

P5SD1-FM2



Motherboard

E1951

First Edition V1

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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.

P5SD1-FM2 specifications summary

CPU	LGA775 socket for Intel® Pentium® 4/Celeron processor Compatible with Intel® Performance Universal FMB Supports Intel® Hyper-Threading Technology
Chipset	Northbridge: SiS 649 Southbridge: SiS 965
Front Side Bus	800/533 MHz
Memory	2 x 184-pin DIMM sockets support unbuffered non-ECC 400/333 MHz DDR SDRAM memory modules
Expansion slots	1 x PCI Express x16 slot for discrete graphics card 3 x PCI slots
Storage	SiS 965 Southbridge supports: <ul style="list-style-type: none"> - 4 x Ultra DMA 100/66/33 hard disk drives - 4 x Serial ATA hard disk drives with RAID 0, RAID 1, RAID 0+1 (10), and JBOD configuration
Audio	ADI AD1888 SoundMax® 6-channel CODEC S/PDIF out interface support
LAN	Realtek® RTL 8201CL 10/100 Mbps LAN PHY
USB	Supports up to 8 USB 2.0 ports
IEEE 1394	VT6307 controller supports: <ul style="list-style-type: none"> - 2 x IEEE 1394a ports
BIOS features	4 Mb LPC Flash ROM, AMI BIOS, Green, PnP, DMI2.0, SM BIOS 2.3, WfM2.0, ACPI 2.0a
Special features	ASUS Q-Fan 1.5 ASUS EZ Flash
Rear panel	1 x PS/2 mouse port 1 x PS/2 keyboard port 1 x IEEE 1394a port 1 x Parallel port 1 x LAN (RJ-45) port 4 x USB 2.0 ports 1 x Serial port 1 x Coaxial S/PDIF port 6-channel audio ports

(continued on the next page)

P5SD1-FM2 specifications summary

Internal connectors	1 x Floppy disk drive connector 1 x Power LED connector 2 x IDE connectors 4 x Serial ATA connectors 1 x CPU fan connector 1 x Chassis fan connector 1 x Speaker out connector 2 x USB 2.0 connectors 1 x 24-pin ATX power connector 1 x 4-pin ATX 12 V power connector 1 x Internal audio connector 1 x Front panel audio connector 1 x System panel connector
Support CD contents	Device drivers
Form factor	uATX form factor: 9.6 in x 9.0 in (24.4 cm x 23 cm)

*Specifications are subject to change without notice.

This chapter lists the hardware setup procedures that you have to perform when installing system components. It includes description of the jumpers and connectors on the motherboard.

Hardware information



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.
-

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 motherboard.



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 installing 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.

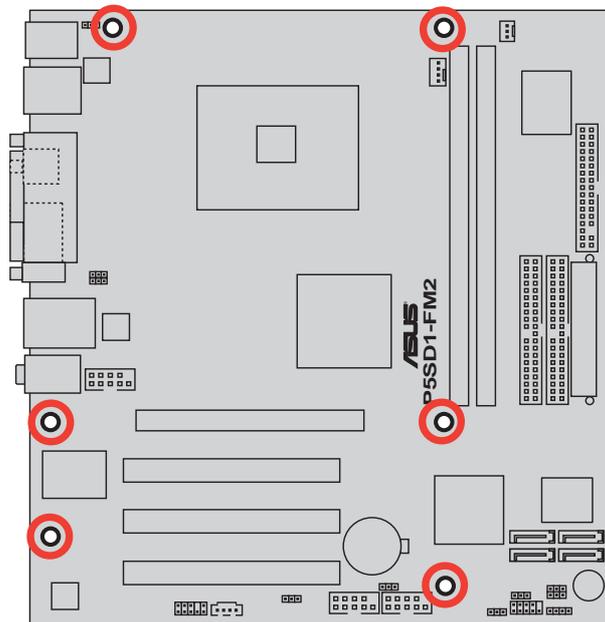
1.2.2 Screw holes

Place six (6) screws into the holes indicated by circles to secure the motherboard to the chassis.

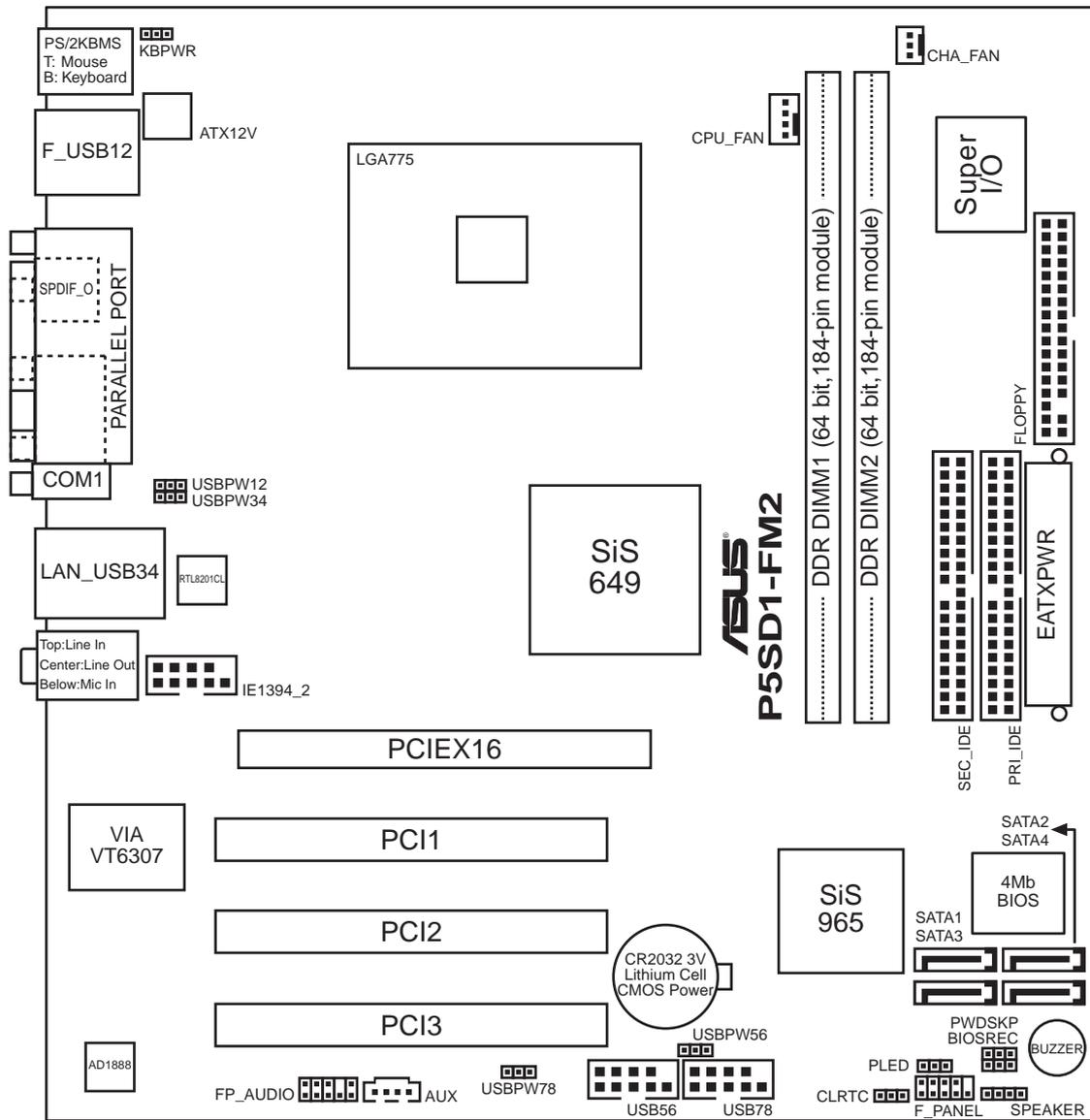


Do not overtighten the screws! Doing so can damage the motherboard.

Place this side towards
the rear of the chassis



1.2.3 Motherboard layout



1.2.4 Layout Contents

Slots	Page
1. DDR DIMM slots	1-14
2. PCI slots	1-20
3. PCI Express slot	1-20

Jumpers	Page
1. Clear RTC RAM (CLRTC)	1-21
2. USB device wake-up (3-pin USBPW12, USBPW34, USBPW56, USBPW78)	1-22
3. Keyboard power (3-pin KBPWR)	1-23
4. Clear password (3-pin PWSKP)	1-23
5. BIOS Recovery (3-pin BIOSREC)	1-24

Rear panel connectors	Page
1. PS/2 mouse port	1-25
2. Parallel port	1-25
3. LAN (RJ-45) port	1-25
4. Rear Speaker Out port	1-25
5. Side Speaker Out port	1-25
6. Line In port	1-25
7. Line Out port	1-25
8. Microphone port	1-25
9. USB 2.0 ports 3 and 4	1-26
10. Serial port	1-26
11. USB 2.0 ports 1 and 2	1-26
12. PS/2 keyboard port	1-26

Internal connectors	Page
1. Floppy disk drive connector (34-1 pin FLOPPY)	1-27
2. Power LED connector (3-1 pin PLED)	1-27
3. IDE connectors (40-1 pin PRI_IDE, SEC_IDE)	1-28
4. Serial ATA connectors (7-pin SATA1 [black], SATA2 [black])	1-29
5. CPU and Chassis fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN)	1-30
6. Speaker out connector (4-pin SPEAKER)	1-30
7. USB connectors (10-1 pin USB56, USB78)	1-31
8. ATX power connector (24-pin EATXPWR)	1-32
9. ATX 12V power connector (4-pin ATX12V)	1-32
10. Internal audio connector (4-pin AUX)	1-33
11. Front panel audio connector (10-1 pin FP_AUDIO)	1-33
12. System panel connector (10-1 pin F_PANEL)	1-34
- System power LED (Green 2-pin PLED)	
- Hard disk activity (Red 2-pin HDLED)	
- Power/Soft-off button(Black 2-pin PWRSW)	
- Reset switch (Blue 2-pin RESET)	

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.

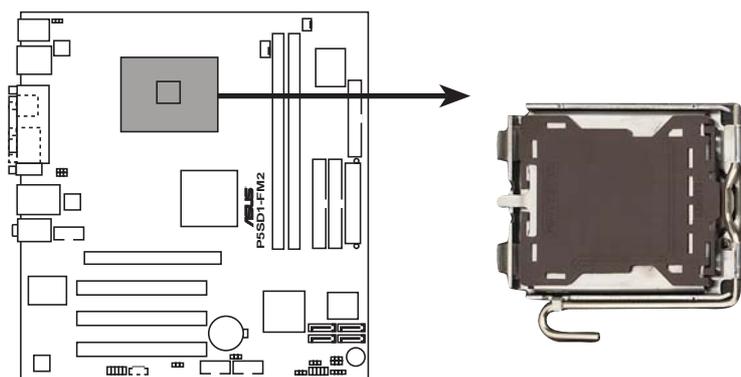


- Your boxed Intel® Pentium® 4 LGA775 processor package should come with installation instructions for the CPU, heatsink, and the retention mechanism. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP 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.

