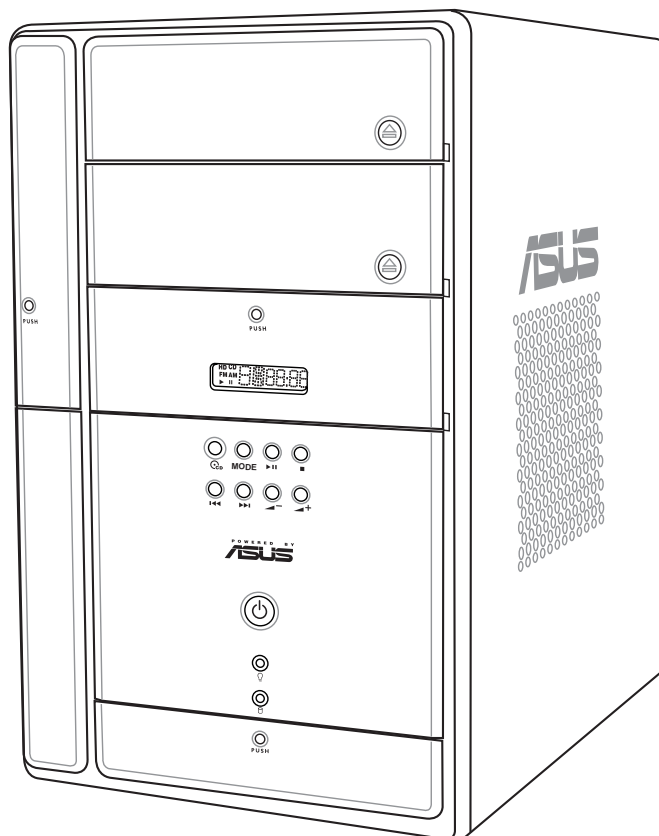


# ASUS® Terminator 2

## Barebone System

(Model T2-P)



## User Guide

**E1430**

**First edition V1**

**October 2003**

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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.



---

### WARNING!

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 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 devices into the system, carefully read all the documentation 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.

### Lithium-Ion Battery Warning

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

**VORSICHT:** Explosionsgefahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlenem ähnlichen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

### LASER PRODUCT WARNING

**CLASS 1 LASER PRODUCT**

# About this guide

## Audience

This guide provides general information and installation instructions about the ASUS Terminator 2 barebone system. This guide is intended for experienced users and integrators with hardware knowledge of personal computers.

## How this guide is organized

This guide contains the following parts:

### 1. Chapter 1: System introduction

This chapter gives a general description of the ASUS Terminator 2. The chapter lists the system features including introduction on the front and rear panel, and internal components.

### 2. Chapter 2: Basic installation

This chapter provides step-by-step instructions on how to install components in the system.

### 3. Chapter 3: Motherboard information

This chapter gives information about the P4P8T motherboard that came with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.

### 4. Chapter 4: BIOS information

This chapter tells how to change system settings through the BIOS Setup menus and describes the BIOS parameters.

### 5. Chapter 5: Starting up

This chapter helps you power up the system and install drivers and utilities from the support CD.

### 6. Appendix

The appendix includes information on the DVD-RW/DVD-ROM/CD-RW technical specifications and the available wireless LAN adapter channels.



## Conventions used in this guide



**WARNING:** Information to prevent injury to yourself when trying to complete a task.



**CAUTION:** Information to prevent damage to the components when trying to complete a task.



**IMPORTANT:** Information that you **MUST** follow to complete a task.



**NOTE:** Tips and additional information to aid in completing a task.

## Where to find more information

Refer to the following sources for additional information and for product and software updates.

### 1. **ASUS Websites**

The ASUS websites worldwide provide updated information on ASUS hardware and software products. Refer to the ASUS contact information.

### 2. **Optional Documentation**

Your product package may include optional documentation, such as warranty flyers, that may have been added by your dealer. These documents are not part of the standard package.

# System package contents



---

If any of the items is damaged or missing, contact your retailer immediately.

---

## Terminator 2 Deluxe Model – Commercial Edition

1. ASUS Terminator 2 barebone system with:
  - ASUS P4P8T motherboard
  - Optical drive\*
  - Floppy disk drive
  - 3-in-1 PCI card \*\*
  - 7-in-1 storage card reader
  - LED panel
2. Cables
  - Serial ATA cable
  - Power cable and plug
3. Support CD
4. User guide
5. Optional components
  - FM radio module and radio antenna
  - Modem module

\* *CD-ROM/CD-RW/DVD-ROM/DVD-RW*

\*\* *IEEE 1394, wireless LAN adapter (with dipolar antenna), and Gigabit LAN*

# System package contents

## Terminator 2 Deluxe Model – Consumer Edition

1. ASUS Terminator 2 barebone system with:
  - ASUS P4P8T motherboard
  - Optical drive\*
  - Floppy disk drive
  - 3-in-1 PCI card \*\*
  - 7-in-1 storage card reader (Deluxe models only)
  - LED panel (Deluxe models only)
2. Cables
  - Serial ATA cable
  - Power cable and plug
3. Support CD
4. User guide
5. Optional components
  - 3-in-1 PCI card (Deluxe models only)\*\*
  - FM radio module and radio antenna
  - Modem module

\* *CD-ROM/CD-RW/DVD-ROM/DVD-RW*

\*\* *IEEE 1394, wireless LAN adapter (with dipolar antenna), and TV Tuner*

# System package contents

## Terminator 2 Basic Model

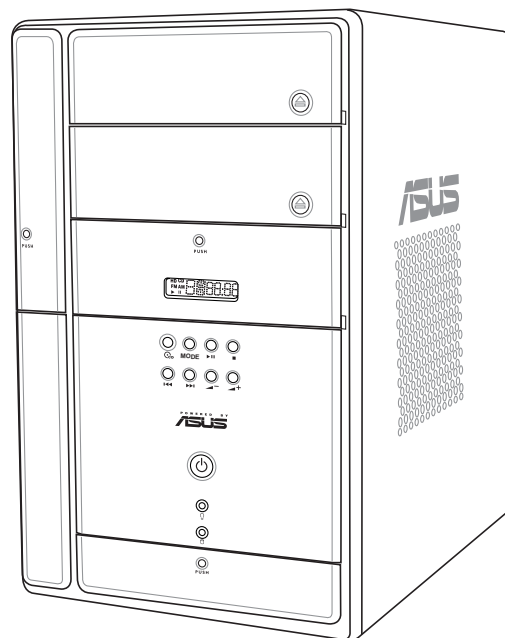
1. ASUS Terminator 2 barebone system with:
  - ASUS P4P8T motherboard
  - Optical drive\*
  - Floppy disk drive
2. Cables
  - Serial ATA cable
  - Power cable and plug
3. Support CD
4. User guide
5. Optional components
  - 3-in-1 PCI card\*\*
  - FM radio module and radio antenna
  - Modem module

\* *CD-ROM/CD-RW/DVD-ROM/DVD-RW*

\*\* *IEEE 1394, wireless LAN adapter (with dipolar antenna), and TV Tuner or IEEE 1394, wireless LAN adapter (with dipolar antenna), and Gigabit LAN*

# Chapter 1

This chapter gives a general description of the ASUS Terminator 2. The chapter lists the system features including introduction on the front and rear panel, and internal components.



# System introduction

# 1.1 Welcome!

Thank you for choosing the ASUS Terminator 2!

The ASUS Terminator 2 is an all-in-one barebone system with a versatile home entertainment feature.

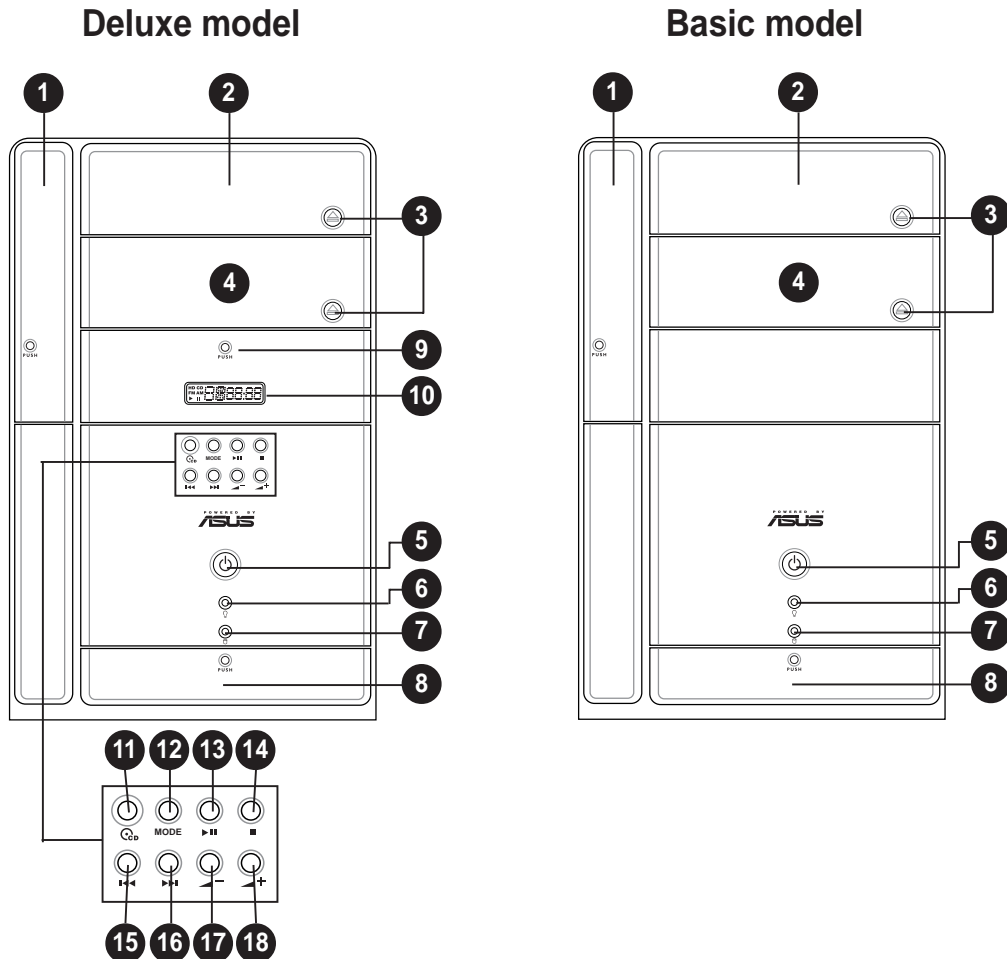
The system comes in a stylish mini-tower casing, and powered by the ASUS P4P8T motherboard that supports Intel® Pentium® 4 Northwood/ Prescott processor with an 800MHz FSB, and up to 2GB system memory.

With video and audio capabilities, Gigabit/Fast Ethernet and wireless networking, and extensive connectivity, Terminator 2 is designed for sophisticated individuals.

With these and many more, the Terminator 2 definitely delivers the cutting edge technology for your computing and multimedia needs!

# 1.2 Front panel (external)

The front panel includes the system and audio control buttons, system LEDs, and LED panel.



1. **Floppy drive door.** Open this door to access the floppy disk drive.
2. **Optical drive door.** This door opens when you eject the loading tray.
3. **Eject button.** Press this button to eject the loading tray of the optical drive.
4. **Secondary optical drive door.** This door covers a second optical drive bay.
5. **Power button.** Press this button to turn the system on.
6. **Power LED.** When lit, this LED indicates that the system is ON.
7. **HDD LED.** This LED lights up when data is being read from or written to the hard disk drive
8. **Front panel I/O door.** Open this door to show the front panel input/output ports.
9. **Storage card reader door** (*Deluxe models only*). Open this door to access the 7-in-1 storage card reader.
10. **LED panel** (*Deluxe models only*). The LED panel displays the audio medium (CD/FM), radio frequency, player status (▶/||), real time clock, track number, and time. See page 22 for details.



---

The following front panel buttons are activated only when the system is in **Audio DJ mode**. The Audio DJ feature allows you to play CD/DVD audio tracks, or tune into an FM radio station without entering the operating system. See page 96 for details. The audio control buttons are available on Deluxe models only.

---

11. **CD button** (Ⓞ). Press this button to put the Audio DJ function to CD mode.



---

In Windows® mode, pressing this button shuts down, restarts, or puts the system in sleep mode (S3) depending on the OS setting.

---

12. **Mode button.** Press this button to switch from CD to FM radio mode or vice versa.

- 13. PLAY/PAUSE button (▶/||).** Press this button to perform various functions in different modes.

In **CD mode**, plays or pauses an audio CD/DVD track.

In **Radio mode**, scans the available FM stations when pressed for less than 2 seconds or presets a station when pressed for more than 2 seconds. Refer to page 22 on how to preset a radio station.
- 14. STOP button (■).** Press this button to stop the audio track being played.
- 15. PREVIOUS button (◀◀).** Press this button to perform various functions in different modes.

In **CD mode**, selects the previous audio track.

In **Radio mode**, selects the previous preset station.
- 16. NEXT button (▶▶).** Press this button to perform various functions in different modes.


In **CD mode**, selects the next audio track/file.

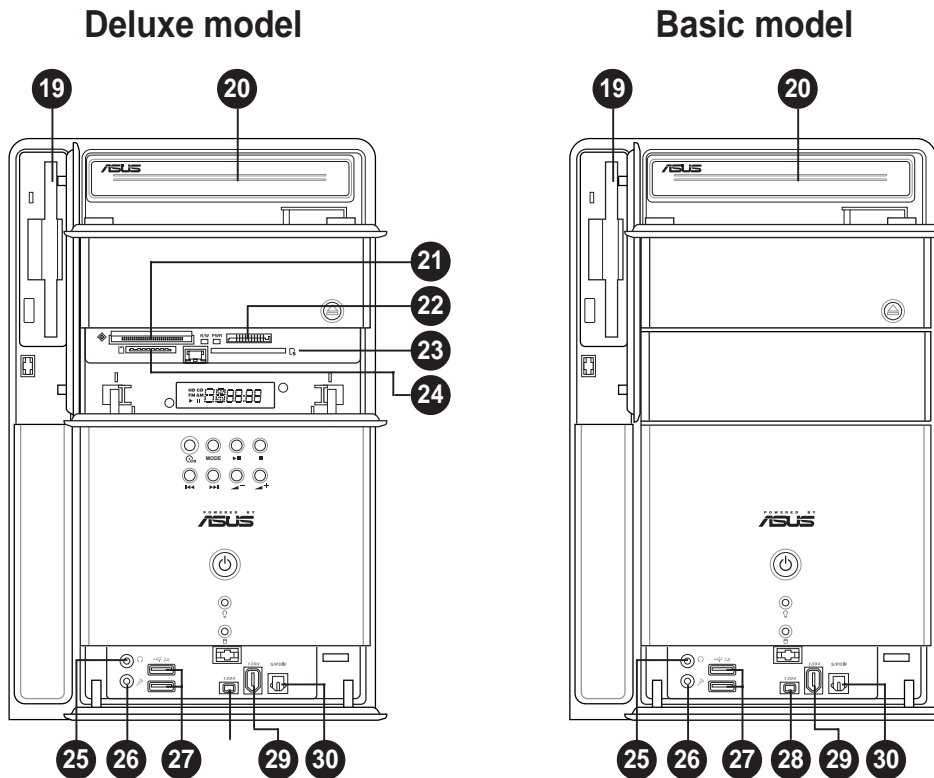
In **Radio mode**, selects the next preset station.
- 17. Volume down button (◀-).** Press this button to decrease the system volume.
- 18. Volume up button (▶+).** Press this button to increase the system volume.






## 1.2 Front panel (internal)

The optical drive(s), storage card reader slots, and several I/O ports are located inside the front panel doors.

Open the front panel doors by pressing the  mark.



- 19. **Floppy disk drive.** This drive is for 1.44MB, 3.5-inch floppy disks.
- 20. **Optical drive.** This is an IDE optical drive.
- 21. **CompactFlash®/Microdrive™ card slot** () . This slot is for a CompactFlash®/Microdrive™ storage card.
- 22. **Memory Stick®/Memory Stick Pro™ card slot.** This slot is for a Memory Stick®/Memory Stick Pro™ storage card.
- 23. **Secure Digital™/MultimediaCard slot** () . This slot is for a Secure Digital™/MultimediaCard storage card.
- 24. **SmartMedia® card slot** () . This slot is for a SmartMedia® storage card.



You can not close the storage card reader door if a storage card is inserted into any of the card slots.

- 25. **Headphone jack.** This jack connects a headphone with a stereo mini-plug.
- 26. **Microphone jack.** This Mic (pink) jack connects a microphone.

**Audio ports function variation**

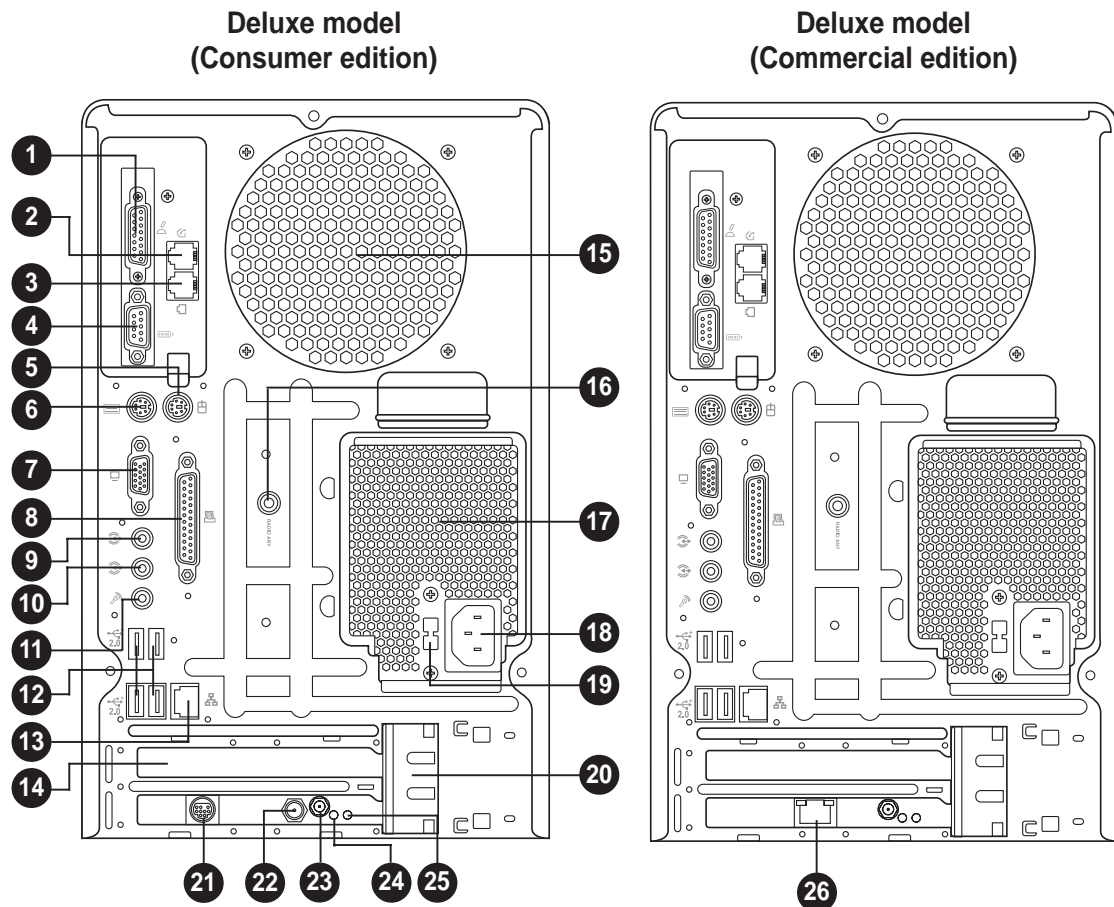
Audio port	Headphone/2-Channel	4-Channel	6-Channel
Light Blue	Line In	No function	LFE Output*/Center
Lime	Line Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Surround	Surround

\* *Low Frequency Enhanced Output*

- 27. **USB 2.0 ports.** These Universal Serial Bus 2.0 (USB 2.0) ports are available for connecting USB 2.0 devices such as a mouse, printer, scanner, camera, PDA, and others.
- 28. **4-pin IEEE 1394 port.** This port provides high-speed connectivity for IEEE 1394-compliant audio/video devices, storage peripherals, and other PC devices.
- 29. **6-pin IEEE 1394 port.** This port provides high-speed connectivity for IEEE 1394-compliant audio/video devices, storage peripherals, and other PC devices.
- 30. **Optical S/PDIF port.** This port connects your audio system for 5.1-channel surround sound and enhanced 3D audio.

## 1.4 Rear panel

The system rear panel includes the power socket and several I/O ports that allow convenient connection of devices.



1. **GAME/MIDI port.** This port connects a joystick, or game pad for playing games, and MIDI devices for audio editing.
2. **Telephone port (optional).** This port connects an RJ-11 cable jack. Connect one end of an RJ-11 cable to this port and the other end to the RJ-11 port of the telephone unit.
3. **RJ-11 port (optional).** This port connects an RJ-11 cable jack. Connect one end of an RJ-11 cable to this port and the other end to the RJ-11 wall socket.
4. **Serial port.** This port connects a mouse, modem, or other devices that conforms with serial specification.
5. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
6. **PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.
7. **VGA port.** This port connects a VGA monitor.

8. **Parallel port.** This 25-pin port connects a printer, scanner, or other devices.
9. **Line Out port.** This Line Out (lime) port connects a headphone or a speaker. In 4/6-channel mode, the function of this port becomes Front Speaker Out.
10. **Line In port.** This Line In (light blue) port connects a tape player or other audio sources. In 6-channel mode, the function of this port becomes Low Frequency Enhanced Output/Center.
11. **Microphone port.** This Microphone (pink) port connects a microphone. In 4/6-channel mode, the function of this port becomes Surround Speaker.
12. **USB 2.0 ports.** These Universal Serial Bus 2.0 (USB 2.0) ports are available for connecting USB 2.0 devices such as a mouse, printer, scanner, camera, PDA, and others.
13. **Ethernet LAN port.** This port allows connection to a Local Area Network (LAN) through a network hub.
14. **AGP slot cover.** Remove this cover when installing an AGP card.
15. **Chassis fan.** This fan provides ventilation inside the system chassis.
16. **Radio antenna port.** This port connects an optional radio antenna.
17. **Power supply unit fan.** This fan provides ventilation inside the power supply unit.
18. **Power socket.** This socket connects the power cable and plug.
19. **Voltage selector.** This switch allows you to select the appropriate voltage supply in your area. See the “Voltage selector” section on page 40 before adjusting this switch.
20. **Expansion card lock.** This metal lock secures any installed expansion card. See page 32 for details.
21. **Video In port.** (*Deluxe models-Consumer edition only.*) This port connects a video cassette recorder.
22. **Cable TV connector.** (*Deluxe models-Consumer edition only.*) This connects a cable TV twist-on connector.
23. **Wireless LAN adapter antenna connector.** This connects the dipolar antenna of the wireless LAN adapter.
24. **Link LED.** This yellow LED lights up when the wireless LAN adapter radio is on but has no activity.

25. **AIR LED.** This green LED blinks when the wireless LAN adapter is transmitting or receiving data.

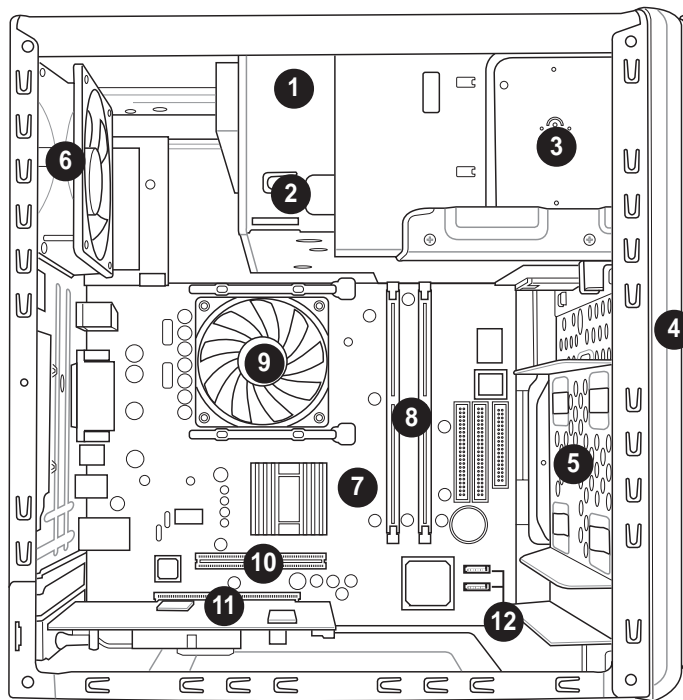


See page 112 for the wireless LAN adapter LED indications.

26. **Gigabit LAN port.** (for Deluxe models-Commercial edition only) This port allows high speed connection to the Internet via a DSL or cable modem.

## 1.5 Internal components

The illustration below is the internal view of the system when you remove the top cover and the power supply unit (see page 37 for details). The installed components are labeled for your reference. Proceed to Chapter 2 for instructions on installing other system components.



- |                                      |                                           |
|--------------------------------------|-------------------------------------------|
| 1. Optical drive                     | 7. ASUS P4P8T motherboard                 |
| 2. 5.25-inch empty optical drive bay | 8. DIMM sockets                           |
| 3. Floppy disk drive                 | 9. CPU fan and heatsink assembly          |
| 4. Front panel cover                 | 10. AGP slot                              |
| 5. Hard disk drive metal tray        | 11. PCI slot (with an installed PCI card) |
| 6. Chassis fan                       | 12. SATA connectors                       |

## 1.6 LED panel

The LED panel displays various system information depending on the system mode.



The LED panel displays the system time in 24-hour format when the system is in soft-off or stand-by mode, S3 (Suspend-to-RAM), or S4 (Suspend-to-Disk) state. Enter the BIOS setup or the operating system to adjust the time.



### Audio DJ mode

The LED panel displays various information when the system is in Audio DJ mode.

In CD mode, the LED panel displays the play/pause icon, number, and duration of the audio CD/DVD track being played.

CD mode, play/paused status



In Radio mode, the LED panel displays the station preset number and station frequency. Refer to the section below on how to preset a radio station.

FM radio mode



Refer to page 96 on how to turn on the Audio DJ feature.

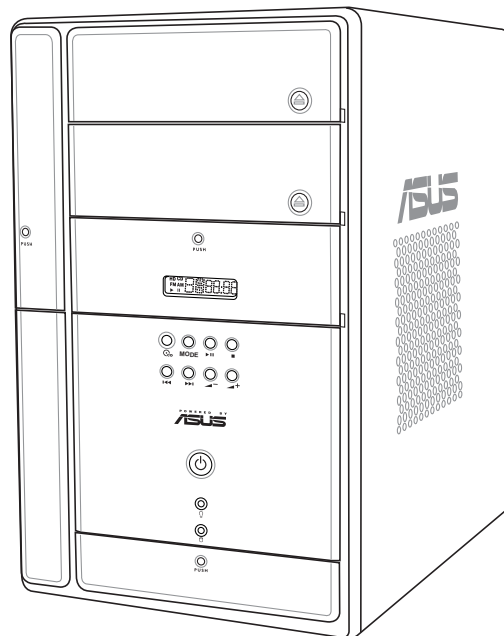
### Presetting a radio station

To preset a radio station:

1. Put the Audio DJ in Radio mode.
2. Use the PLAY/PAUSE button for less than 2 seconds to scan the radio frequency, then select the station you wish to preset.
4. Press the PLAY/PAUSE button for more than 2 seconds until the station frequency display in the LED panel blinks.
5. Use the NEXT or PREVIOUS button to select a preset number (1 ~ 9) for the selected station.
6. Press the PLAY/PAUSE button to confirm the preset station.

# Chapter 2

This chapter provides step-by-step instructions on how to install components in the system.



# Basic installation

## 2.1 Preparation

Before you proceed, make sure that you have all the components that you plan to install in the system.

