# P5GD1-FM

Motherboard

E1798

First Edition
October 2004

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# Notices

## Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received including interference that may cause undesired operation.

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 in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, 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 receiver.
- Connect the equipment to 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.

> The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

## Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

**This class B digital apparatus complies with Canadian ICES-003.**

# Safety information

## Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

## Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

# P5GD1-FM specifications summary

| | |
|---|---|
| **CPU** | LGA775 socket for Intel® Pentium® 4/Celeron processor<br>Compatible with Intel® Performance Universal FMB 2005<br>    processors<br>Supports Intel® Hyper-Threading Technology |
| **Chipset** | Northbridge: Intel® 915P Memory and Controller Hub (MCH)<br>Southbridge: Intel® 82801FB ICH6 |
| **Front Side Bus** | 800/533 MHz |
| **Memory** | 4 x 184-pin DIMM sockets support unbufferred non-ECC<br>    400/333 MHz DDR memory modules |
| **Expansion slots** | 1 x PCI Express x16 slot for discrete graphics card<br>3 x PCI slots |
| **Storage** | Intel® ICH6 Southbridge supports:<br>   - 2 x Ultra ATA 100/66/33 hard disk drives<br>   - 4 x Serial ATA hard disk drives |
| **High Definition Audio** | Realtek® ALC861 8-channel CODEC with Jack-sensing<br>    and Universal Audio Jack (UAJ®) technology<br>1 x Optical S/PDIF out port |
| **LAN** | Realtek® RTL8101L LAN controller |
| **USB** | Supports up to 8 USB 2.0 ports |
| **IEEE 1394** | T1 controller supports:<br>  - 2 x IEEE 1394a ports |
| **BIOS features** | 4 MB FWH, AMI BIOS, Green, PnP, DMI2.0, WfM2.0,<br>    ACPI 2.0a, SM BIOS 2.3 |
| **Rear panel** | 1 x Serial port<br>1 x Optical S/PDIF out port<br>1 x IEEE 1394a port<br>1 x LAN (RJ-45) port<br>4 x USB 2.0 ports<br>8-channel audio ports |

# P5GD1-FM specifications summary

| Internal connectors | 1 x Floppy disk drive connector<br>1 x Primary IDE connector<br>4 x Serial ATA connectors<br>1 x CPU fan connector<br>1 x Chassis fan connector<br>2 x USB 2.0 connectors<br>1 x 24-pin ATX power connector<br>1 x 4-pin ATX 12 V power connector<br>1 x Front panel audio connector<br>1 x IEEE 1394a port<br>1 x Optical drive audio connector<br>1 x System panel connector |
|---|---|
| Power requirement | ATX power supply (with 24-pin and 4-pin 12 V plugs)<br>ATX 12 V 2.0 compliant |
| Form factor | Micro ATX form factor: 9.6 in x 9.6 in (24.5 cm x 24.5 cm) |

*Specifications are subject to change without notice.

This chapter describes the motherboard features and the new technologies it supports.

# Product introduction

**1**

# 1.1    Before you proceed

Take note of the following precautions before you install motherboard components or change any motherboard settings.

⚠️
- Unplug the power cord from the wall socket before touching any component.

- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity

- Hold components by the edges to avoid touching the ICs on them.

- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- **Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply.** Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

## Onboard LED

The motherboard comes with a standby power LED that lights up to indicate that the system is ON, in sleep mode, or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LED.



**P5GD1-FM Onboard LED**

SB_PWR1

**ON**
Standby
Power

**OFF**
Powered
Off
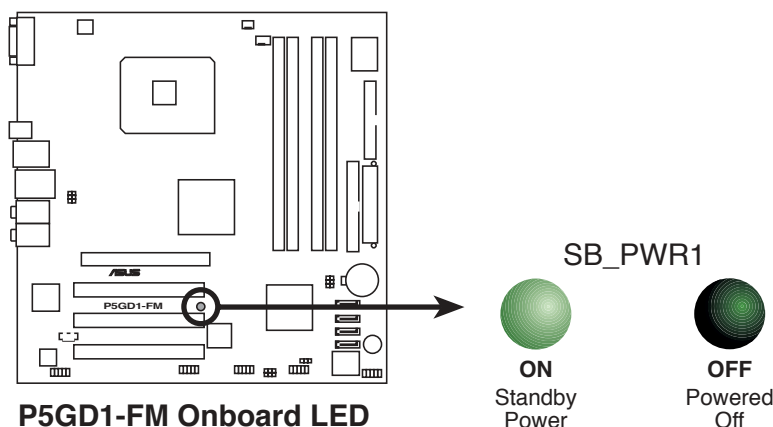
# 1.2    Motherboard overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the mothebroard.

> Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

## 1.2.1   Placement direction

When installaing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

## 1.2.2   Screw holes

Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.

> Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards the rear of the chassis

P5GD1-FM

# 1.2.3 Motherboard layout

COM1

ATX12V1

CHA_FAN1

CPU_FAN1

LGA775

Super I/O

SPDIF_O2

F_USB12

LAN_USB34

USBPW34
USBPW12

DDR DIMM_A1 (64 bit,240-pin module)
DDR DIMM_A2 (64 bit,240-pin module)
DDR DIMM_B1 (64 bit,240-pin module)
DDR DIMM_B2 (64 bit,240-pin module)

FLOPPY1

Top:Rear Speaker Out
Center:
Side Speaker Out
Below:
Center/Subwoofer

Top:Line In
Center:Line Out
Below:Mic In

Intel® 915P MCH

EATXPWR1

PRI_IDE1

PCIEX16

ASUS

BIOS_R
BIOS_S

CR2032 3V
Lithium Cell
CMOS Power

RTL8101L

PCI1

P5GD1-FM

SB_PWR1

Intel ICH6

SATA4

SATA3

SATA2

PCI2

CD1

TI TSB43AB22A

SATA1

BUZZ1

ALC861

PCI3

AAFP1

IE1394_2

USBPW78
USBPW56

USB56

USB78

CLRTC1

Intel FWH 4Mb

F_PANEL1

# 1.3    Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA775 socket designed for the Intel® Pentium® 4 processor in the 775-land package.

⚠️
- Your boxed Intel® Pentium® 4 LGA775 processor package should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.

- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.

- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.

- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

## 1.3.1    Installing the CPU

To install a CPU:

1.    Locate the CPU socket on the motherboard.
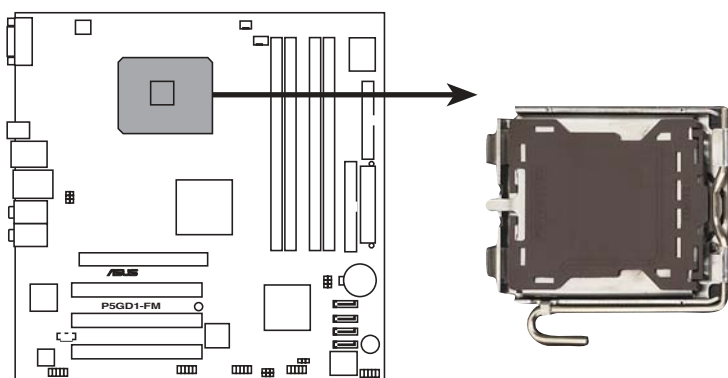


**P5GD1-FM Socket 775**

✍️ Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2.  Press the load lever with your thumb (A), then move it to the left (B)
    until it is released from the retention tab.

Retention tab

Load lever

A

B

PnP cap

This side of the
socket box should
face you.
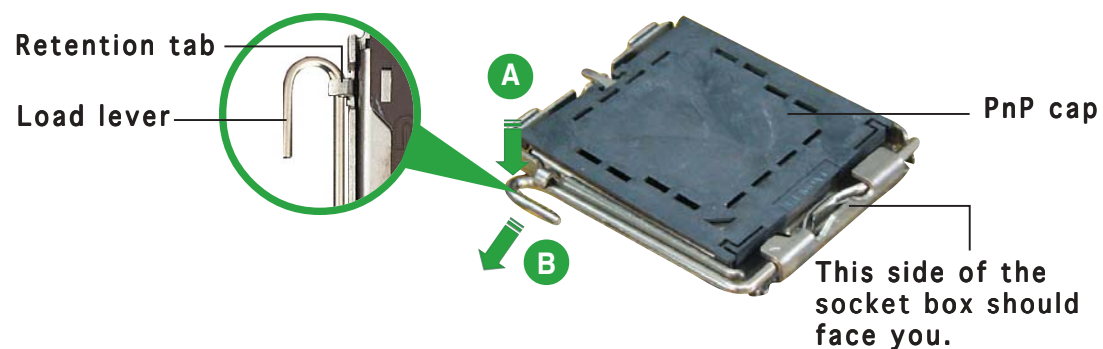
⚠  To prevent damage to the socket pins, do not remove the PnP cap
   unless you are installing a CPU.

3.  Lift the load lever in the
    direction of the arrow to a 135º
    angle.
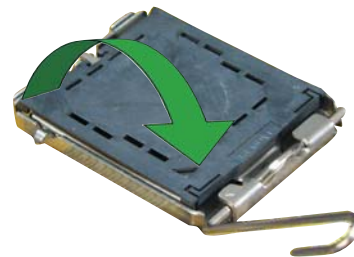
4.  Lift the load plate with your
    thumb and forefinger to a
    100º angle (A), then push
    the PnP cap from the load
    plate window to remove (B).

B

A
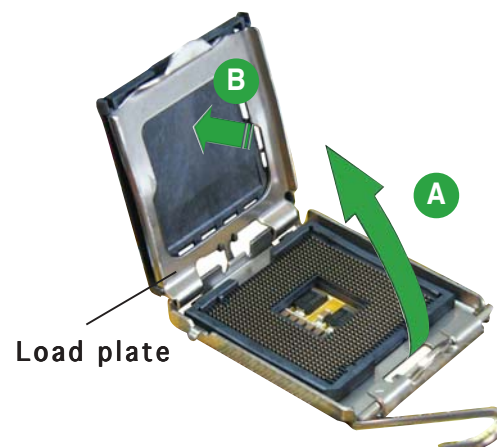
Load plate

5.  Position the CPU over
    the socket, making
    sure that the gold
    triangle is on the
    bottom-left corner of
    the socket. The
    socket alignment key
    should fit into the
    CPU notch.

Alignment key

Gold triangle mark
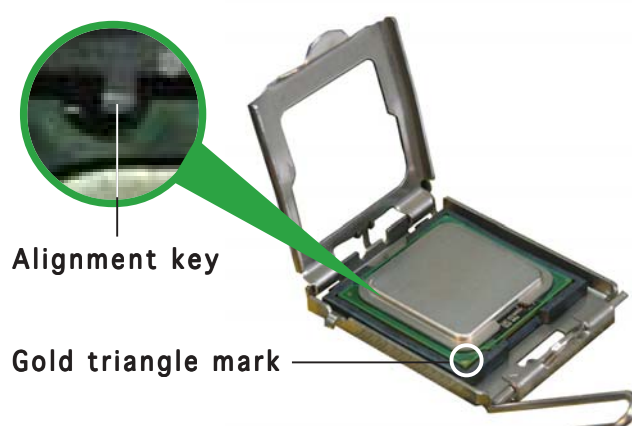
6. Close the load plate (A), then push the load lever (B) until it snaps into the retention tab.
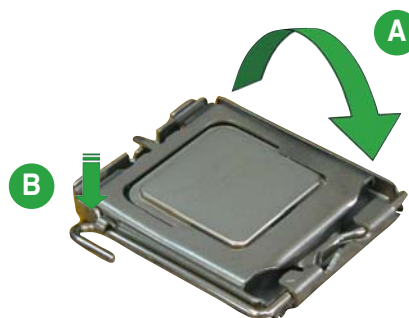


> The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

## Notes on Intel® Hyper-Threading Technology

- This motherboard supports Intel® Pentium® 4 CPUs in the 775-land package with Hyper-Threading Technology.

- Hyper-Threading Technology is supported under Windows® XP/2003 Server and Linux 2.4.x (kernel) and later versions only. Under Linux, use the Hyper-Threading compiler to compile the code. If you are using any other operating systems, disable the Hyper-Threading Techonology item in the BIOS to ensure system stability and performance.

- Installing Windows® XP Service Pack 1 or later version is recommended.

- Make sure to enable the Hyper-Threading Technology item in BIOS before installing a supported operating system.

- For more information on Hyper-Threading Technology, visit www.intel.com/info/hyperthreading.

To use the Hyper-Threading Technology on this motherboard:

1. Install an Intel® Pentium® 4 CPU that supports Hyper-Threading Technology.

2. Power up the system and enter the BIOS Setup (see Chapter 2: BIOS setup). Under the Advanced Menu, make sure that the item Hyper-Threading Technology is set to Enabled. The item appears only if you installed a CPU that supports Hyper-Threading Techonology.

3. Reboot the computer.

## 1.3.2 Installing the CPU heatsink and fan

The Intel® Pentium® 4 LGA775 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- When you buy a boxed Intel® Pentium® 4 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.

- Your Intel® Pentium® 4 LGA775 heatsink and fan assembly comes in a push-pin design and requires no tool to install.

- If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

Make sure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

To install the CPU heatsink and fan:

1.  Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

    Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.
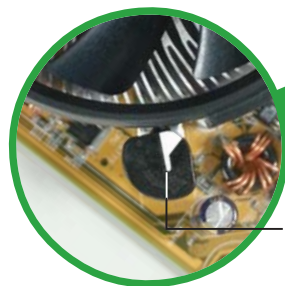


**Narrow end of the groove**

**Motherboard hole**

**Fastener**

Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

2.  Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.
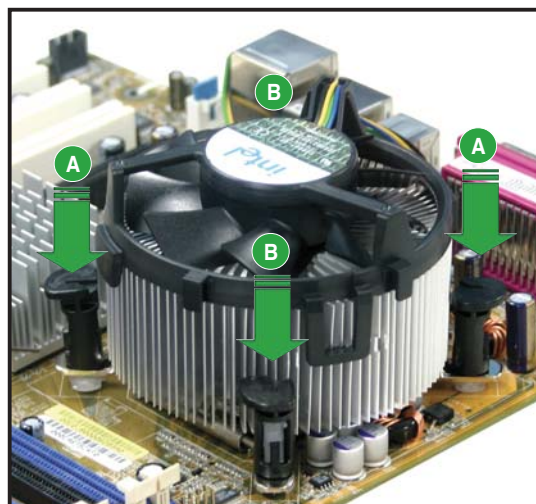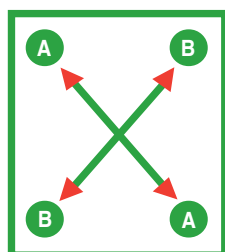
3.  Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN1.