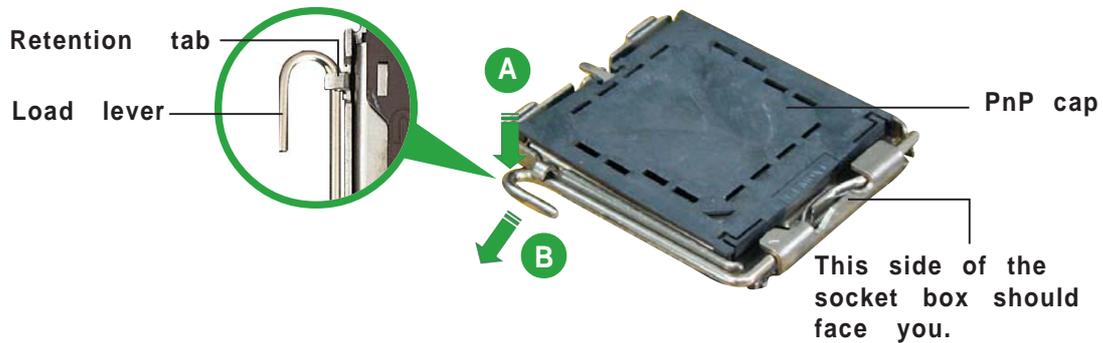


P5SD1-FM2 CPU Socket 775



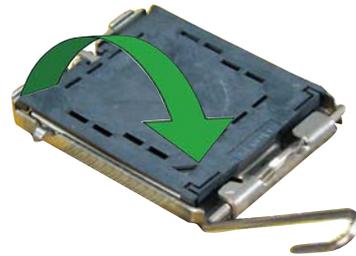
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

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

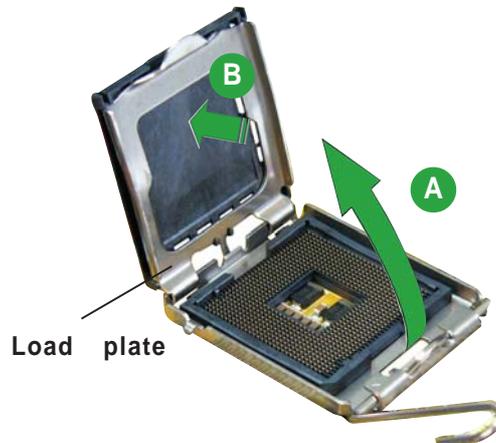


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

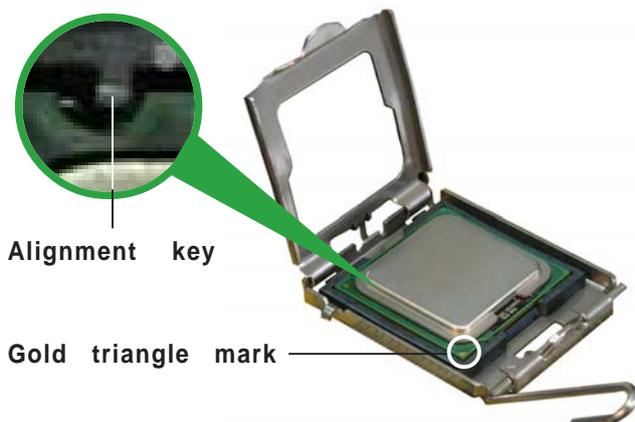
3. Lift the load lever in the direction of the arrow to a 135° angle.



4. Lift the load plate with your thumb and forefinger to a 100° angle (A), then push the PnP cap from the load plate window to remove (B).



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.



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 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 Technology item in the BIOS to ensure system stability and performance.
- Installing Windows® XP Service Pack 2 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 Technology.
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.



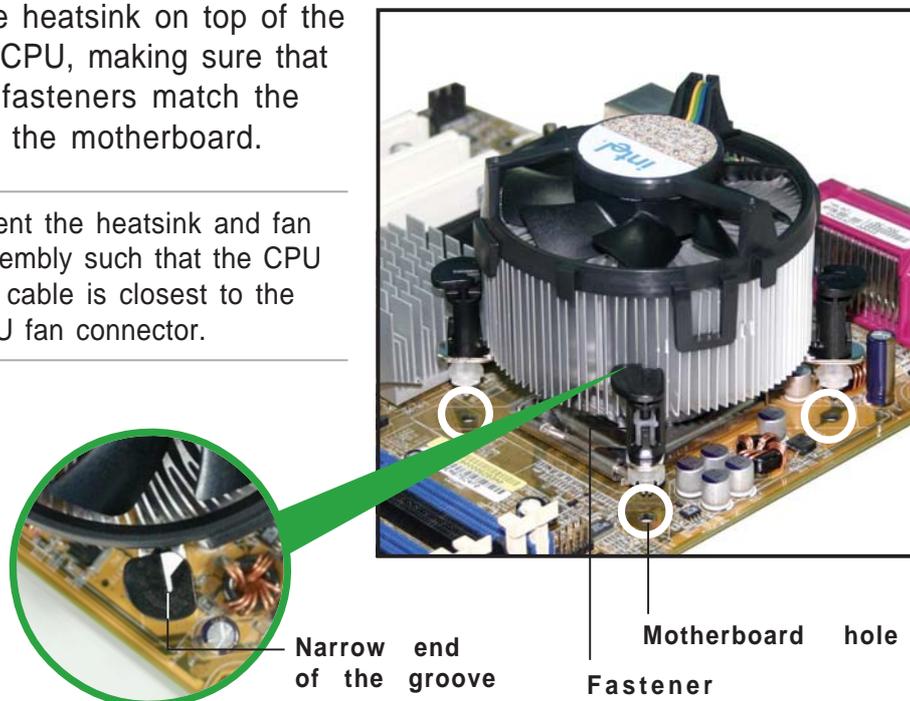
Make sure that you have installed the motherboard to the chassis before you install the CPU fan and heatsink assembly.

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.

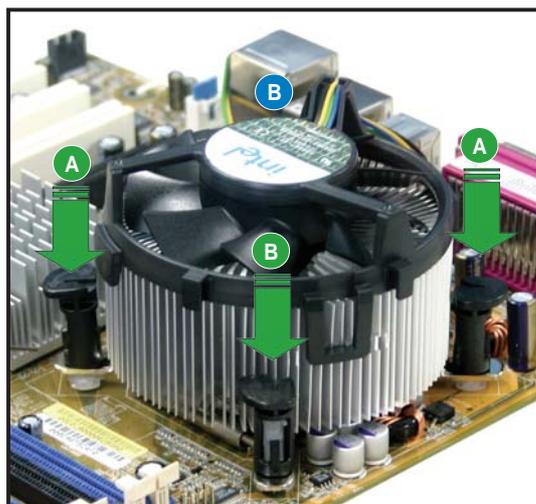
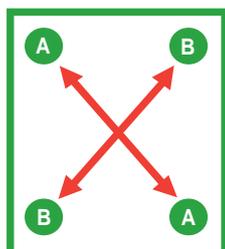


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

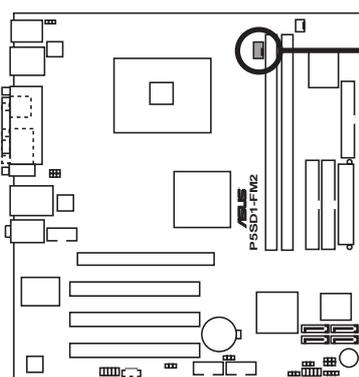


Make sure to orient each fastener with the narrow end of the groove pointing outward. (The photo shows the groove shaded for emphasis.)

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_FAN.



CPU_FAN

CPU FAN PWM
CPU FAN IN
CPU FAN PWR
GND

P5SD1-FM2 CPU fan connector



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

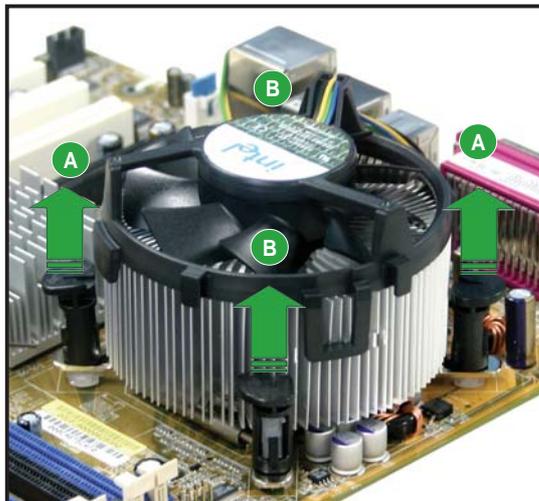
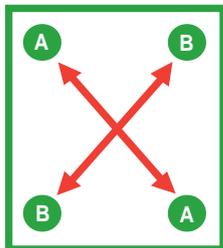
1.3.3 Uninstalling the CPU heatsink and fan

To uninstall the CPU heatsink and fan:

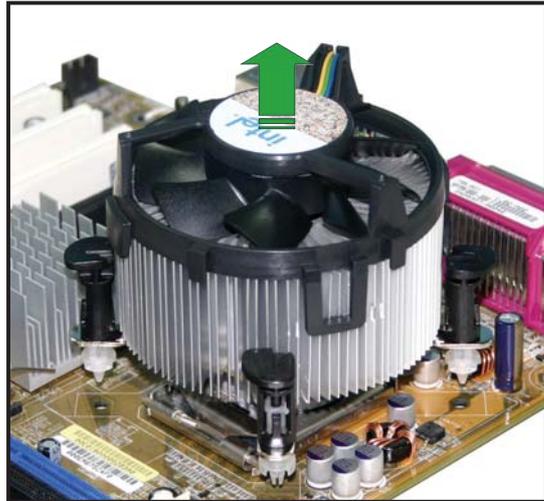
1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise.



3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly from the motherboard.



- Carefully remove the heatsink and fan assembly from the motherboard.



- 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.)

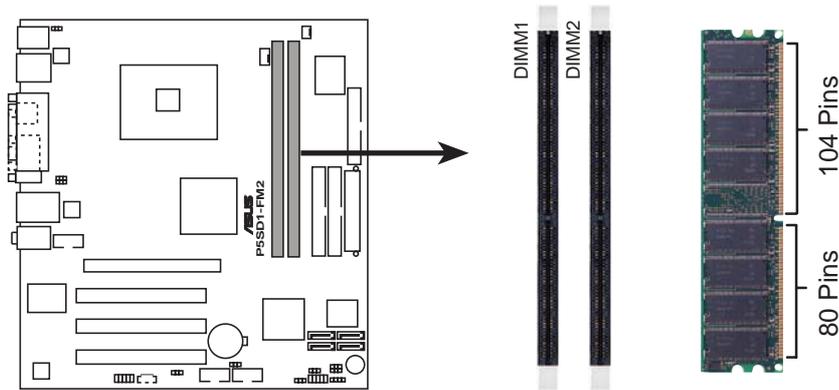


1.4 System memory

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:



P5SD1-FM2 184-pin DDR DIMM sockets

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.



- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend 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 2 GB system memory when you installed two 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

Sockets		
Mode	DIMM_A1 (black)	DIMM_A2 (black)
Single-channel	(1) Installed	—
	(2) —	Installed
	(3)* Installed	Installed

* Use only identical DDR DIMM pairs.