### Basic components to install

1. Central processing unit (CPU)
2. DDR Dual Inline Memory Module (DIMM)
3. Expansion card(s)
4. Hard disk drive
5. Secondary optical drive

### Tool

Phillips (cross) screw driver

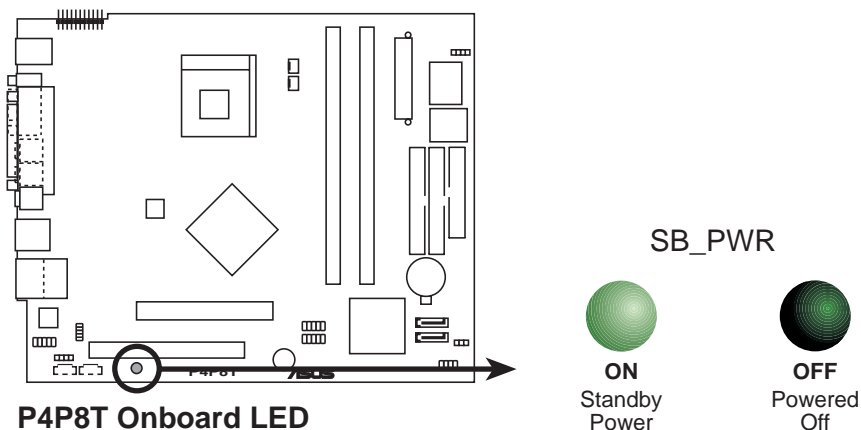
## 2.2 Before you proceed

Take note of the following precautions before you install components into the system.



1. Use a grounded wrist strap or touch a safely grounded object or to a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.
2. Hold components by the edges to avoid touching the ICs on them.
3. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

The motherboard comes with an onboard standby power LED. When lit, this LED indicates that the system is ON, in sleep mode or in soft-off mode, and not powered OFF. Unplug the power cable from the power outlet and make sure that the standby power LED is OFF before installing any system component.

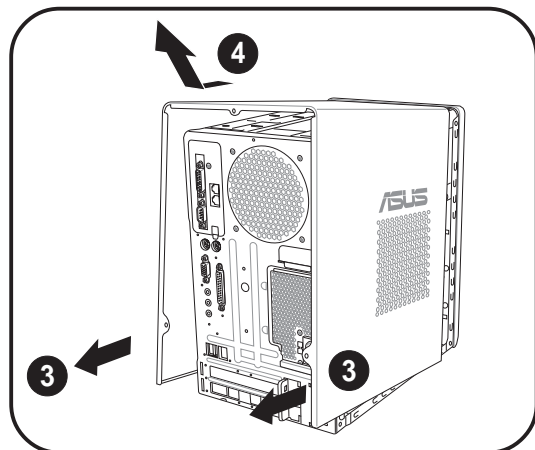
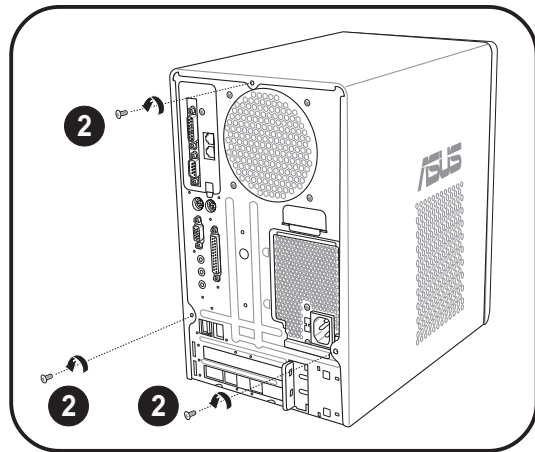
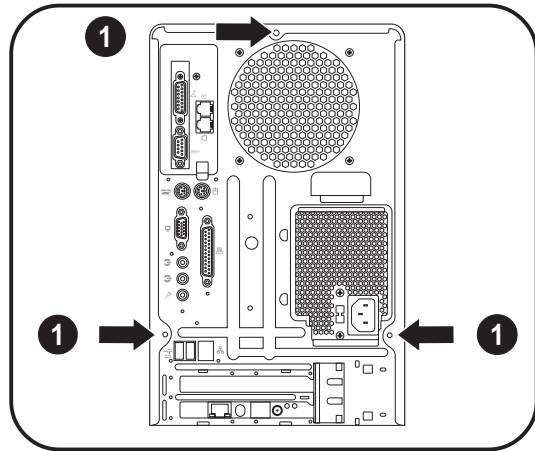




## 2.3 Removing the cover

To remove the cover:

1. On the rear panel, locate the three screws that secure the cover to the chassis.
2. Use a Phillips (cross) screw driver to remove the cover screws. Keep the screws for later use.
3. Pull the cover slightly toward the rear panel until the side tabs are disengaged from the chassis.
4. Lift the cover, then set aside.

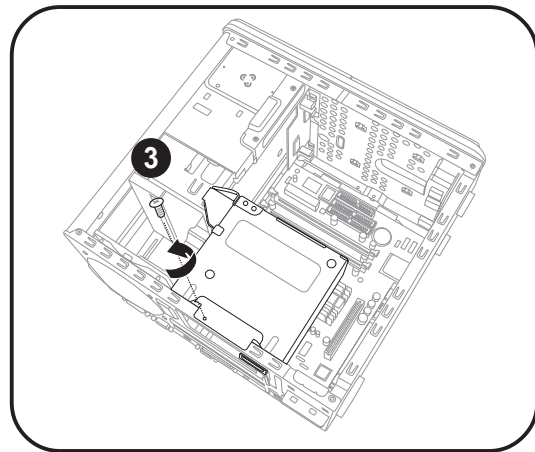


## 2.4 Removing the power supply

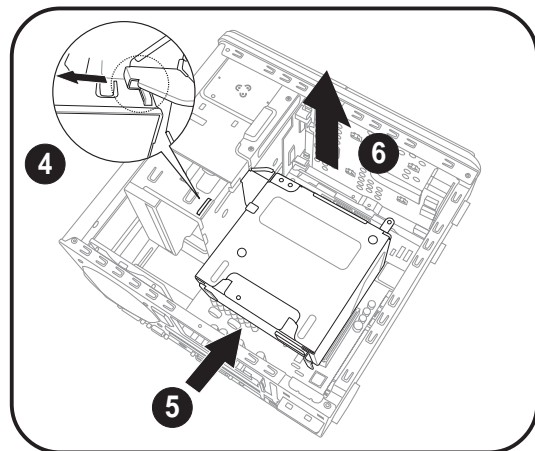
You must remove the power supply unit (PSU) before you can install a central processing unit (CPU), and other system components. See page 37 for details on the PSU.

To remove the PSU:

1. Lay the system on its side on a flat, stable surface.
2. Disconnect all power supply plugs in the optical drive and floppy disk drive.
3. Remove the screw that secures the PSU to the chassis.



4. Slide the PSU to the left until the side hook is disengaged from the chassis.
5. Push the PSU towards the front panel for about half an inch.
6. Lift the PSU slightly, then disconnect the power plugs on the motherboard.
7. Set the PSU aside.



When removing the PSU, make sure to hold or support it firmly. The unit may accidentally drop and damage the other system components.

## 2.5 Installing a CPU

The P4P8T motherboard comes with a surface mount 478-pin Zero Insertion Force (ZIF) socket. This socket is specifically designed for Intel® Pentium® 4 Northwood/Prescott processor.

### 2.5.1 Removing the CPU fan and heatsink assembly

The system package includes a pre-installed proprietary CPU fan and heatsink assembly to ensure optimum thermal condition and performance.

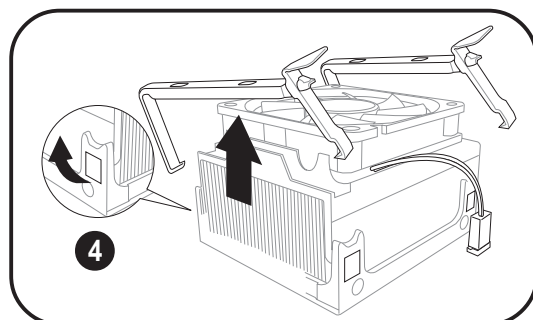
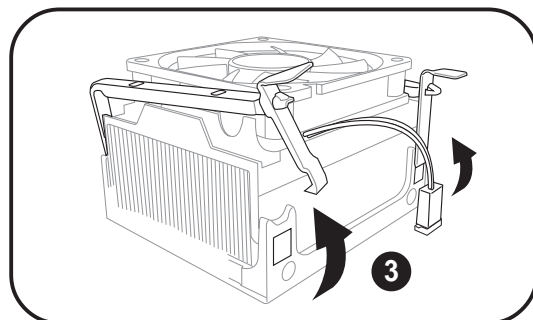
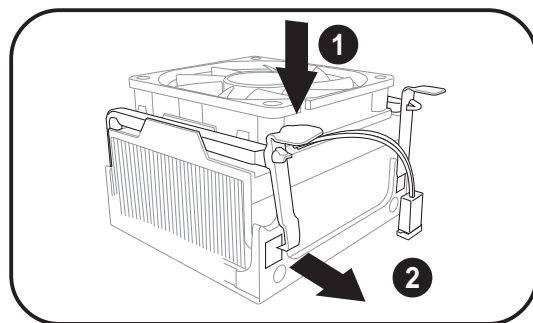


**DO NOT** replace the proprietary CPU fan and heatsink with other models.

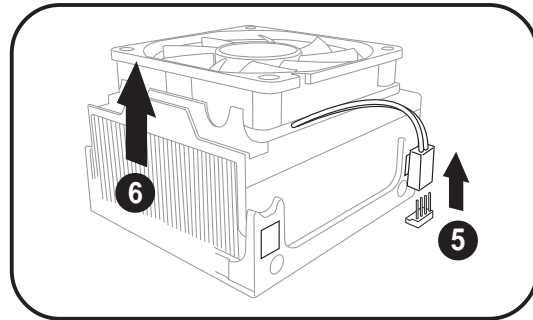
You must remove the CPU fan and heatsink assembly before you can install a CPU.

To remove the CPU fan and heatsink assembly:

1. Carefully press down the locking lever of the retention bracket
2. Detach the retention bracket hook from the retention module hole by flipping the locking lever to the direction of the arrow.
3. Slightly lift the retention bracket.
4. Detach the other retention bracket hook from the hole on the other side of the retention module, then lift.
5. Do steps 1-4 to remove the second retention bracket.



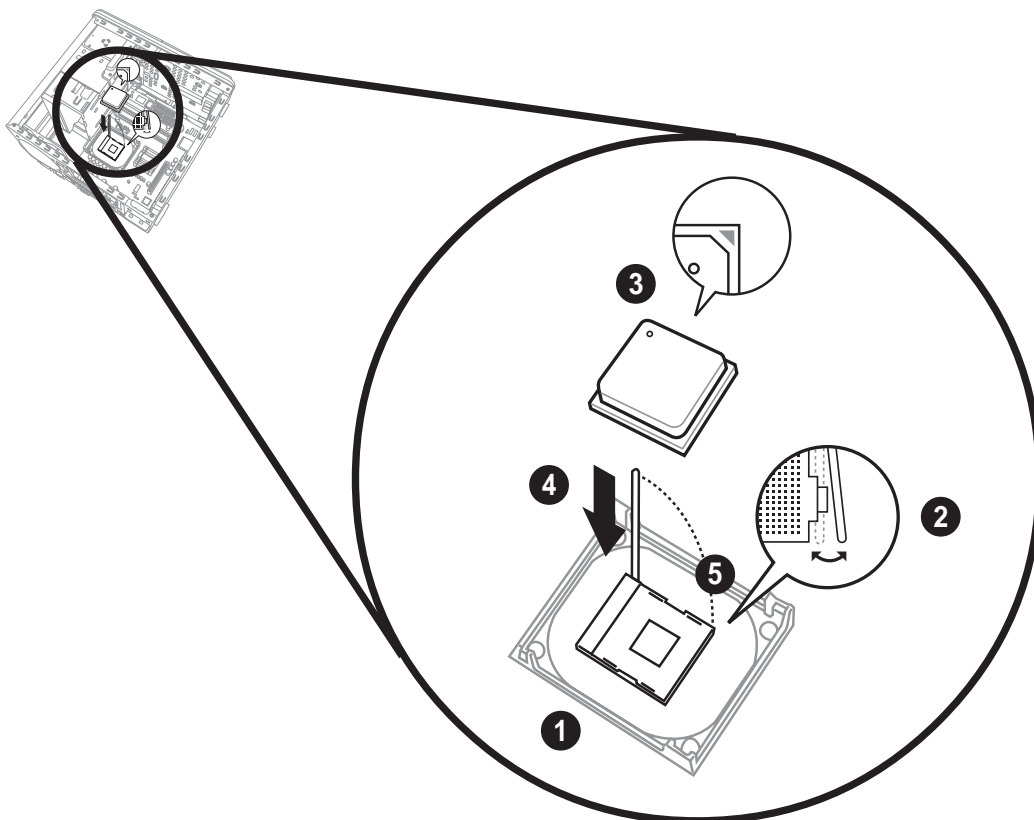
5. Disconnect the CPU fan cable from the CPU fan connector on the motherboard.
6. Lift the CPU fan and heatsink assembly, then set aside.



## 2.5.2 CPU installation

To install the CPU:

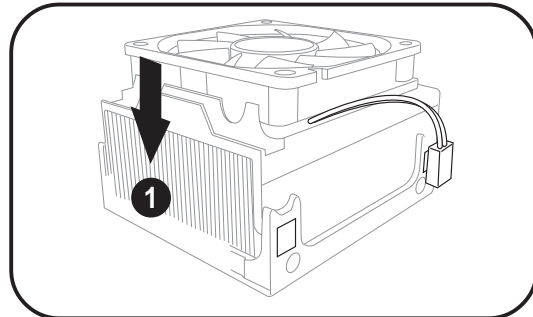
1. Locate the 478-pin CPU socket on the motherboard.
2. Unlock the socket by pressing the lever sideways then lifting it up to a 90° angle.
3. Position the CPU above the socket such that its marked corner (gold mark) matches the base of the socket lever.
4. Carefully insert the CPU into the socket until it fits in place.
5. Push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



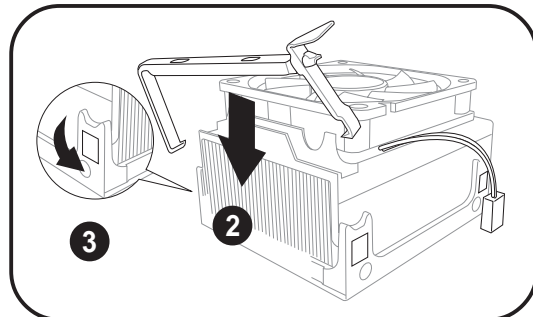
## 2.5.3 Re-installing the CPU fan and heatsink assembly

To re-install the CPU fan and heatsink assembly:

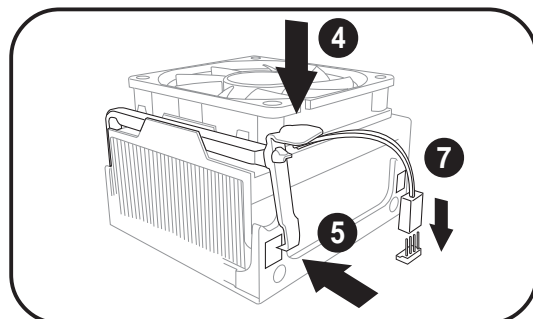
1. Position the CPU fan and heatsink assembly on top of the installed CPU.



2. Align the retention bracket with the rails on the side of the CPU fan.
3. Attach the retention bracket hook into the retention module hole.



4. Carefully press down the locking lever on the other side of the retention bracket
5. Attach the locking lever hook into the retention module hole to secure the fan and heatsink assembly in place.
6. Follow steps 2 to 5 to re-install the second retention bracket.
7. Connect the CPU fan cable to the CPU fan connector on the motherboard.



## 2.6 Installing a DIMM

The motherboard comes with two Double Data Rate (DDR) Dual Inline Memory Module (DIMM) sockets. These sockets support up to 2GB system memory using unbuffered non-ECC PC3200/2700/2100 DIMMs.

### 2.6.1 Memory configurations

You may install 64MB, 128MB, 256MB, 512MB, and 1GB DDR DIMMs into the DIMM sockets.



Obtain DDR DIMMs only from ASUS qualified vendors. Refer to the Qualified DDR400 vendors list below. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest DDR Qualified Vendors List.

#### Table 1 Qualified DDR400 vendors list

This table lists the memory modules that have been tested and qualified for use with this motherboard.

Size	Vendor	Part Number	Chip Brand	Chip Number
256MB	Samsung	M368L3223DTM-CC4	Samsung	K4H560838D-TCC4
256MB	Samsung	M368L3223ETM-CCC	Samsung	K4H560838E-TCCC
512MB	Samsung	M368L6432ETM-CCC	Samsung	K4H560838E-TCCC
256MB	Infineon	HYS64D32300GU-5-B	Infineon	HYB25D256800BT-5B
512MB	Infineon	HYS64D64320GU-5-B	Infineon	HYB25D256800BT-5B
256MB	Transcend	TS32MLD64V4F3	Samsung	K4H560838D-TCC4
512MB	Transcend	TS64MLD64V4F3	Samsung	K4H560838D-TCC4
256MB	Winbond	W9425GCDB-5	Winbond	W942508CH-5
512MB	Winbond	W9451GCDB-5	Winbond	W942508CH-5
256MB	A DATA	MDOAD5F3G315B1ECZ	Samsung	K4H560838D-TCC4
256MB	TwinMOS	MDSTTUF08108L294K4FW0/T	TwinMOS	TMD7608F8E50B
512MB	Hynix	HYMD264646B8J-D43 AA	Hynix	HY5DU56822BT-D43
512MB	Apacer	77.10636.465	Samsung	K4H560838D-TCC4



1. Install only **identical** (the same type and size) DDR DIMM in DIMM\_A and DIMM\_B.
2. Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
3. This motherboard only supports x4, x8, x16 chips/per module DDR DIMMs.
4. Make sure that the memory frequency matches the CPU FSB (Front Side Bus). Refer to Table 2.

## Table 2 Memory frequency/CPU FSB synchronization

This motherboard supports different memory frequencies depending on the CPU FSB (Front Side Bus) and the type of DDR DIMM.

CPU FSB	DDR DIMM Type	Memory Frequency
800 MHz	PC3200/PC2700*/PC2100	400/333*/266 MHz
533 MHz	PC2700/PC2100	333/266 MHz
400 MHz	PC2100	266 MHz

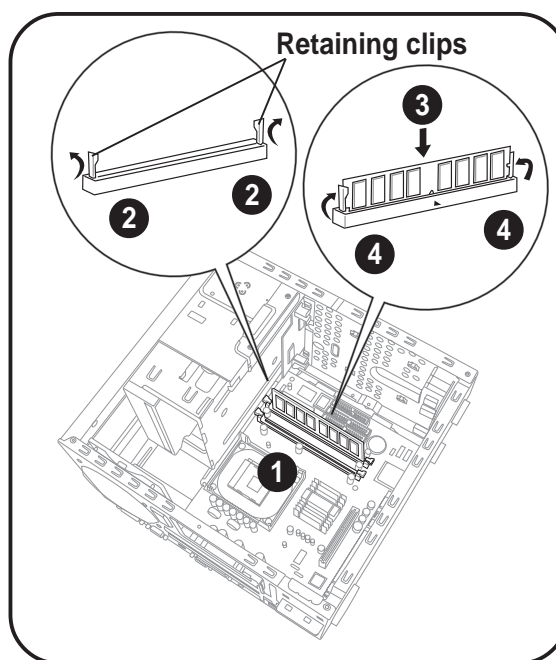


\*When using 800MHz CPU FSB, PC2700 DDR DIMMs may run only at 320MHz (not 333MHz) due to chipset limitation.

### 2.6.2 DIMM installation

To install a DDR DIMM.

1. Locate the two DIMM sockets on the motherboard.
2. Unlock a socket by pressing the retaining clips outward.
3. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.
4. Firmly insert the DIMM into the socket until the retaining clips snap back in place and the DIMM is properly seated.



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!



## 2.7 Installing an expansion card

In the future, you may need to install expansion cards. The motherboard has one PCI and one Accelerated Graphics Port (AGP) slot. The following sub-sections describe the slots and the expansion cards that they support.



For Deluxe models, a 3-in-1 PCI card is pre-installed in the PCI slot. See section “ ” for details. You may refer to this section when installing a different PCI card on the PCI slot.

### 2.7.1 Expansion slots

#### PCI slot

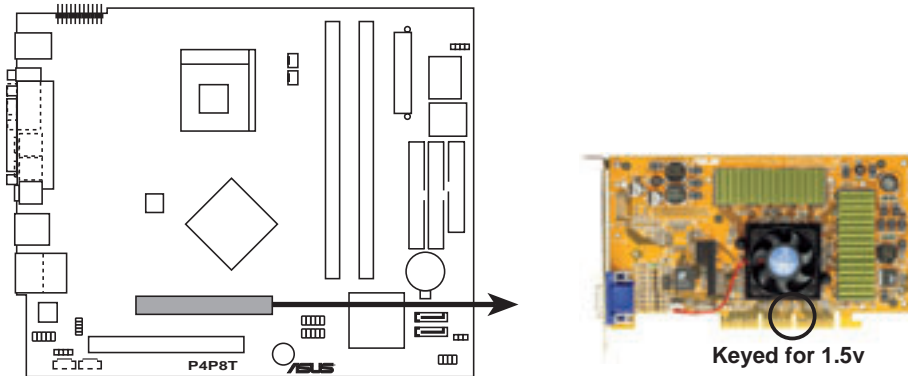
The PCI slot supports PCI cards such as a LAN card, SCSI card, USB card, and other cards that comply with PCI specifications.

#### AGP slot

The AGP slot supports AGP 8X (+0.8V) cards and AGP 4X (+1.5V) cards. When you buy an AGP card, make sure that you ask for one with +0.8V or +1.5V specification.



Install only +0.8V or +1.5V AGP cards. The P4P8T motherboard does not support 3.3V AGP cards.



#### P4P8T Accelerated Graphics Port (AGP)



If installing the ATi 9500 or 9700 Pro Series VGA cards, use only the card version **PN xxx-xxxxx-30** or later, for optimum performance and overclocking stability.



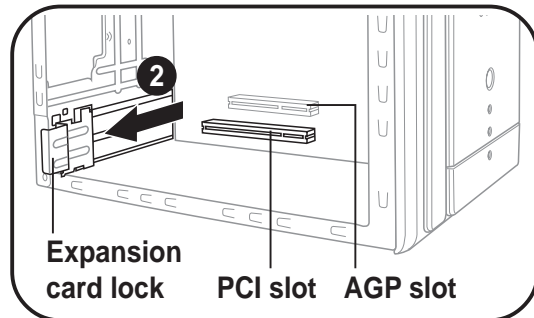
Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage the motherboard.



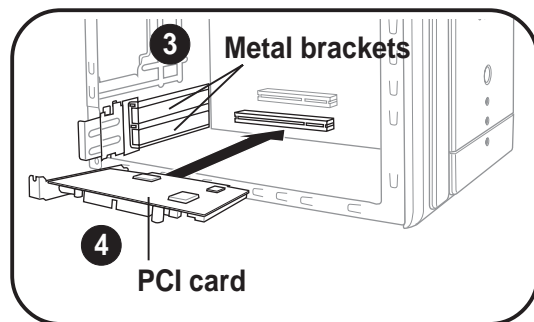
## 2.7.1 Expansion slots

To install an expansion card.

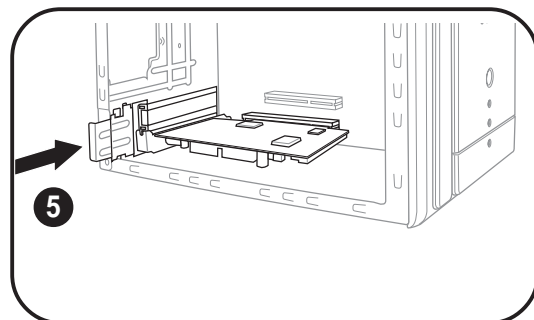
1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Pull the expansion card lock to the direction of the arrow.



3. Remove the metal bracket opposite the slot that you intend to use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.



5. Replace the expansion card lock to secure the card to the chassis.



## 2.7.2 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 4 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.

## Standard interrupt assignments

IRQ	Priority	Standard Function
0	1	System Timer
1	2	Keyboard Controller
2	N/A	Programmable Interrupt
3*	11	Communications Port (COM2)
4*	12	Communications Port (COM1)
5*	13	Sound Card (sometimes LPT2)
6	14	Floppy Disk Controller
7*	15	Printer Port (LPT1)
8	3	System CMOS/Real Time Clock
9*	4	ACPI Mode when used
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.

## IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI slot 1	—	shared	—	—	—	—	—	—
AGP slot	shared	shared	—	—	—	—	—	—
Onboard USB controller HC0	shared	—	—	—	—	—	—	—
Onboard USB controller HC1	—	—	—	shared	—	—	—	—
Onboard USB controller HC2	—	—	shared	—	—	—	—	—
Onboard USB controller HC3	shared	—	—	—	—	—	—	—
Onboard USB 2.0 controller	—	—	—	—	—	—	—	used
Onboard LAN	—	—	—	—	—	—	used	—
Onboard Audio	—	shared	—	—	—	—	—	—



When using a PCI card 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.

## 2.8 Installing a second optical drive

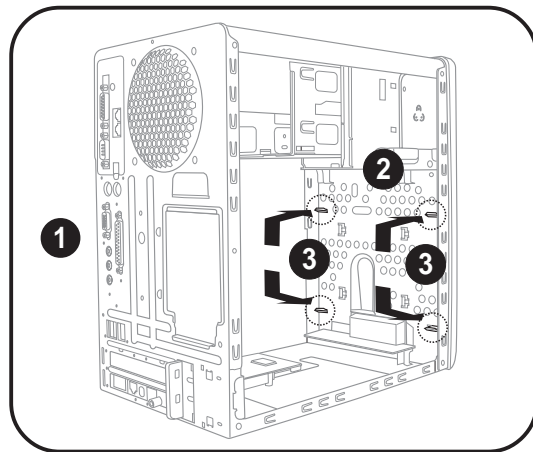
The system comes with a pre-installed optical drive (DVD-RW, DVD-ROM, CD-RW, or CD-ROM) and an empty 5.25-inch drive bay for a second optical drive.



Set your second optical drive as Slave device before connecting the IDE cable and power plug. Refer to the optical drive documentation on how to set the drive as a Slave device.

To install a second optical drive:

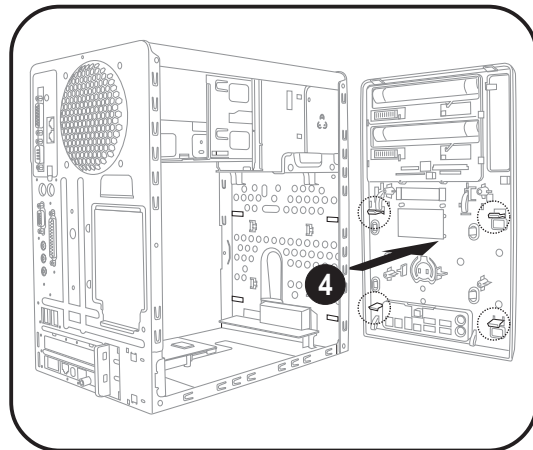
1. Place the chassis upright.
2. Locate the front panel cover hooks.
3. Press the hooks inward to release the front panel cover from the chassis.



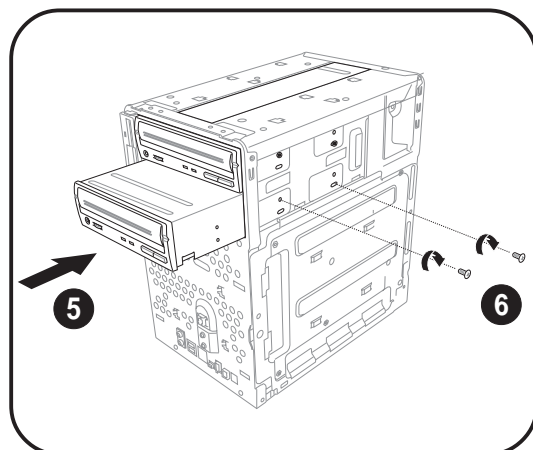
4. Push the the front panel cover slightly outwards to detach it from the chassis, then set it aside.



On Deluxe models, disconnect the LED panel and the front audio button panel cables from their respective connectors before removing the front panel cover.



5. Carefully push the optical drive into the bay until its screw holes align with the holes on the bay as shown.
6. Secure the optical drive with two screws on one side of the bay.



7. Connect a power cable from the power supply unit to the power connector at the back of the optical drive. See page 40 for details.

8. Connect one end of the IDE ribbon cable to the IDE interface at the back of the optical drive, matching the red stripe on the cable with Pin 1 on the IDE interface.