CPU_FAN1

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM
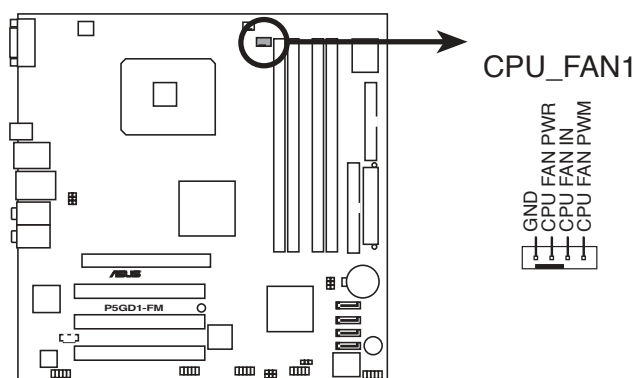
**P5GD1-FM CPU_FAN connector**

Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

## 1.3.3 Uninstalling the CPU heatsink and fan

To uninstall the CPU heatsink and fan:

1.  Disconnect the CPU fan cable from the connector on the motherboard.

2.  Rotate each fastener counterclockwise.
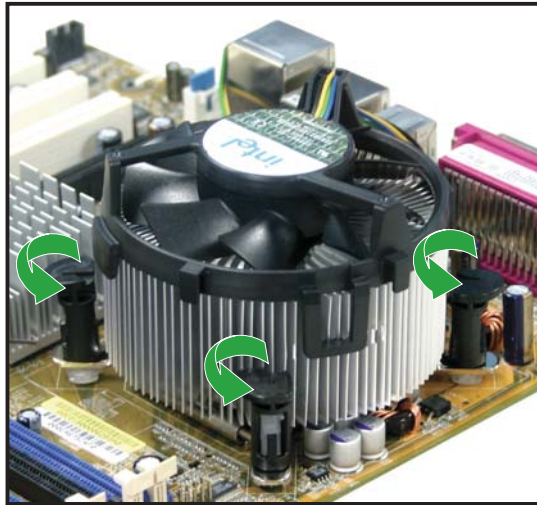
3.  Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.
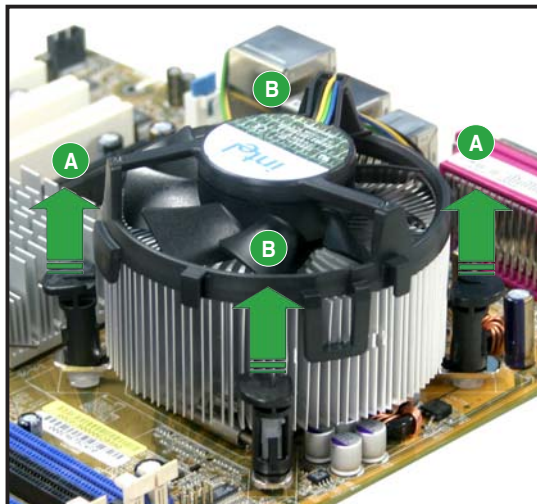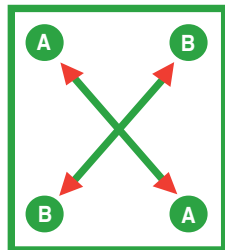
4.  Carefully remove the heatsink and fan assembly from the motherboard.
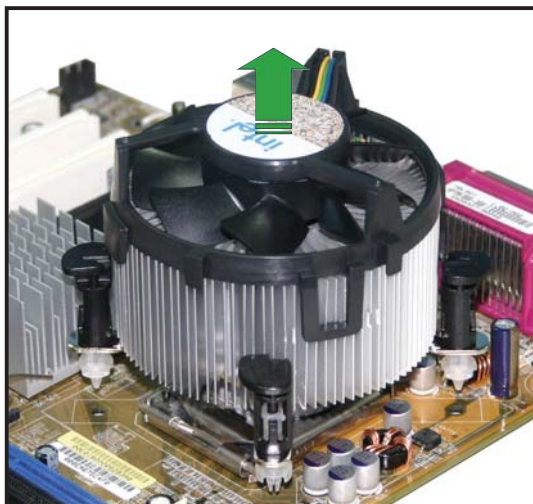
5.  Rotate each fastener clockwise to ensure correct orientation when reinstalling.

**Narrow end of the groove**

✍ The narrow end of the groove should point outward after resetting. (The photo shows the groove shaded for emphasis.)

# 1.4 System memory

## 1.4.1 DIMM sockets location

The motherboard comes with two 184-pin Double Data Rate (DDR) Dual Inline Memory Modules (DIMM) sockets.

The following figure illustrates the location of the sockets:
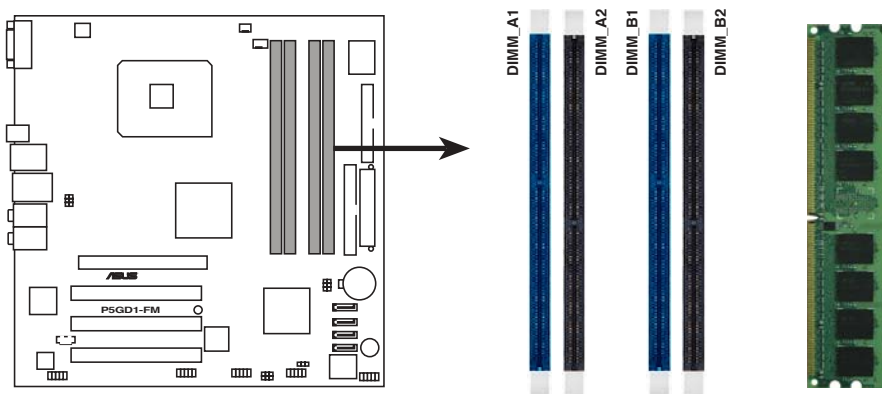
**P5GD1-FM 184-pin DDR DIMM sockets**

| Channel | Sockets | Color |
|---------|---------|-------|
| Channel A | DIMM_A1 and DIMM_B1 | Blue |
| Channel B | DIMM_A2 and DIMM_B2 | Black |

## 1.4.2 Memory Configurations

You may install 256 MB, 512 MB and 1 GB unbuffered non-ECC DDR DIMMs into the DIMM sockets using the memory configurations in this section.

- For dual-channel configuration, the total size of memory module(s) installed per channel must tbe the same (DIMM_A2 = DIMM_B2).

- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. Refer to the DDR Qualified Vendors List on the next page for details.

- Due to chipset resource allocation, the system may detect less than 4 GB system memory when you installed four 1 GB DDR memory modules.

- This motherboard does not support memory modules made up of 128 Mb chips or double sided x16 memory modules.

## Recommended memory configurations

| Mode | | DIMM_A1 (blue) | DIMM_A2 (black) | DIMM_B1 (blue) | DIMM_B2 (black) |
|---|---|---|---|---|---|
| | | | **Sockets** | | |
| Single-channel | (1) | Installed | — | — | — |
| | (2) | — | Installed | — | — |
| | (3) | — | — | Installed | — |
| | (4) | — | — | — | Installed |
| Dual-channel* | (1) | Installed | — | Installed | — |
| | (2) | — | Installed | — | Installed |
| | (3) | Installed | Installed | Installed | Installed |

*\* Use only identical DDR DIMM pairs.*

## 1.4.3  Installing a DIMM

![warning icon] Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1.  Unlock a DIMM socket by pressing the retaining clips outward.

2.  Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

DDR DIMM notch

Unlocked retaining clip
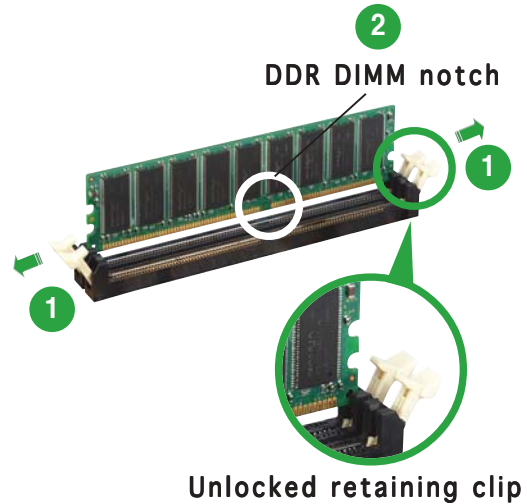
![warning icon] A DDR DIMM is  keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

3.  Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.

Locked Retaining Clip
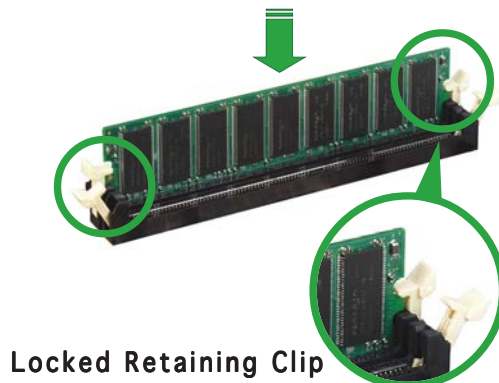
## 1.4.4  Removing a DIMM

Follow these steps to remove a DIMM.

1.  Simultaneously press the retaining clips outward to unlock the DIMM.

DDR DIMM notch
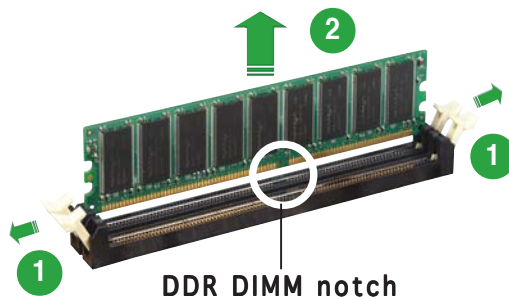
![warning icon] Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2.  Remove the DIMM from the socket.

# 1.5 Expansion slots

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

> Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

## 1.5.1 Installing an expansion card

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

## 1.5.2 Configuring an expansion card

After installing the expansion card, configure the it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

## 1.5.3 Interrupt assignments

### Standard interrupt assignments

| IRQ | Priority | Standard Function |
|---|---|---|
| 0 | 1 | System Timer |
| 1 | 2 | Keyboard Controller |
| 2 | - | Re-direct to IRQ#9 |
| 4 | 12 | Communications Port (COM1)* |
| 5 | 13 | IRQ holder for PCI steering* |
| 6 | 14 | Floppy Disk Controller |
| 8 | 3 | System CMOS/Real Time Clock |
| 9 | 4 | IRQ holder for PCI steering* |
| 10 | 5 | IRQ holder for PCI steering* |
| 11 | 6 | IRQ holder for PCI steering* |
| 13 | 8 | Numeric Data Processor |
| 14 | 9 | Primary IDE Channel |

**\* These IRQs are usually available for ISA or PCI devices.**

### IRQ assignments for this motherboard

| | A | B | C | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|
| PCI slot 1 | — | — | — | — | — | shared | — | — |
| PCI slot 2 | — | — | — | — | — | — | used | — |
| PCI slot 3 | — | — | — | — | shared | — | — | — |
| PCI Express x16 slot | shared | — | — | — | — | — | — | — |
| Onboard USB controller 1 | — | — | — | — | — | — | — | shared |
| Onboard USB controller 2 | — | — | — | shared | — | — | — | — |
| Onboard USB controller 3 | — | — | shared | — | — | — | — | — |
| Onboard USB controller 4 | shared | — | — | — | — | — | — | — |
| Onboard USB 2.0 controller | — | — | — | — | — | — | — | shared |
| Onboard Azalia Audio | shared | — | — | — | — | — | — | — |
| Onboard IDE Controller | — | — | shared | — | — | — | — | — |
| Onboard SATA Controller | — | — | — | shared | — | — | — | — |
| Onboard LAN (10/100 Mbps) | — | used | — | — | — | — | — | — |
| Onboard PCI IDE (ITE) | — | — | — | — | shared | — | — | — |
| Onboard IEEE 1394a controller | — | — | — | — | — | shared | — | — |

When using PCI cards on shared slots, ensure that the drivers support "Share IRQ" or that the cards do not need IRQ assignments; otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

## 1.5.4 PCI slots

This motherboard has three PCI slots. The PCI slots support cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications. The figure shows a LAN card installed on a PCI slot.
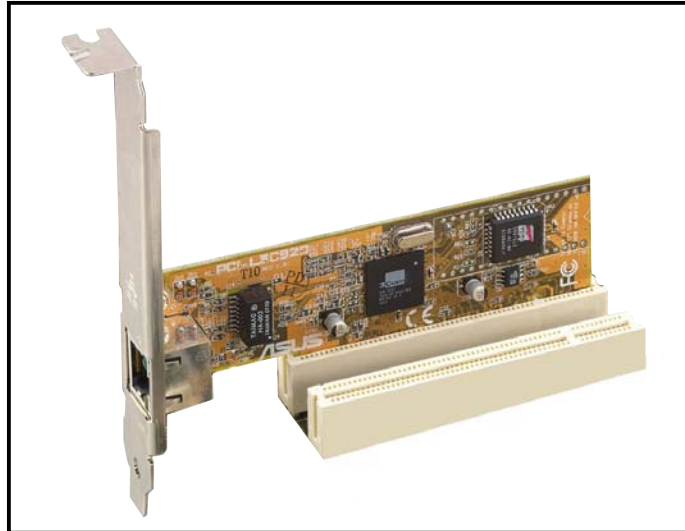