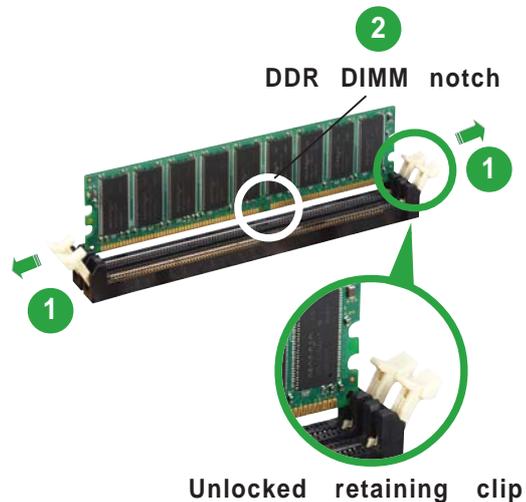


1.4.3 Installing a DIMM



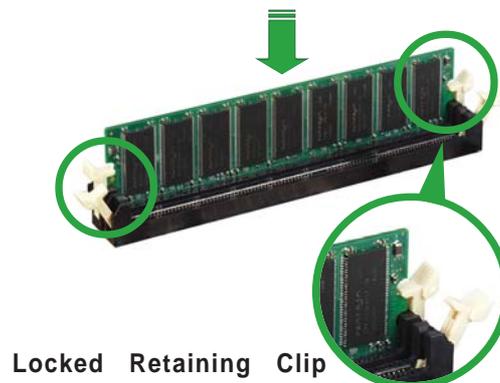
Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

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.



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.

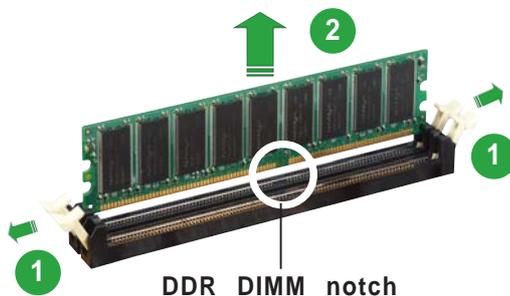
3. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



1.4.4 Removing a DIMM

To remove a DIMM:

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



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 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
3	11	Communications Port (COM2)*
4	12	Communications Port (COM1)*
5	13	IRQ holder for PCI steering*
6	14	Floppy Disk Controller
7	15	Printer Port (LPT)*
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*
12	7	PS/2 Compatible Mouse Port*
13	8	Numeric Data Processor
14	9	Primary IDE Channel
15	10	Secondary IDE Channel

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



The communications port (COM2) is an optional item.

IRQ assignments for this motherboard

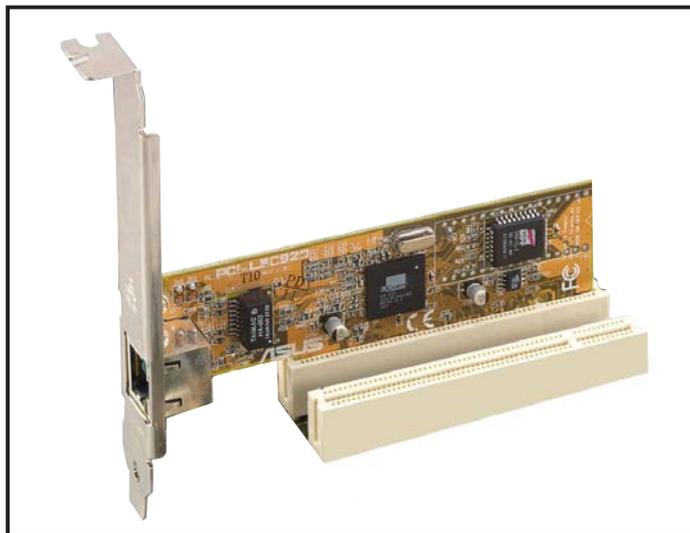
	A	B	C	D	E	F	G	H
PCI slot 1	shared	—	—	—	—	—	—	—
PCI slot 2	—	shared	—	—	—	—	—	—
PCI slot 3	—	—	shared	—	—	—	—	—
PCI Express x16 slot	—	—	—	shared	—	—	—	—
Onboard USB 1.1 controller 0	—	—	—	—	used	—	—	—
Onboard USB 1.1 controller 1	—	—	—	—	—	used	—	—
Onboard USB 1.1 controller 2	—	—	—	—	—	—	used	—
Onboard USB 2.0 controller	—	—	—	—	—	—	—	used
Onboard Audio	—	—	shared	—	—	—	—	—
Onboard IDE Controller	shared	—	—	—	—	—	—	—
Onboard SATA Controller	—	shared	—	—	—	—	—	—
Onboard LAN	—	—	—	shared	—	—	—	—
Onboard IEEE 1394a controller	—	—	shared	—	—	—	—	—
Onboard modem	—	—	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.

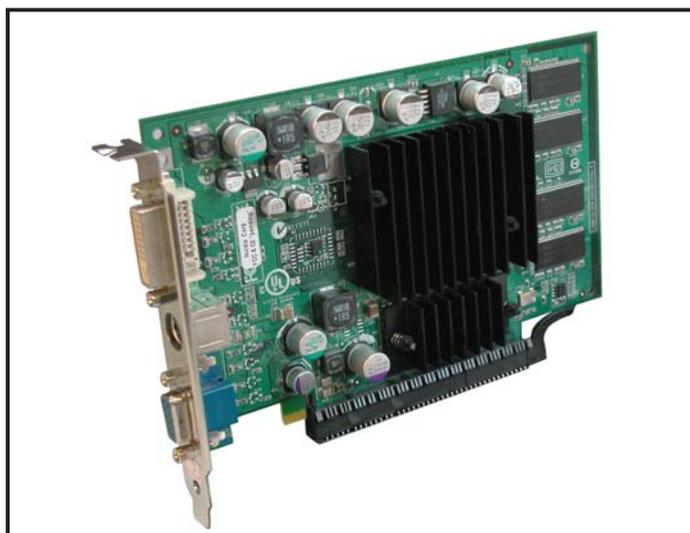
1.5.4 PCI slots

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 (CLRRTC)

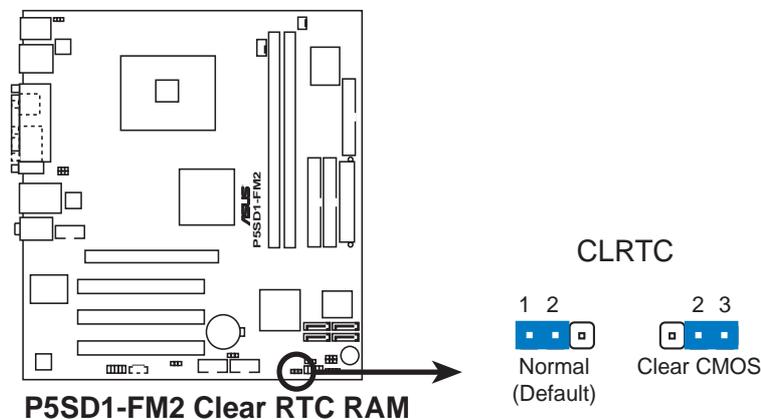
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

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. Reinstall the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the key during the boot process and enter BIOS setup to re-enter data.



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

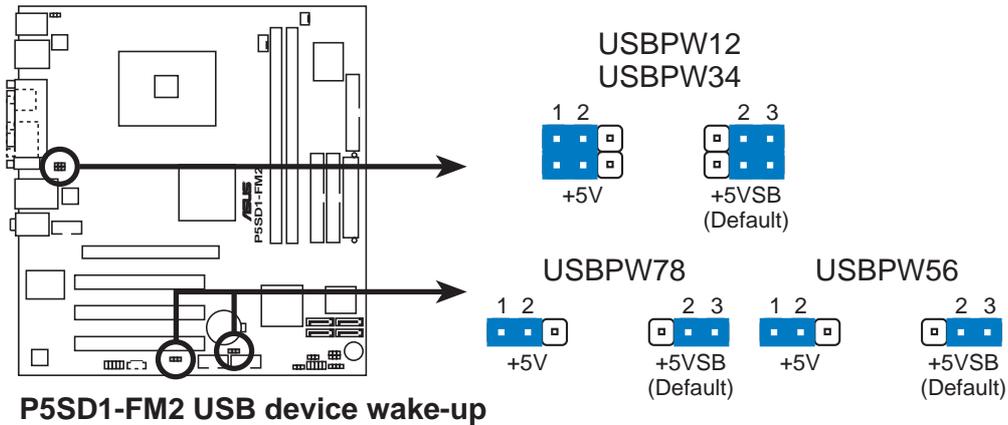


You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

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).

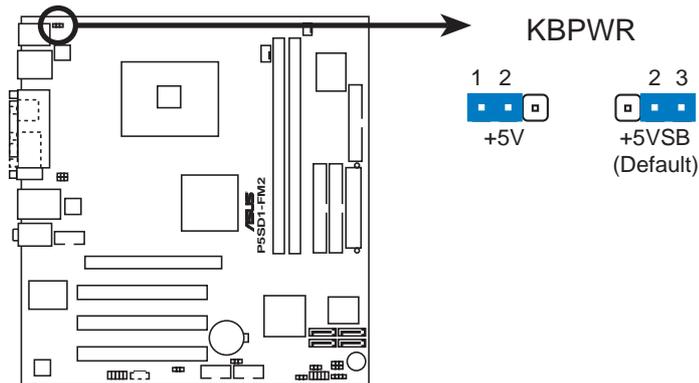
The USBPW12 and USBPW34 jumpers are for the rear USB ports. The USBPW56 and USBPW78 jumpers are for the internal USB connectors that you can connect to additional USB ports.



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

3. Keyboard power (3-pin KBPWR)

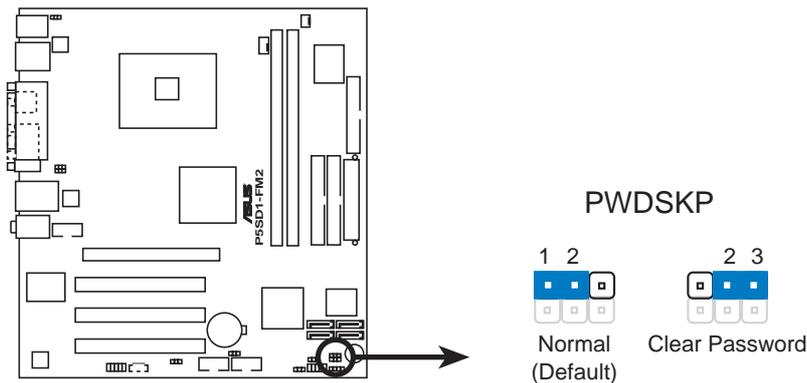
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead, and a corresponding setting in the BIOS.



P5SD1-FM2 Keyboard power setting

4. Clear password (3-pin PWDSKP)

Set this jumper to 1-2 (Default) if you want to enable the password setting in the BIOS. Set this jumper to 2-3 if you want to skip the password.



P5SD1-FM2 Clear password setting

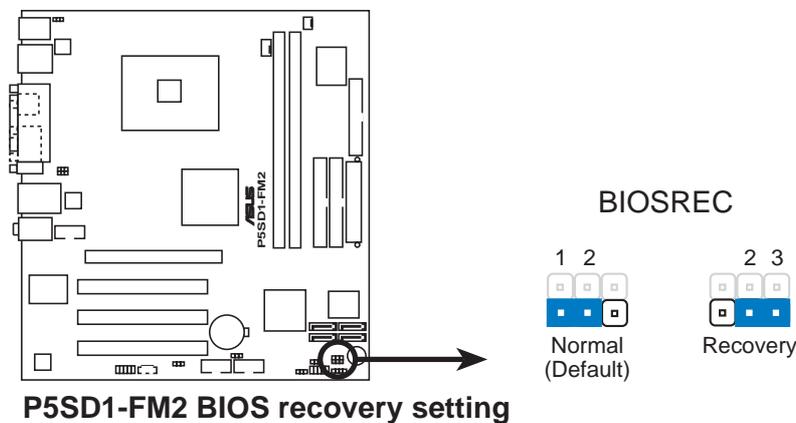
5. BIOS Recovery (3-pin BIOSREC)

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.