9. Connect one end of the optical drive audio cable to the 4-pin connector at the back of the optical drive.

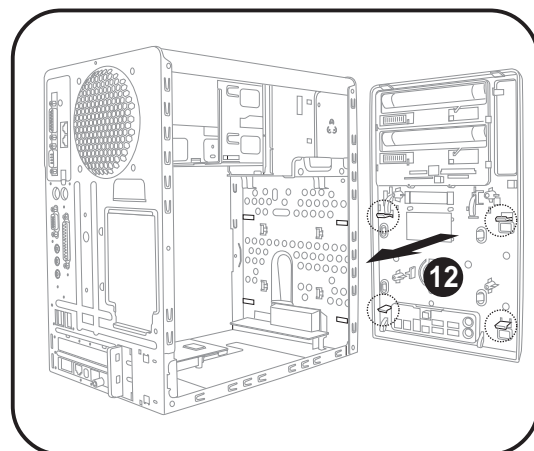
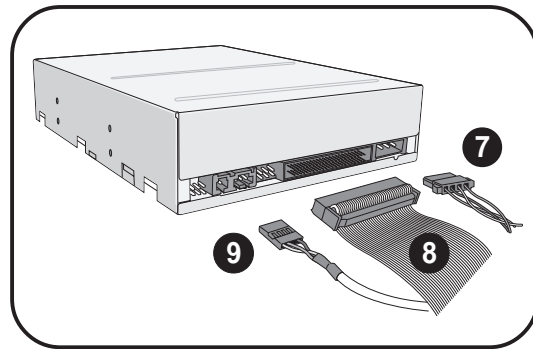
10. Connect the other end of the IDE ribbon cable to the secondary IDE connector (black connector labeled SEC\_IDE) on the motherboard. See page 49 for the location of the secondary IDE connector.

11. Connect the other end of the audio cable to the black 4-pin connector labeled CD\_1 on the motherboard. See page 50 for the location of the CD connector.

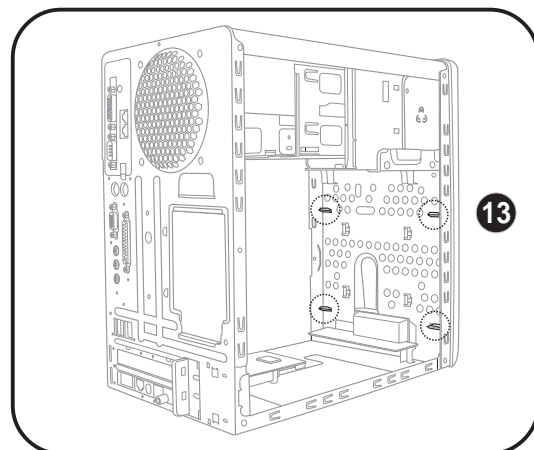
12. Re-install the front panel cover by aligning its hooks with the holes on the chassis.



On Deluxe models, re-connect the LED panel and the front audio button panel cables to their respective connectors before re-installing the front panel cover.



13. Snap the front panel cover hooks to the chassis holes as indicated.

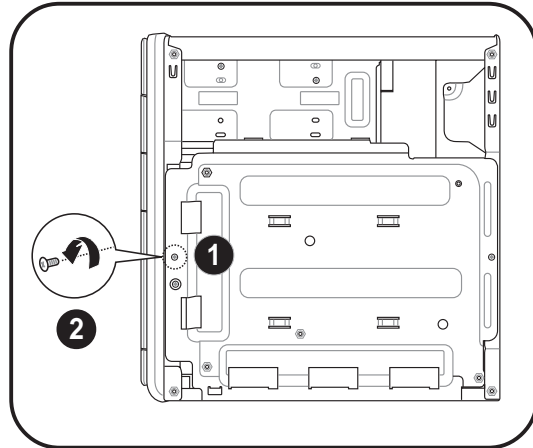


## 2.9 Installing a hard disk drive

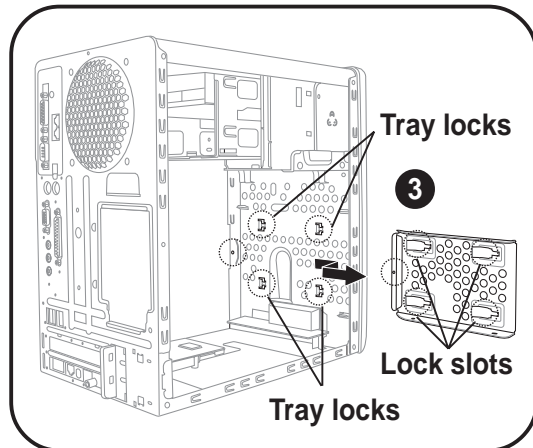
The system supports one UltraATA133 IDE/Serial ATA hard disk drive (HDD).

To install a hard disk drive:

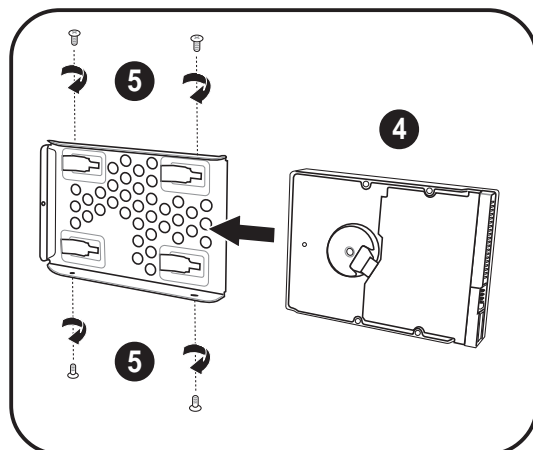
1. Locate the HDD metal tray flathead lock screw on the other side of the chassis.
2. Remove the flat head screw using a Philips screw driver. Keep the screw for later use.



3. Slide the HDD metal tray outward until its slots are released from the tray locks.

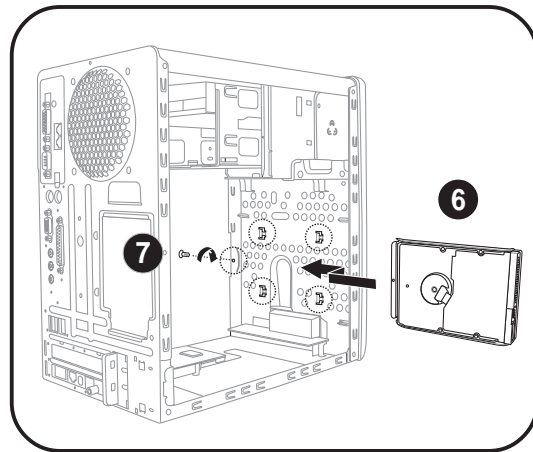


4. Place a hard disk drive on the HDD metal tray with its bottom on the open side of the tray. Align the HDD and HDD metal tray screw holes.
5. Secure the HDD with four screws.

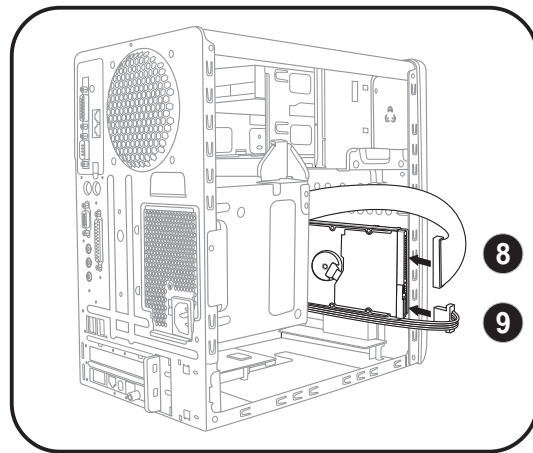


Configure your hard disk drive as Master device before connecting the IDE cable and power plug. Refer to the HDD documentation on how to set the drive as a Master device.

6. Re-install the HDD metal tray and HDD in the chassis by sliding it into the tray hooks.
7. Secure the HDD metal tray with the flat head screw you earlier removed.



8. Connect one end of the 40-pin IDE cable to the IDE connector on the drive.
9. Connect a 4-pin power plug from the power supply unit to the HDD power connector.
10. Connect the other end of the IDE ribbon cable to the primary IDE connector (blue connector labeled PRI\_IDE) on the motherboard. See page 49 for the location of the primary IDE connector.

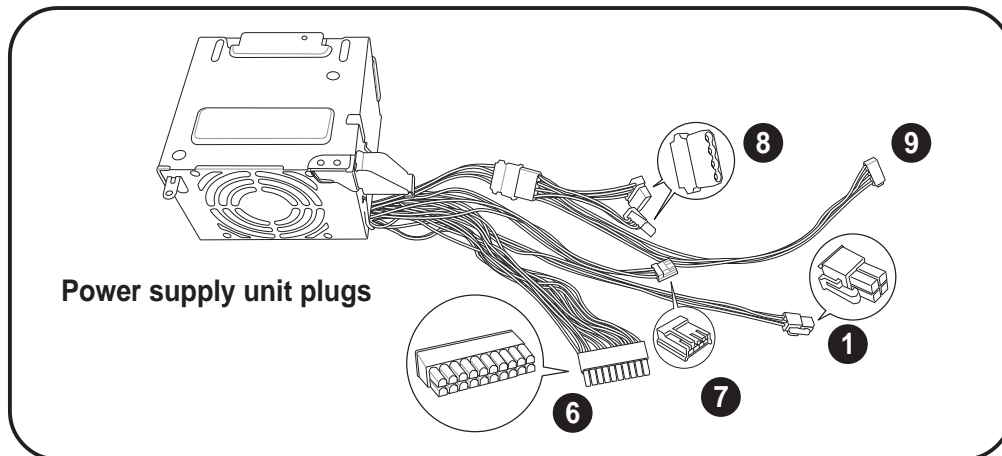


## 2.10 Re-installing the power supply unit

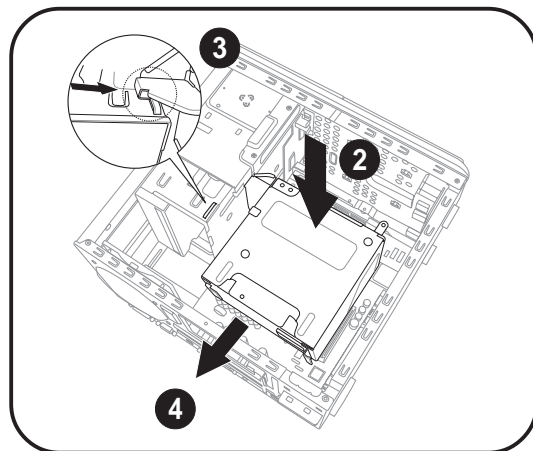
After installing the system components and reconnecting the cables, re-install the power supply unit (PSU).

To reinstall the PSU:

1. Connect the 4-pin 12V power plug to the ATX12V connector on the motherboard labeled ATX12V. See page 52 for the location of the ATX12V connector.



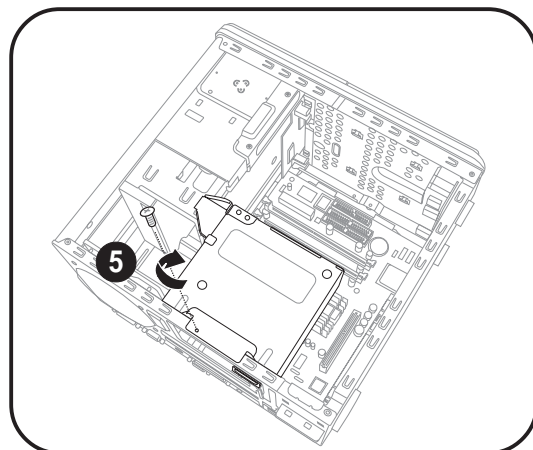
2. Position the PSU over the chassis.
3. Align the PSU side hook with the metal slot located in the side of the optical drive bay.
4. Slide the PSU toward the direction of the rear panel until it fits in place.



5. Secure the PSU with the screw you removed earlier.



Make sure the PSU cables do not touch the CPU fan and chassis fan.





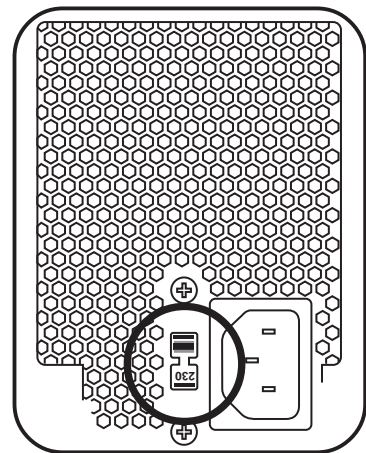
6. Connect the 20-pin power plug to the power connector on the motherboard labeled ATXPWR. See page 52 for the location of the ATXPWR connector.
7. Connect the 4-pin power plug to the power connector of the floppy disk drive.
8. Connect the 4-pin power plug(s) to the power connector of the optical drive(s).
9. Connect the 4-pin power plug to the power connector of the hard disk drive.

## Voltage selector

The PSU has a 115V/230V voltage selector switch located at the side of the power socket. Use this switch to select the appropriate voltage according to the voltage supply in your area.

If the voltage supply in your area is 100-127V, set the switch to 115V.

If the voltage supply in your area is 200-240V, set the switch to 230V.



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Setting the switch to 115V in a 230V environment will seriously damage the system!

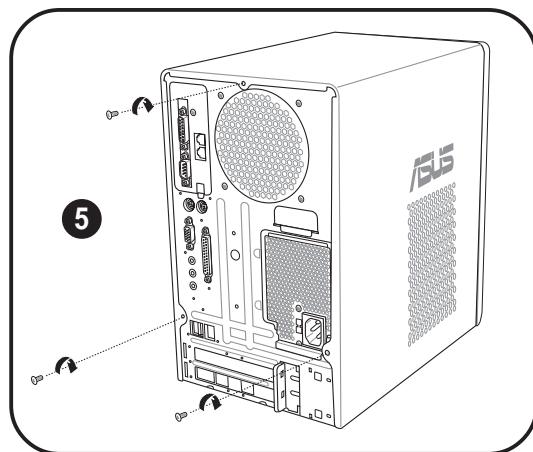
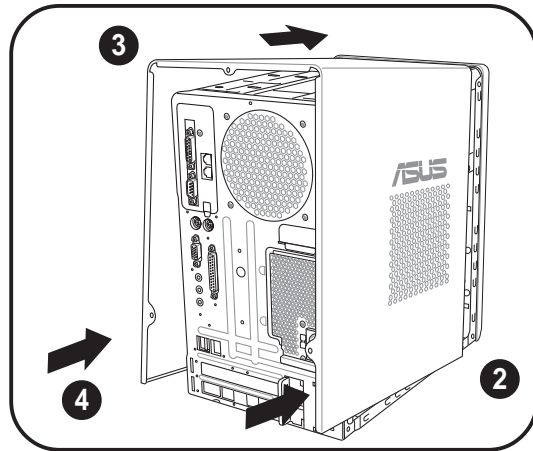
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## 2.11 Replacing the cover

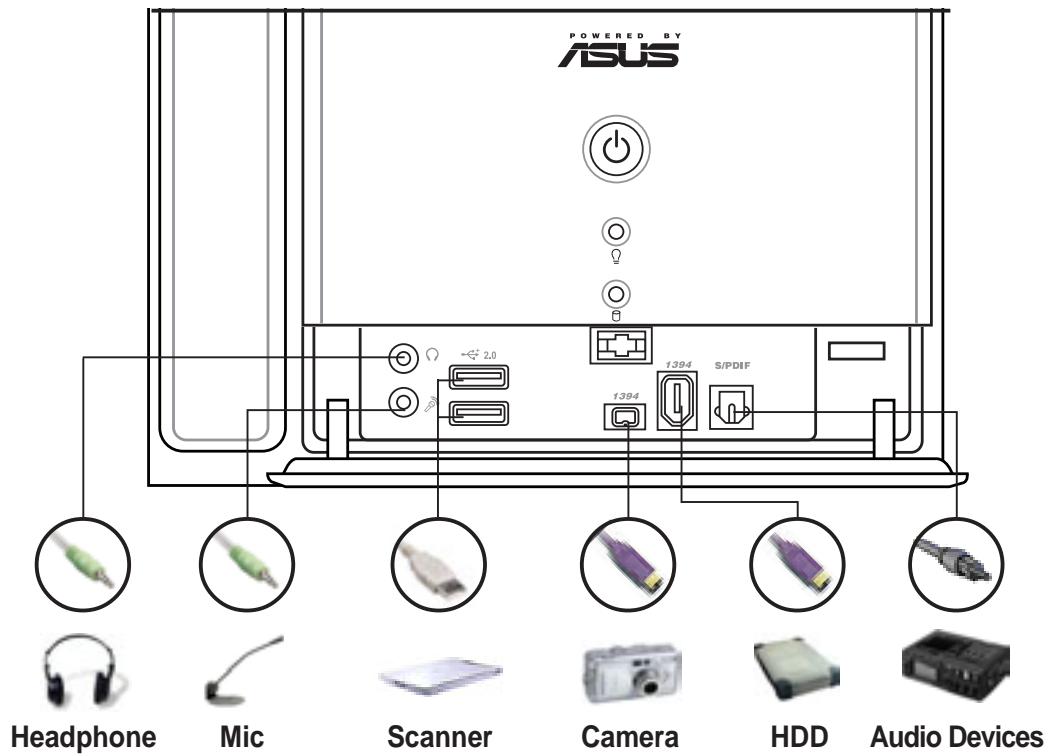
To replace the cover.

1. Turn the chassis upright.
2. Position the front edge of the cover at least two inches from the front panel cover. Fit the cover tabs with the chassis rail and the front panel tabs.
3. Lower the rear edge of the cover as shown.
4. Push the cover slightly toward the front panel until it fits in place.
5. Secure the cover with three screws you earlier removed.

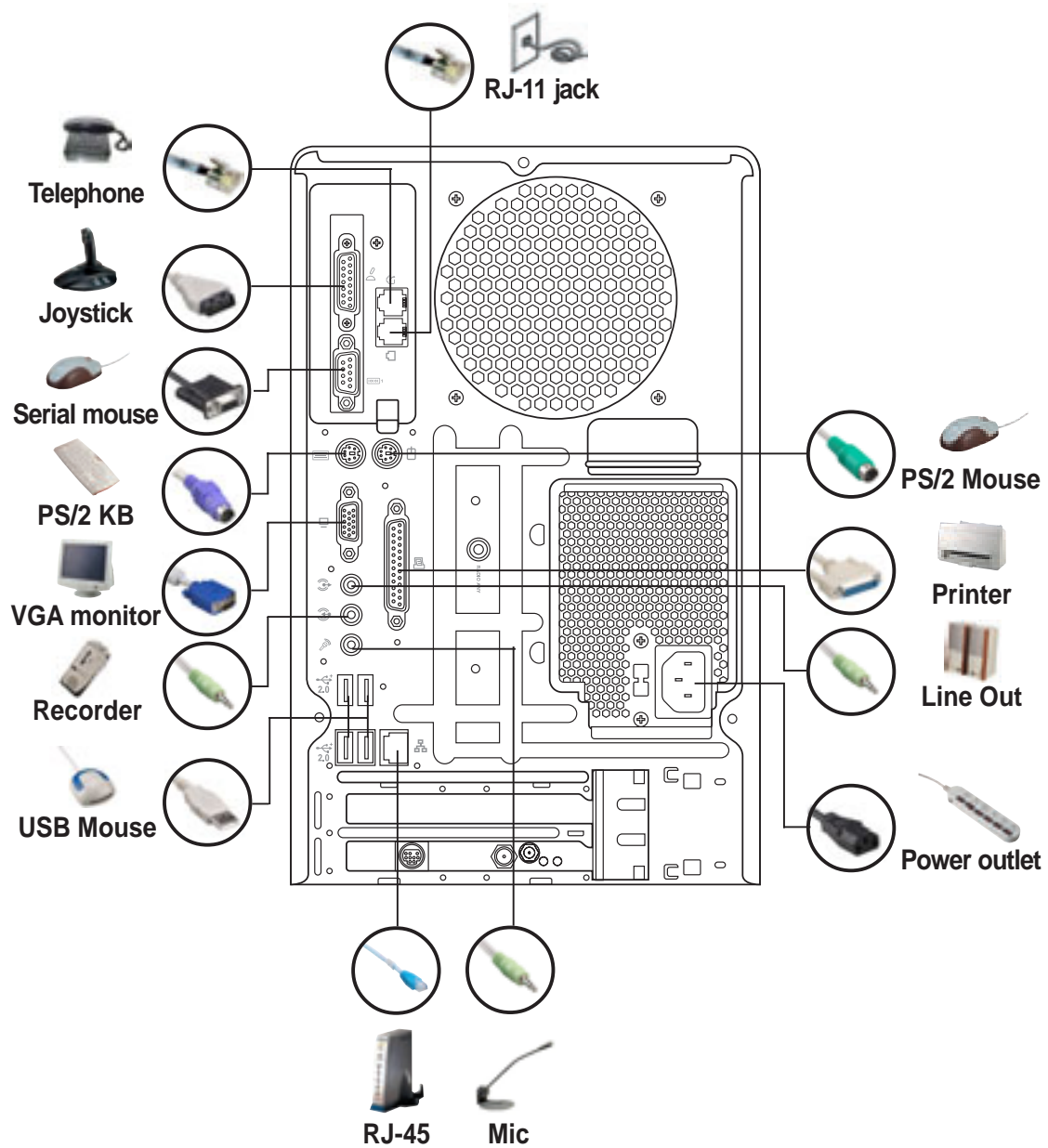


## 2.12 Connecting external devices

### To the front panel



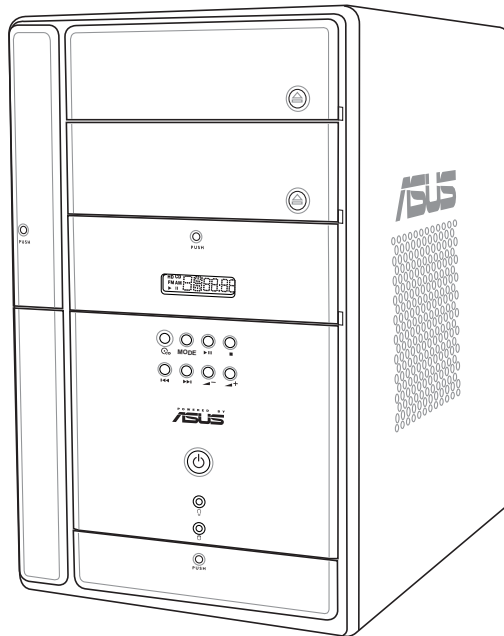
# To the rear panel





# Chapter 3

This chapter gives information about the P4P8T motherboard that came with the Terminator 2 system. This chapter includes the motherboard layout, jumper settings, and connector locations.

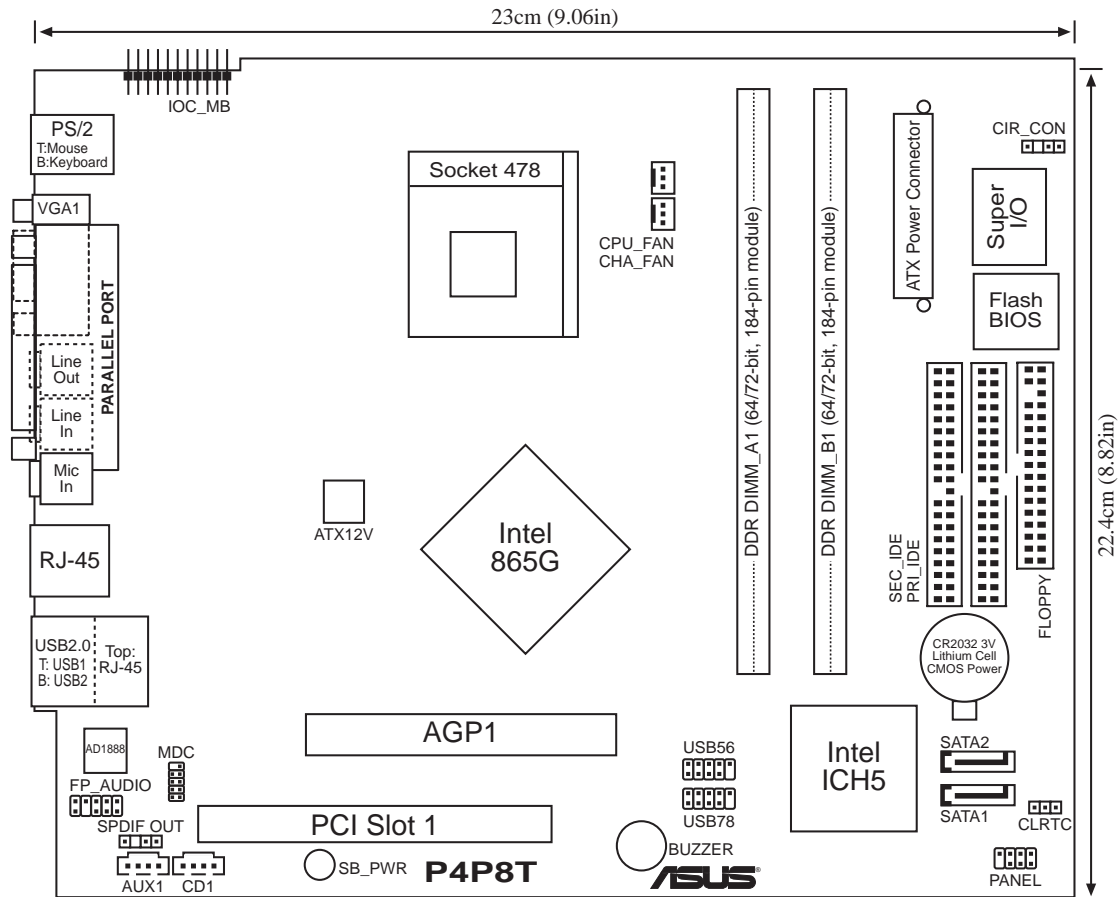


# Motherboard Info

# 3.1 Introduction

The ASUS P4PT motherboard comes already installed in the ASUS Terminator 2 system. This chapter provides technical information about the motherboard for future upgrades or system reconfiguration.

# 3.2 Motherboard layout



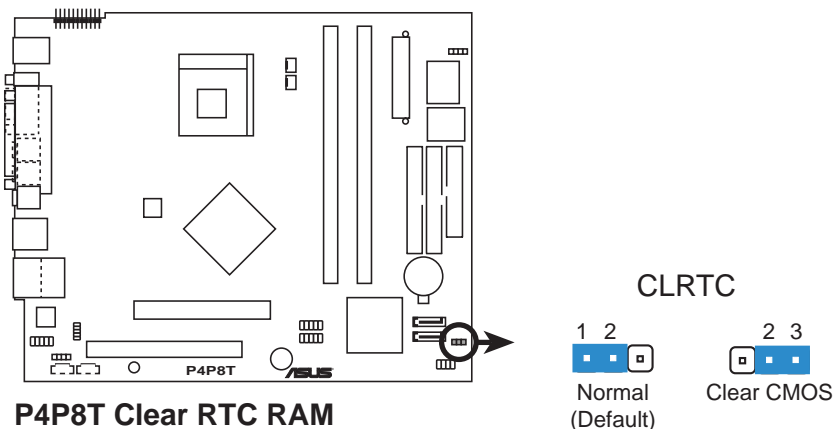
## 3.3 Jumper

### 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 RAM data in CMOS, that include system setup information such as system passwords, is powered by the onboard button cell battery.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the 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.



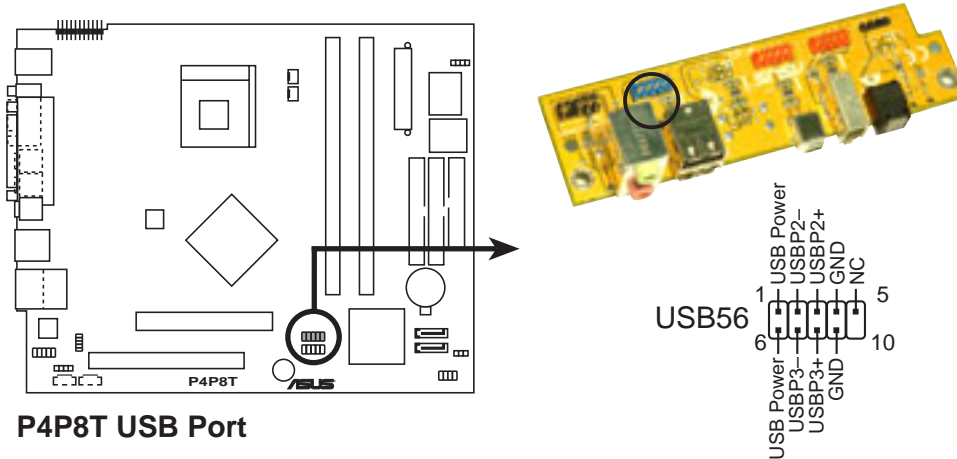
Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure.