## 1.5.5 PCI Express x16 slot

This motherboard supports PCI Express x16 graphic cards that comply with PCI Express specifications. The figure shows a graphics card installed on the PCI Express x16 slot.
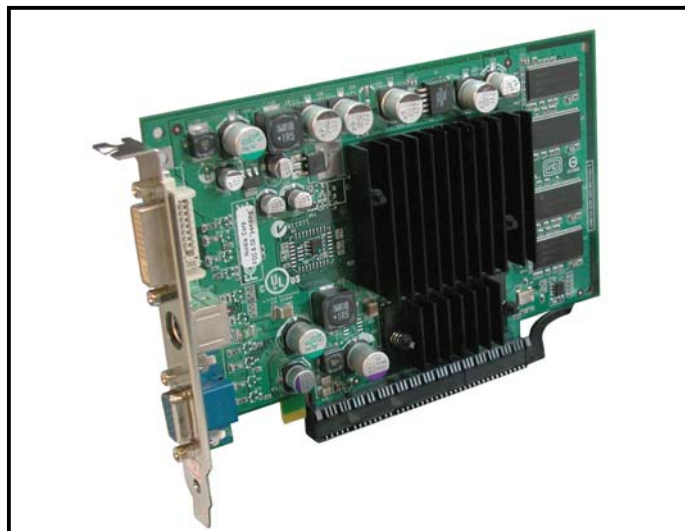
# 1.6 Jumpers

**1. Clear RTC RAM (CLRTC1)**

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

> Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

CLRTC1

1 2 2 3

Normal (Default)     Clear CMOS

**P5GD1-FM Clear RTC RAM**
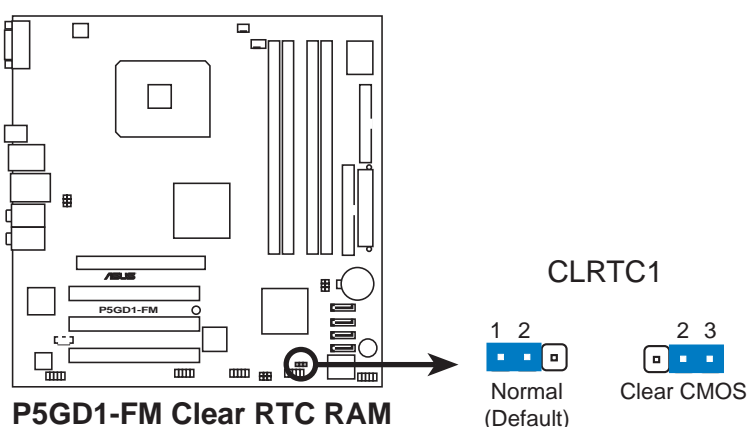
### 2. USB device wake-up (3-pin USBPW12, USBPW34, USBPW56, USBPW78)

Set these jumpers to +5V to wake up the computer from S1 sleep mode (CPU stopped, DRAM refreshed, system running in low power mode) using the connected USB devices. Set to +5VSB to wake up from S3 and S4 sleep modes (no power to CPU, DRAM in slow refresh, power supply in reduced power mode).

The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumpers are for the internal USB connectors that you can connect to additional USB ports.



**P5GD1-FM USB device wake-up**
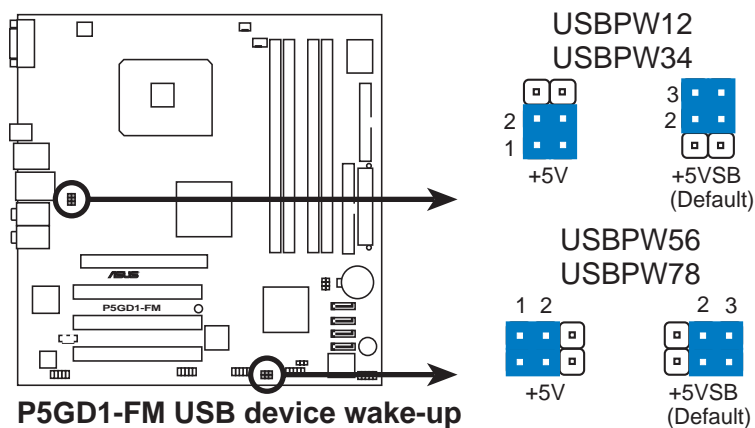
- The USB device wake-up feature requires a power supply that can provide 500 mA on the +5VSB lead for each USB port; otherwise, the system will not power up.

- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

### 3. BIOS recovery (3-pin BIOS_R)

The force BIOS recovery jumper allows you to force recover the BIOS settings when the BIOS gets corrupted or destroyed.

The jumper block is on pins 1 and 2 during normal operation (default). To force recover the BIOS, set the jumper block on pins 2 and 3.

To recover the BIOS:

1. Turn OFF your computer and unplug the power cord.
2. Move the jumper cap from pins 1-2 (default) to pins 2-3.
3. Insert a floppy disk with the original or updated BIOS file, and rename the BIOS file name as **P5GD1FM.ROM**.
4. Plug the power cord and turn ON the computer.
5. The system searches for the BIOS file in the floppy then reflashes the BIOS.
6. When finished, shut down your computer.
7. Replace the jumper cap from pins 2-3 to pins 1-2.
8. Reboot your computer.
9. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.
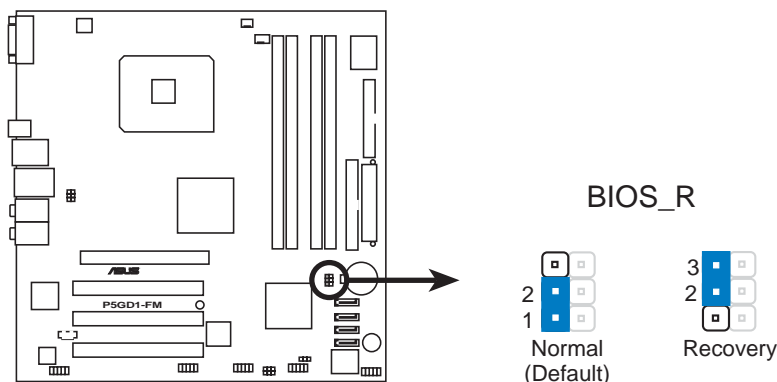


**P5GD1-FM BIOS recovery setting**

### 4. BIOS password setting (3-pin BIOS_S)

The BIOS password setting jumper allows you to skip or bypass the BIOS password if you forgot the password. Set the jumper block on pins 2-3 to skip the password lock.
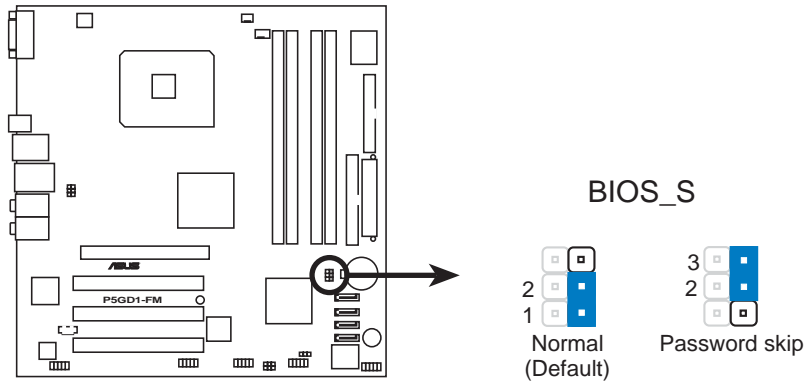


**P5GD1-FM BIOS password setting**

# 1.7 Connectors

## 1.7.1 Rear panel connectors
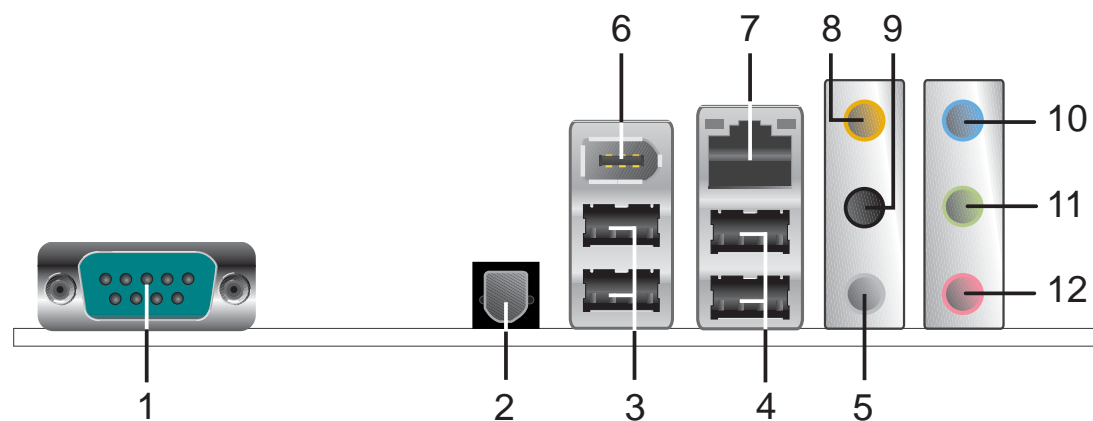


1. **Serial port**. This 9-pin COM1 port is for pointing devices or other serial devices.

2. **Optical S/PDIF Out port.** This port connects an external audio output device via an optical S/PDIF cable.

3. **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

4. **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.

5. **Rear Speaker Out port (gray).** This port connects to the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.

6. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.

7. **LAN (RJ-45) port.** This port allows 10/100 Mbps connection to a Local Area Network (LAN) through a network hub.

8. **Center/Subwoofer port (yellow orange).** This port connects the center/subwoofer speakers.

9. **Side Speaker Out port (black).** This port connects to the side speakers in an 8-channel audio configuration.

10. **Line In port (light blue).** This port connects a tape, CD, DVD player or other audio sources.

11. **Line Out port (lime).** This port connects a headphone or a speaker. In 4/6-channel configuration, the function of this port becomes Front Speaker Out.

12. **Microphone port (pink).** This port connects a microphone.

## Audio 2, 4, 6, or 8-channel configuration

| Port | Headset 2-channel | 4-channel | 6-channel | 8-channel |
|---|---|---|---|---|
| Light Blue | Line In | Line In | Line In | Line In |
| Lime | Line Out | Front Speaker Out | Front Speaker Out | Front Speaker Out |
| Pink | Mic In | Mic In | Mic In | Mic In |
| Gray | - | Rear Speaker Out | Rear Speaker Out | Rear Speaker Out |
| Black | - | - | - | Side Speaker Out |
| Yellow Orange | - | - | Center/Subwoofer | Center/Subwoofer |

## 1.7.2 Internal connectors

### 1. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector is for the provided floppy disk drive (FDD) signal cable. Insert one end of the cable to this connector, then connect the other end to the signal connector at the back of the floppy disk drive.

Pin 5 on the connector is removed to prevent incorrect cable connection when using a FDD cable with a covered Pin 5.

FLOPPY1

**NOTE:** Orient the red markings on the floppy ribbon cable to PIN 1.

PIN 1
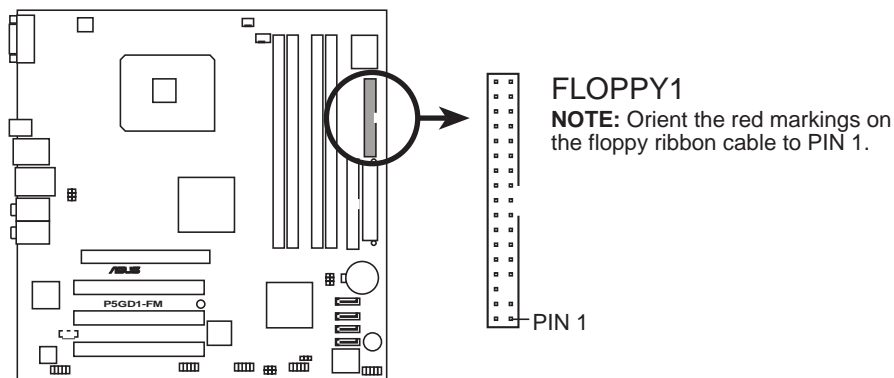
**P5GD1-FM Floppy disk drive connector**

## 2. Primary IDE connector (40-1 pin PRI_IDE1)

This connector is for an Ultra DMA 100/66 signal cable. The Ultra DMA 100/66 signal cable has three connectors: a blue connector for the primary IDE connector on the motherboard, a black connector for an Ultra DMA 100/66 IDE slave device (optical drive/hard disk drive), and a gray connector for an Ultra DMA 100/66 IDE master device (hard disk drive). If you install two hard disk drives, you must configure the second drive as a slave device by setting its jumper accordingly. Refer to the hard disk documentation for the jumper settings.

- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.

- Use the 80-conductor IDE cable for Ultra DMA 100/66 IDE devices.
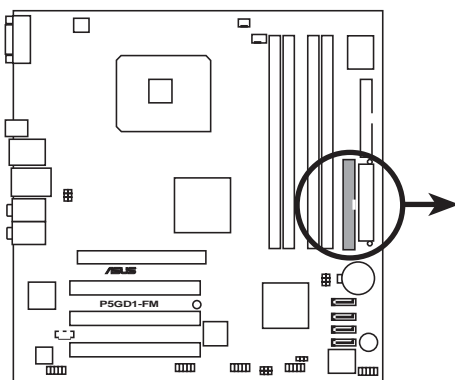
**P5GD1-FM IDE connector**

PRI_IDE1
**NOTE:** Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

PIN 1

### 3. Serial ATA connectors (7-pin SATA1 [red], SATA2 [red], SATA3 [black], SATA4 [black])

These connectors are for the Serial ATA signal cables for Serial ATA hard disk drives.



**P5GD1-FM SATA connectors**
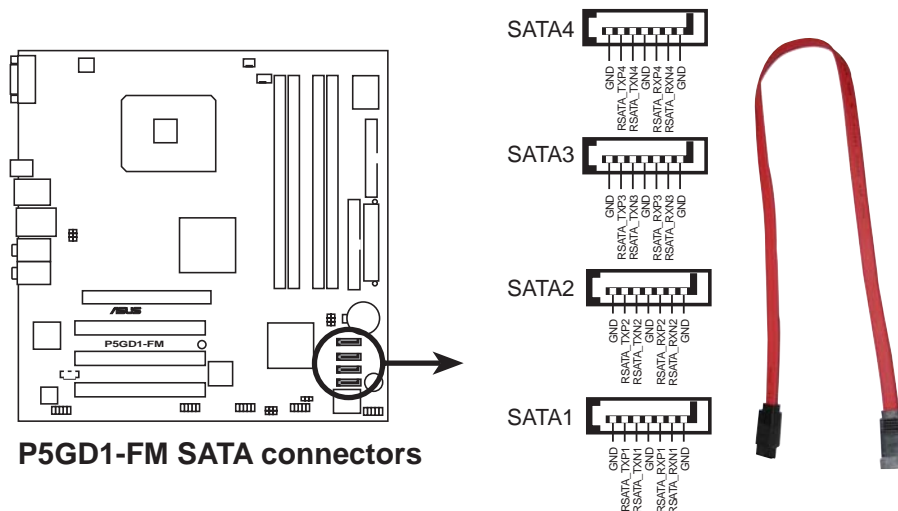
**Important notes on Serial ATA**

- You must install Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA hard disk drives.