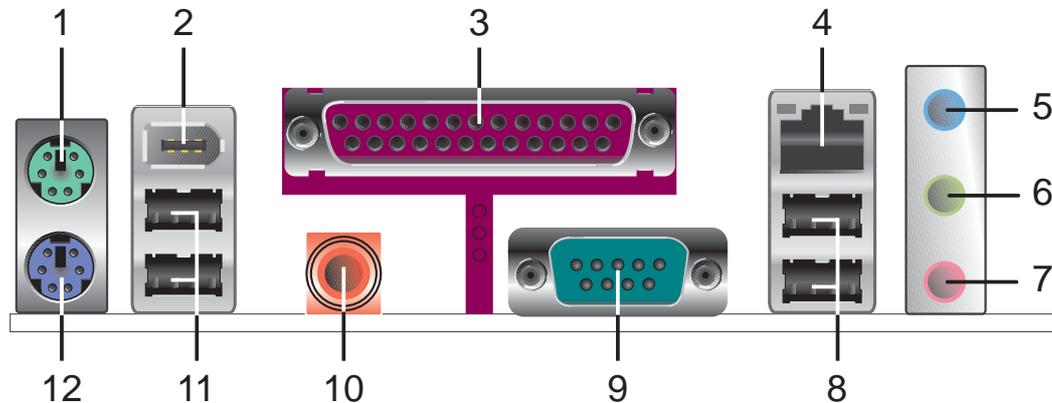
To recover the BIOS:

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 **P5SD1FMF.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 key during the boot process and enter BIOS setup to re-enter data.



1.7 Connectors

1.7.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **Parallel port.** This 25-pin port connects a parallel printer, a scanner, or other devices.
3. **IEEE 1394a port.** This 6-pin IEEE 1394a port provides high-speed connectivity for audio/video devices, storage peripherals, PCs, or portable devices.
4. **LAN (RJ-45) port.** This port allows connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.
5. **Line In port (blue).** This port connects a tape, CD, DVD player, or other audio sources. In 6-channel mode, the function of this port becomes Bass/Center.
6. **Line Out port (green).** This port connects a headphone or a speaker. In 4-channel, and 6-channel the function of this port becomes Front Speaker Out.
7. **Microphone port (pink).** This port connects a microphone. In 6-channel mode, the function of this port becomes Rear Speaker Out.



Refer to the audio configuration table for the function of the audio ports in stereo, 4-channel, and 5.1/6-channel modes.

Audio configuration

Port	Stereo mode	4-channel mode	5.1/6-channel mode
Blue	Line in	Line in	Center/LFE*
Green	Line out	Front speaker out	Front speaker out
Pink	Mic	Rear speaker out	Rear speaker out

*Low frequency enhanced output

- 9 . **USB 2.0 ports 3 and 4.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 10 . **Serial port.** This 9-pin COM1 port is for pointing devices or other serial devices.
- 11 . **USB 2.0 ports 1 and 2.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
- 12 . **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.

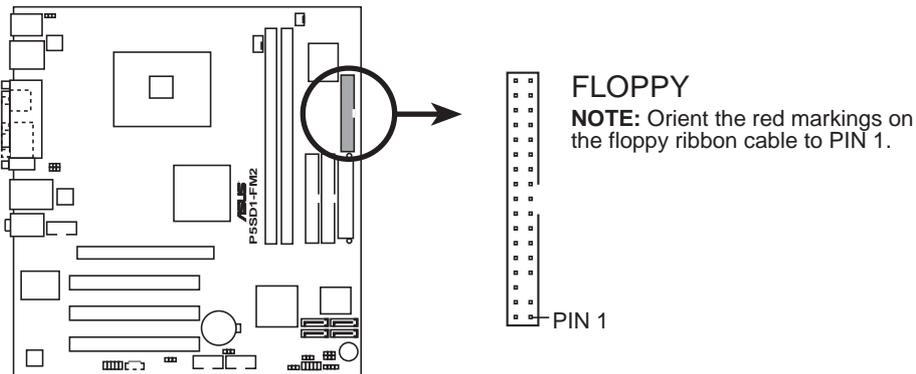
1.7.2 Internal connectors

1. Floppy disk drive connector (34-1 pin FLOPPY)

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.



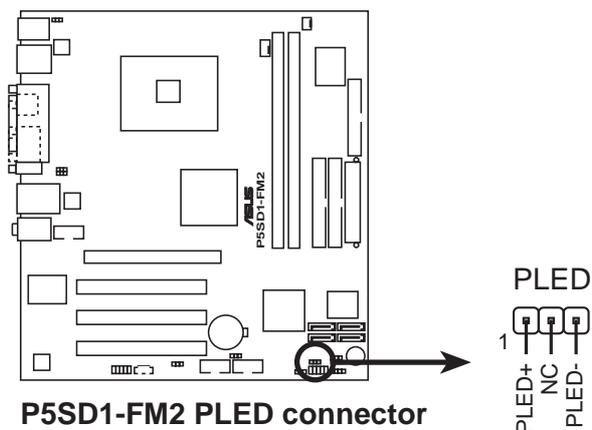
Pin 5 on the connector is removed to prevent incorrect cable connection when using an FDD cable with a covered Pin 5.



P5SD1-FM2 Floppy disk drive connector

2. Power LED connector (3-1 pin PLED)

This 3-1 pin connector is for the system power LED. Connect the 3-pin power LED cable from the system chassis to this connector. The LED lights up when you turn on the system power, and blinks when the system is in sleep mode.



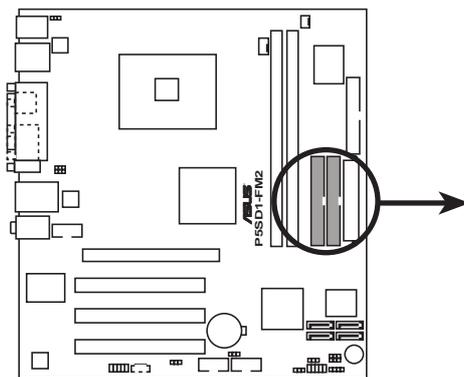
P5SD1-FM2 PLED connector

3. IDE connectors (40-pin PRI_IDE, SEC_IDE)

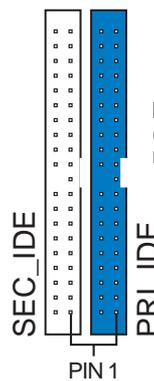
These connectors are for a Ultra DMA 100/66 signal cable. The Ultra DMA 100/66 signal cable has three connectors: a blue connector for the primary IDE connector on the motherboard, a black connector for an Ultra DMA 100/66 IDE slave device (optical drive/hard disk drive), and a gray connector for an 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.



P5SD1-FM2 IDE connectors



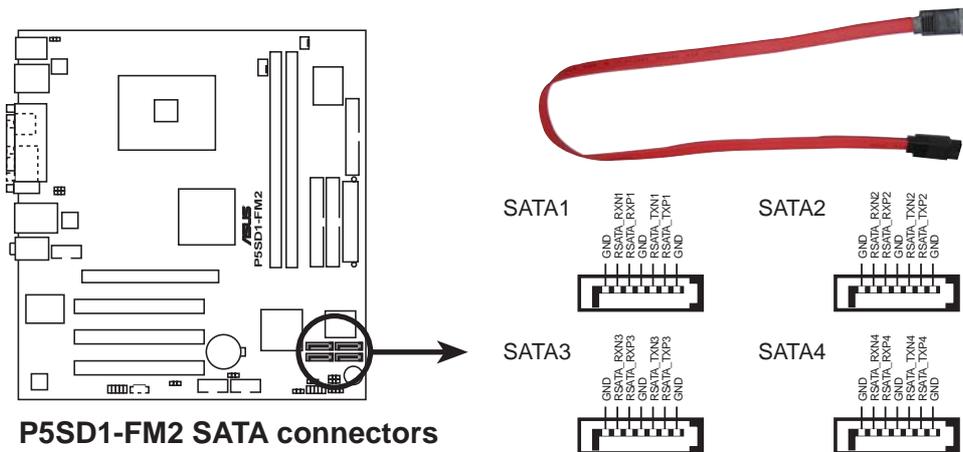
NOTE: Orient the red markings (usually zigzag) on the IDE ribbon cable to PIN 1.

4. Serial ATA connectors (7-pin SATA1 [blue], SATA2 [blue], SATA3 [black], SATA4 [black])

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



These connectors are set to Standard IDE configuration by default. In Standard IDE mode, you can connect Serial ATA boot/data hard disk drives to these connectors.



P5SD1-FM2 SATA connectors



Important notes on Serial ATA

- The Serial ATA RAID feature (RAID 0, RAID 1) is available only if you are using Windows® XP.
- Install the Windows® XP Service Pack 1 before using Serial ATA.
- Use only a maximum of two ports for each RAID 0 or RAID 1 set.
- Plug your Serial ATA boot disk on the master port (SATA1 and SATA2) to support S3 function. Refer to the table below for details.

Serial ATA Master/Slave connectors

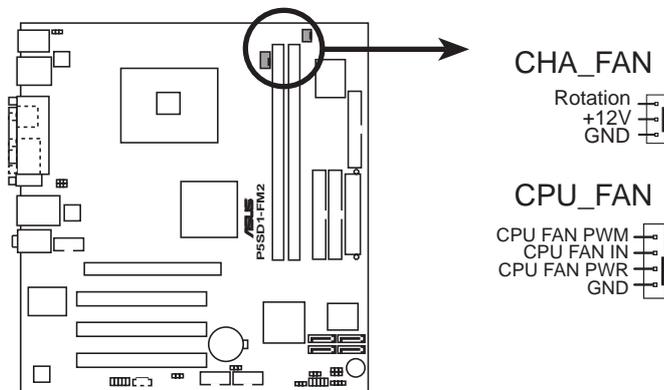
Connector	Color	Setting	Use
SATA1 , SATA2	Blue	Master	Boot Disk
SATA3, SATA4	Black	Slave	Data Disk

5. CPU and Chassis fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN)

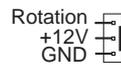
The fan connectors support cooling fans of 350 mA ~ 2000 mA (24 W max.) or a total of 1 A ~ 3.48 A (41.76 W max.) at +12 V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.



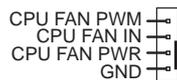
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.



CHA_FAN



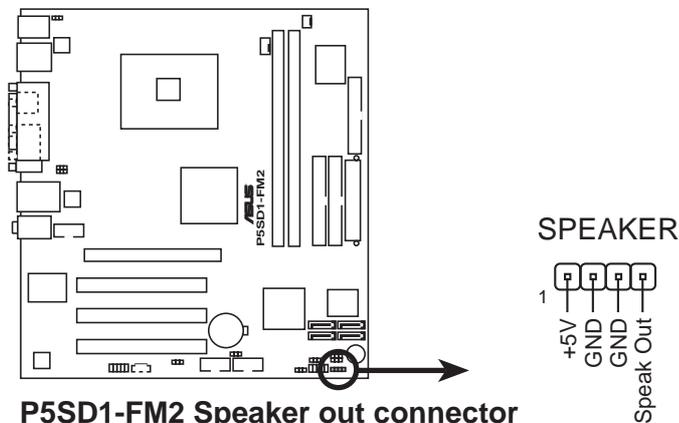
CPU_FAN



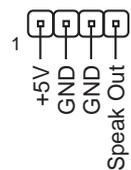
P5SD1-FM2 Fan connectors

6. Speaker out connector (4-pin SPEAKER)

This connector is for the case-mounted speaker and allows you to hear system beeps and warnings.