## 3.4 Connectors

This section describes and illustrates the connectors on the motherboard. See page 19 for the description of rear panel connectors.

### 1. Front panel USB connector (10-1 pin USB56)

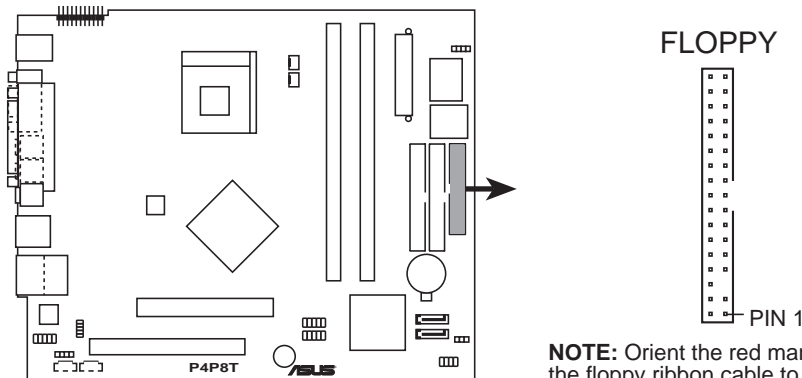
The USB56 header is connected to the USB\_2 connector of the front panel I/O daughterboard.



**P4P8T USB Port**

### 2. CPU and chassis fan connectors (3-pin CPU\_FAN, CHA\_FAN)

The fan connectors support the proprietary CPU fan and chassis fan. Connect the fan cable to the connector matching the black wire to the ground pin.



**P4P8T Floppy Disk Drive Connector**

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



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



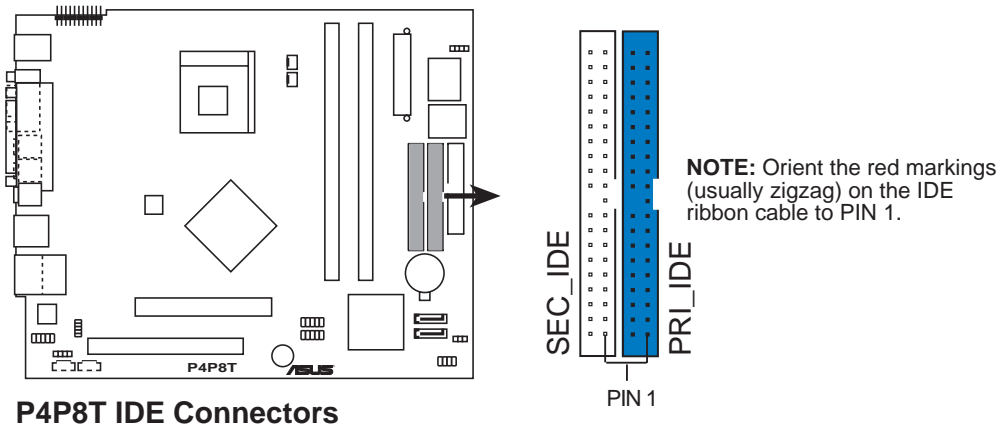
### 3. IDE connectors (40-1 pin PRI\_IDE, SEC\_IDE)

The PRI\_IDE connector is for the UltraATA100 IDE hard disk ribbon cable. Connect the cable's blue connector to the IDE connector, then connect the gray connector to a slave device (optical drive) and the black connector to the UltraATA100 master device (hard disk drive). Refer to the hard disk documentation for the jumper settings.



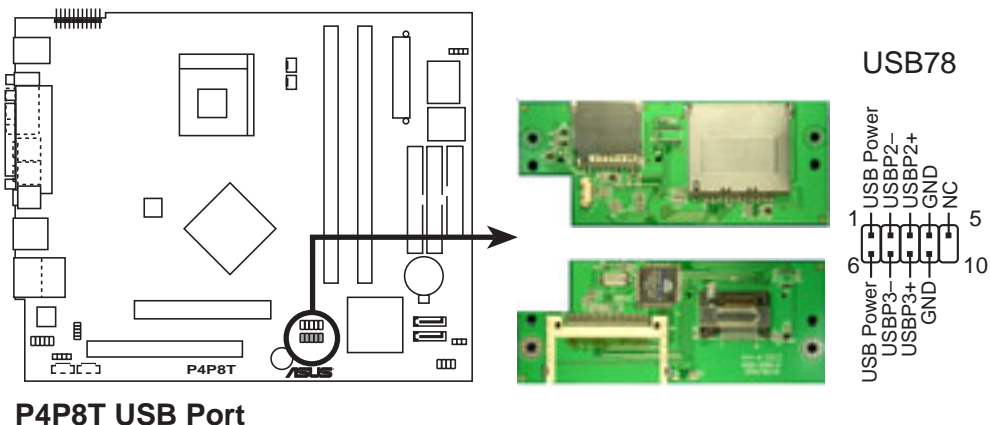
Pin 20 on the IDE connector is removed to match the covered hole on the UltraATA cable connector. This prevents incorrect orientation when you connect the cables.

For UltraATA133 IDE devices, use an 80-conductor IDE cable.



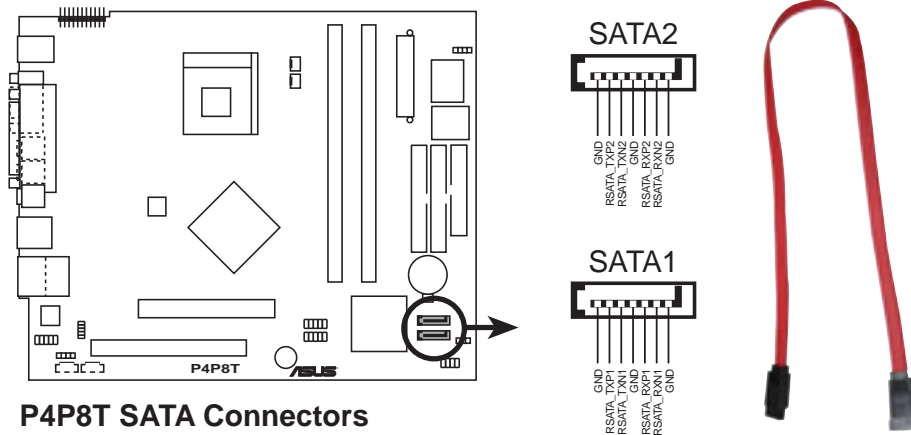
### 4. USB connector (10-1 pin USB78)

On Deluxe models, the USB78 header is connected to the J1 connector of the storage card reader daughterboard. On Basic models, you may use the USB78 header to connect a USB port module for additional USB ports.



## 5. Serial ATA connectors (7-pin SATA2, SATA1)

These next generation connectors support the thin Serial ATA cables for Serial ATA hard disks. The current Serial ATA interface allows up to 150 MB/s data transfer rate, faster than the standard parallel ATA with 133MB/s (Ultra ATA133).



**P4P8T SATA Connectors**



### Important notes on Serial ATA

- The Serial ATA cable is smaller and more flexible allowing easier routing inside the chassis. The lower pin count of the Serial ATA cable eliminates the problem caused by the wide, flat ribbon cables of the Parallel ATA interface.
- Hot plug support for Serial ATA drive and connections are not available in this motherboard.
- Install Windows® XP™ Service Pack 1 when using Serial ATA.

### Parallel ATA and Serial ATA device configurations

Following are the Parallel ATA and Serial ATA device configurations supported by Intel ICH5 specifications.

**Native** operating systems (OS) are Windows® 2000/XP. ICH5 supports a maximum of six (6) devices using these OS.

**Legacy** OS are MS-DOS, Windows® 98/ME/NT4.0. ICH5 supports a maximum of four (4) devices using these OS.

Operating System	P-ATA		S-ATA	
	Primary (2 devices)	Secondary (2 devices)	Port 0 (1 device)	Port 1 (1 device)
1. Windows 2000/XP	✓	✓	✓	✓
2. Windows 98/Me/NT4.0				
Configuration A	✓	—	✓	✓
Configuration B	—	✓	✓	✓
Configuration C	✓	✓	—	—

**Legend:** ✓ Supported — Disabled

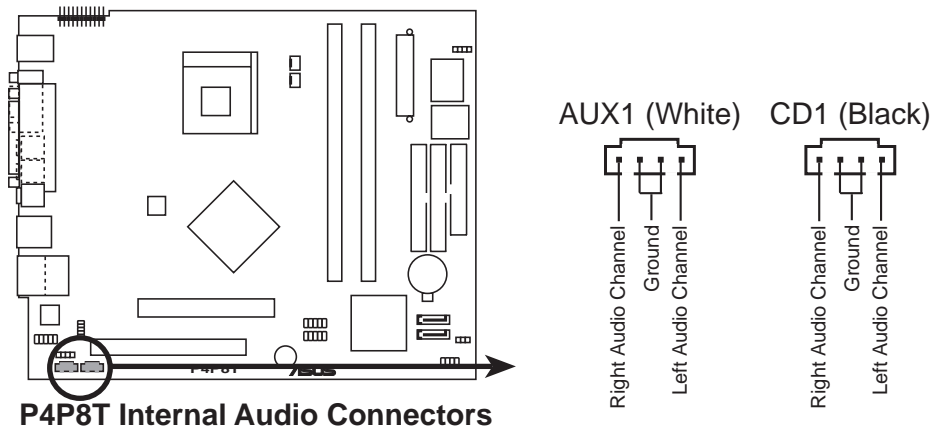
### Required IDE Configuration settings in BIOS

Refer to the following table for the appropriate BIOS settings of the above P-ATA and S-ATA device configurations. See section “2.3.6 IDE Configuration” for details on the related BIOS items.

BIOS item	Windows® 2000/XP	Windows® 98/ME/NT4.0		
		A	B	C
Onboard IDE Operate Mode	Enhanced Mode	Compatible Mode	Compatible Mode	Compatible Mode
Enhanced Mode Support On	S-ATA	—	—	—
IDE Port Settings	—	Primary P-ATA+S-ATA	Sec. P-ATA+S-ATA	P-ATA Ports Only

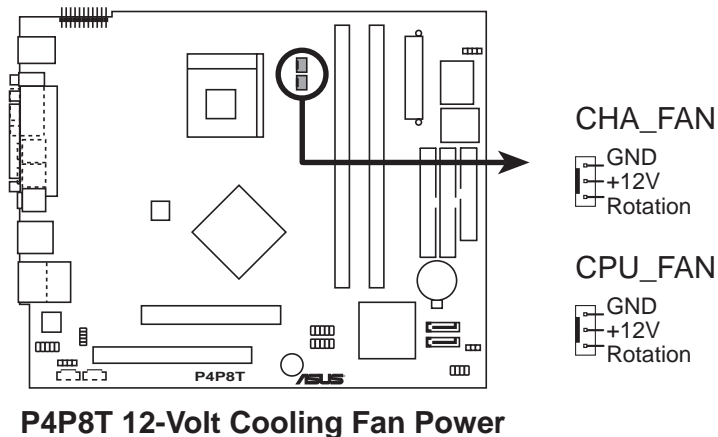
## 6. Internal audio connectors (4-pin AUX1, CD1)

These connectors allow you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



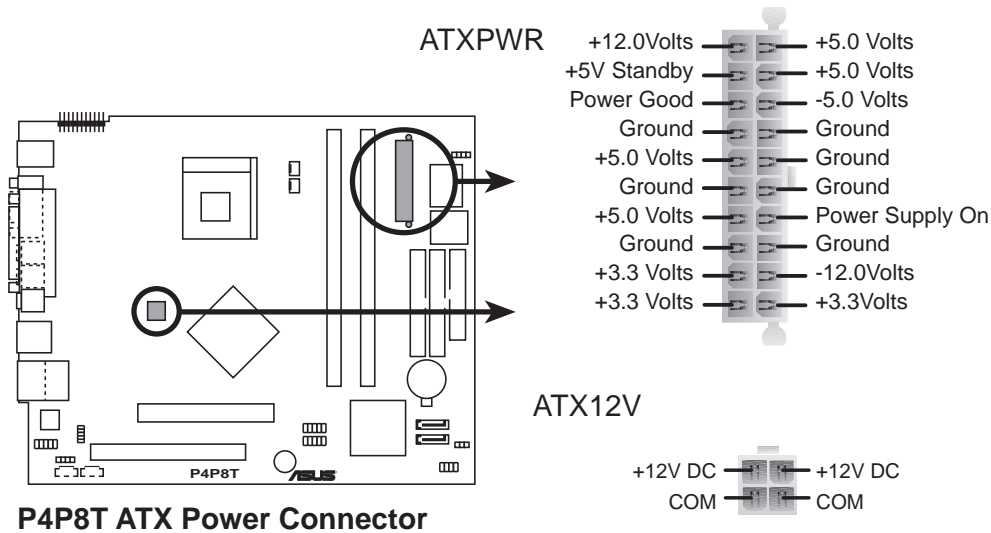
## 7. Floppy disk drive connector (34-1 pin FLOPPY1)

This connector supports the provided floppy drive ribbon cable. After connecting one end to the motherboard, connect the other end to the floppy disk drive. (Pin 5 is removed to prevent incorrect insertion when using ribbon cables with pin 5 plug).



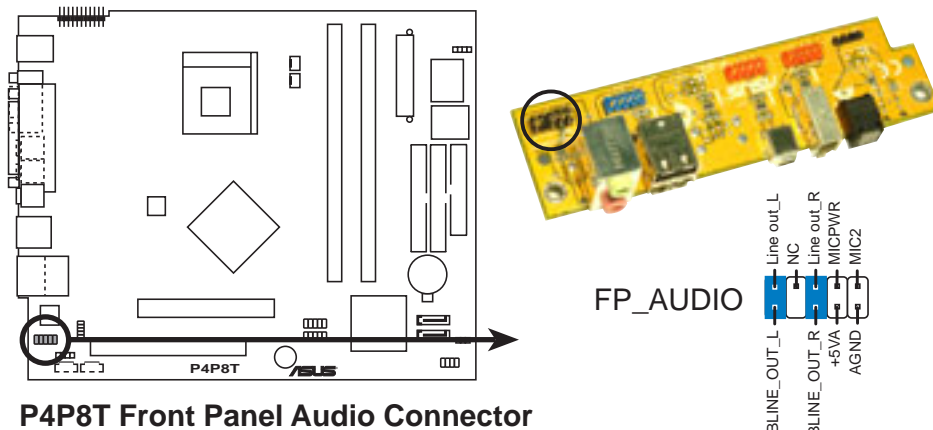
## 8. ATX power connectors (20-pin ATXPWR, 4-pin ATX12V)

These connectors are for the 20-pin and 4-pin power plugs from the power supply unit. The plugs from the power supply unit are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit. See page 37 for details on the power supply unit.



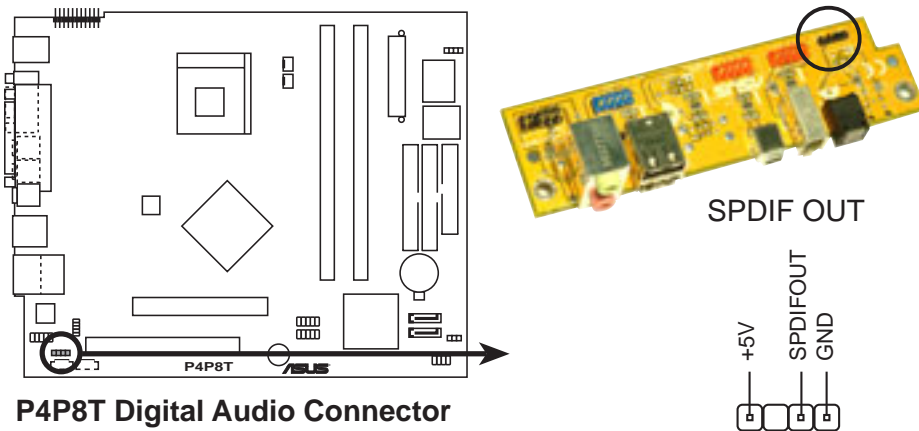
## 9. Front panel audio connector (10-1 pin FP\_AUDIO)

This interface is connected to the J1 connector in the front panel I/O daughterboard to support the front panel audio I/O ports.



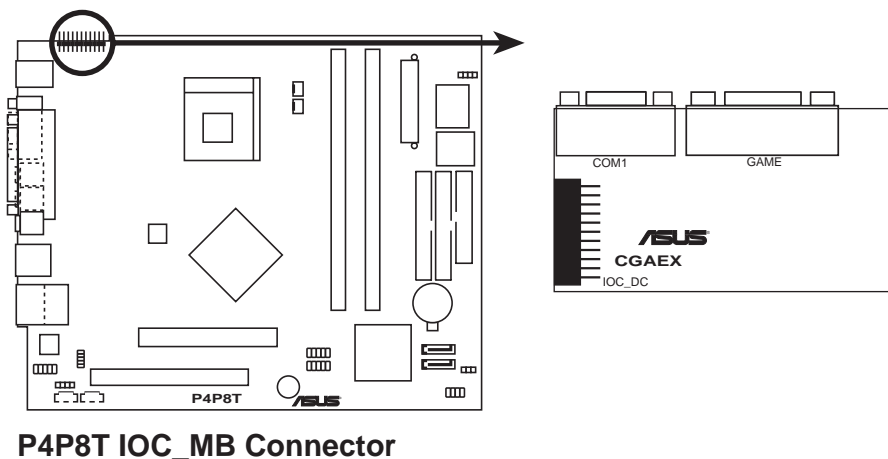
## 10. Digital audio connector (4-1 pin SPDIF\_OUT)

The SPDIF\_OUT is connected to the SPDIF\_OUT2 connector in the front panel I/O daughterboard to support the optical S/PDIF port.



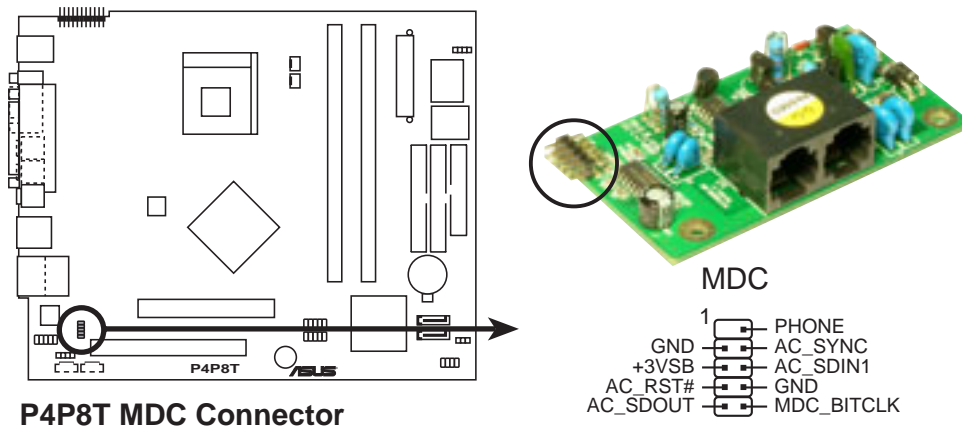
## 11. I/O extension module (22-pin IOC\_MB)

This connector is for the CGAEX extension module.



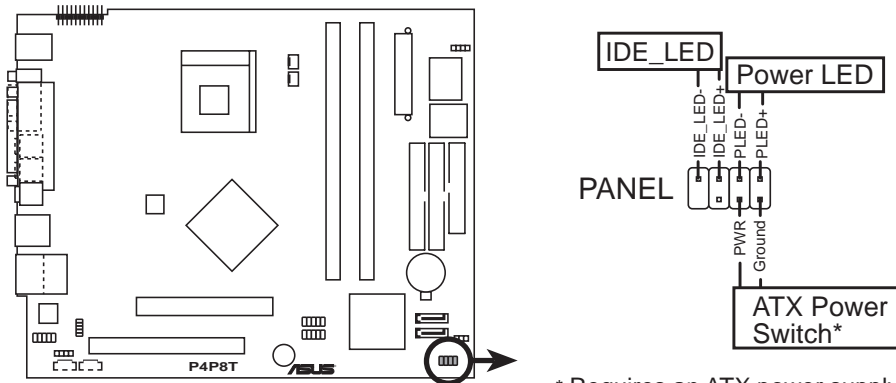
## 12. Modem connector (10-1 pin MDC)

This interface connects to the JP2 connector in the optional modem module.



### 13. System panel connector (20-pin PANEL1)

This connector accommodates several system front panel functions.



**P4P8T System Panel Connector**

\* Requires an ATX power supply.

- **Power LED Lead**

This 2-pin connector connects to the system power LED. The LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **ATX Power Switch**

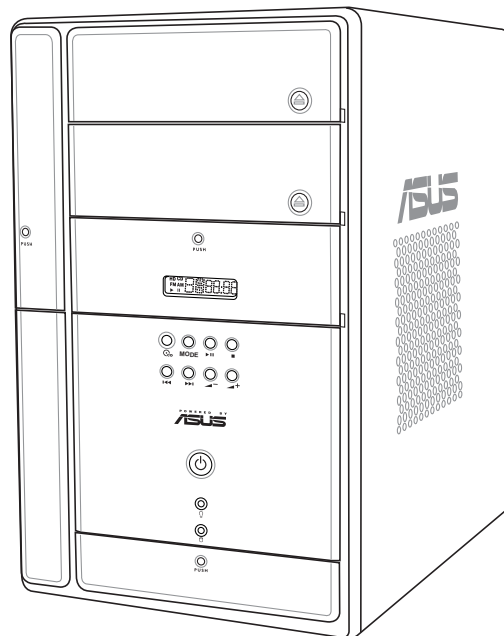
This connector connects a switch that controls the system power. Pressing the power switch turns the system between ON and SLEEP, or ON and SOFT OFF, depending on the BIOS or OS settings. Pressing the power switch while in the ON mode for more than 4 seconds turns the system OFF.

- **IDE LED Lead**

This 2-pin connector supplies power to the hard disk drive activity LED. The read or write activities of any device connected to the primary or secondary IDE connector cause this LED to light up.

# Chapter 4

This chapter tells how to change system settings through the BIOS Setup menus and describes the BIOS parameters.



# BIOS information

## 4.1 Managing and updating your BIOS

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

1. **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. **CrashFree BIOS 2** (*Updates the BIOS using a bootable floppy disk or the support CD when the BIOS gets corrupted.*)
4. **ASUS Update** (*Updates the BIOS in Windows® environment.*)

Refer to the corresponding section for each utility.

### Important notes



---

It is recommended that you 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 AFUDOS or the ASUS Update utilities.

A **working BIOS file** for this motherboard is in the support CD. Use this file only when you do not have a copy of the original motherboard BIOS file in a floppy disk.

Visit the ASUS website and download the latest BIOS file for this motherboard using the ASUS Update utility.

---

### 4.1.2 Creating a bootable floppy disk

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

#### DOS environment

Insert a 1.44 MB floppy disk into the drive. At the DOS prompt, type:

**format A:/S** then press <Enter>.

#### Windows® 98SE/ME environment

- a. From your Windows desktop, click on **Start**, then select **My Computer**.
- b. Double-click on **Add/Remove Programs** icon from the Control Panel window.
- c. Click on the **Startup Disk** tab, then on **Create Disk...** button.
- d. Insert a 1.44 MB floppy disk when prompted. Follow the succeeding screen instructions to complete the process.



## Windows® XP environment

- a. Insert a 1.44 MB floppy disk into the floppy disk drive.
  - b. From your Windows desktop, click on **Start**, 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. Copy the original (or the latest) motherboard BIOS to the bootable floppy disk.

### 4.1.3 Using AFUDOS to copy the current BIOS

The AFUDOS.EXE utility can also be used to copy the current system BIOS settings to a floppy or hard disk. The copy can be used as a backup in case the system BIOS fails or gets corrupted.

1. At the DOS prompt, type the command line:

**afudos /o<filename>**

where “filename” can be any user provided filename of not more than eight (8) alpha-numeric characters for the main filename and three (3) alpha-numeric characters for the extension name.

Press the **Enter** key.



The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

```

Main filename Extension name
  |             |
  |             |
  |             |
A:\>afudos /oMYBIOS03.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

Reading flash ..... 0x0008CC00 (9%)
```

2. The utility will copy the current system BIOS by default to the floppy disk. Make sure that the floppy disk is not write-protected and have enough space (at least 600KB) to store the file.

```
A:\>afudos /oMYBIOS03.rom
AMI Firmware Update Utility - Version 1.10
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

    Reading flash ..... done

A:\>
```

When the BIOS copy process is complete, the utility returns to the DOS prompt.

#### 4.1.4 Using AFUDOS to update the BIOS

The AFUDOS is a DOS-based application that lets you update the BIOS file using a bootable floppy diskette. AFUDOS also allows you to copy the original BIOS file to a floppy diskette.

To update the BIOS using the AFUDOS.EXE:

1. Visit the ASUS website ([www.asus.com](http://www.asus.com)) to download the latest BIOS file for your motherboard. Save the BIOS file to a bootable floppy disk.



---

Write down the BIOS file name to a piece of paper. You need to type the **exact BIOS file name** at the prompt.

---

2. Copy the AFUDOS.EXE utility from the support CD to the bootable floppy disk that contains the BIOS file.
3. Boot the system from the floppy disk.
4. At the DOS prompt, type the command line:

```
afudos /i<filename.rom>
```

where “filename.rom” means the latest (or original) BIOS file that you copied to the bootable floppy disk.

The screen displays the status of the update process.



The BIOS information on the screen is for reference only. What you see on your screen may not be exactly the same as shown.

```
A:\>afudos /ip4p8t.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** shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

When the BIOS update process is complete, the utility returns to the DOS prompt.

```
A:\>afudos /ip4p8t.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:\>
```

5. Reboot the system from the hard disk.

## 4.1.5 Using ASUS EZ Flash to update the BIOS

The ASUS EZ Flash feature allows you to easily 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 is built-in the BIOS LPC chip so it is accessible by simply pressing <Alt> + <F2> during the Power-On Self Tests (POST).

To update the BIOS using ASUS EZ Flash:

1. Visit the ASUS website ([www.asus.com](http://www.asus.com)) to download the latest BIOS file for your motherboard and rename it to **P4R8T.ROM**. Save the BIOS file to a floppy disk.
2. Reboot the system.
3. To launch EZ Flash, press <Alt> + <F2> during POST to display the following.

```
User recovery requested. Starting BIOS recovery...
Checking for floppy...
```



If there is no floppy disk found in the drive, the error message “**Floppy not found!**” appears.

If the correct BIOS file is not found in the floppy disk, the error message “**P4P8T.ROM not found!**”

4. Insert the floppy disk that contains the BIOS file. If the **P4P8T.ROM** file is found in the floppy disk, EZ Flash performs the BIOS update process and automatically reboots the system when done.



**DO NOT** shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

```
User recovery requested. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "p4p8t.rom". Completed.
Start flashing...
Flashed successfully. Rebooting.
```

## 4.1.6 Recovering the BIOS with CrashFree BIOS 2

The CrashFree BIOS 2 auto recovery tool allows you to restore BIOS from the motherboard support CD, or from a floppy disk that contains the BIOS file, in case the current BIOS on the motherboard fails or gets corrupted.



- Prepare the **support CD** that came with the motherboard or a **floppy disk that contains the motherboard BIOS (P4P8T.ROM)** before proceeding with the BIOS update process.
- If you have saved a copy of the original motherboard BIOS to a bootable floppy disk, you may also use this disk to restore the BIOS. See section “2.1.1 Creating a bootable floppy disk.”

To recover the BIOS from a floppy disk:

1. Boot the system.
2. When a corrupted BIOS is detected, the following message appears.

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

3. Insert a floppy disk that contains the original, or the latest, BIOS file for this motherboard (**P4P8T.ROM**). If the BIOS file that you downloaded from the ASUS website has a different filename (e.g. **P4P8T11.ROM**), rename it to **P4P8T.ROM**. The BIOS update process continues when the **P4P8T.ROM** is found.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "p4p8t.rom". Completed.
Start flashing...
```



DO NOT shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

4. When the BIOS update process is complete, reboot the system.

To recover the BIOS from the support CD:

1. Boot the system.
2. When a corrupted BIOS is detected, the following screen message appears.

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



The system automatically checks the CD-ROM if there is no floppy disk found in the drive.