- When using the connectors in standard IDE mode, connect the primary (boot) hard disk drive to the SATA1 or SATA2 connector. Refer to the table below for the recommended hard disk drive connections.

## Serial ATA Master/Slave connectors

| Connector | Color | Setting | Use |
|---|---|---|---|
| SATA1, SATA2 | Red | Master | Boot Disk |
| SATA3, SATA4 | Black | Slave | Data Disk |

### 4. CPU and Chassis Fan connectors (3-pin CHA_FAN1, 4-pin CPU_FAN1)

The fan connectors support cooling fans of 350 mA~740 mA (8.88 W max.) or a total of 1 A~2.22 A (26.64 W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

> ⚠ Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

CHA_FAN1    CPU_FAN1

GND
+12V
Rotation

GND
CPU FAN PWR
CPU FAN IN
CPU FAN PWM

**P5GD1-FM Fan connectors**
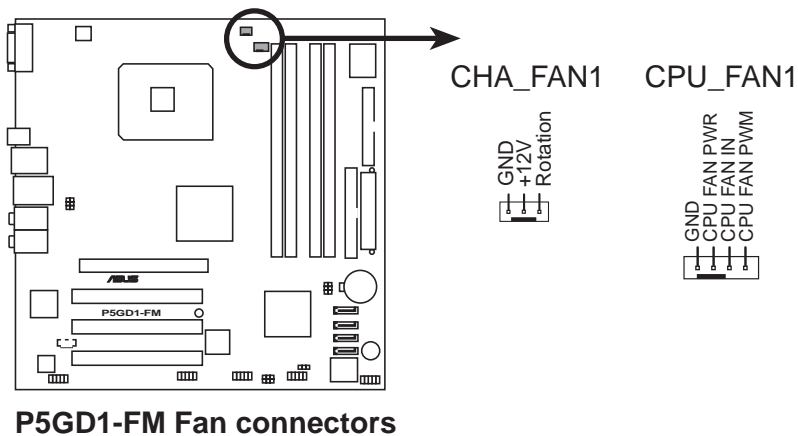
## 5. USB connectors (10-1 pin USB56, USB78)

These connectors are for USB 2.0 ports. Connect the USB/GAME module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



**P5GD1-FM USB 2.0 connectors**
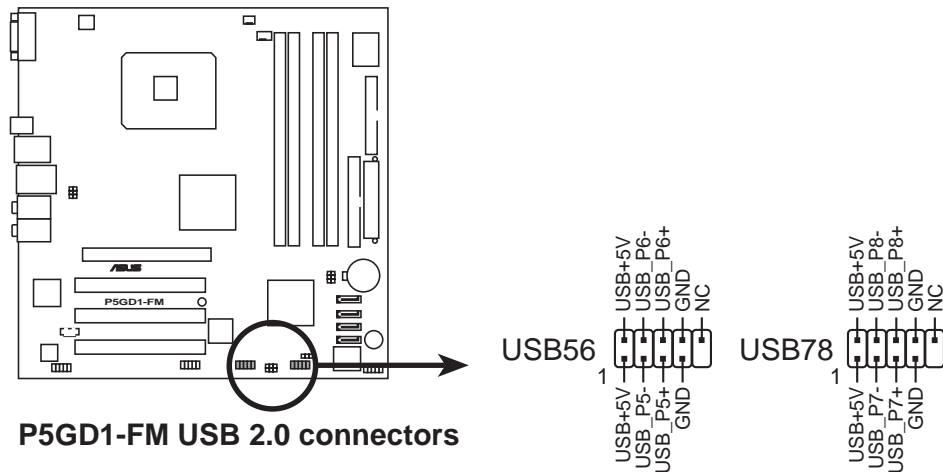
Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

The USB module is purchased separately.

## 6. ATX power connectors (24-pin EATXPWR1, 4-pin ATX12V1)

These connectors are for ATX power supply plugs. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



**P5GD1-FM ATX power connectors**

ATX12V1

+12V DC
GND

+12V DC
GND

EATXPWR1

| | |
|---|---|
| +3 Volts | Ground |
| +12 Volts | +5 Volts |
| +12 Volts | +5 Volts |
| +5V Standby | +5 Volts |
| Power OK | -5 Volts |
| Ground | Ground |
| +5 Volts | Ground |
| Ground | Ground |
| +5 Volts | PSON# |
| Ground | Ground |
| +3 Volts | -12 Volts |
| +3 Volts | +3 Volts |
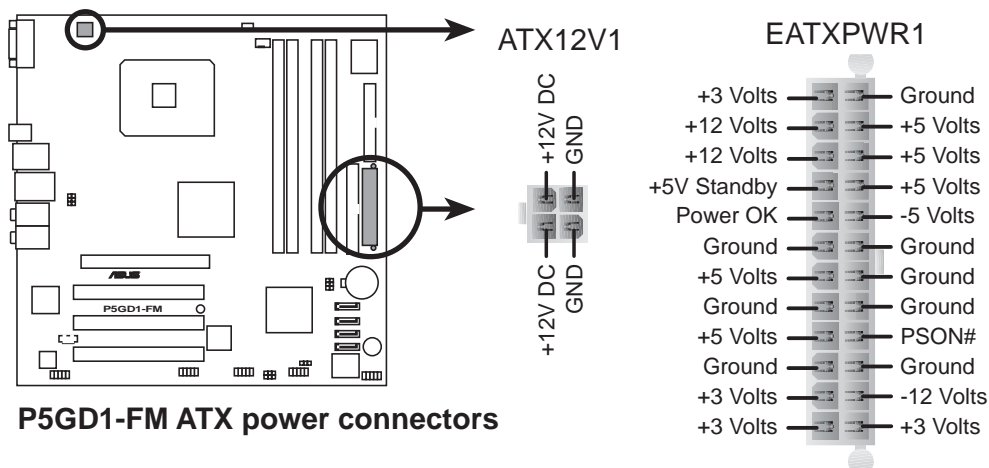
## Important notes on the motherboard power requirements

- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.

- To power the motherboard, it is recommended that you use an ATX 12 V Specification 2.0 power supply unit (PSU) with a minimum 350 W power rating. This PSU type has a 24-pin and 4-pin ATX power plugs.

### 7. Front panel audio connector (10-1 pin AAFP1)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC '97 audio standard. Connect one end of the front panel audio I/O module cable to this connector.



AAFP1

Azalia
compliant definition

GND
PRESENCE#
SENSE1_RETUR
SENSE2_RETUR

PORT1 L
PORT1 R
PORT2 R
SENSE_SEND
PORT2 L

**P5GD1-FM Analog front panel connector**
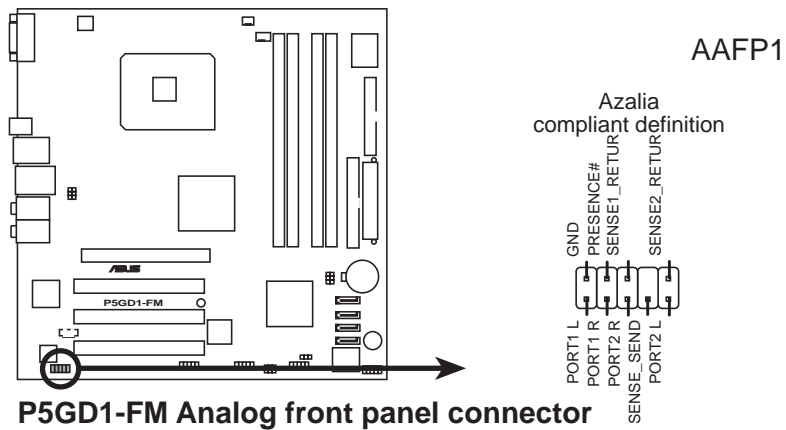
## 8 . IEEE 1394a port connector (10-1 pin IE1394_2)

This connector is for an IEEE 1394a port. Connect the IEEE 1394a module to this connector, then install the module to a slot opening at the back of the system chassis.

**P5GD1-FM IEEE 1394 connector**
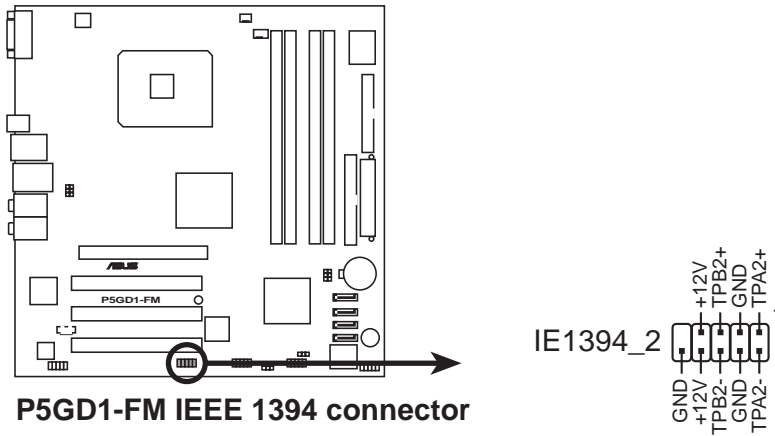
Never connect a **USB cable** to the IEEE 1394a connector. Doing so will damage the motherboard!

## 9 . Optical drive audio connector (4-pin CD1)

This connector is for the 4-pin audio cable that connects to the audio connector at the back of the optical drive.

**P5GD1-FM CD audio connector**
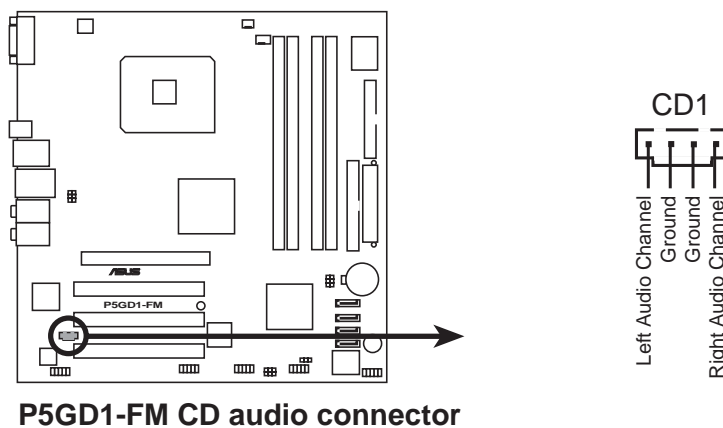
## 10. System panel connector (10-1 pin F_PANEL1)

This connector supports several chassis-mounted functions.



**P5GD1-FM System panel connector**

* Requires an ATX power supply.
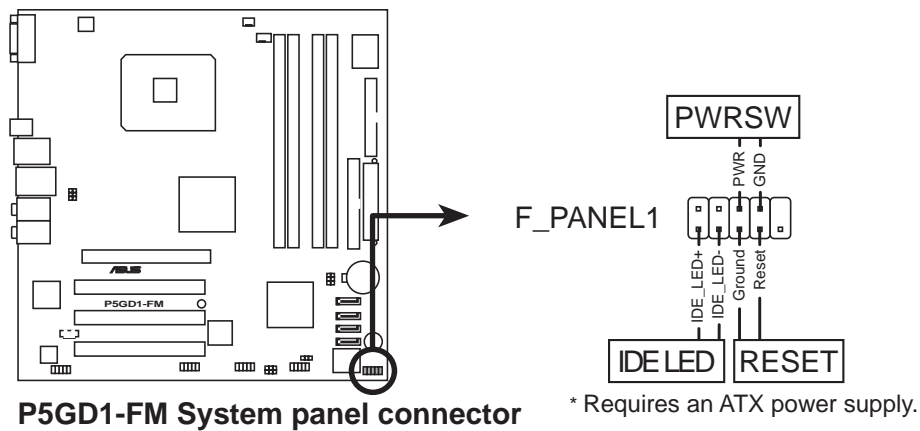
- **ATX power button/soft-off button (2-pin PWRSW)**
  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Hard disk drive activity LED (2-pin IDELED)**
  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.

- **Reset button (2-pin RESET)**
  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

This chapter tells how to change
the system settings through the BIOS
Setup menus. Detailed descriptions
of the BIOS parameters are also
provided.

# BIOS setup

2

# 2.1 Managing and updating your BIOS

The following utilities allow you to manage and update the motherboard Basic Input/Output System (BIOS) setup.

1. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)
2. **ASUS EZ Flash** (Updates the BIOS using a floppy disk during POST.)
3. **ASUS CrashFree BIOS 2** (Updates the BIOS using a bootable floppy disk or the motherboard support CD when the BIOS file fails or gets corrupted.)

Refer to the corresponding sections for details on these utilities.

Save a copy of the original motherboard BIOS file to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

## 2.1.1 Creating a bootable floppy disk

1. Do either one of the following to create a bootable floppy disk.

   **DOS environment**

   a. Insert a 1.44MB floppy disk into the drive.
   b. At the DOS prompt, type `format` `A:/S` then press <Enter>.

   **Windows® XP environment**

   a. Insert a 1.44 MB floppy disk to the floppy disk drive.
   b. Click **Start** from the Windows® desktop, then select **My Computer**.
   c. Select the 3 1/2 Floppy Drive icon.
   d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
   e. Select **Create an MS-DOS startup disk** from the format options field, then click **Start**.

   **Windows® 2000 environment**

   To create a set of boot disks for Windows® 2000:

   a. Insert a formatted, high density 1.44 MB floppy disk into the drive.
   b. Insert the Windows® 2000 CD to the optical drive.
   c. Click **Start**, then select **Run**.

d. From the Open field, type

**`D:\bootdisk\makeboot a:`**

assuming that D: is your optical drive.

e. Press <Enter>, then follow screen instructions to continue.

2. Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

## 2.1.2   AFUDOS utility

The AFUDOS utility allows you to update the BIOS file in DOS environment using a bootable floppy disk with the updated BIOS file. This utility also allows you to copy the current BIOS file that you can use as backup when the BIOS fails or gets corrupted during the updating process.

### Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:

> • Make sure that the floppy disk is not write-protected and has at least 600 KB free space to save the file.
>
> • The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be exactly the same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

2. Boot the system in DOS mode, then at the prompt type:

**`afudos /o[filename]`**

where the [filename] is any user-assigned filename not more than eight alphanumeric characters  for the main filename and three alphanumeric characters for the extension name.

```
A:\>afudos /oOLDBIOS1.ROM
```

**Main filename    Extension name**

3.	Press <Enter>. The utility copies the current BIOS file to the floppy disk.

```
A:\>afudos /oOLDBIOS1.ROM
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading flash ..... done
A:\>
```

The utility returns to the DOS prompt after copying the current BIOS file.

## Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

1.	Visit the system builder's website and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.

Write the BIOS filename on a piece of paper. You need to type the exact BIOS filename at the DOS prompt.

2.	Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.

3.	Boot the system in DOS mode, then at the prompt type:

	**afudos /i[filename]**

	where [filename] is the latest or the original BIOS file on the bootable floppy disk.

```
A:\>afudos /iP5GD1FM.ROM
```

4.	The utility verifies the file and starts updating the BIOS.

```
A:\>afudos /iP5GD1FM.ROM
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
   Reading file ..... done
   Erasing flash .... done
   Writing flash .... 0x0008CC00 (9%)
```

Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

5.    The utility returns to the DOS prompt after the BIOS update process is completed. Reboot the system from the hard disk drive.

```
A:\>afudos /iP5GD1FM.ROM
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
    Reading file ..... done
    Erasing flash .... done
    Writing flash .... 0x0008CC00 (9%)
    Verifying flash .. done
A:\>
```

## 2.1.3   ASUS EZ Flash utility

The ASUS EZ Flash feature allows you to update the BIOS without having to go through the long process of booting from a floppy disk and using a DOS-based utility. The EZ Flash utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self Tests (POST).

To update the BIOS using EZ Flash:

1.    Visit the system builder's  website to download the latest BIOS file for the motherboard and rename the same to **P5GD1FM.ROM**.

2.    Save the BIOS file to a floppy disk, then restart the system.

3.    Press <Alt> + <F2> during POST to display the following.

```
EZFlash starting BIOS update
Checking for floppy...
```

4.    Insert the floppy disk that contains the BIOS file to the floppy disk drive. When the correct BIOS file is found, EZ Flash performs the BIOS update process and automatically reboots the system when done.

```
EZFlash starting BIOS update
Checking for floppy...
Floppy found!
Reading file "P5GD1FM.ROM". Completed.
Start erasing.......|
Start programming...|
Flashed successfully. Rebooting.
```

- Do not shut down or reset the system while updating the BIOS to prevent system boot failure!

- A "Floppy not found!" error message appears if there is no floppy disk in the drive. A "P5GD1FM.ROM not found!" error message appears if the correct BIOS file is not found in the floppy disk. Make sure that you rename the BIOS file to P5GD1FM.ROM.

## 2.1.4 ASUS CrashFree BIOS 2 utility

The ASUS CrashFree BIOS 2 is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can update a corrupted BIOS file using the motherboard support CD or the floppy disk that contains the updated BIOS file.

> • Prepare the motherboard support CD or the floppy disk containing the updated motherboard BIOS before using this utility.
>
> • Make sure that you rename the original or updated BIOS file in the floppy disk to **P5GD1FM.ROM**.

### Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

1.  Turn on the system.
2.  Insert the floppy disk with the original or updated BIOS file to the floppy disk drive.
3.  The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When found, the utility reads the BIOS file and starts flashing the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "P5GD1FM.ROM". Completed.
Start flashing...
```

> DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4.  Restart the system after the utility completes the updating process.

## Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Remove any floppy disk from the floppy disk drive, then turn on the system.

2. Insert the support CD to the optical drive.

3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
```

When no floppy disk is found, the utility automatically checks the optical drive for the original or updated BIOS file. The utility then updates the corrupted BIOS file.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "P5GD1FM.ROM". Completed.
Start flashing...
```

DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

4. Restart the system after the utility completes the updating process.

The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the system builder's website to download the latest BIOS file.

## 2.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section *"2.1 Managing and updating your BIOS."*

Use the BIOS Setup program when you are installing a motherboard, reconfiguring your system, or prompted to "Run Setup." This section explains how to configure your system using this utility.

Even if you are not prompted to use the Setup program, you can change the configuration of your computer in the future. For example, you can enable the security password feature or change the power management settings. This requires you to reconfigure your system using the BIOS Setup program so that the computer can recognize these changes and record them in the CMOS RAM of the firmware hub.

The firmware hub on the motherboard stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Del> during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

The Setup program is designed to make it as easy to use as possible. Being a menu-driven program, it lets you scroll through the various sub-menus and make your selections from the available options using the navigation keys.

> • The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the **Load Default Settings** item under the Exit Menu. See section "2.7 Exit Menu."
>
> • The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
>
> • Visit the system builder's website to download the latest BIOS file for this motherboard.

## 2.2.1   BIOS menu screen

Menu items    Menu bar    Configuration fields                    General help

```
                          BIOS SETUP UTILITY
 Main    Advanced    Power    Boot    Exit

   System Time                 [11:51:19]              Use [ENTER], [TAB] or
   System Date                 [Tue 10/05/2004]        [SHIFT-TAB] to select
   Legacy Diskette A           [1.44M, 3.5 in]         a field.

 ► Primary IDE Master          [ST320413A]             Use [+] or [-] to
 ► Primary IDE Slave           [Pioneer CD-ROM ATA]    configure the System
 ► Third IDE Master            [Not Detected]          time.
 ► Third IDE Slave             [Not Detected]
 ► Fourth IDE Master           [Not Detected]
 ► Fourth IDE Slave            [Not Detected]
 ► IDE Configuration
                                                       ↔     Select Screen
 ► System Information                                  ↑↓    Select Item
                                                       +-    Change Option
                                                       F1    General Help
                                                       F10   Save and Exit
                                                       ESC   Exit

            v00.00 (C)Copyright 1985-2003, American Megatrends, Inc.
```

Sub-menu items                                          Navigation keys

## 2.2.2   Menu bar

The menu bar on top of the screen has the following main items:

| | |
|---|---|
| **Main** | For changing the basic system configuration |
| **Advanced** | For changing the advanced system settings |
| **Power** | For changing the advanced power management (APM) configuration |
| **Boot** | For changing the system boot configuration |
| **Exit** | For selecting the exit options and loading default settings |

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

## 2.2.3   Navigation keys

At the bottom right corner of a menu screen are the navigation keys for that particular menu. Use the navigation keys to select items in the menu and change the settings.

Some of the navigation keys differ from one screen to another.

## 2.2.4 Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (Advanced, Power, Boot, and Exit) on the menu bar have their respective menu items.
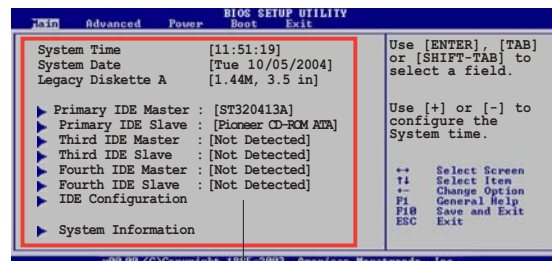


**Main menu items**

## 2.2.5 Sub-menu items

A solid triangle before each item on any menu screen means that the iteam has a sub-menu. To display the sub-menu, select the item and press <Enter>.

## 2.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to "2.2.7 Pop-up window."

## 2.2.7 Pop-up window

Select a menu item then press <Enter> to display a pop-up window with the configuration options for that item.

## 2.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the
Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.
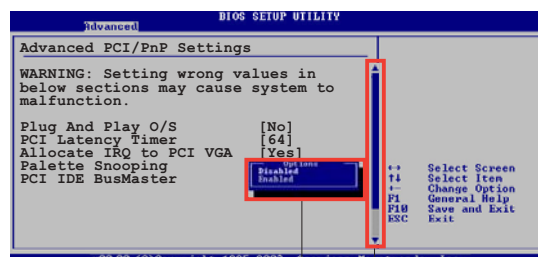


**Pop-up window**

**Scroll bar**

## 2.2.9 General help

At the top right corner of the menu screen is a brief description of the selected item.

## 2.3 Main menu

When you enter the BIOS Setup program, the Main menu screen appears, giving you an overview of the basic system information.

Refer to section "2.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                          BIOS SETUP UTILITY
  Main     Advanced     Power     Boot     Exit

  System Time                [11:51:19]                Use [ENTER], [TAB] or
  System Date                [Tue 10/05/2004]          [SHIFT-TAB] to select
  Legacy Diskette A          [1.44M, 3.5 in]           a field.

  ▶  Primary IDE Master    :  [ST320413A]              Use [+] or [-] to
  ▶  Primary IDE Slave     :  [Pioneer CD-ROM ATA]     configure the System
  ▶  Third IDE Master      :  [Not Detected]           time.
  ▶  Third IDE Slave       :  [Not Detected]
  ▶  Fourth IDE Master     :  [Not Detected]
  ▶  Fourth IDE Slave      :  [Not Detected]
  ▶  IDE Configuration
                                                       ↔      Select Screen
  ▶  System Information                                ↑↓     Select Item
                                                       +-     Change Option
                                                       F1     General Help
                                                       F10    Save and Exit
                                                       ESC    Exit

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```

## 2.3.1 System Time [xx:xx:xxxx]

Allows you to set the system time.

## 2.3.2 System Date [Day xx/xx/xxxx]

Allows you to set the system date.

## 2.3.3 Legacy Diskette A [1.44M, 3.5 in.]

Sets the type of floppy drive installed. Configuration options: [Disabled] [360K, 5.25 in.] [1.2M , 5.25 in.] [720K , 3.5 in.] [1.44M, 3.5 in.] [2.88M, 3.5 in.]

## 2.3.4 Primary, Third, and Fourth IDE Master/Slave

While entering Setup, the BIOS automatically detects the presence of IDE devices. There is a separate sub-menu for each IDE device. Select a device item then press <Enter> to display the IDE device information.

```
                              BIOS SETUP UTILITY
  Main

  Primary IDE Master                                  Select the type of
                                                      device connected to
    Device                 : Hard Disk                the system.
    Vendor                 : ST320413A
    Size                   : 20.0GB
    LBA Mode               : Supported
    Block Mode             : 16 Sectors
    PIO Mode               : 4
    Async DMA              : MultiWord DMA-2
    Ultra DMA              : Ultra DMA-5
    SMART Monitoring       : Supported

    Type                      [Auto]               ←→    Select Screen
    LBA/Large Mode            [Auto]               ↑↓    Select Item
    Block(Multi-sector Transfer)  [Auto]           +-    Change Option
    PIO Mode                  [Auto]               F1    General Help
    DMA Mode                  [Auto]               F10   Save and Exit
    Smart Monitoring          [Auto]               ESC   Exit
    32Bit Data Transfer       [Disabled]
    Acoustics                 [Disabled]

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```

The BIOS automatically detects the values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring). These values are not user-configurable. These items show N/A if no IDE device is installed in the system.

## Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive. Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

## LBA/Large Mode [Auto]

Enables or disables the LBA mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Configuration options: [Disabled] [Auto]

## Block (Multi-sector Transfer) [Auto]

Enables or disables data multi-sectors transfers. When set to Auto, the data transfer from and to the device occurs multiple sectors at a time if the device supports multi-sector transfer feature. When set to [Disabled], the data transfer from and to the device occurs one sector at a time. Configuration options: [Disabled] [Auto]

## PIO Mode [Auto]

Selects the PIO mode.
Configuration options: [Auto] [0] [1] [2] [3] [4]

## DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0]
[SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0]
[UDMA1] [UDMA2]

## SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.
Configuration options: [Auto] [Disabled] [Enabled]

## 32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.
Configuration options: [Disabled] [Enabled]

## Acoustics [Disabled]

Sets the level of acoustic management. Medium setting provides some
management. Silent setting makes your hard drive run quietly.
Configuration options: [Disabled] [Medium] [Silent]

## 2.3.5   IDE Configuration

The items in this menu allow you to set or change the configurations for
the IDE devices installed in the system. Select an item then press <Enter>
if you want to configure the item.

```
                        BIOS SETUP UTILITY
  Main

   IDE Configuration                              Set to [Compatible
                                                  Mode] when Legacy OS
   Onboard IDE Operate Mode       [Enhanced Mode] (i.e. WIN ME, 98,
      Enhanced Mode Support On    [SATA mode]     NT4.0, MS DOS is
                                                  used.
   IDE Detect Time Out (Sec)      [35]
```
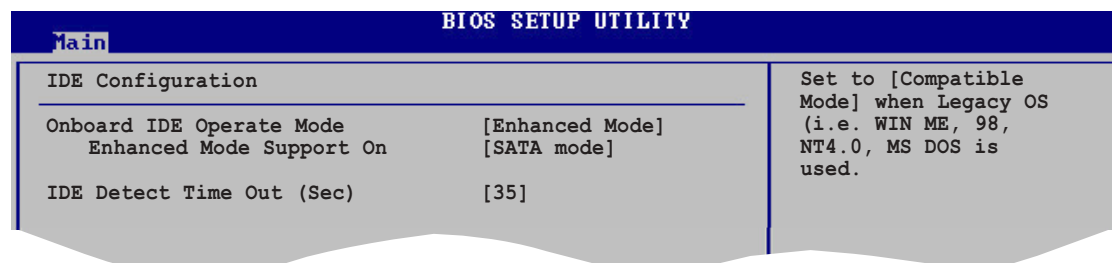
## Onboard IDE Operate Mode [Enhanced Mode]

Allows selection of the IDE operation mode depending on the operating
system (OS) that you installed. Set to Enhanced Mode if you are using
native OS, such as Windows® 2000/XP. Configuration options: [Disabled]
[Compatible Mode] [Enhanced Mode]

*Enhanced Mode Support On [SATA mode]*

The default setting SATA allows you to use native OS on Serial ATA and Parallel ATA ports. We recommend that you do not change the default setting for better OS compatibility. In this setting, you may use legacy OS on the Parallel ATA ports **only if** you did not install any Serial ATA device.