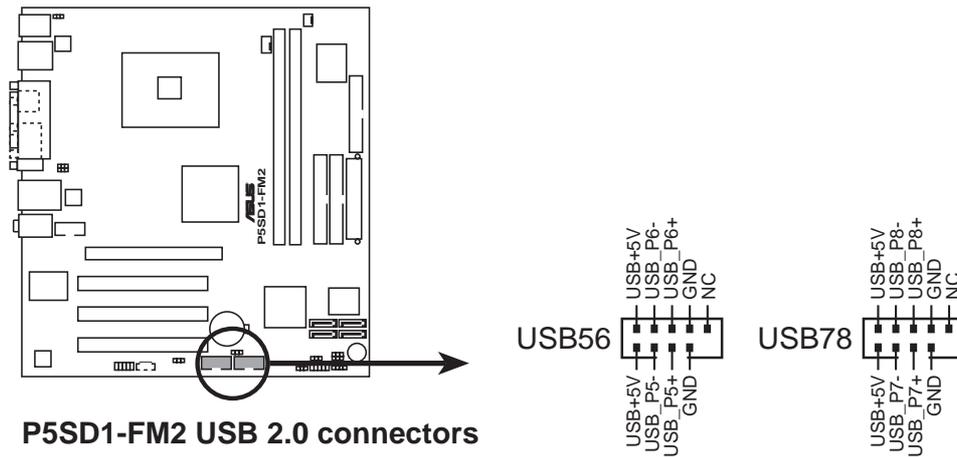
SPEAKER



P5SD1-FM2 Speaker out connector

7. USB connectors (10-1 pin USB56, USB78)

These connectors are for USB 2.0 ports. These USB connectors comply with USB 2.0 specification that supports up to 480 Mbps connection speed.



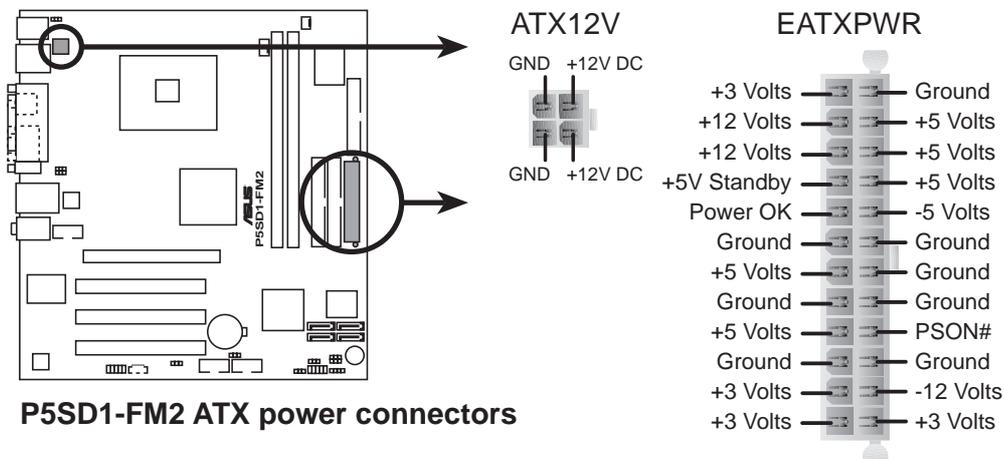
Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!

8. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

These connectors are for an ATX power supply. 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.



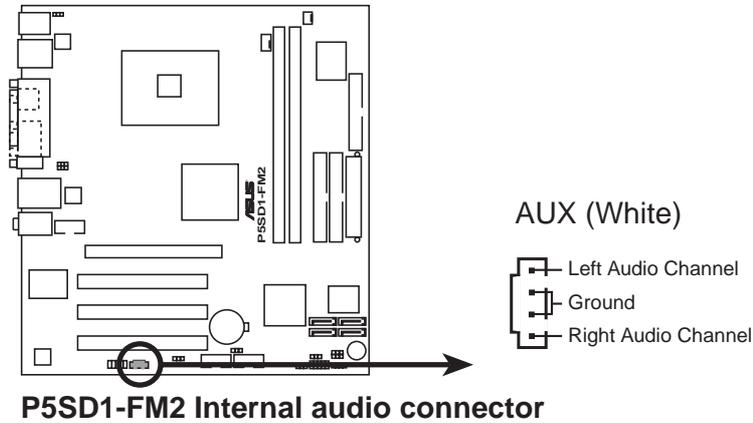
- We recommend that you use an ATX 12 V Specification 2.0-compliant power supply unit (PSU) with a minimum of 350 W power rating. This PSU type has 24-pin and 4-pin power plugs.
- If you intend to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and that the PSU has a minimum power rating of 350 W. The system may become unstable or may not boot up if the power is inadequate.
- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot up.
- We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.



P5SD1-FM2 ATX power connectors

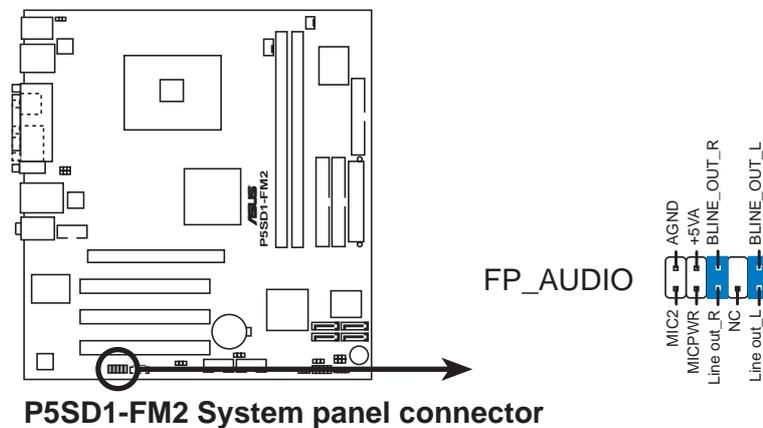
9. Internal audio connector (4-pin AUX)

This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



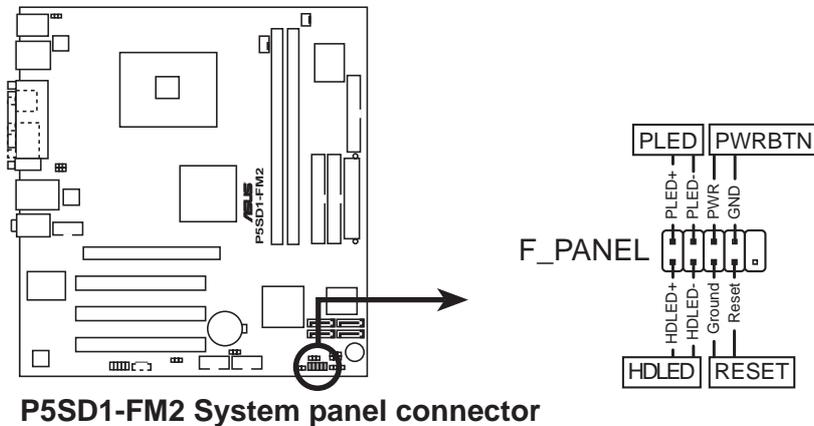
10. Front panel audio connector (10-1 pin FP_AUDIO)

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



11. System panel connector (10-1 pin F_PANEL)

This connector supports several chassis-mounted functions.



P5SD1-FM2 System panel connector



The system panel connector is color-coded for easy connection. Refer to the connector description below for details.

- **System power LED (Green 2-pin PLED)**
This 3-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **Hard disk drive activity (Red 2-pin HDLED)**
This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. This LED lights up or flashes when data is read from or written to the HDD.
- **Power/Soft-off button (Black 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.
- **Reset button (Blue 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 EZ Flash** (Updates the BIOS using a floppy disk during POST.)
2. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)

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 1.44 MB 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**.

2.1.2 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 into 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 **P5SD1FMF.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 "P5SD1FMF.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 "P5SD1FMF.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 P5SD1FMF.ROM.

2.1.3 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 /iP5SD1FMF.ROM
```

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

```
A:\>afudos /iP5SD1FMF.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2003 American Megatrends, Inc. All rights reserved.

WARNING!! Do not turn off power during flash BIOS
Reading file .... done
Reading flash .... done

Advance Check.....
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 /iP5SD1FMF.ROM
AMI Firmware Update Utility - Version 1.19 (ASUS V2.07 (03.11.24BB))
Copyright (C) 2003 American Megatrends, Inc. All rights reserved.

WARNING!! Do not turn off power during flash BIOS
Reading file .... done
Reading flash ... done

Advance Check.....
Erasing flash .... done
Writing flash .... done
Verifying flash ... done