3. Place the support CD in the optical drive. The support CD contains the original BIOS for this motherboard.

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found.
Reading file "p4r8t.rom". Completed.
Start flashing...
```



**DO NOT** shutdown or reset the system while updating the BIOS! Doing so may cause system boot failure!

4. When the BIOS update process is complete, reboot the system.



The recovered BIOS may not be the latest BIOS version for this motherboard. Visit the ASUS website ([www.asus.com](http://www.asus.com)) to download the latest BIOS file.

## 4.1.7 ASUS Update

The ASUS Update is a utility that allows you to update the motherboard BIOS in Windows® environment. This utility is available in the support CD that comes with the motherboard package. ASUS Update requires an Internet connection either through a network or an Internet Service Provider (ISP).

To install ASUS Update:

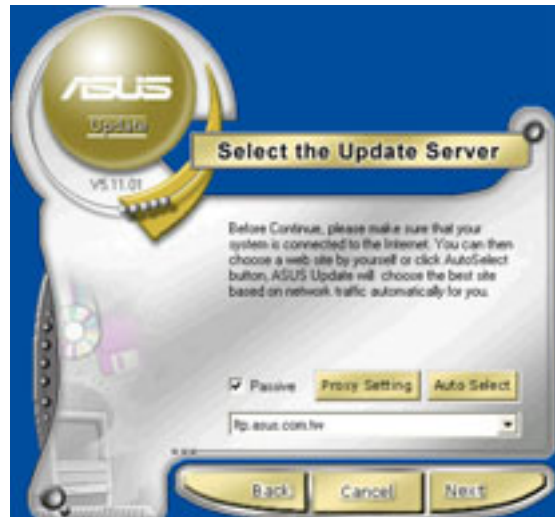
1. Insert the support CD into the CD-ROM drive. The **Drivers** menu appears.
2. Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 98 for the **Utilities** menu screen.
3. The ASUS Update utility is copied into your system.

To update the BIOS using the ASUS Update:

1. Launch the utility from the Windows desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update initial screen appears.
2. Select your desired update method, then click **Next**.



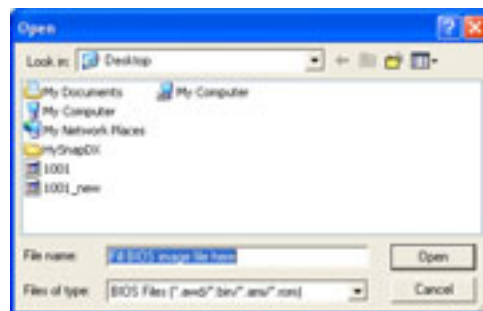
3. If you selected updating/downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose **Auto Select**. Click **Next**.



4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.
5. Follow the instructions on the succeeding screens to complete the update process.



If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click **Save**, then follow the screen instructions to complete the update process.





## 4.2 BIOS Setup program

This motherboard supports a programmable Firmware Hub (FWH) that you can update using the provided utility described in section “4.1 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 may want to change the configuration of your computer in the future. For example, you may want to enable the security password feature or make changes to 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 stores the Setup utility. When you start up the computer, the system provides you with the opportunity to run this program. Press <Delete> 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. It is a menu-driven program, which means you can scroll through the various sub-menus and make your selections among the predetermined choices.

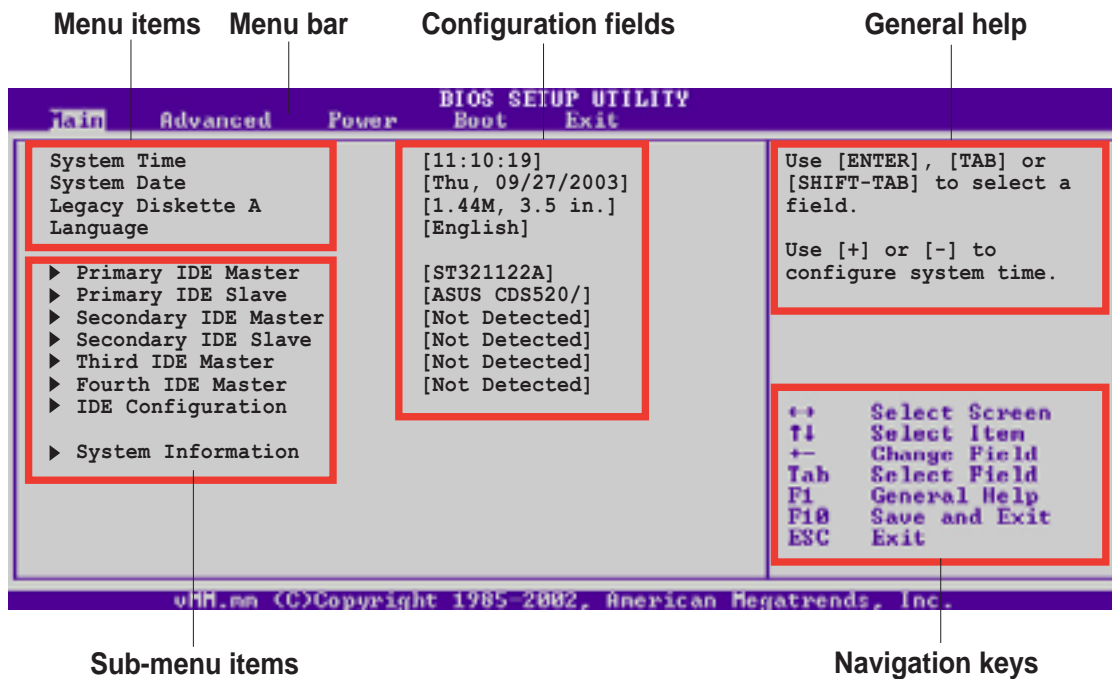


---

Because the BIOS software is constantly being updated, the following BIOS setup screens and descriptions are for reference purposes only, and may not exactly match what you see on your screen.

---

## 4.2.1 BIOS menu screen



## 4.2.2 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.

## 4.2.3 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.

## 4.2.4 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

## 4.2.5 Sub-menu items

An item with a sub-menu on any menu screen is distinguished by a solid triangle before the item. To display the sub-menu, select the item and press Enter.

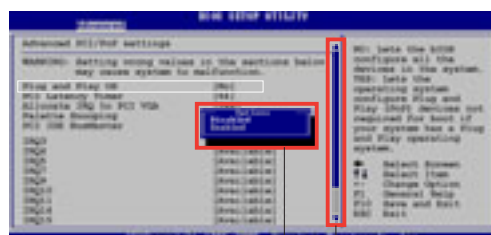
## 4.2.6 Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you may change the value of the field opposite the item. You can not 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 “4.2.7 Pop-up window.”

## 4.2.7 Pop-up window

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



Pop-up window

Scroll bar

## 4.2.8 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 **Up/Down arrow keys** or **PageUp/PageDown keys** to display the other items on the screen.

## 4.2.9 General help

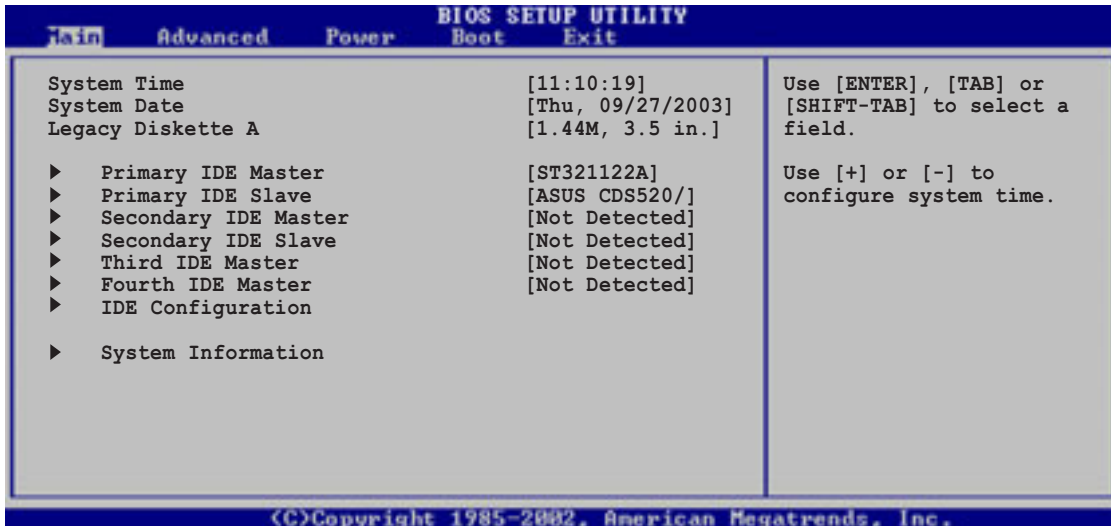
At the top right corner of the menu screen is a brief description of the selected item.

## 4.3 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 4.2.1 BIOS menu screen” for information on the menu screen items and how to navigate through them.



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

This item allows you to set the system time.

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

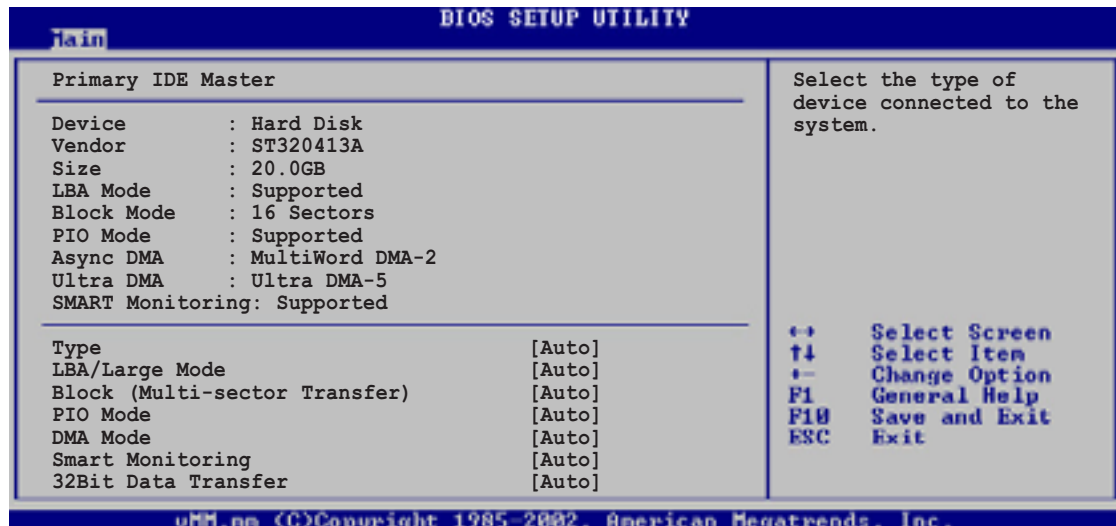
This item allows you to set the system date.

### 4.3.3 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, 3.5in.]

## 4.3.4 Primary and Secondary IDE Master/Slave; Third and Fourth IDE Master

While entering Setup, BIOS auto-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 values opposite the dimmed items (Device, Vendor, Size, LBA Mode, Block Mode, PIO Mode, Async DMA, Ultra DMA, and SMART monitoring) are auto-detected by BIOS and 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] [UDMA3] [UDMA4] [UDMA5]

### SMART Monitoring [Auto]

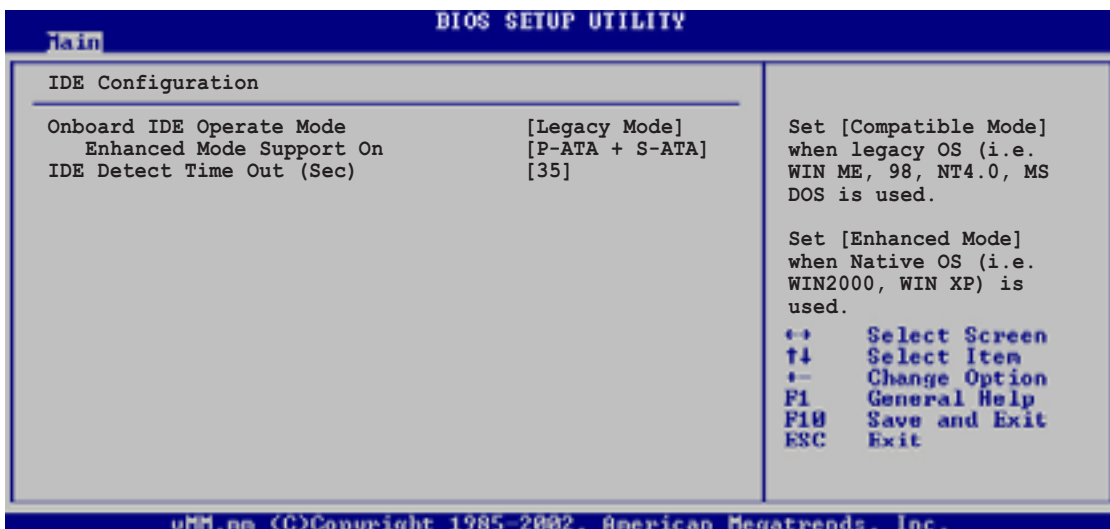
Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled]

### 32Bit Data Transfer [Disabled]

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

## 4.3.5 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 wish to configure the item.



### **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. Set to Compatible Mode if you are using legacy OS including MS-DOS, Windows® ME/98/NT4.0.

Configuration options: [Compatible Mode] [Enhanced Mode]



Refer to the section "Parallel ATA and Serial ATA device configuration" on page 50 for the appropriate settings of the IDE configuration items under different operating modes.

### Enhanced Mode Support On [S-ATA]

The default setting S-ATA 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.

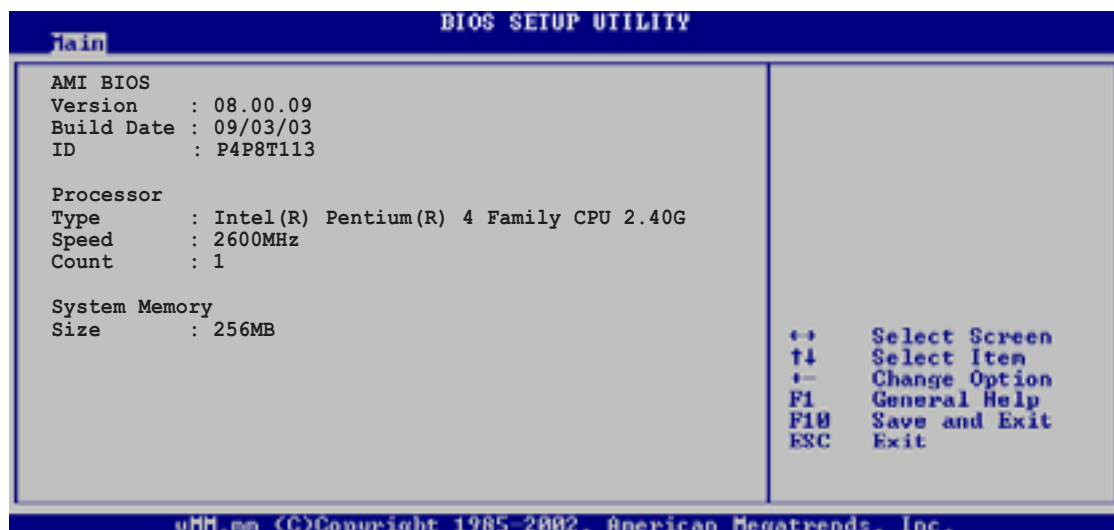
The P-ATA+S-ATA and P-ATA options are for advanced users only. If you set to any of these options and encounter problems, revert to the default setting **S-ATA**. Configuration options: [P-ATA+S-ATA] [S-ATA] [P-ATA]

## 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]

## 4.3.6 System Information

This menu gives you an overview of the general system specifications. The items in this menu are auto-detected by BIOS.



### AMI BIOS

This item displays the auto-detected BIOS information.

### Processor

This item displays the auto-detected CPU specification.

### System Memory

This item displays the auto-detected system memory.

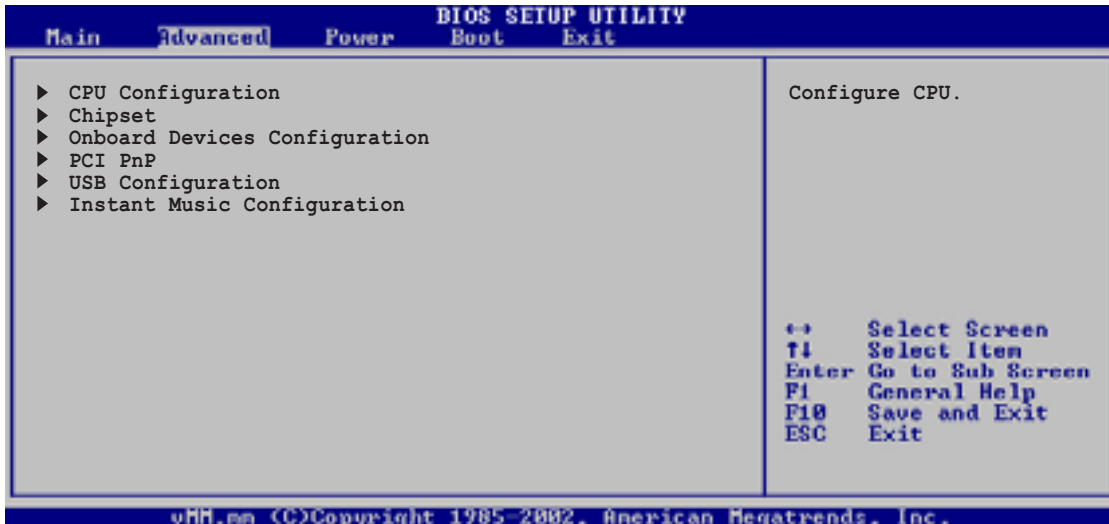


## 4.4 Advanced menu

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

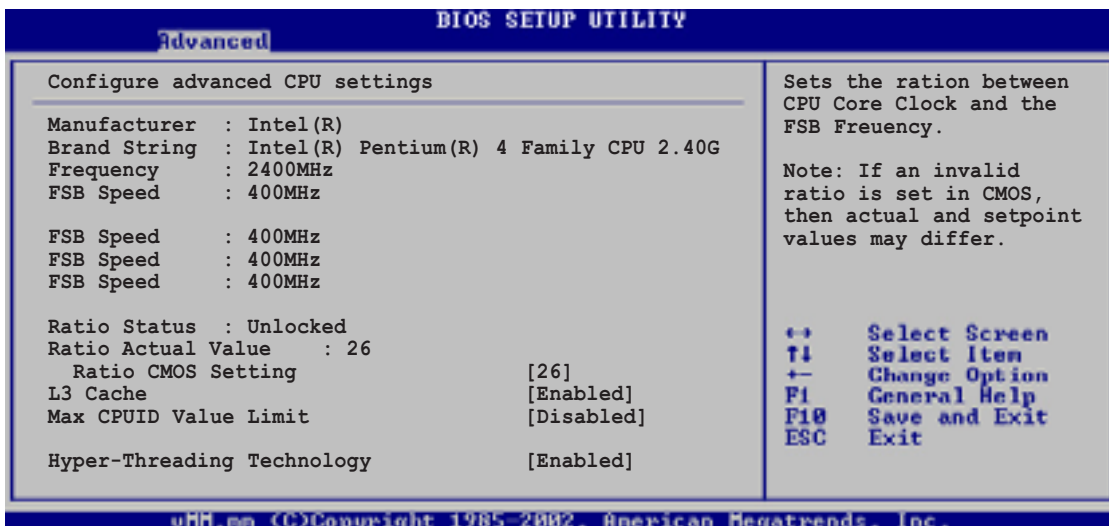


Take caution when changing the settings of the Advanced menu items. Incorrect field values may cause the system to malfunction.



### 4.4.1 CPU Configuration

The items in this menu show the CPU-related information auto-detected by BIOS.



#### Ratio CMOS Setting [26]

This item allows you to set the ratio between the CPU clock and the FSB Frequency. Select this option, then press <Enter> to specify the ratio value. We recommend that you keep the default setting for stable performance.



## L3 Cache [Enabled]

This item allows you to enable or disable the L3 cache.

Configuration options: [Enabled] [Disabled]

## Max CPUID Value Limit [Disabled]

This item allows you to enable or disable the CPUID maximum value limit support for older OS. Configuration options: [Disabled] [Enabled]

## Hyper-Threading Technology [Enabled]

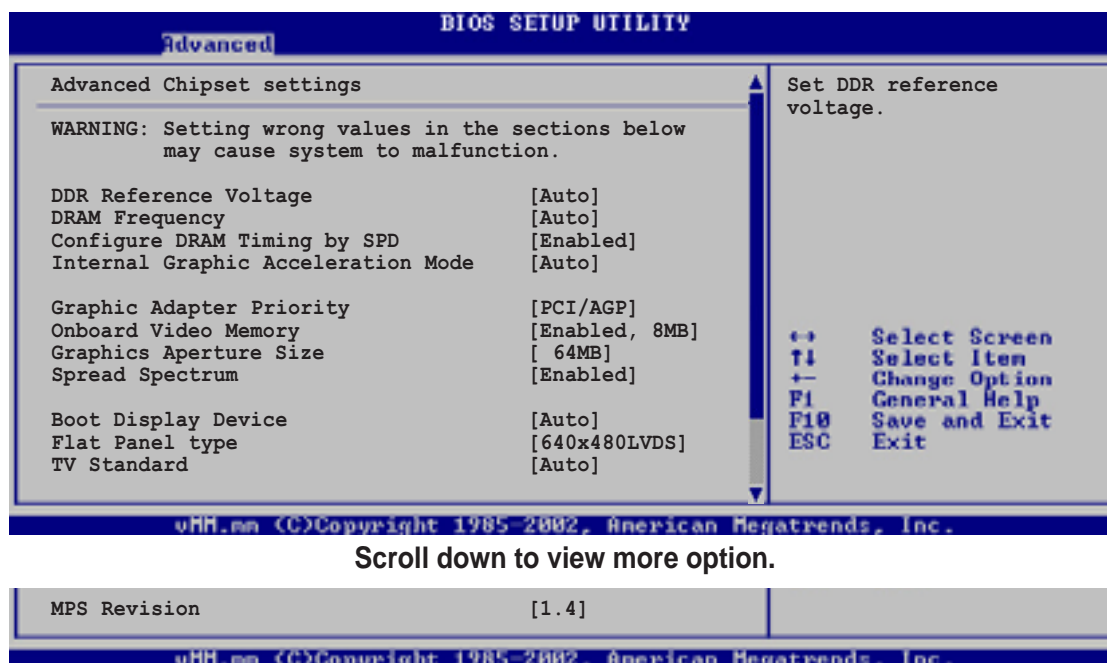
This item allows you to enable or disable the processor Hyper-Threading Technology. Configuration options: [Disabled] [Enabled]



The item **Hyper-Threading Technology** appears only if you installed an Intel® Pentium® 4 CPU that supports this feature. See page 2-4 for details.

## 4.4.2 Chipset

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



## DDR Reference Voltage [Auto]

This item allows you to set the DDR reference voltage. We recommend that you keep the default setting [Auto]. Configuration options: [Auto] [2.55V] [2.65V]

## DRAM Frequency [Auto]

This item allows you to set the DRAM frequency. We recommend that you keep the default setting [Auto]. Configuration options: [Auto] [266MHz]

## 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).

Configuration options: [Enabled] [Disabled]



---

When you disable this option, you may manually set the DRAM timing parameters through the DRAM sub-items listed below.

---

### DRAM CAS# Latency [2.5 Clocks]

This item controls the latency between the SDRAM read command and the time the data actually becomes available. Configuration options: [2.0 Clocks] [2.5 Clocks] [3.0 Clocks]

### DRAM RAS# Precharge [4 Clocks]

This item controls the idle clocks after issuing a precharge command to the DDR SDRAM. Configuration options: [4 Clocks] [3 Clocks] [2 Clocks]

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

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

### DRAM Precharge Delay [8 Clocks]

Configuration options: [8 Clocks] [7 Clocks] [6 Clocks] [5 Clocks]

### DRAM Burst Length [8 Clocks]

Configuration options: [8 Clocks] [4 Clocks]

## Internal Graphic Acceleration Mode [Auto]

This field allows you to select the internal graphic acceleration mode.

Configuration options: [Auto] [2T] [1T]

## Graphic Adapter Priority [AGP/PCI]

Allows selection of the graphics controller to use as primary boot device.

Configuration options: [AGP/PCI] [PCI/AGP]

## Onboard Video Memory [Enabled, 8MB]

Allows you to set the size of the onboard video memory. Configuration options: [Enabled, 1MB] [Enabled, 4MB] [Enabled, 8MB] [Enabled, 16MB] [Enabled, 32MB]

## Graphics Aperture Size [64MB]

This parameter allows you to select the mapped memory for AGP graphic data. Configuration options: [4MB] [8MB] [16MB] [32MB] [64MB] [128MB] [128MB]

### **Spread Spectrum [Enabled]**

This field enables or disables the clock generator spread spectrum.

Configuration options: [Enabled] [Disabled]

### **Boot Display Device [Auto]**

This parameter allows you to select the boot display device.

Configuration options: [Auto] [CRT] [TV] [EFP] [LFP] [CRT+EFP]

[CRT+LFP]

### **Flat Panel Display [640x480LVDS]**

This parameter allows you to select the flat panel display resolution when you selected LCD Flat Panel [LFP] as your boot display device.

Configuration options: [640x480LVDS] [640x480CMOS]  
[800x600LVDS] [800x600CMOS]  
[1024x768LVDS] [1024x768CMOS]  
[1280x1024LVDS] [1280x1024CMOS]  
[1400x1050LVDS] [1400x1050CMOS]  
[1600x1200LVDS] [1600x1200CMOS]

### **TV Standard [Auto]**

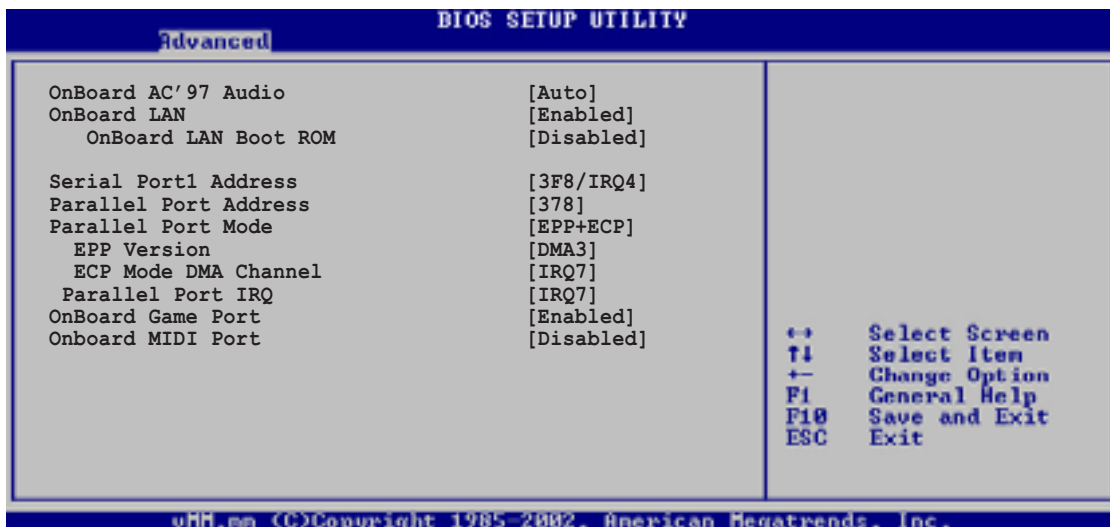
This parameter allows you to select the TV standard when you selected TV as your boot display device.

Configuration options: [Auto] [NTSC\_M] [PAL\_B] [SECAM\_L]  
[NTSC\_M\_J] [PAL\_G] [SECAM\_L1]  
[NTSC\_433] [PAL\_D] [SECAM\_B]  
[NTSC\_N] [PAL\_H]  
[PAL\_I]  
[PAL\_M]  
[PAL\_N]  
[PAL\_60]

### **MPS Revision [1.4]**

Configuration options: [1.4] [1.1]

## 4.4.3 Onboard Devices Configuration



### OnBoard AC'97 Audio [Auto]

[Auto] allows the BIOS to detect whether you are using any audio device. If an audio device is detected, the onboard audio controller is enabled; if no audio device is detected, the controller is disabled.

Configuration options: [Auto] [Disabled]

### OnBoard LAN [Enabled]

Allows you to enable or disable the onboard LAN controller.

Configuration options: [Enabled] [Disabled]

#### *OnBoard LAN Boot ROM [Disabled]*

Allows you to enable or disable the option 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]

### Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.

Configuration options: [378] [278] [3BC] [Disabled]

### Parallel Port Mode [EPP+ECP]

Allows you to select the Parallel Port mode.

Configuration options: [EPP+ECP] [Normal] [Bi-directional] [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**. Configuration options: [1.9] [1.7]

### ECP Mode DMA Channel [DMA3]

Allows selection of the Parallel Port ECP DMA channel. This item appears only when the **Parallel Port Mode** is set to **ECP**. Configuration options: [DMA0] [DMA1] [DMA3]

### Parallel Port IRQ [IRQ7]

Allows you to select the Parallel Port IRQ. Configuration options: [IRQ5] [IRQ7]

## **Onboard Game Port [Enabled]**

Allows you to enable or disable the Game port.  
Configuration options: [Enabled] [Disabled]

## **Onboard MIDI Port [Disabled]**

Allows you to select the MIDI port address or to disable the port.  
Configuration options: [Disabled] [200/300] [200/330] [208/300] [208/330]

## 4.4.4 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 may 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 installed a Plug & Play operating system, the operating system configures the Plug & 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: [No] [Yes]

### Palette Snooping [Disabled]

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

## PCI IDE BusMaster [Enabled]

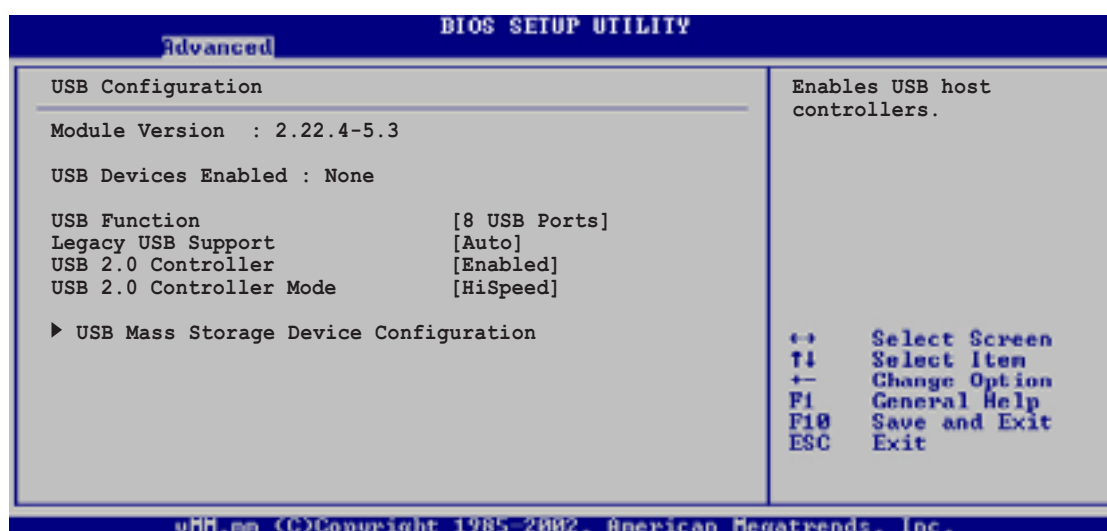
Allows BIOS to use PCI bus mastering when reading/writing to IDE devices. Configuration options: [Disabled] [Enabled]

## IRQ xx [Available]

When set to [Available], 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: [Available] [Reserved]

## 4.4.5 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.



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 [8 USB Ports]

Allows you to set the number of USB ports to activate.

Configuration options: [Disabled] [2 USB Ports] [4 USB Ports] [6 USB Ports] [8 USB Ports]

## Legacy USB Support [Auto]

Allows you to enable or disable support for legacy USB devices. 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: [Auto] [Enabled] [Disabled]



## USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.

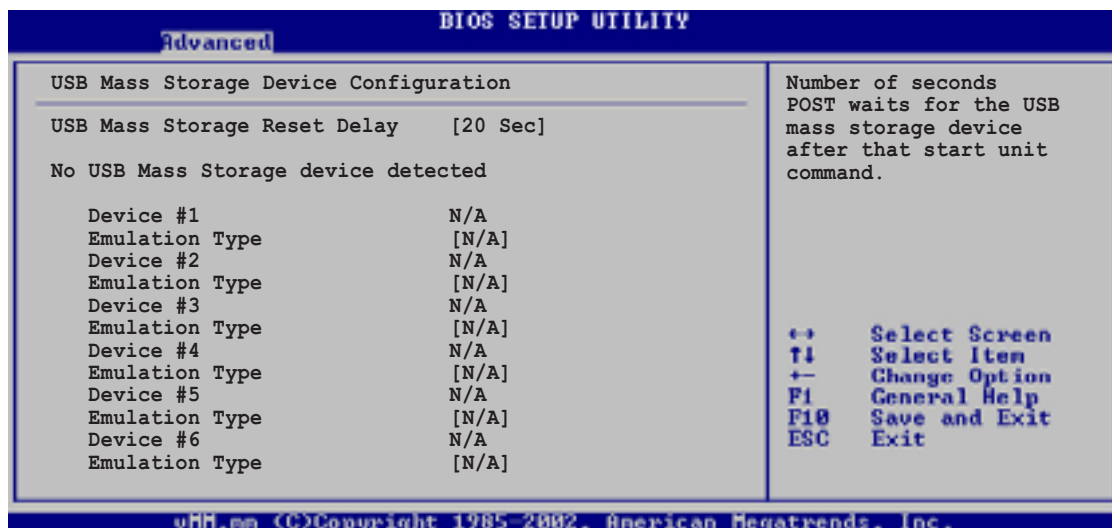
Configuration options: [Enabled] [Disabled]