The P-ATA+S-ATA and P-ATA options are for advanced users only. If you set to any of these options and encounter problems, revert to the default setting **SATA**. Configuration options: [S-ATA+P-ATA] [SATA mode] [P-ATA]

## IDE Detect Time Out [35]

Selects the time out value for detecting ATA/ATAPI devices. Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

## 2.3.6　System Information

This menu gives you an overview of the general system specifications. The BIOS automatically detects the items in this menu.

```
                          BIOS SETUP UTILITY
   Main


      AMIBIOS
      Version    : 08.00.10
      Build Date : 09/16/04

      Processor
      Type     : Genuine Intel(R) CPU 3.20GHz
      Speed    : 3200 MHz
      Count    : 1

      System Memory
      Size      : 256MB
                                          ←→    Select Screen
                                          ↑↓    Select Item
                                          +-    Change Option
```
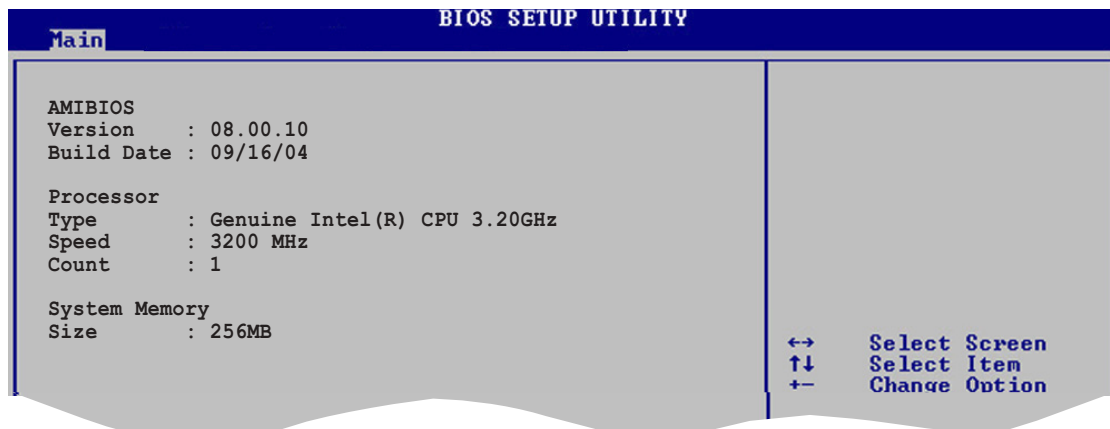
## AMI BIOS

Displays the auto-detected BIOS information

## Processor

Displays the auto-detected CPU specification

## System Memory

Displays the auto-detected system memory

# 2.4 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

> ⚠️ Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

 ▶  USB Configuration                            Configure the USB
                                                 support.
 ▶  CPU Configuration
 ▶  Chipset
 ▶  Onboard Devices Configuration
 ▶  PCI PnP




                                            ←→     Select Screen
                                            ↑↓     Select Item
                                            Enter  Go to Sub Screen
                                            F1     General Help
                                            F10    Save and Exit
                                            ESC    Exit



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```
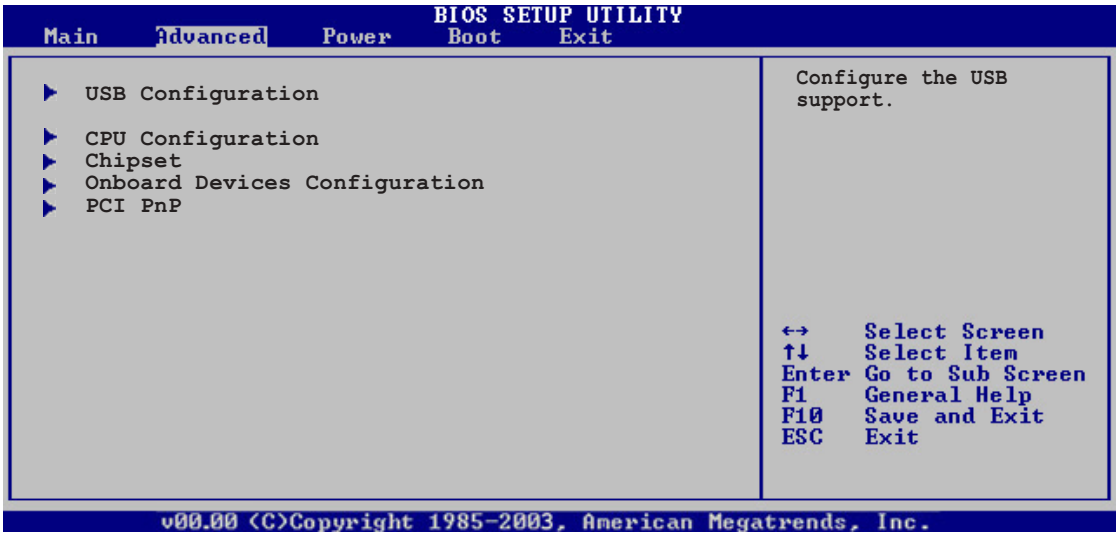
## 2.4.1 USB Configuration

The items in this menu allows you to change the USB-related features. Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
     Advanced

 USB Configuration                              Enables USB host
                                                controllers.
 Module Version - 2.23.2-9.4

 USB Devices Enabled: None

 USB Function                 [Enabled]
 Legacy USB Support           [Auto]
 USB 2.0 Controller           [Enabled]
 USB 2.0 Controller Mode      [HiSpeed]
```
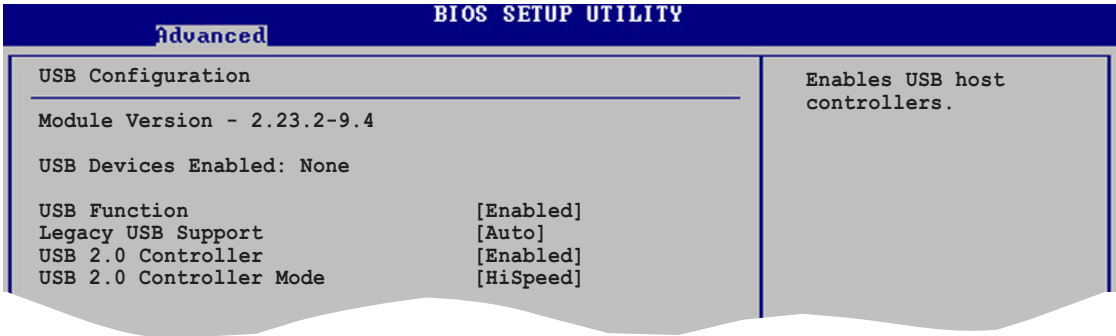
> ✎ The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

## USB Function [Enabled]

Allows you to enable or disable the USB function.
Configuration options: [Disabled] [Enabled]

## Legacy USB Support [Auto]

Allows you to enable or disable support for USB devices on legacy operating systems (OS). Setting to Auto allows the system to detect the presence of USB devices at startup. If detected, the USB controller legacy mode is enabled. If no USB device is detected, the legacy USB support is disabled. Configuration options: [Disabled] [Enabled] [Auto]

## USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller. Configuration options: [Enabled] [Disabled]

## USB 2.0 Controller Mode [HiSpeed]

Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [Full Speed] [HiSpeed]

## 2.4.2 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

```
                        BIOS SETUP UTILITY
    Advanced

 Configure Advanced CPU settings                    Sets the ratio between
                                                    CPU Core Clock and the
 Manufacturer: Intel                                FSB Frequency.
 Brand String: Genuine Intel(R) CPU 3.20GHz         NOTE: If an invalid
 Frequency   : 3200 MHz                             ratio is set in CMOS
 FSB Speed   : 800 MHz                              then actual and
                                                    setpoint values may
 Cache L1    : 16 KB                                differ.
 Cache L2    : 1024 KB
 Cache L3    : 0 KB

 Ratio Status: Unlocked
 Ratio Actual Value : 16
   Ratio CMOS Setting:          [  8]              ←→    Select Screen
   VID CMOS Setting:            [ 62]              ↑↓    Select Item
 Microcode Updation:            [Enabled]          +-    Change Option
 Max CPUID Value Limit:         [Disabled]         F1    General Help
 Enhanced C1 Control            [Auto]             F10   Save and Exit
 CPU Internal Thermal Control   [Auto]             ESC   Exit

 Hyper Threading Technology     [Enabled]


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```

## Ratio CMOS Setting [ 8]

Sets the ratio between the CPU Core Clock and the Front Side Bus frequency. The default value of this item is auto-detected by BIOS. Use the **<+>** or **<->** keys to adjust the values.

## VID CMOS Setting [ 62]

Allows you to set the VID CMOS setting at which the processor is to run. The default value of this item is auto-detected by BIOS. Use the **<+>** or **<->** keys to adjust the values.

## Microcode Updation [Enabled]

Enables or disables microcode updation.
Configuration options: [Disabled] [Enabled]

## Max CPUID Value Limit [Disabled]

Enable this item to boot legacy operating systems that cannot support CPUs with extended CPUID functions. Configuration options: [Disabled] [Enabled]

## Enhanced C1 Control [Auto]

When set to [Auto], the BIOS will automatically check the CPU's capability to enable the C1E support. In C1E mode, the CPU power consumption is lower when idle. Configuration options: [Auto] [Disabled]

## CPU Internal Thermal Control [Auto]

Disables or sets the CPU internal thermal control.
Configuration options:  [Auto] [Disabled]

## Hyper Threading Technology [Enabled]

Enables or disables the processor Hyper-Threading technology.
Configuration options:  [Disabled] [Enabled]

## 2.4.3  Chipset

The Chipset menu allows you to change the advanced chipset settings.
Select an item then press <Enter> to display the sub-menu.

```
                        BIOS SETUP UTILITY
       Advanced

    Advanced Chipset Settings                   Enable or disable
                                                DRAM timing.
    Configure DRAM Timing by SPD      [Enabled]

    Booting Graphic Adapter Priority  [PCI Express/PCI]


    PCI-EX Ports Configuration

    VC1 for Azalia & Root Ports       [Disabled]


                                        ←→     Select Screen
                                        ↑↓     Select Item
                                        +-     Change Option
                                        F1     General Help
                                        F10    Save and Exit
                                        ESC    Exit


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```
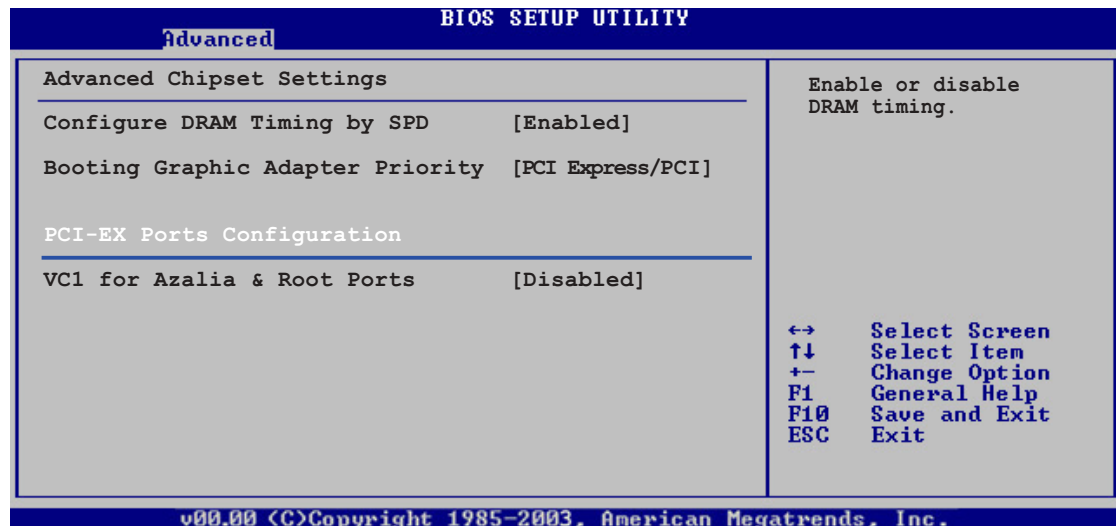
## Advanced Chipset Settings

### *Configure DRAM Timing by SPD [Enabled]*
When this item is enabled, the DRAM timing parameters are set
according to the DRAM SPD (Serial Presence Detect). When disabled,
you can manually set the DRAM timing parameters through the DRAM
sub-items. The following sub-items appear when this item is Disabled.
Configuration options: [Disabled] [Enabled]

#### DRAM CAS# Latency [3 Clocks]
Controls the latency between the SDRAM read command and the
time the data actually becomes available.
Configuration options: [3 Clocks] [2.5 Clocks] [2 Clocks]

#### DRAM RAS# Precharge [4 Clocks]
Controls the idle clocks after issuing a precharge command to the
DDR SDRAM. Configuration options: [2 Clocks] [3 Clocks] [4 Clocks]
[5 Clocks]

### DRAM RAS# to CAS# Delay [4 Clocks]

Controls the latency between the DDR SDRAM active command and the read/write command. Configuration options: [2 Clocks] [3 Clocks]  [4 Clocks] [5 Clocks]

### DRAM RAS# Activate to Precharge Delay [15 Clocks]

Configuration options: [4 Clocks] [5 Clocks] ~ [15 Clocks]

### DRAM Burst Length [8]

Sets the DRAM Burst Length. Configuration options: [4] [8]

*Booting Graphic Adapter Priority [PCI Express/PCI]*
Allows selection of the graphics controller to use as primary boot device. Configuration options: [PCI Express/PCI] [PCI/PCI Express]

*VC1 for Azalia & Root Ports [Disabled]*
Enables or disables the VC1 for the Azalia audio ports and other root ports. Configuration options: [Disabled] [Enabled]

## 2.4.4 Onboard Devices Configuration

