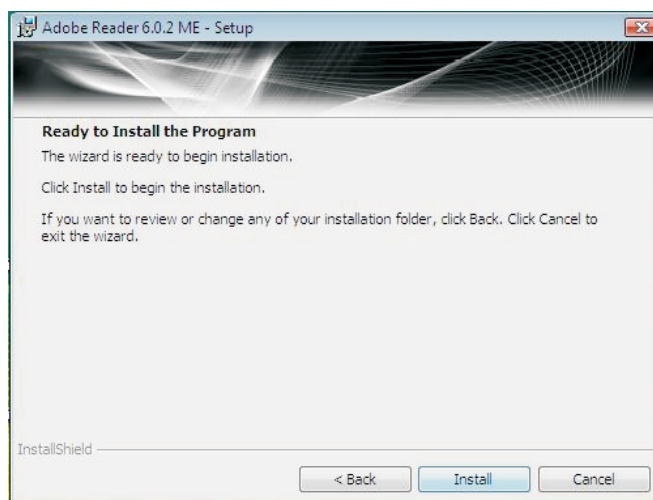
2. Setup is now ready to install. Click Next.



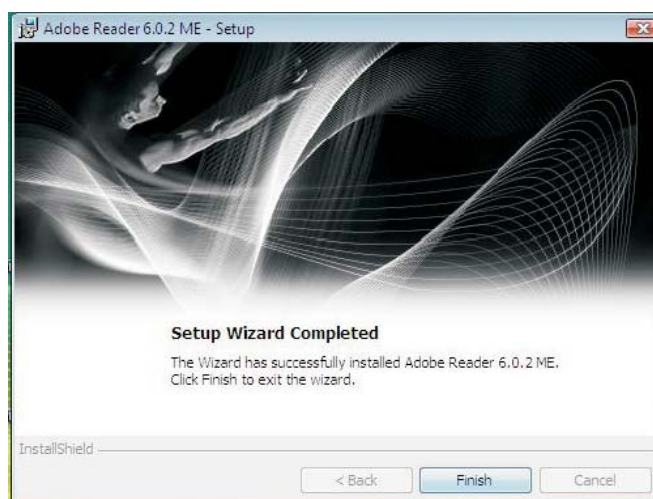
3. Click Next to install or click Change Destination Folder to select another folder:



4. Click Install to begin installation.



5. Click Finish to exit installation.



Installing the AHCI Driver During Windows XP Installation

The AHCI driver must be installed during the Windows® XP installation using the F6 installation method. This is required in order to install the operating system onto a hard drive when in AHCI mode.

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

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

Appendix A - Watchdog Timer

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.

```

;===== PROGRAM START =====
SIO_CON_PORT      EQU    2EH
SIO_DATA          EQU    2FH

begin:
MOV  DX,SIO_CON_PORT    ;SUPERIO ENTER CONFIG
MOV  AL,87H
OUT  DX,AL
OUT  DX,AL

MOV  DX,SIO_CON_PORT
MOV  AL,2DH              ;GPIO5 AND POWER CONTROL SIGNALS
                          ;MULTI-FUNCTION PIN SELECTION
OUT  DX,AL              ;BIT 0 PIN77 SELECT (0= WDTO#, 1=
                          ;GPIO50)

MOV  DX,SIO_DATA
IN   AL,DX
AND  AL,0FEH            ;SELECT PIN TO WATCH DOG
OUT  DX,AL

MOV  DX,SIO_CON_PORT
MOV  AL,07H            ;LOGIC DEVICE SLELCT
OUT  DX,AL

MOV  DX,SIO_DATA
MOV  AL,08H            ;SELECT DEVICE 8 (WATCH DOG)
OUT  DX,AL

MOV  DX,SIO_CON_PORT
MOV  AL,030H          ;ACTIVATE REGISTER
OUT  DX,AL

MOV  DX,SIO_DATA
OR   AL,01H           ;0= INACTIVATE, 1=ACTIVATE
OUT  DX,AL