## 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 ] [Hi Speed]

## USB Mass Storage Device Configuration



### USB Mass Storage Reset Delay [20 Sec]

Allows you to select the number of seconds POST waits for the USB mass storage device after the start unit command. The message "No USB mass storage device detected" appears if none is installed in the system. Configuration options: [10 Sec ] [20 Sec] [30 Sec] [40 Sec]

### Emulation Type [N/A]

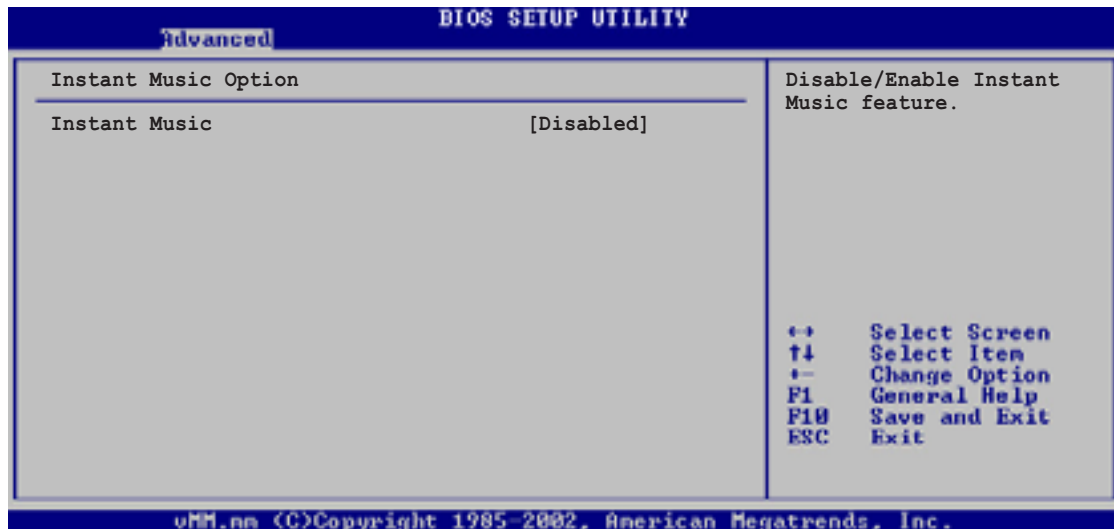
When set to Auto, USB devices less than 530MB will be emulated as floppy drive, and the remaining drives as hard drives. Forced FDD option can be used to force an HDD formatted drive to boot as FDD (for example, ZIP drive).



The Device and Emulation Type items appear only when there are installed USB devices.



## 4.4.6 Instant Music Configuration



### Instant Music [Disabled]

Allows you to enable or disable the Instant Music feature in BIOS.

Configuration options: [Disabled] [Enabled]



- When Instant Music is enabled, the PS/2 keyboard power up feature is automatically disabled. See page 107 for details on the ASUS Instant Music.
- The following items appear only if you enable the Instant Music option.

### Instant Music CD-ROM Drive [IDE Secondary Master]

Allows you to select the CD-ROM drive that you wish to use for the Instant Music CD playback. Configuration options: [IDE Primary Master] [IDE Primary Slave] [IDE Secondary Master] [IDE Secondary Slave]

### Radio Region [JAPAN]

This option allows you to select the regional radio standard in your location.

Configuration options: [JAPAN] [USA] [EUROPE] [EAST EUROPE]

## 4.5 Power menu

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



### 4.5.1 Suspend Mode [Auto]

Allows you to select the ACPI state to be used for system suspend.

Configuration options: [Auto] [S1 (POS) Only] [S3 Only]

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

Determines whether to invoke VGA BIOS POST on S3/STR resume.

Configuration options: [No] [Yes]

### 4.5.3 ACPI 2.0 Support [No]

Allows you to add more tables for ACPI 2.0 specifications.

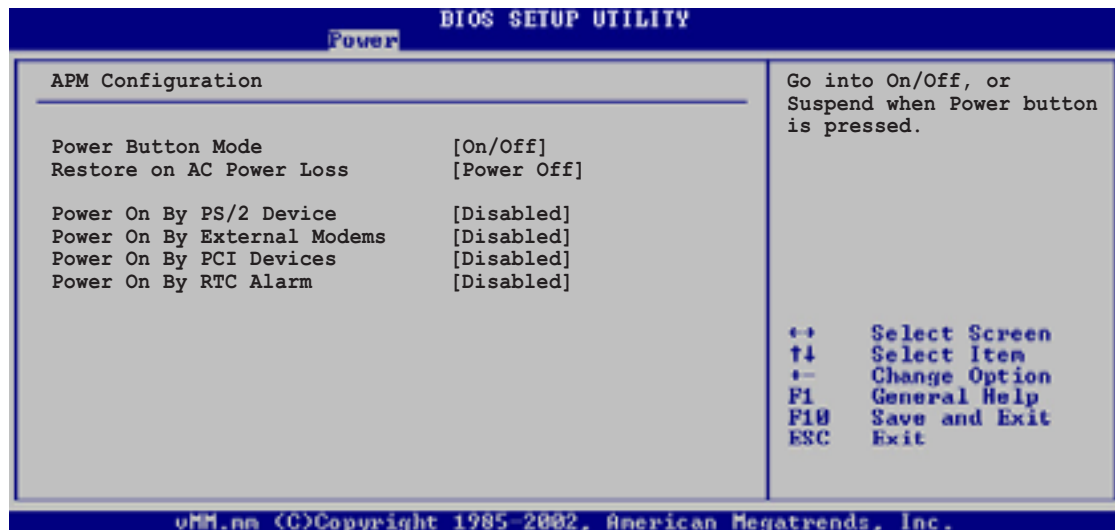
Configuration options: [No] [Yes]

### 4.5.4 ACPI APIC Support [Enabled]

Allows you to enable or disable the ACPI support in the ASIC. When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list.

Configuration options: [Disabled] [Enabled]

## 4.5.5 APM Configuration



### **Power Button Mode [On/Off]**

Allows the system to go into On/Off mode or suspend mode when the power button is pressed. Configuration options: [On/Off] [Suspend]

### **Restore on AC Power Loss [Power Off]**

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 was the system state before the AC power loss.

Configuration options: [Power Off] [Power On] [Last State]

### **Power On By PS/2 Devices [Disabled]**

This parameter allows you to use specific keys on the keyboard or the mouse 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 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.

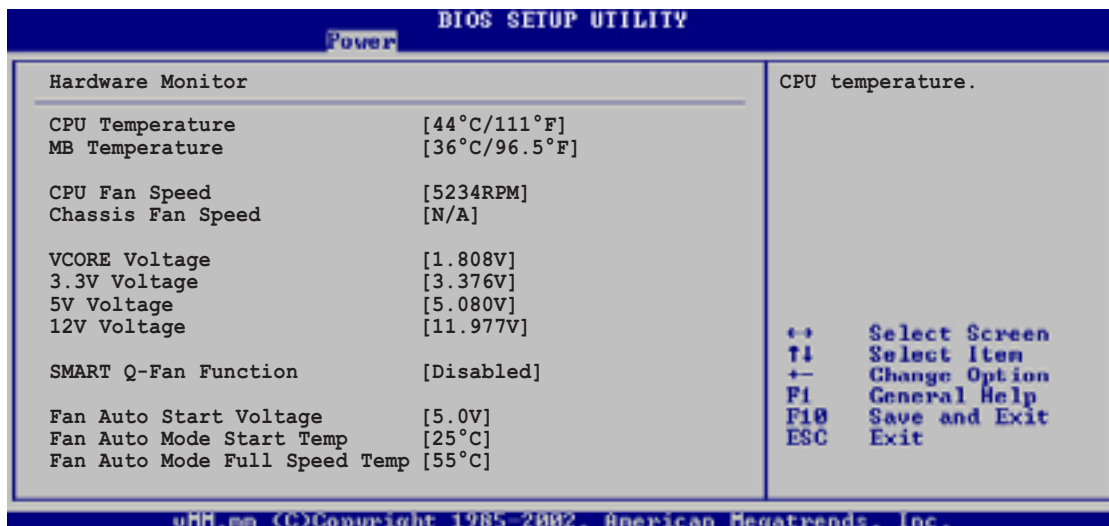
## Power On By PCI Devices [Disabled]

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]

## 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]

## 4.5.6 Hardware Monitor



### CPU Temperature [xxx°C/xxx°F]

### MB 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, and power fan speeds in rotations per minute (RPM). If any of the fans is not connected to the motherboard, 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.



---

If any of the monitored items is out of range, the following error message appears: “Hardware Monitor found an error. Enter Power setup menu for details”. You will then be prompted to “Press F1 to continue or DEL to enter SETUP”.

---

## **SMART Q-Fan Function [Disabled]**

This item allows you to enable or disable the ASUS Smart Q-Fan feature that smartly adjusts the fan speeds for more efficient system operation. Configuration options: [Disabled] [Enabled]



---

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

---

## **Fan Auto Mode Start Voltage [5.0V]**

This item allows you to select the voltage for the auto start fan feature. The fan starts when the system reaches the specified voltage.

Configuration options: [4.0V] [4.5V] [5.0V] [5.5V] [6.0V]

## **Fan Auto Mode Start Temp [25°C]**

Select the temperature for the auto start fan feature. The fan starts when the system reaches the specified temperature. Configuration options:

[25°C]...[75°C]

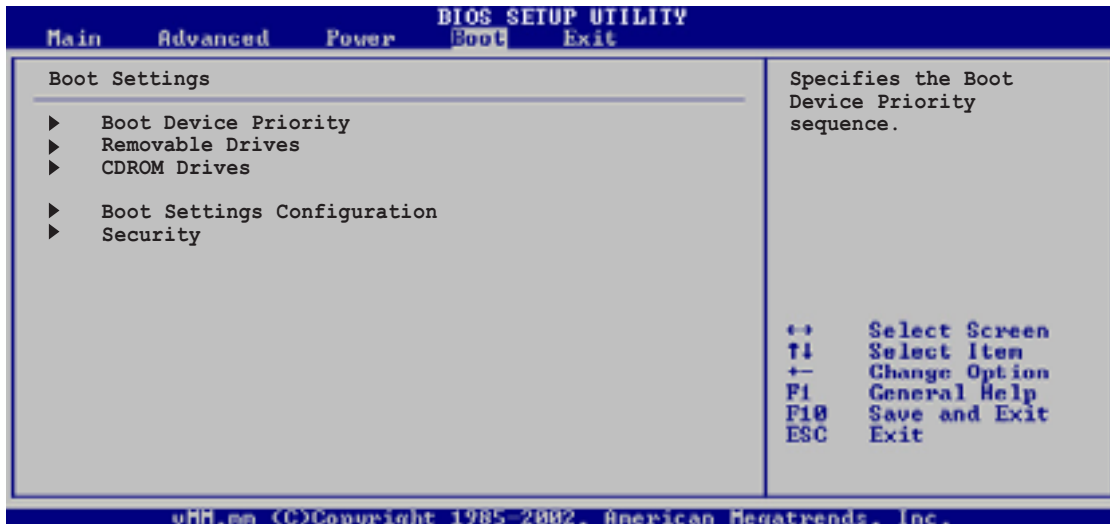
## **Fan Auto Mode Full Speed Temp [55°C]**

Select the temperature for the fan to rotate in full speed. The fan switches to full speed when the system reaches the specified temperature.

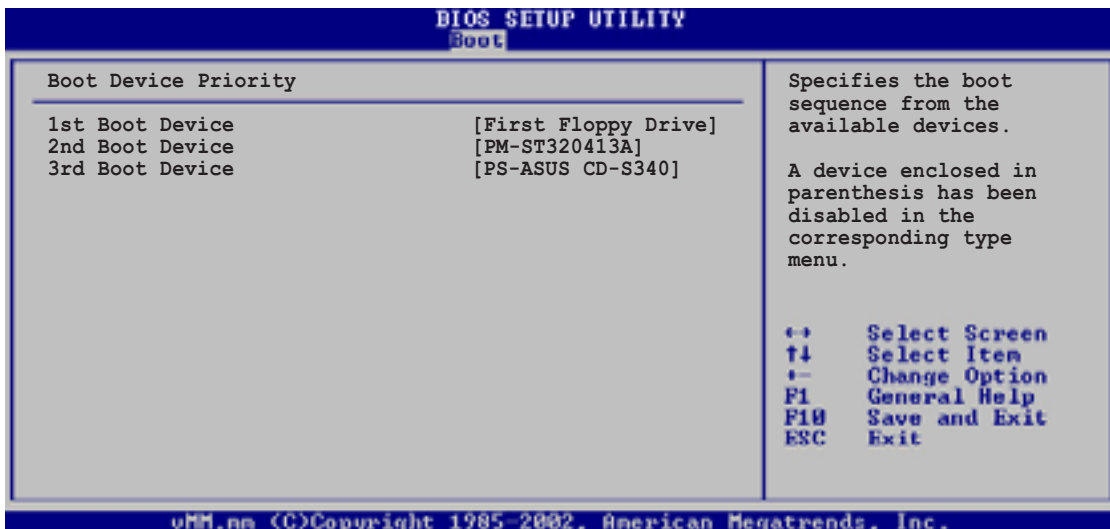
Configuration options: [25°C]...[75°C]

## 4.6 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.



### 4.6.1 Boot Device Priority

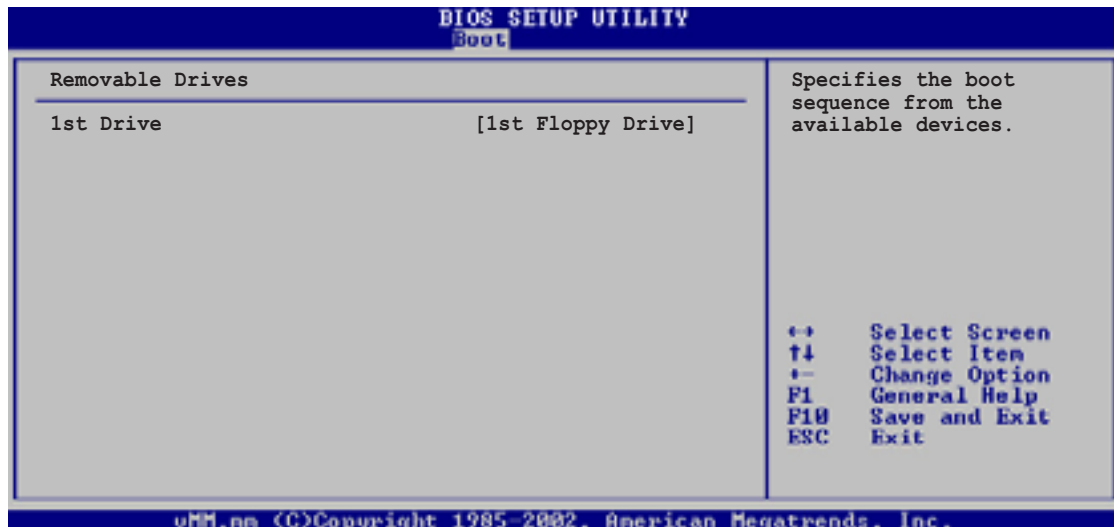


#### 1st ~ xxth Boot Device [1st Floppy Drive]

These items specify the boot device priority sequence from the available devices. The number of device items that appear on the screen depends on the the number of devices installed in the system.

Configuration options: [xxxxx Drive] [Disabled]

## 4.6.2 Removable Drives

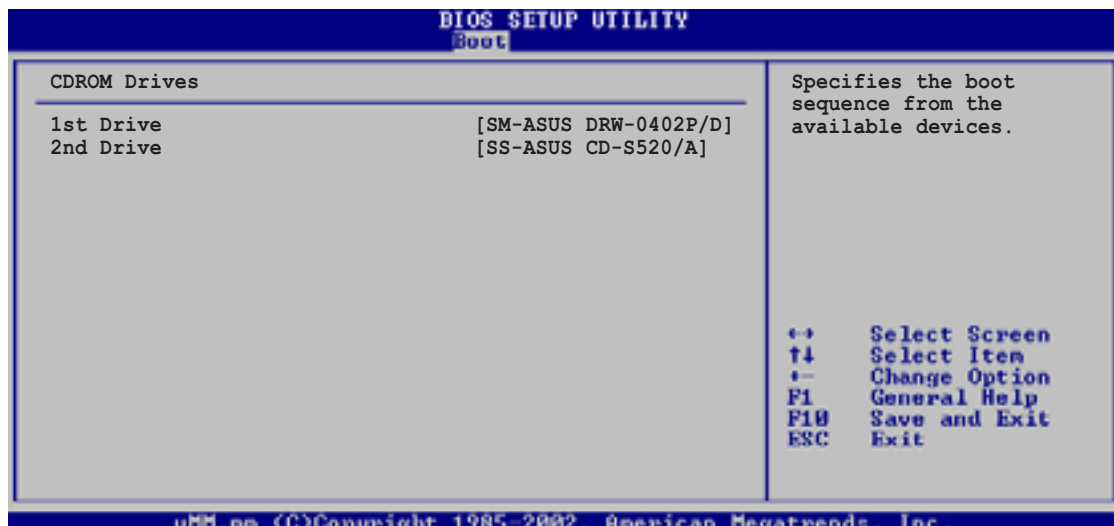


### 1st ~ xxth Drive [1st Floppy Drive]

These items specify the boot sequence from the available removable drives. The number of drives that appear on the screen depends on the the number of devices installed in the system.

Configuration options: [ xxxxx Drive] [Disabled]

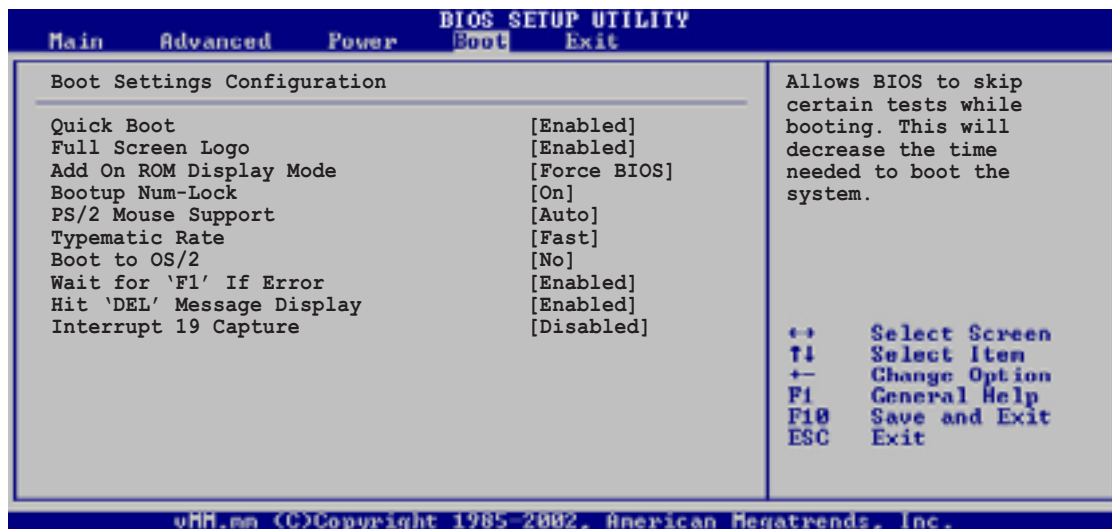
## 4.6.3 CDROM Drives



### 1st ~ xxth Drive [SM-Optical Drive Name]

These items specify the boot sequence from the available optical drives. The number of optical drives that appear on the screen depends on the the number of devices installed in the system. The acronym before the drive indicates the drive mode. SM indicates that the drive is set to Secondary Master mode while SS tells that the drive is a Secondary Slave device. Configuration options: [ xxxxx Drive] [Disabled]

## 4.6.4 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: [Enabled] [Disabled]

### Full Screen Logo [Enabled]

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



Make sure that the Full Screen Logo item is set to [Enabled] if you wish to use the ASUS MyLogo2™ 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: [On] [Off]

### PS/2 Mouse Support [Auto]

Allows you to enable or disable support for PS/2 mouse. Configuration options: [Auto] [Disabled] [Enabled]

### Typematic Rate [Fast]

Allows you to select the keyboard typematic rate. Configuration options: [Fast] [Slow]



## Boot to OS/2 [No]

Allows you to specify the OS/2 compatibility mode.

Configuration options: [No] [Yes]

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

When set to Enabled, the system waits for F1 key to be pressed when error occurs. Configuration options: [Enabled] [Disabled]

## Hit 'DEL' Message Display [Enabled]

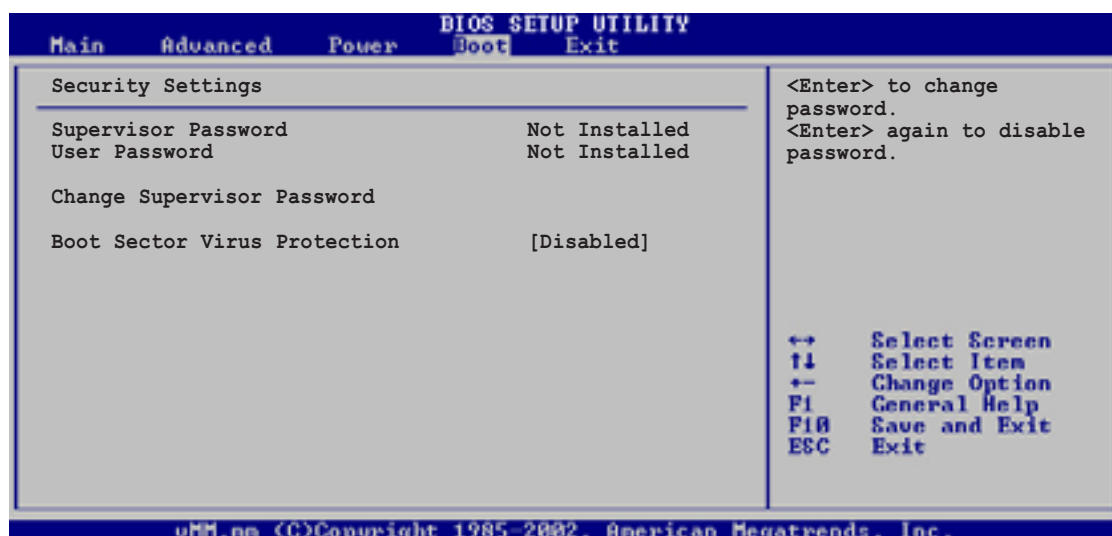
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Enabled] [Disabled]

## Interrupt 19 Capture [Disabled]

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

## 4.6.5 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 have set a password, this item shows **Installed**.

## To set a **Supervisor Password**:

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

The message “Password Installed” appears after you have successfully set your password.

The Supervisor Password item now shows **Installed**.

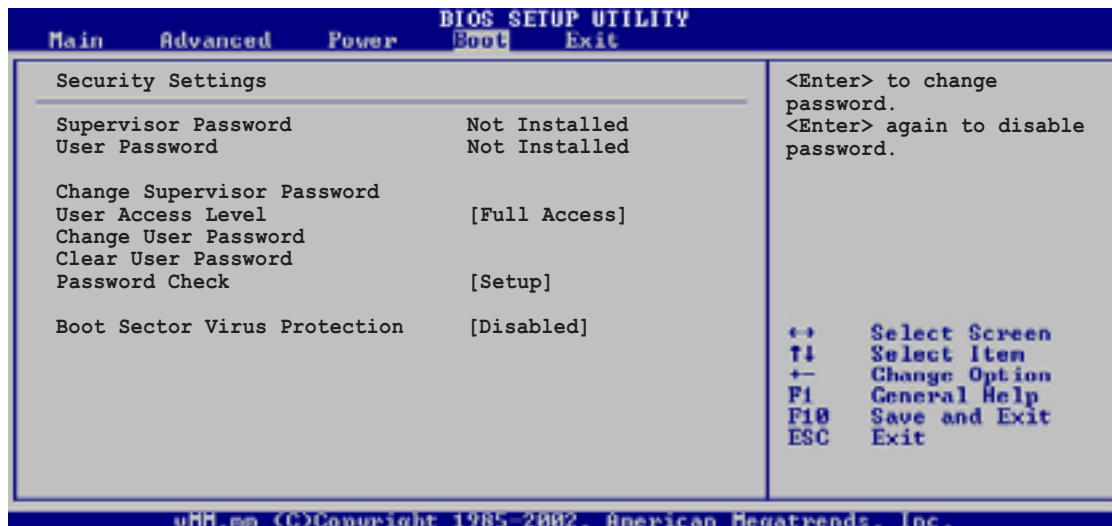
To change the supervisor password, follow the same steps as in setting a user password.

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 3.3 “Jumper” 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 change to only 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 have 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 letters and/or numbers, then press Enter. Your password should have at least six characters.
3. Confirm the password when prompted.

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

The User Password item now shows **Installed**.

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

## Clear User Password

Select this item if you wish 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]

## 4.7 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. The CMOS RAM is sustained by an onboard backup battery and 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. Pressing <Enter> saves 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.

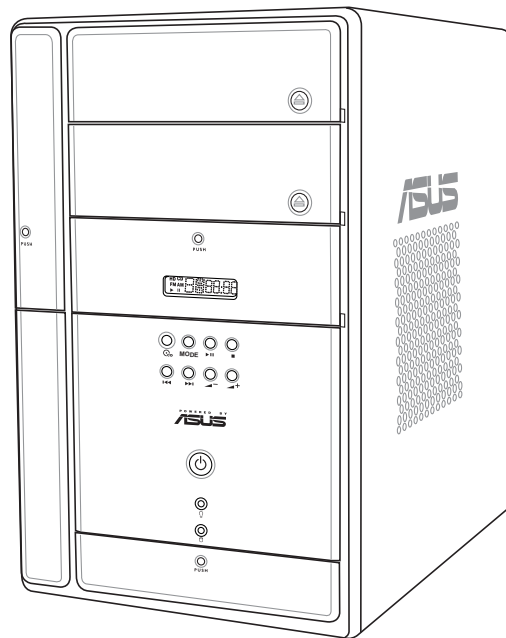
## **Load Setup Defaults**

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 Saving Changes or make other changes before saving the values to the non-volatile RAM.



# Chapter 5

This chapter helps you power up the system and install drivers and utilities from the support CD.



# Starting up


## 5.1 Installing an operating system

Terminator 2 supports Windows® 2000/XP operating systems (OS). Always install the latest OS version and corresponding updates so you can maximize the features of your hardware.



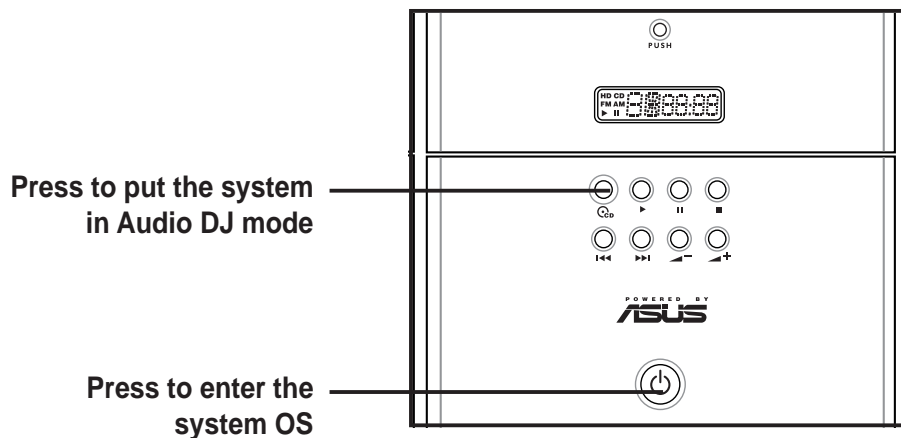
Because motherboard settings and hardware options vary, use the setup procedures presented in this chapter for general reference only. Refer to your OS documentation for more information.


## 5.2 Powering up

The system has two power buttons located in the front panel. Press the system power button (⏻) to enter the OS. Press the  button to turn on the Audio DJ feature.



The Audio DJ feature is available only on Deluxe models.



In Windows® mode, pressing the  button shuts down, restarts, or puts the system in sleep mode (S3) depending on the OS setting.

## 5.3 Support CD information

The support CD that came with the system contains useful software and several utility drivers that enhance the system features.

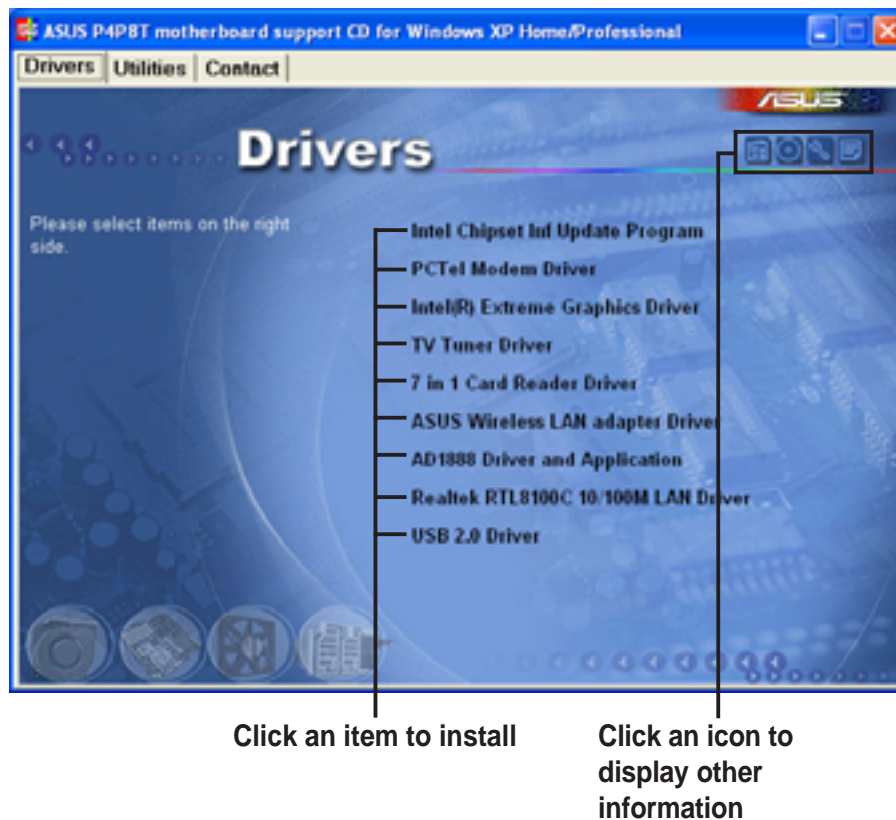


- Screen display and driver options may not be the same for other operating system versions.
- The contents of the support CD are subject to change at any time without notice. Visit the ASUS website for updates.



## 5.3.1 Running the support CD

To begin using the support CD, place the CD in your optical drive. The CD automatically displays the **Drivers** menu if Autorun is enabled in your computer.



If **Autorun** is NOT enabled in your computer, browse the contents of the support CD to locate the file **ASSETUP.EXE** from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

## 5.3.2 Drivers menu

The drivers menu shows the available device drivers if the system detects installed devices. Install the necessary drivers to activate the devices.

### Intel Chipset INF Update Program

Click this item to install the Intel Chipset INF Update Program.

### PCTel Modem Driver

Click this item to install the driver for the optional modem.

### Intel(R) Extreme Graphics Driver

Click this item to install the Intel Extreme Graphics Driver.

## TV Tuner Driver

Click this item to install the driver for the TV Tuner included in the optional 3-in-1 PCI card.

## 7 in 1 Card Reader Driver

This item installs the driver for the system storage card reader. Install this driver if you purchased a Terminator 2 Deluxe model.

## ASUS Wireless LAN Adapter Driver

This item installs the ASUS wireless LAN driver. See page 111 for details.

## AD1888 SoundMAX® Audio Driver

This item installs the AD1888 audio driver and SoundMax® application. See page 101 for details.

## RealtekRTL8100C 10/100M LAN Driver

This item installs the Ethernet driver.

## USB 2.0 Driver

Click this item to install the USB 2.0 driver.

## 5.3.3 Utilities menu

The Utilities menu shows the applications and other software that the motherboard supports.



### LifeView TVR Application

The LifeView TVR application allows control of the TV tuner and radio module. See page 110 for details.

## **ASUS PC Probe**

This utility continuously monitors vital system information such as fan rotations, CPU temperature, and system voltages, and alerts you on any detected problems. This utility helps you keep your computer in a healthy operating condition.

## **ASUS Update**

This item installs the ASUS Update that allows you to update the motherboard BIOS and drivers. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See page 63 for details.

## **PC-CILLIN 2002**

This item installs the PC-cillin 2002 anti-virus program. View the PC-cillin online help for detailed information.

## **Adobe Acrobat Reader V5.0**

This item installs the Adobe Acrobat Reader. The Acrobat Reader software is for viewing files saved in Portable Document Format (PDF).

## **ASUS Screensaver**

This item installs the ASUS Screensaver.

## **I'm In Touch Remote Access Application**

This item installs the I'm InTouch remote access application. I'm InTouch allows you to access your Terminator 2 anywhere you are using another computer, PDA, or mobile phone with Internet connection. See page 104 for details.

## **ASUS Radio Application**

This item installs the ASUS radio application that allows you to tune in to an FM radio station. See page 109 for details.

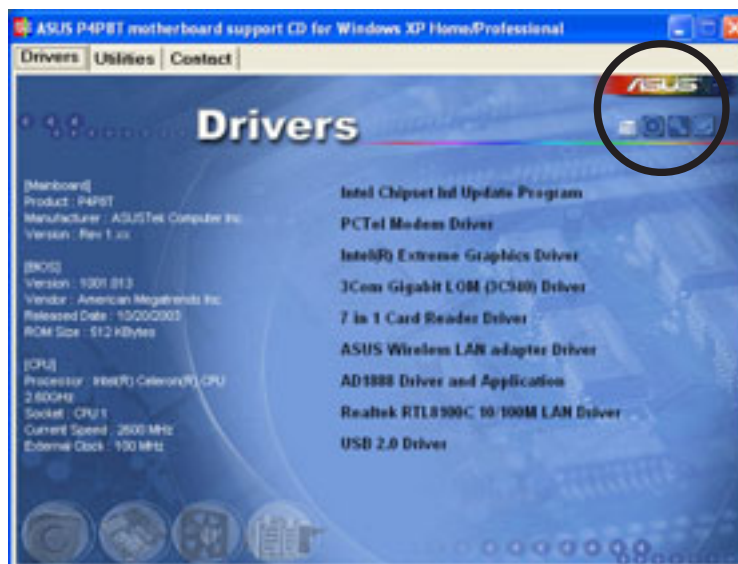
## 5.3.4 ASUS contact information

Click the Contact tab to display the ASUS contact information.



## 5.3.5 Other information

The icons on the top right side of the screen provide additional information on the motherboard and the contents of the support CD.



## 5.4 Multi-channel audio feature

The AD1888 AC '97 audio CODEC provides 6-channel audio capability. Install the **AD1888 Driver and Application** from the support CD to activate the 6-channel audio feature.

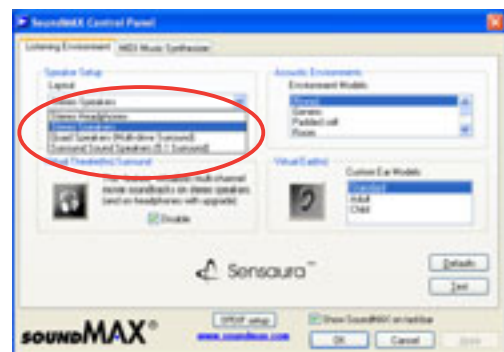


You must use 4-channel or 6-channel speakers for this setup.