```
                        BIOS SETUP UTILITY
   Advanced

  Configure Win627EHF Super IO Chipset        Enable or disable
                                              Azalia controller.
  Azalia Controller            [Enabled]
  Onboard 1394 Controller      [Enabled]
  Onboard LAN                  [Enabled]
  LAN Boot ROM                 [Disabled]

  Serial Port1 Address         [3F8/IRQ4]









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```
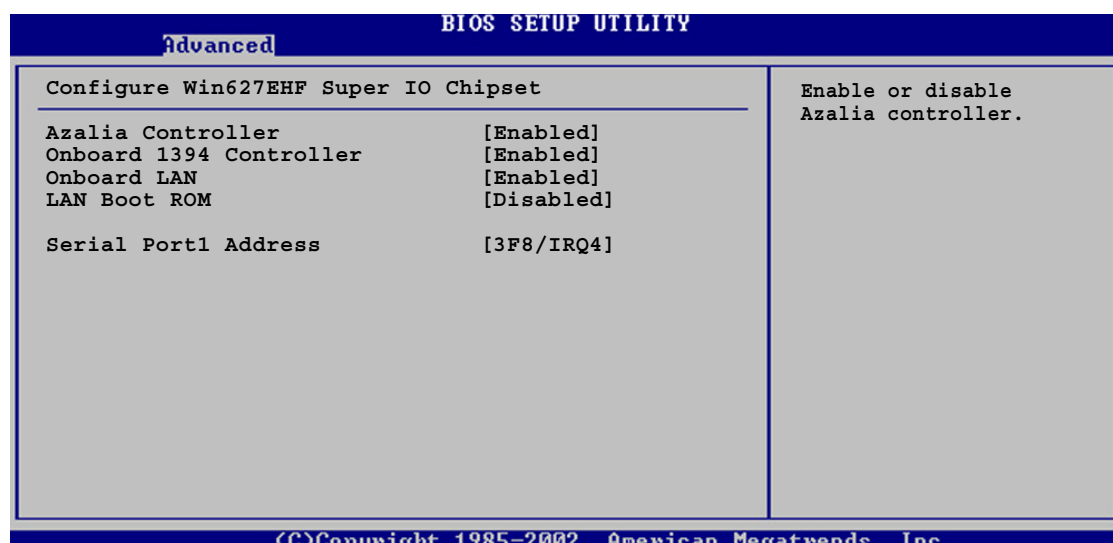
### Azalia Controller [Enabled]

Enables or disables the Azalia controller.
Configuration options: [Enabled] [Disabled]

### Onboard 1394 Controller [Enabled]

Enables or disables the onboard IEEE 1394a controller.
Configuration options: [Enabled] [Disabled]

### OnBoard LAN [Enabled]

Enables or disables the onboard LAN controller. Configuration options:
[Disabled] [Enabled]

### LAN Boot ROM [Disabled]

Allows you to enable or disable the LAN Boot ROM in the onboard LAN
controller. This item appears only when the Onboard LAN item is set to
Enabled. Configuration options: [Disabled] [Enabled]

### Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.
Configuration options: [Disabled] [3F8/IRQ4] [2F8/IRQ3] [3E8/IRQ4]
[2E8/IRQ3]

## 2.4.5 PCI PnP

The PCI PnP menu items allow you to change the advanced settings for PCI/PnP devices. The menu includes setting IRQ and DMA channel resources for either PCI/PnP or legacy ISA devices, and setting the memory size block for legacy ISA devices.

⚠️ Take caution when changing the settings of the PCI PnP menu items. Incorrect field values can cause the system to malfunction.

```
                        BIOS SETUP UTILITY
          Advanced

 Advanced PCI/PnP Settings                            ▲    Available: Specified
                                                           IRQ is available to be
 WARNING: Setting wrong values in below sections           used by PCI/PnP
          may cause system to malfunction.                 devices.
                                                           Reserved: Specified IRQ
 Plug And Play O/S            [Yes]                         is reserved for use by
 PCI Latency Timer           [64]                          Legacy ISA devices.
 Allocate IRQ to PCI VGA     [Yes]
 Palette Snooping            [Disabled]
 PCI IDE BusMaster           [Enabled]
 OffBoard PCI/ISA IDE Card   [Auto]

 IRQ-3  assigned to          [PCI Device]
 IRQ-4  assigned to          [PCI Device]          ←→      Select Screen
 IRQ-5  assigned to          [PCI Device]          ↑↓      Select Item
 IRQ-7  assigned to          [PCI Device]          +-      Change Option
 IRQ-9  assigned to          [PCI Device]          F1      General Help
 IRQ-10 assigned to          [PCI Device]          F10     Save and Exit
 IRQ-11 assigned to          [PCI Device]          ESC     Exit
 IRQ-14 assigned to          [PCI Device]
 IRQ-15 assigned to          [PCI Device]          ▼

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```

### Plug and Play O/S [Yes]

When set to [No], BIOS configures all the devices in the system. When set to [Yes] and if you install a Plug and Play operating system, the operating system configures the Plug and Play devices not required for boot. Configuration options: [No] [Yes]

### PCI Latency Timer [64]

Allows you to select the value in units of PCI clocks for the PCI device latency timer register. Configuration options: [32] [64] [96] [128] [160] [192] [224] [248]

### Allocate IRQ to PCI VGA [Yes]

When set to [Yes], BIOS assigns an IRQ to PCI VGA card if the card requests for an IRQ. When set to [No], BIOS does not assign an IRQ to the PCI VGA card even if requested. Configuration options: [Yes] [No]

### Palette Snooping [Disabled]

When set to [Enabled], the pallete snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

### PCI IDE BusMaster [Enabled]

Allows BIOS to use PCI bus mastering when reading/writing to IDE devices. Configuration options: [Disabled] [Enabled]

### OffBoard PCI/ISA IDE Card [Auto]

Allows you to set the PCI slot number holding a PCI IDE card that requires you to set the slot number. Configuration options: [Auto] [PCI Slot1] [PCI Slot2] [PCI Slot3]

### IRQ-xx assigned to [PCI Device]

When set to [PCI Device], the specific IRQ is free for use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

## 2.5 Power menu

The Power menu items allow you to change the settings for the Advanced Power Management (APM) and Advanced Configuration and Power Interface (ACPI). Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

                                              Select the ACPI state
  ACPI Aware O/S              [Yes]           used for System
  Suspend Mode               [S3 only]       Suspend.
  Repost Video on S3 Resume  [No]
  ACPI 2.0 Support           [No]
  ACPI APIC Support          [Enabled]

  ▶ APM Configuration
  ▶ Hardware Monitor

                                              ↔      Select Screen
                                              ↑↓     Select Item
                                              Enter  Go to Sub Screen
                                              F1     General Help
                                              F10    Save and Exit
                                              ESC    Exit

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```
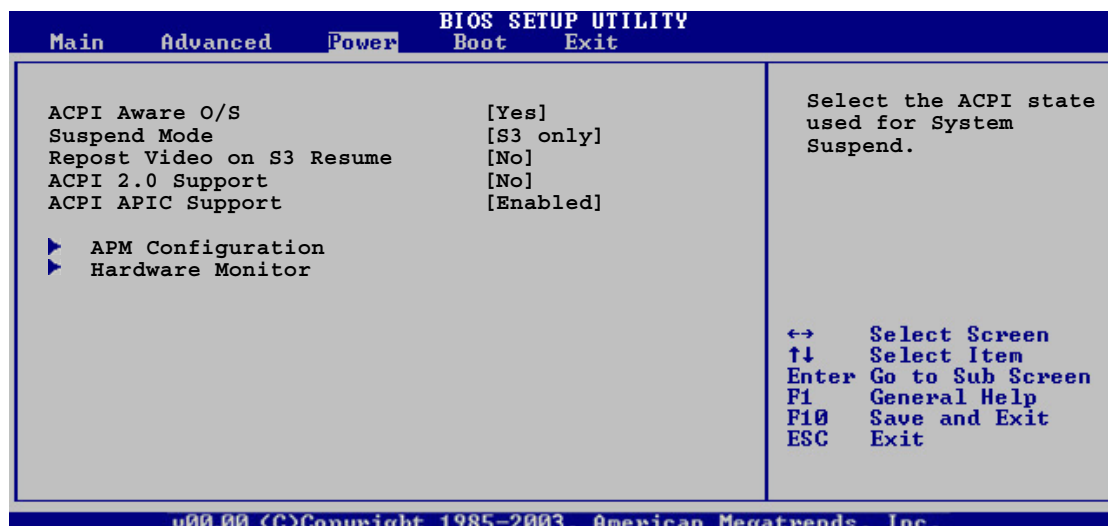
### 2.5.1  ACPI Aware O/S [Yes]

Allows you to enable or disable ACPI support for the operating system. Set to [Yes] if the OS supports ACPI. Set to [No] if the OS does not support ACPI.

### 2.5.2  Suspend Mode [S3 only]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.
Configuration options: [S1 (POS) Only] [S3 Only] [Auto]

### 2.5.3  Repost Video on S3 Resume [No]

Determines whether to invoke VGA BIOS post on S3/STR resume.
Configuration options: [No] [Yes]

### 2.5.4  ACPI 2.0 Support [No]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications. Configuration options: [No] [Yes]

### 2.5.5  ACPI APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Application-Specific Integrated Circuit (ASIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

## 2.5.6  APM Configuration

```
                          BIOS SETUP UTILITY
                  Power

 APM Configuration                                    <Enter> to select
 ─────────────────────────────────────────────       whether or not to
 Restore on AC Power Loss      [Last State]           restart the system
 Power On By RTC Alarm         [Disabled]             after AC power loss.
 Power On By External Modems   [Disabled]
 Power On By PCI Devices       [Disabled]
```
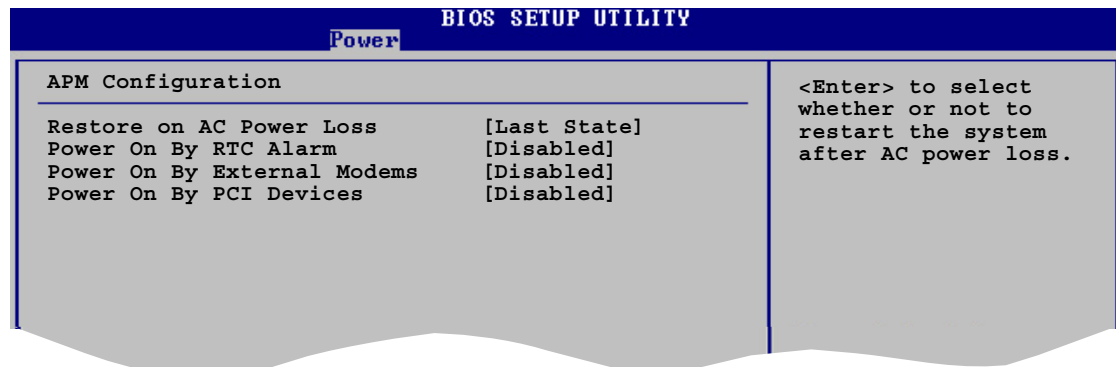
### Restore on AC Power Loss [Last State]

When set to Power Off, the system goes into off state after an AC power loss. When set to Power On, the system goes on after an AC power loss. When set to Last State, the system goes into either off or on state, whatever the system state was before the AC power loss.
Configuration options: [Power Off] [Power On] [Last State]

### Power On By RTC Alarm [Disabled]

Allows you to enable or disable RTC to generate a wake event. When this item is set to Enabled, the items RTC Alarm Date, RTC Alarm Hour, RTC Alarm Minute, and RTC Alarm Second appear with set values. Configuration options: [Disabled] [Enabled]

### Power On By External Modems [Disabled]

This allows either settings of [Enabled] or [Disabled] for powering up the computer when the external modem receives a call while the computer is in Soft-off mode. Configuration options: [Disabled] [Enabled]

> The computer cannot receive or transmit data until the computer and applications are fully running. Thus, connection cannot be made on the first try. Turning an external modem off and then back on while the computer is off causes an initialization string that turns the system power on.

### Power On By PCI Devices [Disabled]

When set to [Enabled], this parameter allows you to turn on the system through a PCI LAN or modem card. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.
Configuration options: [Disabled] [Enabled]

## 2.5.7 Hardware Monitor

```
                          BIOS SETUP UTILITY
                 Power

  Hardware Monitor

  CPU Temperature                [51°C/122.5°F]
  MB Temperature                 [41°C/105.5°F]

  CPU Fan Speed                  [3813 RPM]
  CPU Q-Fan Control              [Enabled]
  CPU Fan Ratio                  [30%]
  CPU Target Temperature         [62°C]
  Chassis Fan Speed              [N/A]

  VCORE Voltage                  [ 1.320V]         ↔    Select Screen
  3.3V Voltage                   [ 3.345V]         ↑↓   Select Item
  5V Voltage                     [ 5.094V]         +-   Change Option
  12V Voltage                    [11.880V]         F1   General Help
                                                   F10  Save and Exit
                                                   ESC  Exit


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```

## CPU Temperature [xxx⁰C/xxx⁰F]
## MB Temperature [xxx⁰C/xxx⁰F]

The onboard hardware monitor automatically detects and displays the motherboard and CPU temperatures. Select Disabled if you do not wish to display the detected temperatures.

## CPU Fan Speed [xxxxRPM] or [N/A]

The onboard hardware monitor automatically detects and displays the CPU fan speed in rotations per minute (RPM). If the fan is not connected to the motherboard, the field shows N/A.