Please restart your computer

A:\>
```

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 during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

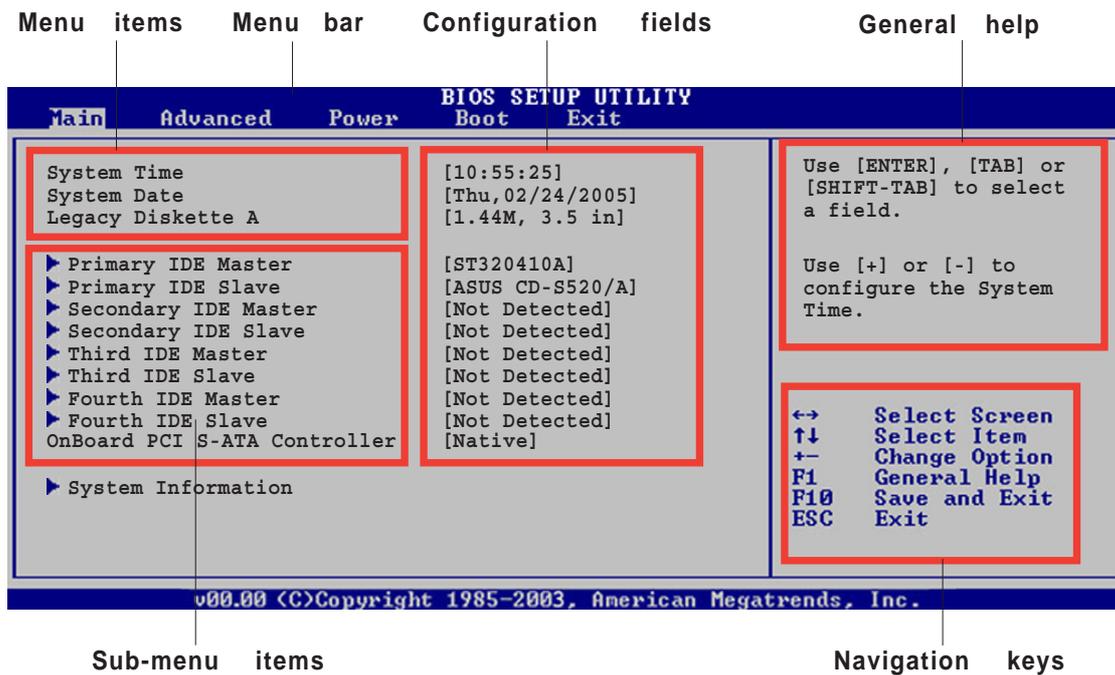
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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



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.

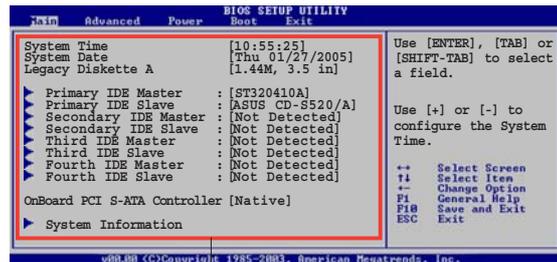


Some of the navigation keys differ from one screen to another.

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 item 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.

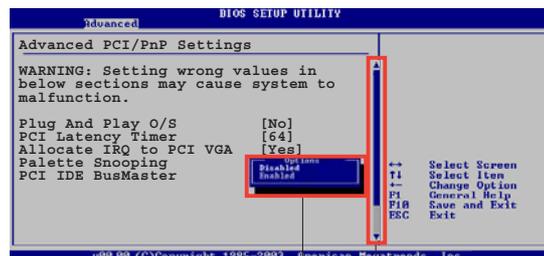
A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to “2.2.7 Pop-up window.”

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           [10:55:25]
System Date           [Thu,02/24/2005]
Legacy Diskette A     [Disabled]

▶ Primary IDE Master   : [ST320410A]
▶ Primary IDE Slave   : [ASUS CD-S520/A]
▶ Secondary IDE Master : [Not Detected]
▶ Secondary IDE Slave  : [Not Detected]
▶ Third IDE Master     : [Not Detected]
▶ Third IDE Slave      : [Not Detected]
▶ Fourth IDE Master    : [Not Detected]
▶ Fourth IDE Slave     : [Not Detected]
OnBoard PCI S-ATA Controller: [Native]

▶ System Information

Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.

Use [+] or [-] to configure the System time.

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

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

2.3.1 System Time [xx:xx:xx]

Allows you to set the system time.

2.3.2 System Date [Day xx/xx/xxxx]

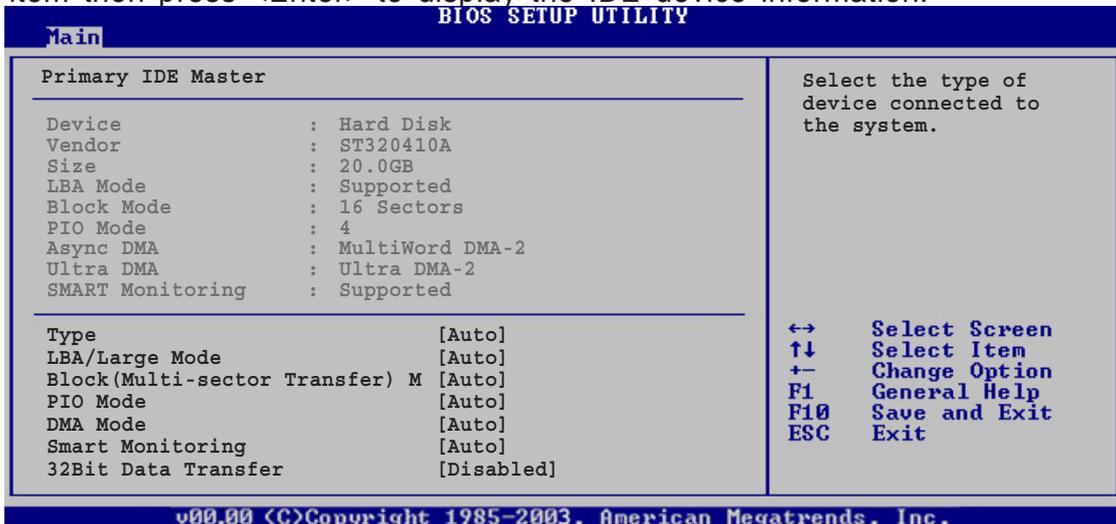
Allows you to set the system date.

2.3.3 Legacy Diskette A [Disabled]

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, Secondary, 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.



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]

Automatically sets the DMA mode.

SMART Monitoring [Auto]

Sets the Self-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]

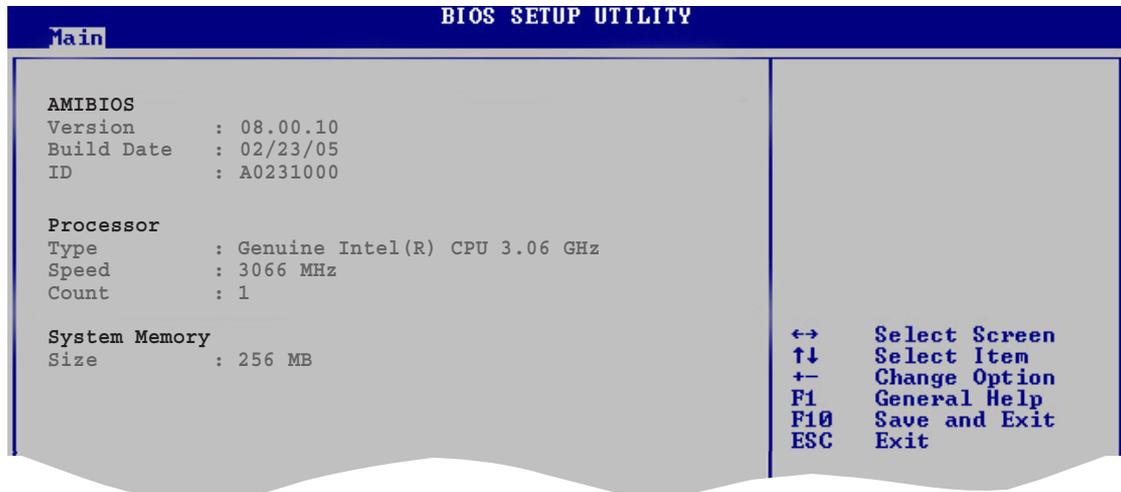
2.3.5 OnBoard PCI S-ATA Controller [Native]

Enables or disables the onboard PCI Serial ATA controller .

Configuration options: [Disabled] [RAID] [Native]

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.



AMI BIOS

Displays the auto-detected BIOS information.

Processor

Displays the auto-detected CPU specification.

System Memory

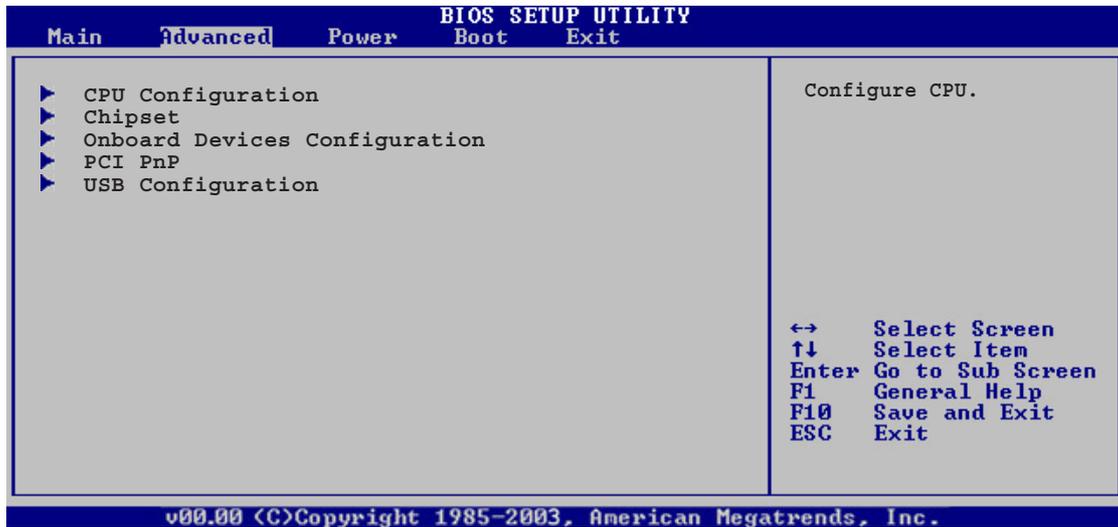
Displays the auto-detected system memory.

2.4 Advanced menu

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

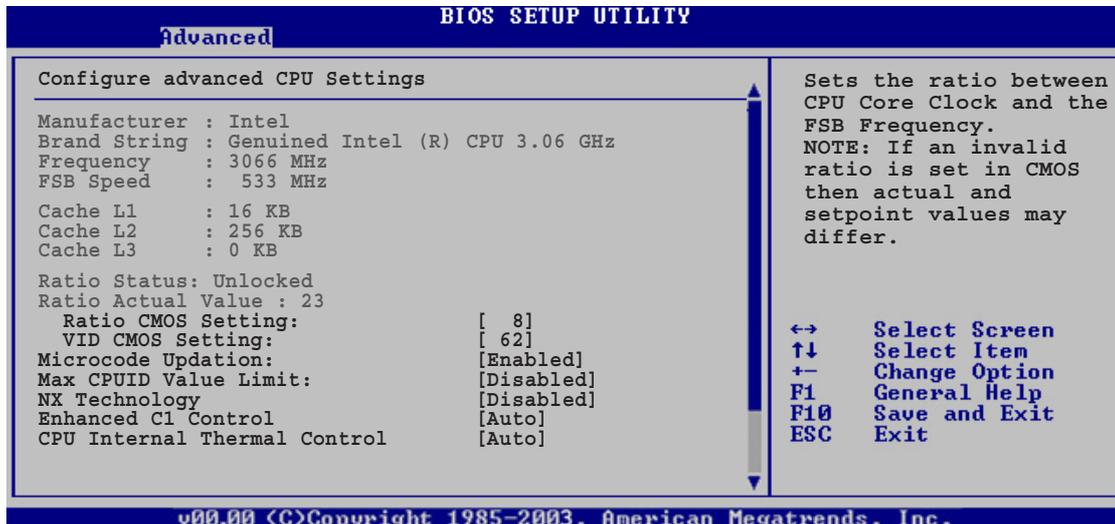


Take caution when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.



2.4.1 CPU Configuration

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



Ratio CMOS Setting [18]

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.



You can only adjust the **Ratio CMOS** and the **VID CMOS** setting if you installed an unlocked CPU. Refer to the CPU documentation for details.

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]

NX Technology [Disabled]

Allows you to enable or disable the No-Execution page protection technology feature. Configuration options: [Disabled] [Enabled]

Enhanced C1 Control [Auto]

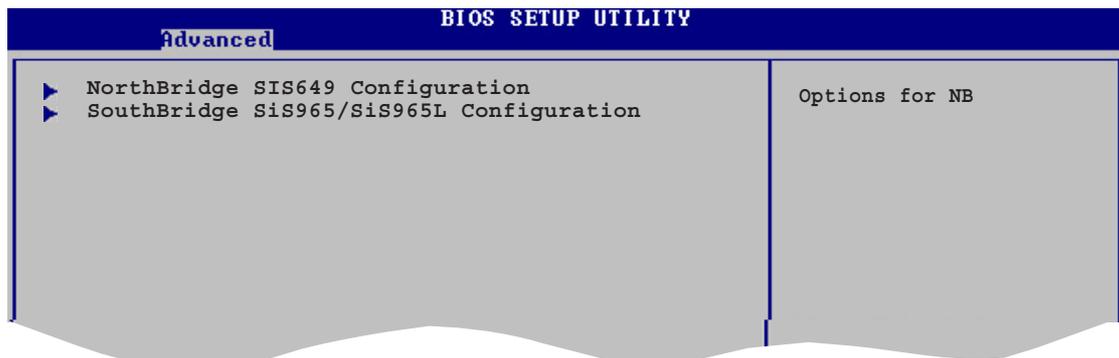
When set to [Auto], the BIOS will automatically check the CPU's capability to enable the C1E support. In C1E mode, the CPU power consumption is lower when idle. Configuration options: [Auto] [Disabled]

CPU Internal Thermal Control [Auto]

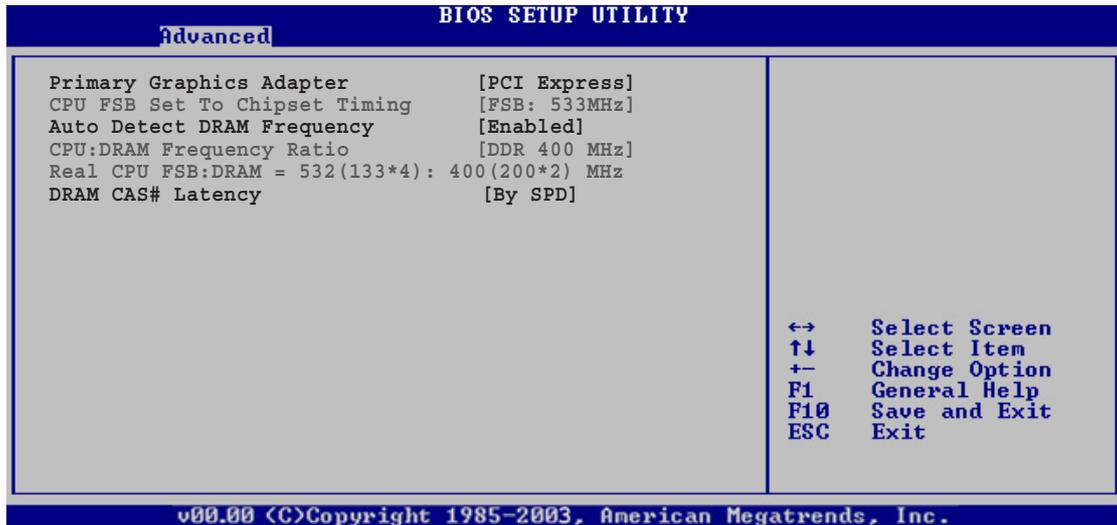
Disables or sets the CPU internal thermal control. Configuration options: [Auto] [Disabled]

2.4.2 Chipset

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



NorthBridge SIS649 Chipset Configuration



Primary Graphics Adapter [PCI Express]

Allows selection of the graphics controller to use as a primary boot device. Configuration options: [PCI] [PCI Express]

CPU FSB Set To Chipset Timing [FSB: 533MHz]

Displays auto-detected CPU FSB information.

Auto Detect DRAM Frequency [Enabled]

When set to [Enabled], this allows the BIOS to detect the DRAM frequency automatically. Configuration options: [Disabled] [Enabled]

CPU:DRAM Frequency Ratio [DDR 400 MHz]

Displays auto-detected CPU and DRAM frequency ratio information.

Real CPU FSB:DRAM = 532(133*4): 400(200*2) MHz