```

```

MOV  DX,SIO_CON_PORT
MOV  AL,0F5H          ;WATCH DOG CONTROL REGISTER
OUT  DX,AL

MOV  DX,SIO_DATA      ;BIT1 DIS/EN WDTO# OUTPUT LOW PULSE
                        ;TO KBRST#PIN(0=DIS, 1=ENABLE)
IN   AL,DX            ;BIT3 COUNTER MODE SLEECT (0=SECOND
                        ;MODE, 1=MINUTE MODE)

OR   AL,02H
OUT  DX,AL

MOV  DX,SIO_CON_PORT
MOV  AL,0F6H          ;WATCH DOG COUNTER
OUT  DX,AL

MOV  DX,SIO_DATA
MOV  AL,0AH           ;SET COUNTER (EX 10 SEC)
OUT  DX,AL

MOV  DX,SIO_CON_PORT
MOV  AL,0F7H          ;WATCH DOG COUNTER
OUT  DX,AL

MOV  DX,SIO_DATA
MOV  AL,00H           ;Clear WDTO
OUT  DX,AL

mov  DX,SIO_CON_PORT ;SUPERIO EXIT CONFIG
mov  al, 0AAh
out  dx, al

;===== RETURN DOS =====
mov  ah,4ch           ;return dos
int  21h

    end begin

```

Appendix B - Troubleshooting

Troubleshooting Checklist

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

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

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

Monitor/Display

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

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

The picture seems to be constantly moving.

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

The screen seems to be constantly wavering.

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

Power Supply

When the computer is turned on, nothing happens.

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

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.

Serial Port

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

1. Make sure that the serial device's power is turned on and that the device is on-line.
2. Verify that the device is plugged into the correct serial port on the rear of the computer.
3. Verify that the attached serial device works by attaching it to a serial port that is working and configured correctly. If the serial device does not work, either the cable or the serial device has a problem. If the serial device works, the problem may be due to the onboard I/O or the address setting.
4. Make sure the COM settings and I/O address are configured correctly.

Keyboard

Nothing happens when a key on the keyboard was pressed.

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

System Board

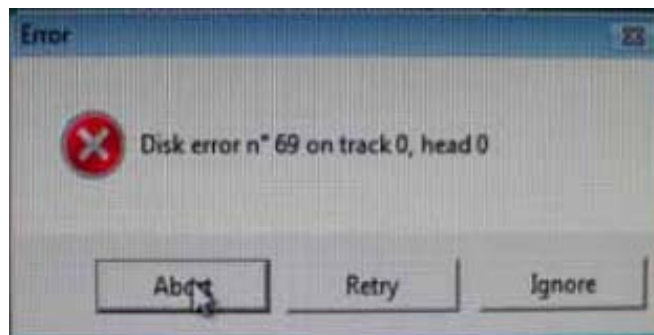
1. Make sure the add-in card is seated securely in the expansion slot. If the add-in card is loose, power off the system, re-install the card and power up the system.
2. Check the jumper settings to ensure that the jumpers are properly set.
3. Verify that all memory modules are seated securely into the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

Appendix C - Frequently Asked Questions

Q1: When executing F6FLPY.EXE in Windows Vista and the following error messages appear, please perform step A2.



Click OK.



Click Abort.

A1: Disconnect the USB floppy drive for 15 seconds then reconnect it to the motherboard. Execute F6FLPY.EXE again.



Disconnect for 15 seconds



Reconnect

Appendix D - Hot Keys for Graphics Display

The integrated graphics driver provides hot keys that allows ease in adjusting the graphics display screen.

Action	Hot Keys
Enable Monitor	<Ctrl><Alt><F1>
Enable Notebook	<Ctrl><Alt><F3>
Enable Digital Display	<Ctrl><Alt><F4>
Open Graphics Property Application	<Ctrl><Alt><F12>
Rotate to Normal	<Ctrl><Alt><Up>
Rotate 90 degrees	<Ctrl><Alt><Left>
Rotate 180 degrees	<Ctrl><Alt><Down>
Rotate 270 degrees	<Ctrl><Alt><Right>