## CPU Q-Fan Control [Disabled]

Allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. When this field is set to [Enabled], the **CPU Fan Ratio** item appears to allow selection of the appropriate fan speed ratio. Configuration options: [Disabled] [Enabled]

## CPU Fan Ratio [30%]

Allows you to select the appropriate CPU fan speed ratio for the system. The default [Auto] automatically selects the fan speed ratio when operating a low CPU temperature. Select a higher ratio if you installed additional devices and the system requires more ventilation. This item appears only when the CPU Q-Fan Control item is Enabled.
Configuration options: [Auto] [30%] [40%] [50%] [60%]

## CPU Target Temperature [62ºC]

Allows you to set the CPU temperature threshold when the CPU fan speed is increased to lower the CPU temperature. This item appears only when the CPU Q-Fan Control item is Enabled. Configuration options: [56°C] [59ºC] [62ºC] [65ºC]

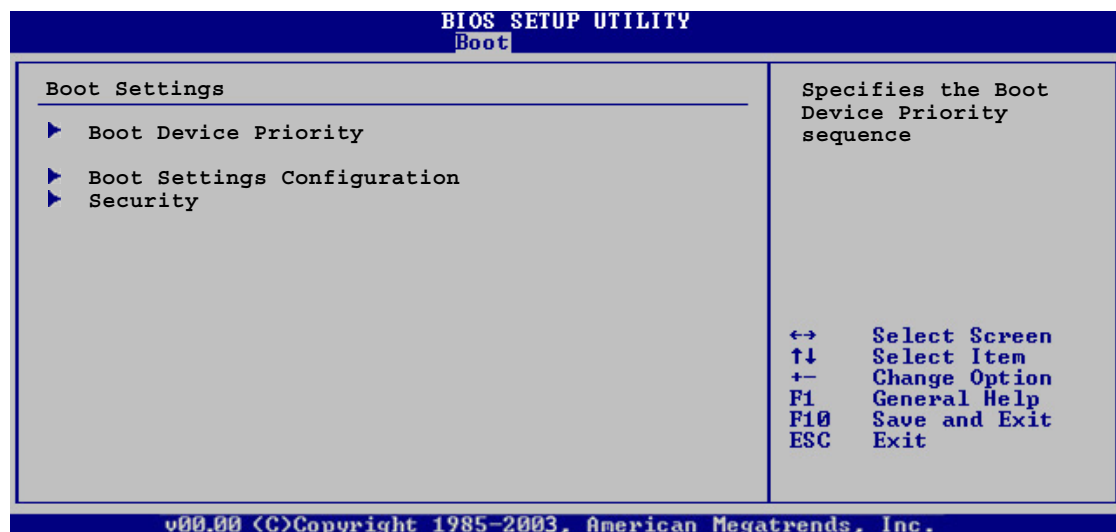## Chassis Fan Speed [xxxxRPM] or [N/A]

The onboard hardware monitor automatically detects and displays the chassis fan speed in rotations per minute (RPM). If the fan is not connected to the chassis, the specific field shows N/A.

## VCORE Voltage, 3.3V Voltage, 5V Voltage, 12V Voltage

The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

# 2.6    Boot menu

The Boot menu items allow you to change the system boot options. Select an item then press <Enter> to display the sub-menu.

```
                      BIOS SETUP UTILITY
                          Boot

 Boot Settings                              Specifies the Boot
                                            Device Priority
 ▶ Boot Device Priority                     sequence

 ▶ Boot Settings Configuration
 ▶ Security



                                            ←→    Select Screen
                                            ↑↓    Select Item
                                            +-    Change Option
                                            F1    General Help
                                            F10   Save and Exit
                                            ESC   Exit


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```

## 2.6.1   Boot Device Priority

```
                      BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

 Boot Device Priority

 1st Boot Device              [1st FLOPPY DRIVE]
 2nd Boot Device              [PM-ST320413A]
 3rd Boot Device              [PS-Pioneer CD-ROM]
```

### 1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.
Configuration options: [xxxxx Drive] [Disabled]

## 2.6.2 Boot Settings Configuration

```
                    BIOS SETUP UTILITY
                    Boot

Boot Settings Configuration                         Allows BIOS to skip
                                                    certain tests while
Quick Boot                    [Enabled]             booting. This will
Full Screen Logo              [Enabled]             decrease the time
AddOn ROM Display Mode        [Force BIOS]          needed to boot the
Bootup Num-Lock               [On]                  system.
Wait For 'F1' If Error        [Disabled]
Hit 'DEL' Message Display     [Enabled]
Interrupt 19 Capture          [Disabled]
```
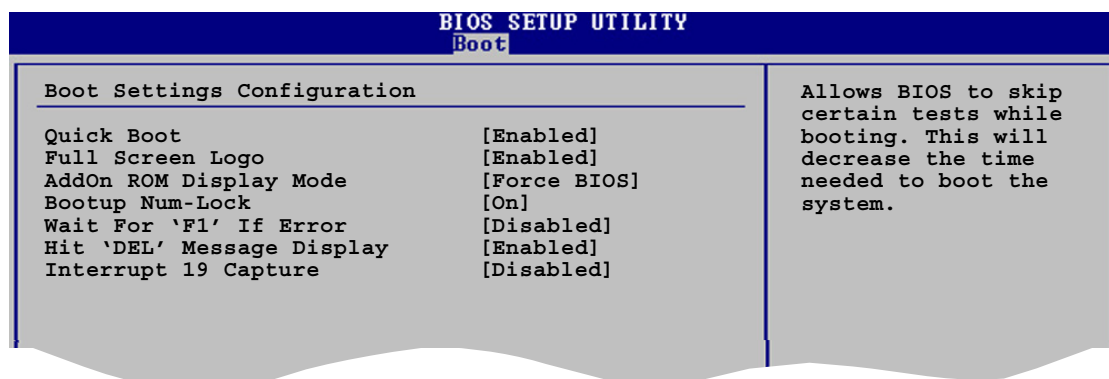
### Quick Boot [Enabled]

Enabling this item allows the BIOS to skip some power on self tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.
Configuration options: [Disabled] [Enabled]

### Full Screen Logo [Enabled]

This allows you to enable or disable the full screen logo display feature.
Configuration options: [Disabled] [Enabled]

> Set this item to [Enabled] to use the ASUS MyLogo™ feature.

### Add On ROM Display Mode [Force BIOS]

Sets the display mode for option ROM.
Configuration options: [Force BIOS] [Keep Current]

### Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.
Configuration options: [Off] [On]

### Wait for 'F1' If Error [Disabled]

When set to Enabled, the system waits for the F1 key to be pressed when error occurs. Configuration options: [Disabled] [Enabled]
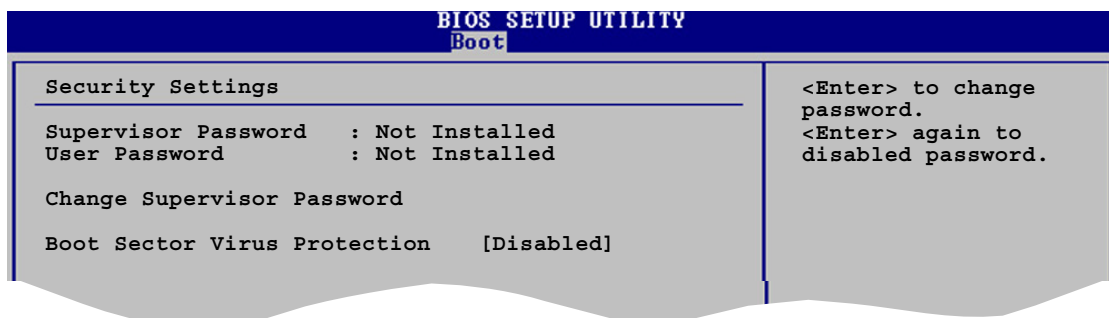
## Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

## Interrupt 19 Capture [Disabled]

When set to [Enabled], this function allows the option ROMs to trap Interrupt 19. Configuration options: [Disabled] [Enabled]

## 2.6.3 Security

The Security menu items allow you to change the system security settings. Select an item then press <Enter> to display the configuration options.

```
                        BIOS SETUP UTILITY
                              Boot

  Security Settings                            <Enter> to change
                                               password.
  Supervisor Password   : Not Installed        <Enter> again to
  User Password         : Not Installed        disabled password.

  Change Supervisor Password

  Boot Sector Virus Protection    [Disabled]
```

## Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a Supervisor Password:

1.  Select the Change Supervisor Password item and press <Enter>.
2.  From the password box, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.  Confirm the password when prompted.

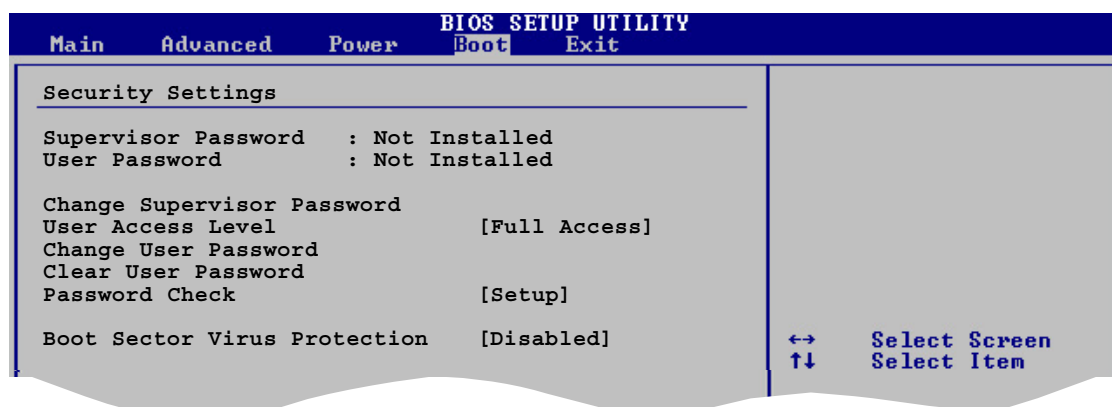The message "Password Installed" appears after you successfully set your password.

To change the supervisor password, follow the same steps as in setting a user password.

To clear the supervisor password, select the Change Supervisor Password then press <Enter>. The message "Password Uninstalled" appears.

> If you forget your BIOS password, you can clear clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "1.9 Jumpers" for information on how to erase the RTC RAM.

After you have set a supervisor password, the other items appear to allow you to change other security settings.

```
                        BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

   Security Settings

   Supervisor Password   : Not Installed
   User Password         : Not Installed

   Change Supervisor Password
   User Access Level            [Full Access]
   Change User Password
   Clear User Password
   Password Check               [Setup]

   Boot Sector Virus Protection [Disabled]        ↔    Select Screen
                                                  ↑↓   Select Item
```

## User Access Level (Full Access]

This item allows you to select the access restriction to the Setup items. Configuration options: [No Access] [View Only] [Limited] [Full Access]

**No Access** prevents user access to the Setup utility.

**View Only** allows access but does not allow change to any field.

**Limited** allows changes only to selected fields, such as Date and Time.

**Full Access** allows viewing and changing all the fields in the Setup utility.

## Change User Password

Select this item to set or change the user password. The User Password item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

To set a User Password:

1.  Select the Change User Password item and press <Enter>.
2.  On the password box that appears, type a password composed of at least six letters and/or numbers, then press <Enter>.
3.  Confirm the password when prompted.

The message "Password Installed" appears after you set your password successfully.

To change the user password, follow the same steps as in setting a user password.

## Clear User Password

Select this item to clear the user password.

## Password Check [Setup]

When set to [Setup], BIOS checks for user password when accessing the Setup utility. When set to [Always], BIOS checks for user password both when accessing Setup and booting the system.
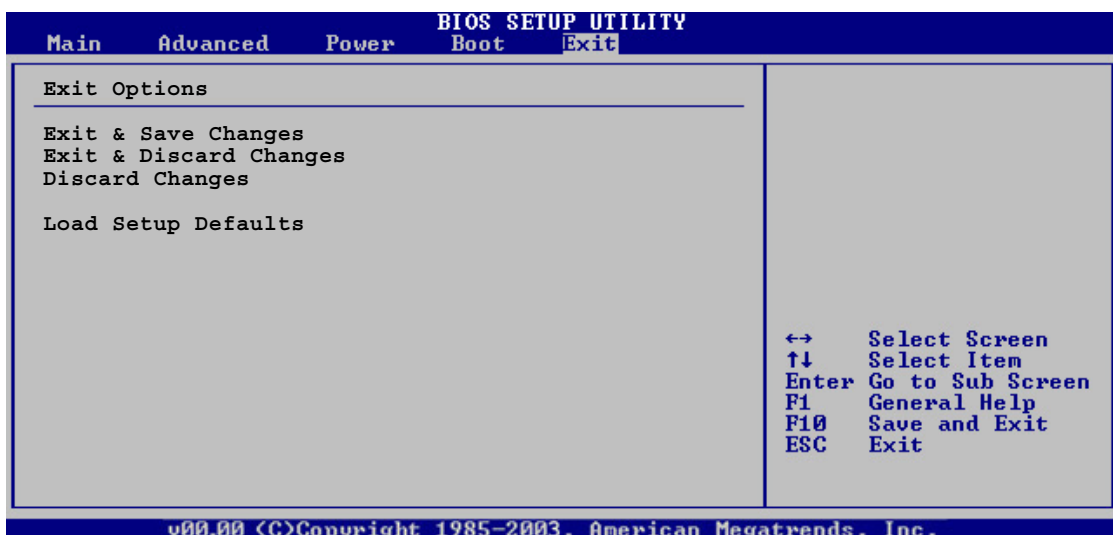Configuration options: [Setup] [Always]

## Boot Sector Virus Protection [Disabled]

Allows you to enable or disable the boot sector virus protection.
Configuration options: [Disabled] [Enabled]

# 2.7    Exit menu

The Exit menu items allow you to load the optimal or failsafe default values for the BIOS items, and save or discard your changes to the BIOS items.

```
                              BIOS SETUP UTILITY
    Main    Advanced    Power    Boot    Exit

   Exit Options

   Exit & Save Changes
   Exit & Discard Changes
   Discard Changes

   Load Setup Defaults



                                              ↔      Select Screen
                                              ↑↓     Select Item
                                              Enter  Go to Sub Screen
                                              F1     General Help
                                              F10    Save and Exit
                                              ESC    Exit


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```

Pressing <Esc> does not immediately exit this menu. Select one of the options from this menu or <F10> from the legend bar to exit.

## Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. An onboard backup battery sustains the CMOS RAM so it stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select **Yes** to save changes and exit.

> If you attempt to exit the Setup program without saving your changes, the program prompts you with a message asking if you want to save your changes before exiting. Press <Enter> to save the changes while exiting.

## Exit & Discard Changes

Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than System Date, System Time, and Password, the BIOS asks for a confirmation before exiting.

## Discard Changes

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **Yes** to discard any changes and load the previously saved values.

## Load Setup Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **Yes** to load default values. Select **Exit & Save Changes** or make other changes before saving the values to the non-volatile RAM.