Displays auto-detected CPU FSB and DRAM frequency information.

DRAM CAS# Latency [By SPD]

Controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [By SPD] [2T] [2.5T] [3T]

SouthBridge SiS965 Chipset Configuration

Advanced		BIOS SETUP UTILITY	
Onboard AC97 Audio Device	[Enabled]		
Onboard SiS191 LAN Device	[Enabled]		
Onboard LAN Boot ROM	[Disabled]		

Onboard AC97 Audio Device [Enabled]

Enables or disables the onboard AC `97 audio CODEC.

Configuration options: [Disabled] [Enabled]

Onboard SiS191 LAN Device [Enabled]

Enables or disables the onboard SiS191 LAN controller.

Configuration options: [Disabled] [Enabled]

Onboard LAN Boot ROM [Disabled]

Enables or disables the onboard LAN boot ROM feature.

Configuration options: [Disabled] [Enabled]

2.4.3 Onboard Devices Configuration

Advanced		BIOS SETUP UTILITY
Configure ITE8712 Super IO Chipset		Allows BIOS to enable or disable the floppy controller.
Serial Port1 Address	[3F8/IRQ4]	
Serial Port1 Mode	[Normal]	
Parallel Port Address	[378]	
Parallel Port Mode	[ECP]	
ECP Mode DMA Channel	[DMA3]	
Parallel Port IRQ	[IRQ7]	
Onboard 1394 Controller	[Enabled]	

Serial Port1 Address [3F8/IRQ4]

Allows you to select the Serial Port1 base address.

Configuration options: [Disabled] [3F8/IRQ4] [3E8/IRQ4] [2E8/IRQ3]

Serial Port1 Mode [Normal]

Allows you to select the Serial Port1 mode.

Configuration options: [Normal] [IrDA] [ASK IR]

COMA Duplex Mode [Half Duplex]

Allows the BIOS to select Full or Half Duplex for Serial Port. This appears only when the **Serial Port1 Mode** item is set to [IrDA] or [ASK IR] Configuration options: [Full Duplex] [Half Duplex]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.

Configuration options: [Disabled] [378] [278]

Parallel Port Mode [ECP]

Allows you to select the Parallel Port mode.

Configuration options: [Normal] [EPP] [ECP] [EPP+ECP]

EPP Version [1.9]

Allows selection of the Parallel Port EPP version. This item appears only when the **Parallel Port Mode** is set to [EPP] or [EPP+ECP].

Configuration options: [1.9] [1.7]

ECP Mode DMA Channel [DMA3]

Allows you to set the Parallel Port ECP DMA. This item appears only when the **Parallel Port Mode** is set to [ECP] or [EPP+ECP].

Configuration options: [DMA0] [DMA1] [DMA3]

Parallel Port IRQ [IRQ7]

Allows selection of the Parallel Port IRQ.

Configuration options: [IRQ5] [IRQ7]

Onboard 1394 Controller [Enabled]

Allows you to enable or disable the onboard IEEE 1394a controller.

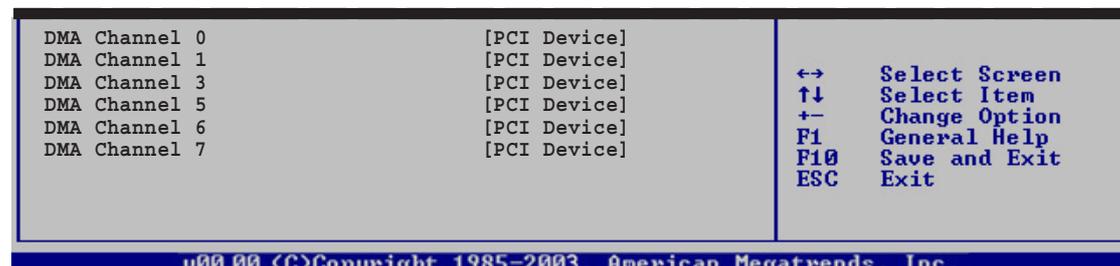
Configuration options: [Disabled] [Enabled]

2.4.4 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.



Plug and Play O/S [No]

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]

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]

OffBoard PCI/ISA IDE Card [Auto]

Allows you to set the PCI slot number that is holding the PCI IDE card. Configuration options: [Auto] [PCI Slot1] [PCI Slot2] [PCI Slot3] [PCI Slot4] [PCI Slot5] [PCI Slot6]

IRQ-xx assigned to [PCI Device]

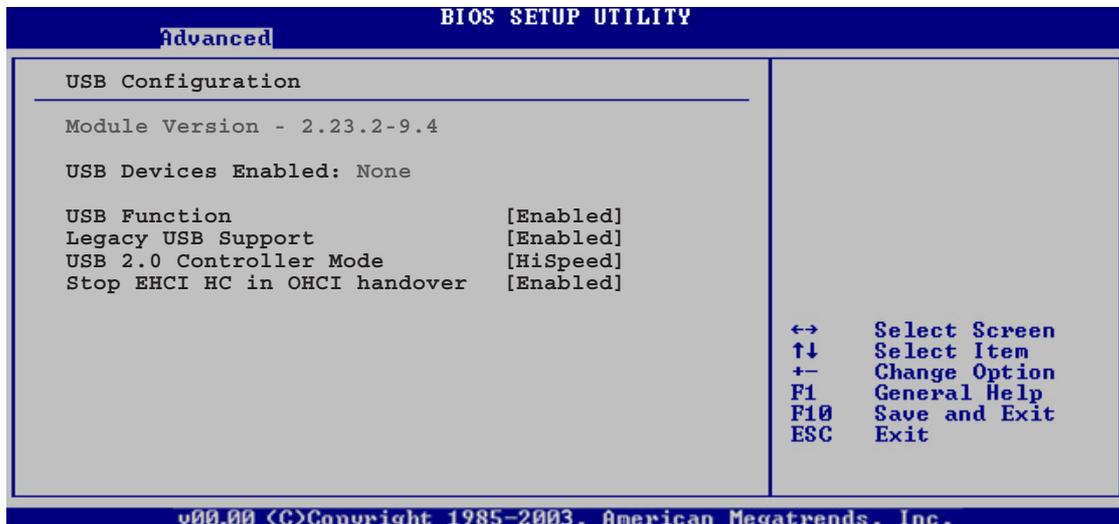
When set to [PCI Device], the specific IRQ is free for the use of PCI/PnP devices. When set to [Reserved], the IRQ is reserved for legacy ISA devices. Configuration options: [PCI Device] [Reserved]

DMA Channel x [PCI Device]

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

2.4.5 USB Configuration

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



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 [Enabled]

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 Mode [HiSpeed]

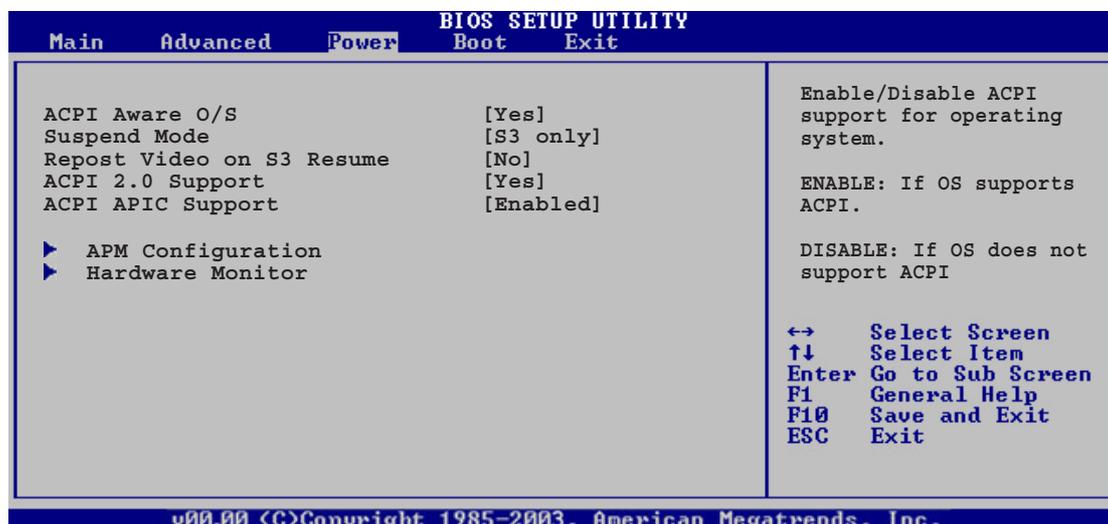
Allows you to set the USB 2.0 controller mode to HiSpeed (480 Mbps) or FullSpeed (12 Mbps). Configuration options: [FullSpeed] [HiSpeed]

Stop EHCI HC in OHCI handover [Enabled]

When this item is set to [Enabled], the BIOS stops the EHCI host controller during OHCI OS handover cal. This is needed for installing operating systems that do not support EHCI host controllers.
Configuration options: [Disabled] [Enabled]

2.5 Power menu

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



2.5.1 ACPI Aware O/S [Yes]

Set this item to [Yes] if the operating system supports the Advanced Configuration and Power Interface [ACPI]. Configuration options: [No] [Yes]

2.5.2 Suspend Mode [S3 only]