### Setting to multi-channel audio

After installing the audio driver, follow these instructions to adjust the audio settings and avail the onboard 6-channel audio feature.

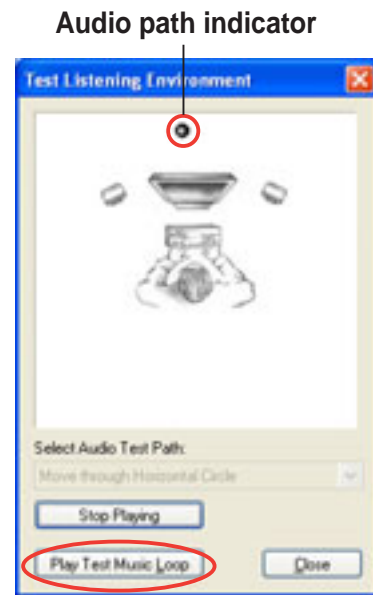
1. From the taskbar, double-click on the **SoundMAX Digital Integrated Audio** icon to display the **SoundMAX Control Panel**.
2. The **Listening Environment** tab allows you to set to multi-channel speakers, enable or disable the **Virtual Theater Surround**, and select **Acoustic Environments** and **Virtual Ear**.
3. The default setting is **Stereo Speakers** (2-channel). To set to a 6-channel speaker system, click the arrow under **Speaker Setup** to display a list of options.
4. Select the option **Surround Sound Speakers (5.1 Surround)**.
5. Click the **Apply** button.
6. Click the **Test** button to display the **Test Listening Environment** window.
7. Select the audio test path from the drop-down menu.



- After selecting an option, test your setting by clicking the **Play Test Noise** button. While testing, you will see a black circle moving on the screen indicating the audio path.

The **Play Test Noise** button becomes **Stop Playing** button. Click this button at any time to stop playing.

- Click the **Close** button when done.



- The **MIDI Music Synthesizer** tab allows you to select a setting for the MIDI.



- Click the **Synthesizer Default Set** drop-down menu to display a list of options. Choose the desired setting.

- Click **Apply**, then click **OK** when finished.

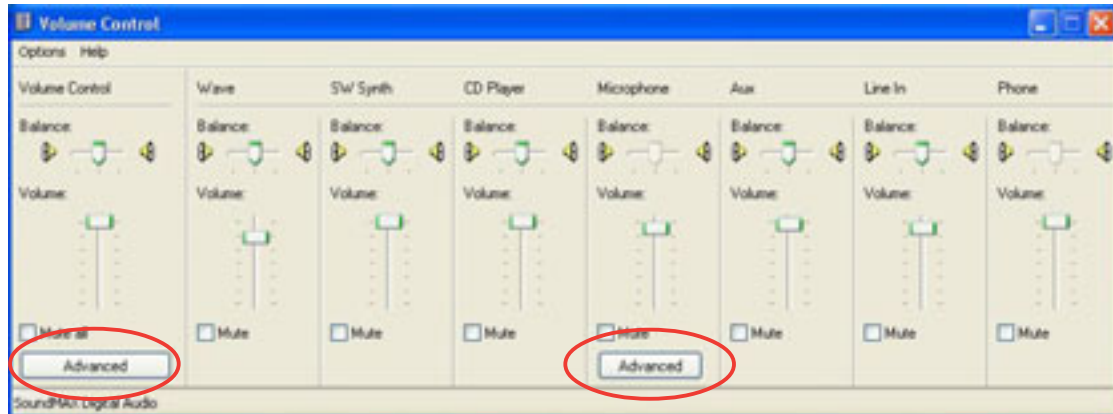
- Reboot the computer.





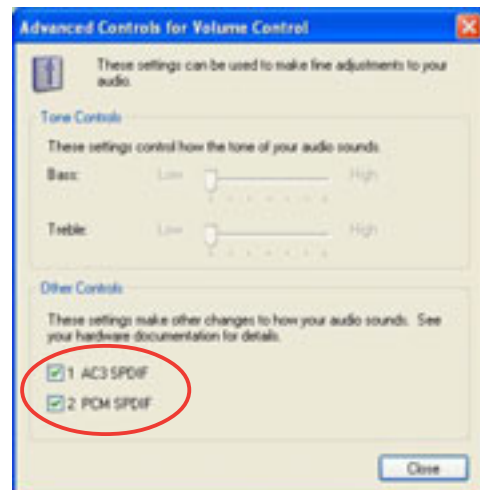
## Adjusting the volume settings

1. After rebooting the system, click on the volume control icon on the Windows® taskbar to display the **Volume Control** window.



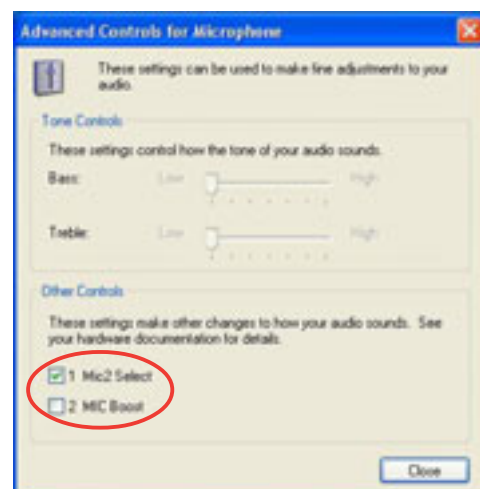
2. Click the Volume Control **Advanced** button. The **Advanced Controls for Volume Control** window appears.

To achieve 6-channel audio capability when playing DVDs, check the boxes opposite **AC3 SPDIF** and **PCM SPDIF**. Click **Close**.



## Adjusting the microphone settings

1. Click on the Microphone **Advanced** button to display the **Advanced Controls for Microphone** window.
2. Check the box opposite **Mic2 Select** to enable the front panel microphone.
3. Click **Close** for the new settings to take effect.



The rear panel Mic port (pink) is automatically disabled when you enable the front panel Mic port. Only one Mic port works at a time.

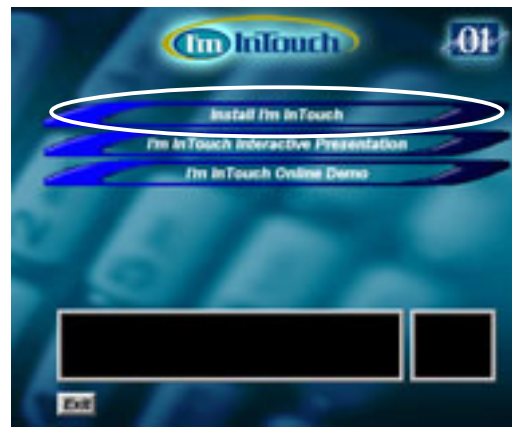
## 5.5 I'm InTouch™ Remote Access Application

I'm InTouch™ is a remote access and control service application that allows you to connect and interact with your Terminator 2 system using a computer, Pocket PC, or a cellular phone with Internet access.

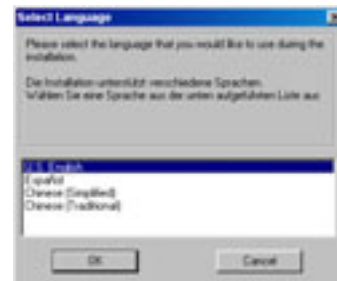
### 5.5.1 Installing I'm InTouch™

Follow these steps to install I'm InTouch™ Remote Access Application on your computer.

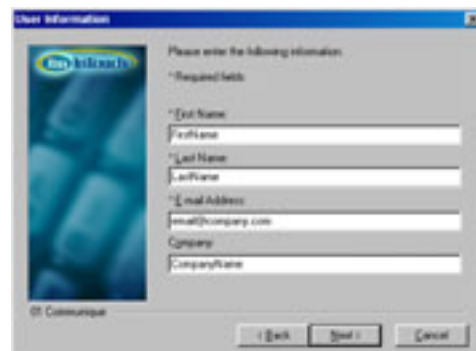
1. Click **I'm InTouch Remote Access Application** from the Utilities tab of the support CD (see page 86). The installation menu appears.
2. Click **Install I'm InTouch**.



3. Select the installation language, then click **OK**.



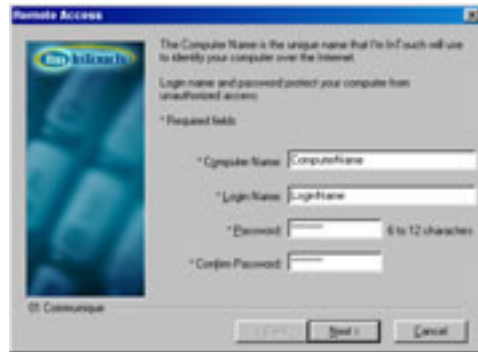
4. Enter the user information, then click **Next**.



Items marked with an asterisk are required fields.



5. Key-in a unique **Computer Name**, **Login Name** and **Password**. Confirm the Password, then click **Next**.



Items marked with an asterisk (\*) are required fields.

6. Make sure the **Enable Remote Control** box is checked. If you want to use the same Login password you created in step 5, check the **Use the same Login password previously established** box. Otherwise, enter a new password, then confirm. Click **Next**.



7. Select the type of Internet connection. If you are using a Proxy server, check the **Use a proxy server** box and enter the proxy settings on the fields. Click **Next**.



8. Follow the succeeding screen instructions to activate the account.

9. A diagnostic tool performs a series of connectivity tests. Follow the screen instructions to complete installation.



## 5.5.2 Using I'm InTouch™



Make sure that your PC is turned on and connected to the Internet before using I'm InTouch™.

To use the I'm InTouch™ Remote Access Application:

1. Go to the I'm InTouch™ locator website (**locator.01com.com**) from any web browser.
2. Enter your computer name in the **Connect To My Computer** page.
3. Depending on the browser you are using, select **Desktop Browser** or **Wireless Browser**.
4. After your computer name is verified, enter your **Login Name** and **Password**, then click **Login**.
5. A screen displays a remote connection to your PC. Perform any computer operation on the screen as you would perform on your PC.



## 5.5.3 ASUS Instant Music

The motherboard is equipped with a BIOS-based audio playback feature called **Instant Music**. This feature is supported by the onboard audio AC'97 CODEC, and requires an optical drive (CD-ROM, DVD-ROM, or CD-RW).



1. Instant Music only supports CDs in audio format.
2. Instant Music does not work if you installed and enabled an add-on sound card.
3. Instant Music only supports PS/2 keyboard.

### To enable ASUS Instant Music:

1. Connect the analog audio cable from the optical drive (CD-ROM, DVD-ROM, or CD-RW drive) to the 4-pin CD connector (labeled CD) on the motherboard. See section “3.4 Connectors” for the location of the CD connector.



Make sure to connect the CD-ROM audio cable. Otherwise, you cannot control the audio volume using the Instant Music function keys.

2. Turn on the system and enter BIOS by pressing the **Delete** key during the Power On Self-Tests (POST).
3. In the **Instant Music Configuration** menu, select the item **Instant Music** and set it to **Enabled**. See section 4.4.6 “Instant Music Configuration.”
4. The **Instant Music CD-ROM Drive** item appears if you enabled Instant Music. Highlight the item then press Enter to display the CD-ROM options.
5. Save your changes and exit BIOS Setup.

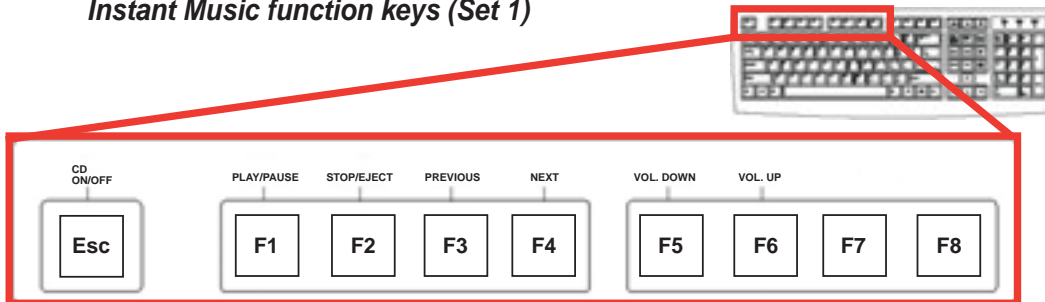


1. The Scroll Lock LED is fixed to ON after enabling Instant Music.
2. The Caps Lock LED turns ON when you pause the CD playback.
3. When set to Instant Music mode, the system wake-up features (LAN, keyboard, mouse, USB) are deactivated. In this case, power up the system using the power switch.
4. If the system lost connection or did not detect any optical drive, the Instant Music feature turns OFF (disabled) automatically. A “beep” indicates this condition.

## To use ASUS Instant Music:

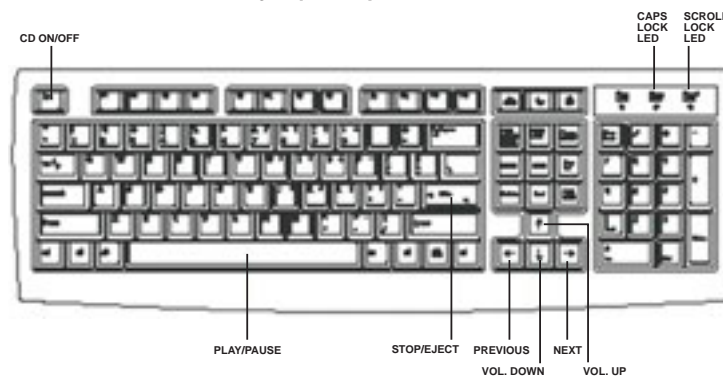
1. Ensure that the power cord is plugged to a grounded power source, so that the system has a standby power.
2. Use either one of the two sets of special function keys on your keyboard to play audio CDs. These keys only function as indicated if you enabled the Instant Music item in BIOS.

### *Instant Music function keys (Set 1)*



To guide you in using Instant Music, place the Instant Music label over the function keys on the keyboard. The Instant Music keyboard label comes with your motherboard package.

### *Instant Music function keys (Set 2)*



3. Connect speakers or a headphone to the Line Out (lime colored) port on the rear panel for audio output. You may also connect a headphone to the headphone jack on the CD-ROM drive front panel.
4. Place an audio CD on the drive.
5. Press **Esc** to turn ON Instant Music.
6. Press **F1** or the **Space Bar** to play the first track on the CD.



If there is no CD on the drive and you press F1 or Space Bar, the drive tray ejects.

7. Refer to the Instant Music function key definitions on the previous page to select other tracks or control the volume.
8. Press **F2** or **Enter** *once* to stop playing the CD.  
Press **F2** or **Enter** *one more time* to eject the CD.

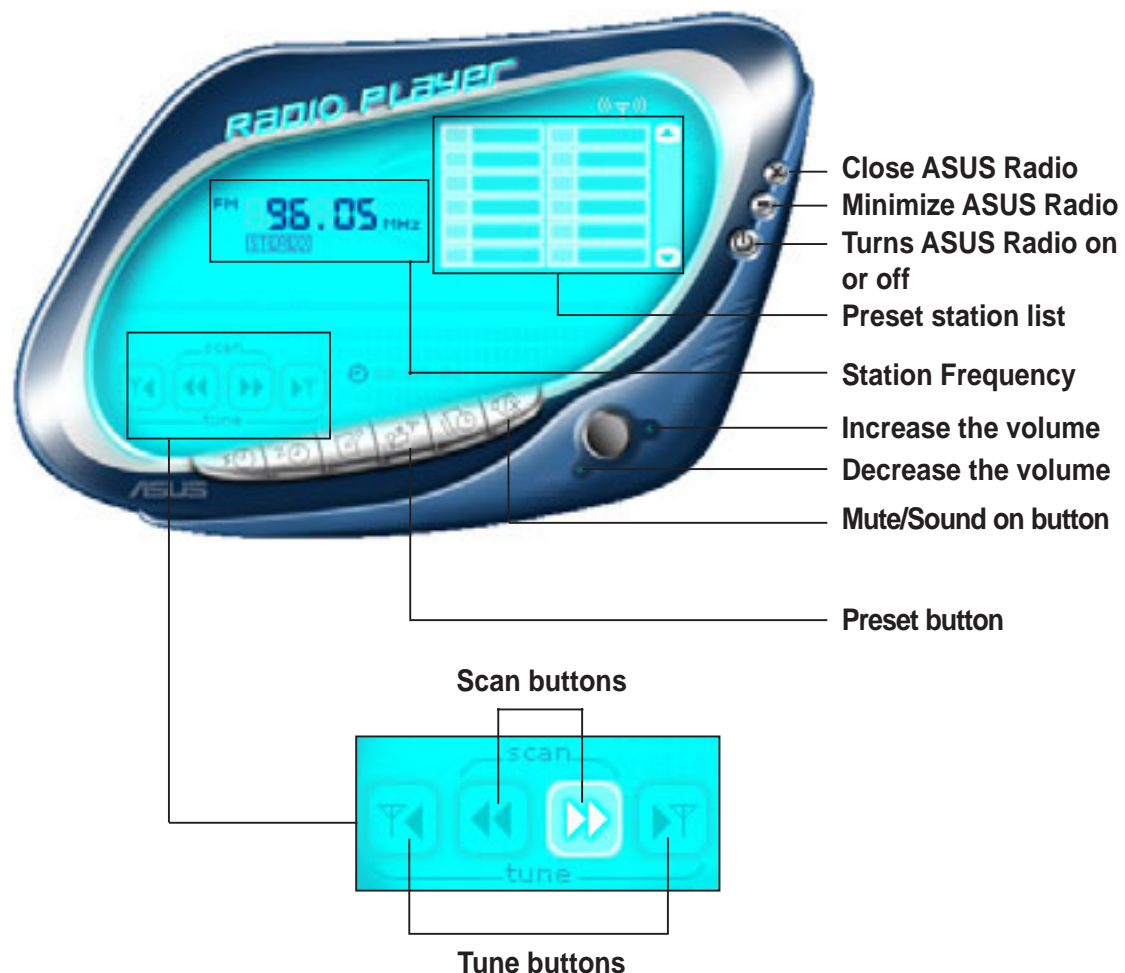
## 5.6 ASUS Radio Play

ASUS Radio Play allows you to tune into an FM station using the optional radio module.

### Using ASUS Radio Play

To use the ASUS Radio Play:

1. Explore the contents of the support CD, then click the **Software** folder.
2. Locate the **Radio** folder, then copy the folder to your system.
3. Open the **Radio** folder, then double-click the **ARadPlay** icon.
4. The ASUS Radio panel appears.




## 5.7 LifeView® TVR Application

The LifeView® TVR Application allows you to watch and record TV in the Terminator 2 system. Install this application if your system came with a TV tuner (included in the 3-in-1 PCI card).

### Using LifeView® TVR

To use the LifeView® TVR application:

1. Install the LifeView TVR Application from the Utilities tab of the support CD. See page 98 for details.
2. Double-click the TVR icon  on the Windows® desktop.
3. The Lifeview TVR panel appears.



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Refer to the LifeView® TVR user manual in the Drivers folder (Drivers\TVManual\Manual\_ENG.pdf) of the support CD for details on this application.

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## 5.8 ASUS Wireless LAN adapter

The 3-in-1 PCI card you purchased with the Terminator 2 system comes with an IEEE 802.11b-compliant wireless LAN adapter for wireless local area network (WLAN).

### Features

The wireless LAN adapter gives you freedom to connect to a wired or wireless local area network and the Internet without the wires and cables. Employing the Direct Sequence Spread Spectrum (DSSS) technology, the wireless LAN adapter is capable of transmitting and receiving signals through radio waves on the 2.4 GHz band. Below are other wireless LAN adapter features:

- Reliable data transfer rates of up to 11Mbps with automatic fallback to 5.5, 2, and 1Mbps
- Secure data transmission via Wired Equivalent Privacy (WEP) encryption
- Operating distance of up to 100 ft (30 m) indoors
- Easy installation and full software support
- Supports infrastructure (wireless LAN adapter to access point) and Ad-hoc (wireless LAN adapter to other wireless clients) network types
- Windows® 2000/XP compatible
- Stand-alone dipolar antenna



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The wireless LAN adapter operating distance may be shorter if there are walls, barriers, or interferences in the home layout or operating environment.

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## 5.8.1 LED indicators

The wireless LAN adapter comes with a Data Transmission (Green AIR) and Network Link (Yellow LINK) LED indicators. Refer to the table below for LED indications.

AIR	LINK	Indications
Fast Blink	ON	The wireless LAN adapter is on and is transmitting/receiving data.
ON	ON	The wireless LAN adapter is on but no data activity.
OFF	OFF	The wireless LAN adapter is off or disabled.
Blink	OFF	The wireless LAN adapter is not connected to a wireless network.

## 5.8.2 Antenna installation

Connect the dipolar antenna twist-on connector to the antenna connector (male) of the wireless LAN adapter before installing the drivers and utilities.

Place the antenna at an elevated location to receive or transmit better signal. Do not place the antenna under your table or in a closed compartment.





### 5.8.3 Installing the WLAN card utilities and driver

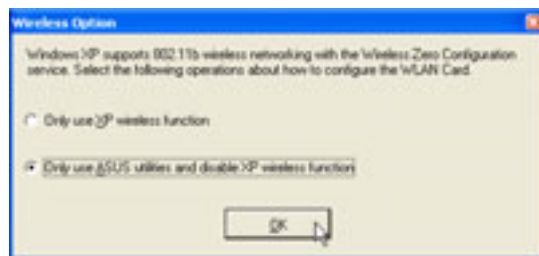
To install the Wireless LAN adapter driver and the Control Center utility in your system:

1. Insert the support CD to the optical drive.
2. In the **Drivers** window, Click the **ASUS Wireless LAN Adapter Driver** item. An installation window appears.
3. Click **Install ASUS WLAN Card Utilities/Driver** to begin installation.



### 5.8.4 Setting the Windows® XP wireless options

In Windows® XP, the **Wireless Option** window appears after installation. Select “**Only use ASUS utilities and disable XP wireless function**” to avail all wireless LAN adapter features. Click **OK**.



### 5.8.5 Other support CD options

**Uninstall ASUS WLAN Card Utilities/ Driver.** Click this option to uninstall the WLAN Card utilities and driver from your system.

**Read/Install User Documentation.** Click to view the installation and quick setup guides in PDF format.

**Explore this CD.** Click this option to explore the support CD contents.

**Browse our Web Site.** Click this option to visit the ASUS website.

Click **EXIT** to close the installation window.



## 5.8.6 The Control Center utility

The Control Center utility is a management software that launches applications and configures network settings. The Control



Center Utility starts automatically when the system boots and displays the Control Center icon in the Windows® taskbar. The Control Center icon serves as an application launcher, and indicator of signal quality and Internet connection.

### Control Center icons

The Control Center icon indicates the quality of link to the access point and connection to the Internet. Refer to the table below for icon indications.

#### Infrastructure Network Mode (wireless LAN adapter to an access point)

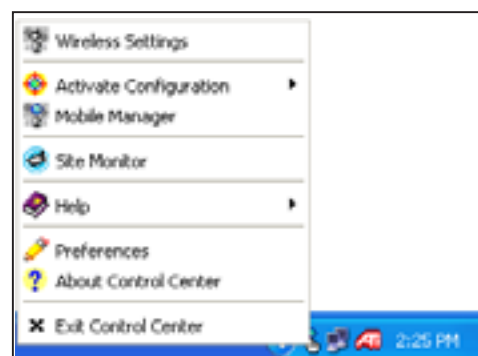
	Excellent link quality and connected to the Internet		Excellent link quality but not connected to the Internet
	Good link quality and connected to the Internet		Good link quality but not connected to the Internet
	Fair link quality and connected to the Internet		Fair link quality but not connected to the Internet
	Poor link quality but connected to the Internet		Poor link quality and not connected to the Internet
	Not linked but connected to the Internet		Not linked and not connected to the Internet

#### Ad-Hoc Network Mode (wireless LAN adapter to other Wi-Fi device)

	Linked
	Not Linked
	Connected to the Internet

### Control Center right-click menu

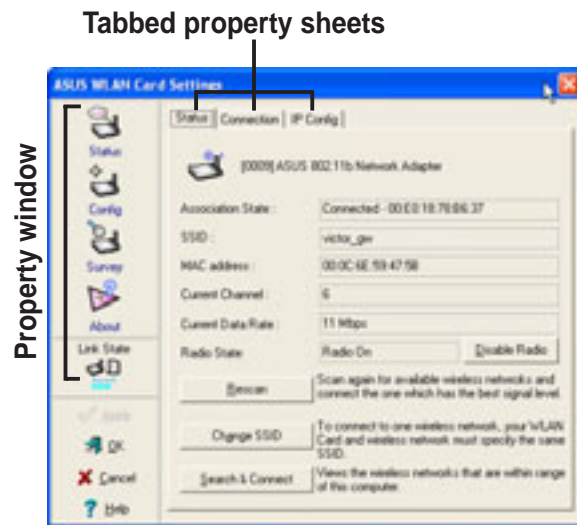