Allows you to select the (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 [Yes]

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 Advanced Programmable Interrupt Controller (APIC). 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		
Power Button Mode	[On/Off]	Select Power button functionality.
AC Power Loss Restart	[Previous State]	
Power On By PS/2 Devices	[Disabled]	
Power On By PCI Devices	[Disabled]	
Power On By External Modems	[Disabled]	
Power On By RTC Alarm	[Disabled]	

Power Button Mode [Off/On]

Allows you to select the power button function.

Configuration options: [Off/On] [Suspend]

AC Power Loss Restart [Previous State]

Allows you to set whether or not to reboot the system after power interruptions. [Always Off] leaves your system off while [Always On] reboots the system after AC power loss. [Previous State] sets the system back to the state it was in before the power interruption. Configuration options: [Always OFF] [Always On] [Previous State]

Power On By PS/2 Devices [Disabled]

Allows you to use PS/2 devices to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead. Configuration options: [Disabled] [Enabled]

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]

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 on.

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]

2.5.7 Hardware Monitor

BIOS SETUP UTILITY	
Power	
Hardware Monitor	MB Temperature
MB Temperature	[41°C/105.5°F]
CPU Temperature	[51°C/122.5°F]
CPU Fan Speed	[3813 RPM]
Chassis Fan Speed	[N/A]
VCORE Voltage	[1.320V]
3.3V Voltage	[3.345V]
5V Voltage	[5.094V]
12V Voltage	[11.880V]
Smart Q-FAN Function	[Enabled]
Fan Auto Mode Start Voltage	[2.0V]
Fan Auto Mode Start Speed Temp	[45°C]
Fan Auto Mode Full Speed Temp	[70°C]
Fan Auto Mode Slope PWM	[2 PWM value/°C]
	↔ Select Screen
	↑↓ Select Item
	+− Change Option
	F1 General Help
	F10 Save and Exit
	ESC Exit

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MB Temperature [xxx°C/xxx°F]

CPU Temperature [xxx°C/xxx°F]

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]

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

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

Smart Q-Fan Function [Enabled]

Allows you to enable or disable the ASUS Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation.

Configuration options: [Disabled] [Enabled]

Fan Auto Mode Start Voltage [2.0V]

Allows you to select the voltage level at which the fan automatically starts. Configuration options: [2.0V] [3.0V] [4.0V]

Fan Auto Mode Start Speed Temp [45°C]

Allows you to select the temperature level at which the fan automatically starts. Configuration options: [10°C] ~ [75°C]

Fan Auto Mode Full Speed Temp [70°C]

Allows you to select the temperature level at which the fan automatically runs at full speed. Configuration options: [25°C] ~ [75°C]

Fan Auto Mode Slope PWM [2 PWM value/°C]

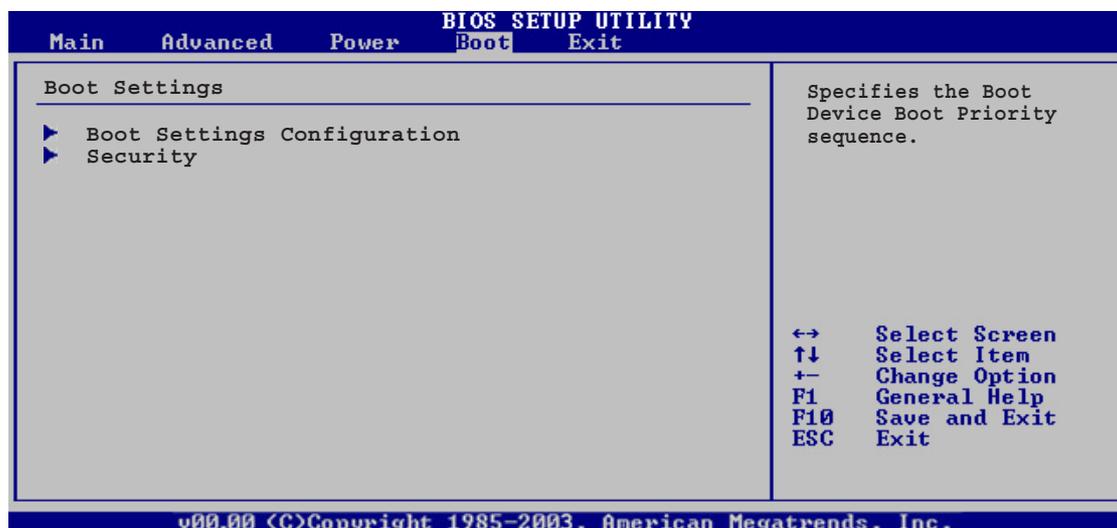
Configuration options: [0 PWM value/°C] [1 PWM value/°C]
[2 PWM value/°C] [4 PWM value/°C] [8 PWM value/°C] [16 PWM value/°C]
[32 PWM value/°C] [64 PWM value/°C]



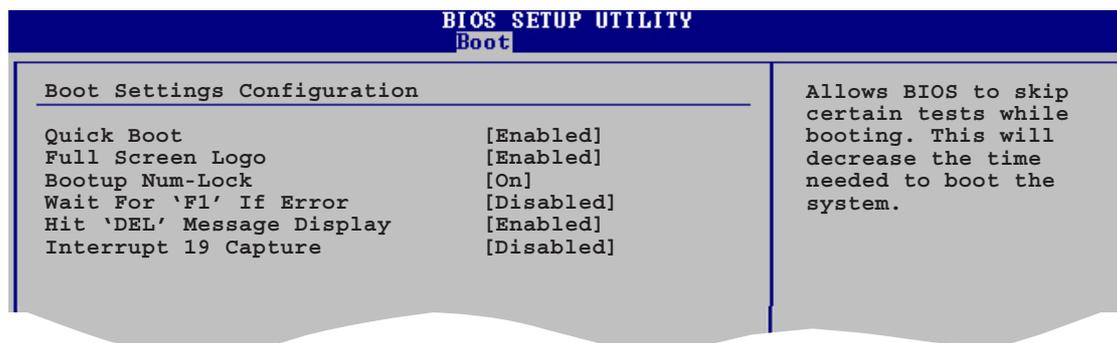
The above items appear only when the **Smart Q-Fan Function** item is set to [Enabled].

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.



2.6.1 Boot Settings Configuration



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.

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]

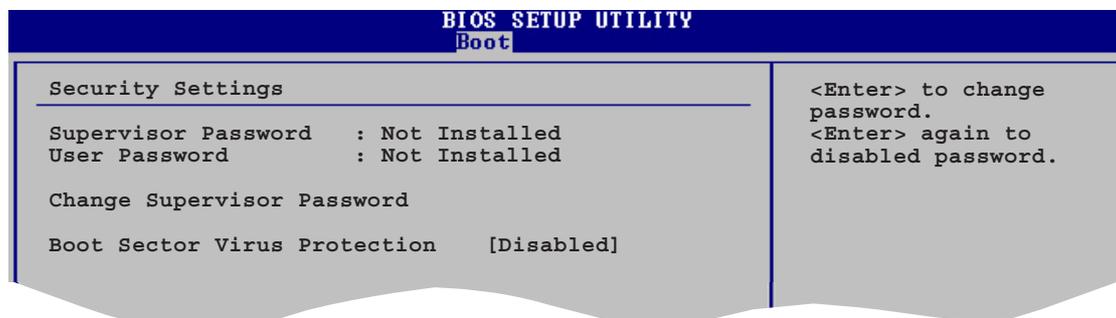
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

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

2.6.2 Security

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



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.

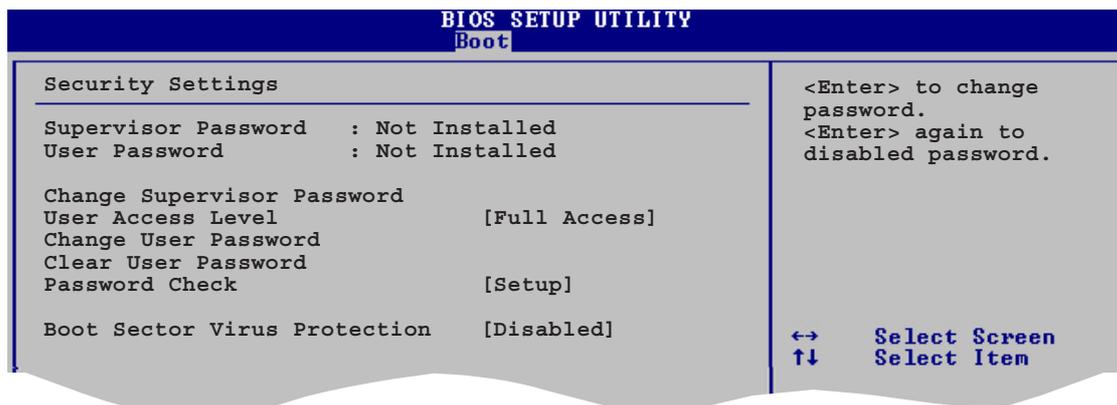
To change the supervisor password, follow the same steps as in setting a user password.

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 it by erasing the CMOS Real Time Clock (RTC) RAM. See section “1.6 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.



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]

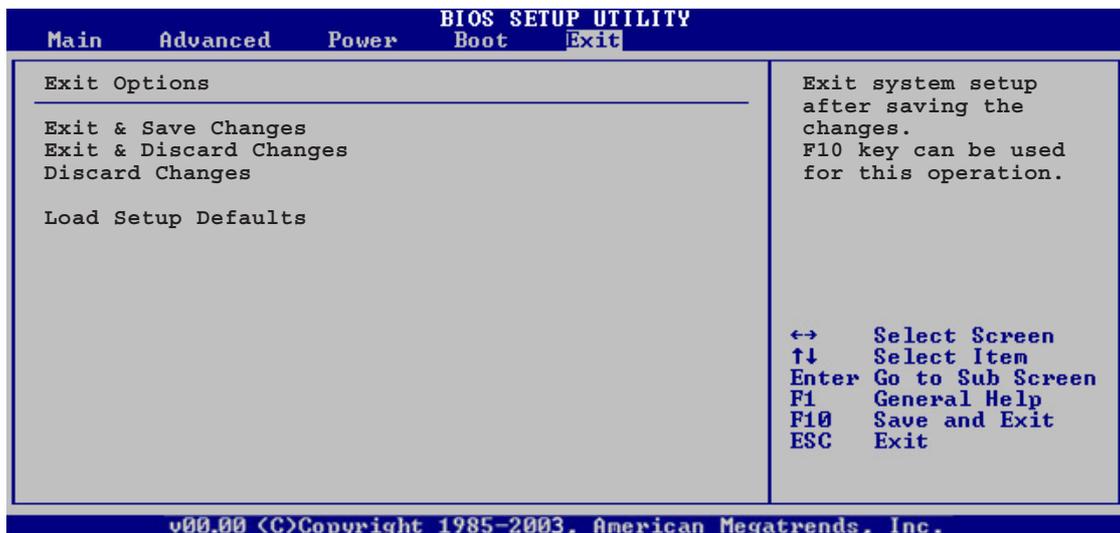
Boot Sector Virus Protection [Disabled]

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.



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.