Right-clicking the Control Center icon displays the right-click menu. The following sections describe the right-click menu items.



## Using the Wireless LAN Card Settings

The Wireless LAN Card Settings is the main interface that allows you to control the ASUS wireless LAN adapter. Use the Wireless Settings to view the operational and connection status, or to modify the wireless LAN adapter configuration.

The Wireless Settings window is composed of the property window and tabbed property sheets. Click the icons in the property window to display their tabbed property sheets.



### Status - Status Tab

The Status Tab provides general information on the wireless LAN adapter.

**Association State.** This field displays the connection status and MAC address of the network where the system is connected.

**Service Set Identifier (SSID).** This field displays the SSID of the network to which the card is associated or is intending to join. The **SSID** is a group name shared by every member of a wireless network. Only client PCs with the same SSID are allowed to establish a connection.

The **MAC Address** field displays the hardware address of a device connected to a network.

The **Current Channel** field displays the radio channel that the card is currently tuned. The channel changes as wireless LAN adapter scans the available channels. See the Appendix for channel information.

The **Current Data Rate** field displays the data transfer rate between the wireless LAN adapter and the access point.

The **Radio State** field displays the radio communication status. Click the **Disable Radio** button if you wish to disable radio communication with an access point or a Wi-Fi device.



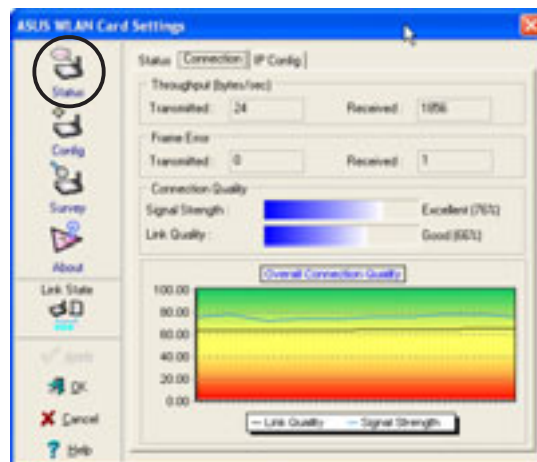
**Rescan** button - Click to allow wireless LAN adapter to scan available wireless networks and to connect to the network with the best signal quality.

**Change SSID** button - Click to change the SSID. Clicking this button opens the Config-Basic window. See “Config-Basic Tab” on the next page.

**Search and Connect** button - Click to view all wireless networks within the range of your system. Clicking this button opens the Site Survey window. See page 120.

### Status - Connection Tab

The Connection Tab provides real-time information on connection throughput, frame errors, signal strength, link quality and overall connection quality in graph representation.



### Status - IP Config Tab

The IP Config tab displays the current host and Ethernet adapter configurations. IP Config displays TCP/IP information including the IP address, subnet mask, default gateway, DNS and Windows Internet Naming Service (WINS) configurations.



Use the IP Config Tab to verify your network settings.

**IP Release.** Click to release the DHCP IP address for the wireless LAN adapter.

**IP Renew.** Click to renew the DHCP IP address for the wireless LAN adapter.

**Ping.** Click to display the Ping tab. Use ping to verify a connection to a particular host name or IP address.



The IP Release and IP Renew buttons may only be used on a DHCP-configured wireless LAN adapter.

### Status - Ping Tab

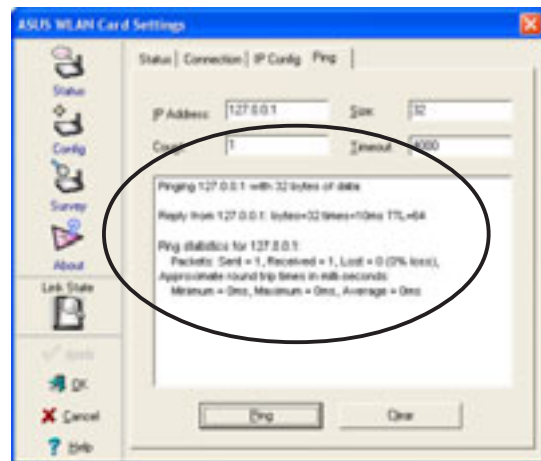
The Ping tab allows you to verify the connection of the host computer with another computer in the network. To ping a connection:

1. Type the IP address of the connection you want to verify in the **IP Address** field.
2. Configure the ping session by assigning the size and count of packet to send, and the time limit for a ping session to continue (in milliseconds).
3. Click the **Ping** button.



During the ping session, the **Ping** button toggles into a **Stop** button. Click **Stop** anytime to cancel the ping session.

The session field displays information on the verified connection including the roundtrip time (minimum, maximum, and average) and packets sent, received, and lost after a ping session.

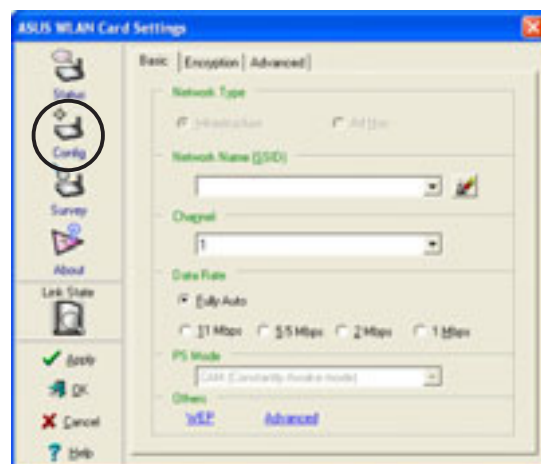


Click the **Clear** button to clear the session field.

### Config - Basic Tab

The **Basic** tab provides general information on network types and other configurations.

**Network Type.** Select the type of network that you wish to use. Select *Infrastructure* mode to establish a connection with an access point (AP). In this mode, your system can access wireless LAN and wired LAN (Ethernet) via the AP. Select the *Ad Hoc* mode to communicate directly with other mobile clients within the wireless LAN adapter range.





**Network Name** - Displays the network SSID. The network SSID is a string use to identify a wireless LAN. Assign different SSIDs to segment the wireless LAN and increase network security. Set the SSID to a null string to allow your station to connect to any available access point. Null string may not be used in Ad-hoc mode.

**Channel.** In Infrastructure mode, wireless LAN adapter automatically tunes in to the access point channel. In Ad-hoc mode, select a channel that is allowed for use in your country/region. See the Appendix for channel information.

**Data Rate.** Select *Fully Auto* to allow the wireless LAN adapter to adjust to the most suitable connection. You may also fix data transfer rates to 11, 5.5, 2 and 1 Mbps.

**PS Mode.** This field allows control of the wireless LAN adapter power saving features. The *CAM (Constantly Awake mode)* is recommended for systems running on AC power. Other options include *MAX\_PSP (Maximum Power Savings)* and *Fast\_PSP (Fast power-saving mode)*

**Others.** Click the *WEP* or *Advanced* link to open the Encryption or Advanced property tab sheet.

### Config - Encryption Tab

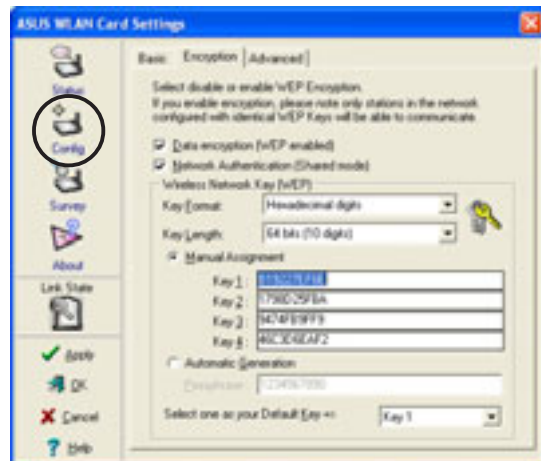
Wireless data transmissions between your wireless LAN adapter and the AP are secured using the Wired Equivalent Privacy (WEP) encryption. Check the *Data encryption (WEP enabled)* option to assign the WEP keys.

Check the *Network Authentication (Shared Mode)* option if you wish to use a network key to authenticate a preferred wireless network.

Unchecking this option allows the network to operate on an Open System mode.

**Key Format** allows you to set a hexadecimal digit or ASCII character WEP key.

**Key Length** allows you to choose a 64-bit or a 128-bit WEP key. A 64-bit encryption contains 10 hexadecimal digits or 5 ASCII characters. A 128-bit encryption contains 26 hexadecimal digits or 13 ASCII characters.





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All wireless clients in a network must have identical WEP keys to communicate with each other or with an access point.

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## Two ways to assign WEP keys

**Manual Assignment.** For a 64-bit encryption, enter 10 hexadecimal digits (0~9, a~f, A~F) or 5 ASCII characters in each of the four WEP keys. For 128-bit encryption enter 26 hexadecimal digits (0~9, a~f, A~F) or 13 ASCII characters in each of the four WEP keys.

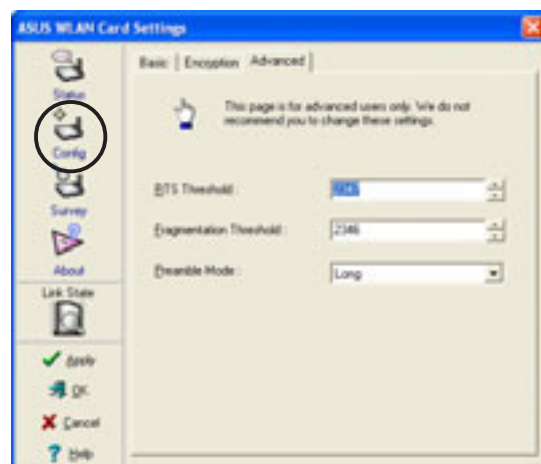
**Automatic Generation.** Type a combination of up to 64 letters, numbers, or symbols in the Passphrase field. The Wireless Settings utility uses an algorithm to generate four WEP keys based on the typed combination.



- 64-bit and 40-bit WEP keys use the same encryption method and can interoperate on wireless networks. This lower level of WEP encryption uses a 40-bit (10 hexadecimal digits assigned by the user) secret key and a 24-bit Initialization Vector assigned by the wireless LAN adapter. 104-bit and 128-bit WEP keys use the same encryption method.
  - After assigning the WEP keys, click **APPLY** to save and activate the encryption. Manually assigned encryptions are more secure than automatically generated encryptions.
  - Use Manual Assignment instead of Automatic Generation if you are not sure whether other wireless clients use the same algorithm as that of wireless LAN adapter.
  - Keep a record of the WEP encryption keys.
- 

### Config - Advanced

The **Advanced** tab displays the wireless LAN adapter advanced settings. We recommend that you keep the default settings.



### Site Survey

The **Site Survey** window displays the available networks within the wireless LAN adapter range and the following network settings.



**BSSID** - The IEEE MAC address of the available wireless networks.

**SSID** - SSID (service set identifier) of the network.

**CH** - Direct sequence channel used by the network.

**RSSI** - Received Signal Strength Indicator (RSSI) in dBm.

**Type** - wireless network mode. AP indicates an Infrastructure network type. STA indicates an Ad-hoc network type.

**WEP** - shows whether a network has an enabled (On) or disabled (Off) WEP encryption.

Select an available network and click **Connect** to establish connection. Click **Search** to rescan available networks.

### About

Click the **About** icon to view the software version, driver version, and copyright information.



### Link State

Displays the current connection status of the wireless LAN adapter to the AP or to other Wi-Fi devices. Icons represent the Link State for easy identification. Refer to the table below for icon indications.

	Excellent link quality (Infrastructure)		Not linked (Infrastructure)
	Good link quality (Infrastructure)		Linked (Ad-hoc)
	Fair link quality (Infrastructure)		Not linked (Ad-hoc)
	Poor link quality (Infrastructure)		



### Command icons

**Apply.** Click to apply the changes made on wireless LAN adapter configuration and settings.

**OK.** Click to close the Wireless Settings utility window.

**Cancel.** Click to cancel any changes made on wireless LAN adapter configuration or settings. Clicking Cancel closes the Wireless Settings utility window.

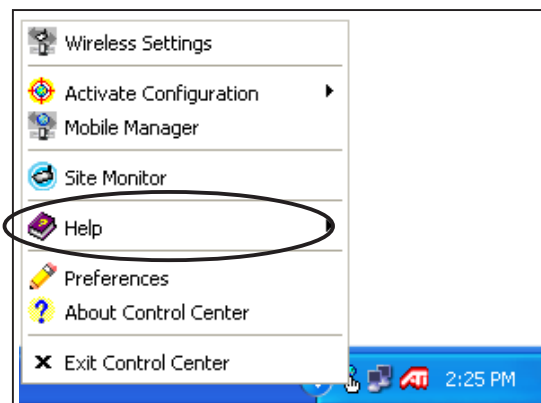
**Help.** Click to display the help menu.



### **Help Menu**

The Control Center utility has a Help menu to guide you in using the Control Center and Wireless Settings utilities.

Right-click the Control Center icon, then select **Help**. Select a utility to display its help window.



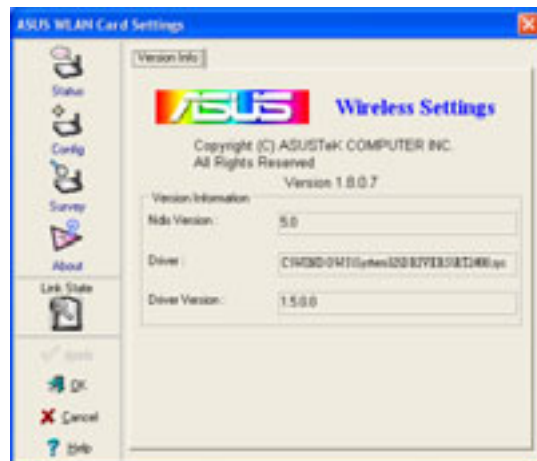
### **Preferences**

The **Preferences** window allows you to customize the Control Center Utility settings.



## About Control Center

The **About Control Center** menu displays the software and drivers version, and copyright information.



## Control Center left-click menu

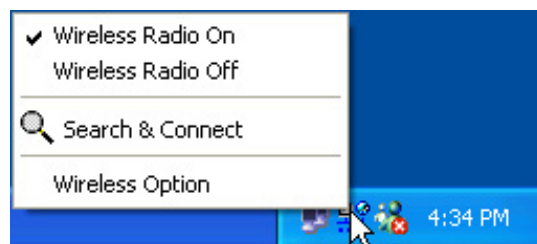
Left-clicking the Control Center icon displays the Left-Click Menu. The options are described below.

**Wireless Radio On** – Turns the wireless LAN adapter radio ON.

**Wireless Radio Off** – Turns the wireless LAN adapter radio OFF.

**Search & Connect** – View available wireless networks within range.

**Wireless Option** – Sets your Windows® XP wireless networking environment. See page 113 for details.



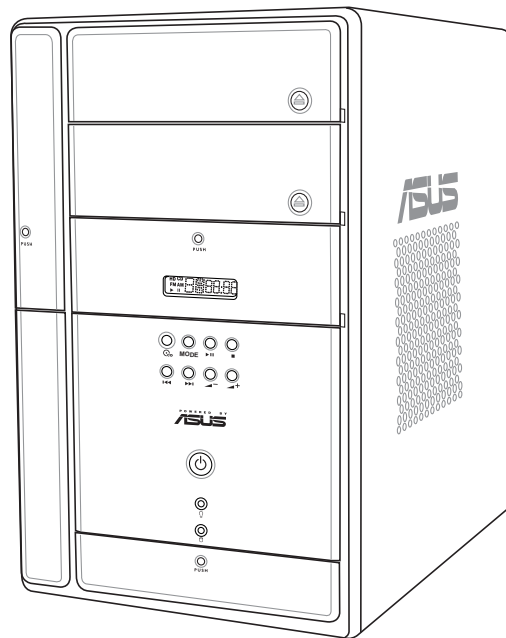
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The Control Center Left-click menu is available only when the wireless LAN adapter is set to Station Mode (STA).

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# Appendix

The Appendix contains the PSU specification and the IEEE 802.11b channels.



# Appendix

# A.1 Power Supply Specifications

## A.1.1 Input Characteristics

<b>Input Voltage Range</b>	<b>Min</b>	<b>Nom</b>	<b>Max</b>
Range 1	90V	115V	132V
Range 2	180V	230V	264V
<b>Input Frequency Range</b>	47 Hz to 63 Hz		
<b>Maximum Input AC Current</b>	5A max. at 115Vac 3A max. at 230Vac, full load		
<b>Inrush Current</b>	No hazards to occur and damage components		
<b>Efficiency</b>	65% min. at 115Vac and output full load		
<b>Current Harmonic</b>	Meets EN61000-3-2 @ 100Vac/50Hz or 230 Vac/50Hz at full load		
<b>EPA</b>	50% min. at input 115Vac, 60Hz		

## A.1.2 Output Characteristics

<b>Output Voltage</b>	<b>Load Range</b>		<b>Regulation</b>		<b>Ripple</b>
	<b>Min</b>	<b>Max</b>	<b>Min</b>	<b>Max</b>	<b>Max</b>
+5V	1.5A	21A	-5%	+5%	50mV <sub>p-p</sub>
+12V	0.5A	10A	-5%	+5%	120mV <sub>p-p</sub>
-12V	0.05A	0.8A	-10%	+10%	150mV <sub>p-p</sub>
+3.3V	0.3A	14A	-5%	+5%	60mV <sub>p-p</sub>
+5VSB	0.01A	2A	-5%	+5%	60mV <sub>p-p</sub>

## A.1.3 Over-Voltage Protection (OVP)

<b>Output Voltage</b>	<b>Maximum Voltage</b>
+3.3V	4.6V
+5V	6.5V
+12V	15.6V

## A.2 Wireless LAN adapter channels

The IEEE 802.11b standard for Wireless LAN allocated the 2.4 GHz frequency band into 14 overlapping operating **channels**. Each channel corresponds to a different set of frequencies. The table below shows the center frequencies of each channel.

Channel	Center Frequency	Channel	Center Frequency
1	2.412 GHz	8	2.447 GHz
2	2.417 GHz	9	2.452 GHz
3	2.422 GHz	10	2.457 GHz
4	2.427 GHz	11	2.462 GHz
5	2.432 GHz	12	2.467 GHz
6	2.437 GHz	13	2.472 GHz
7	2.442 GHz	14	2.484 GHz



If several Wi-Fi devices are operating in the same vicinity, the distance between the center frequencies of channels used must be at least 25MHz to avoid interference.

The number of channels available for the wireless LAN adapter varies by country/region. Refer to the table below to determine the number of channels available in your location.

Country/Region (Regulating Body)	Available Channels
Australia (ACA)	Channels 1 to 13
Belgium (RTT&E/EMC/LVD)	Channels 1 to 13
Bulgaria (RTT&E/EMC/LVD)	Channels 1 to 13
Canada (CSA/cJL 950 3rd Edition)	Channels 1 to 11
China (MI)	Channels 1 to 11
Cyprus (RTT&E/EMC/LVD)	Channels 1 to 13
Czech Republic (RTT&E/EMC/LVD)	Channels 1 to 13
Denmark (RTT&E/EMC/LVD)	Channels 1 to 13
Finland (RTT&E/EMC/LVD)	Channels 1 to 13
France (RTT&E/EMC/LVD)	Channels 1 to 13
Germany (RTT&E/EMC/LVD)	Channels 1 to 13
Greece (RTT&E/EMC/LVD)	Channels 1 to 13
Hong Kong (OFTA)	Channels 1 to 13
Hungary (RTT&E/EMC/LVD)	Channels 1 to 13
Iceland (RTT&E/EMC/LVD)	Channels 1 to 13

*(continued next page)*

Country/Region (Regulating Body)	Available Channels
Ireland (RTT&E/EMC/LVD)	Channels 1 to 13
Italy (RTT&E/EMC/LVD)	Channels 1 to 13
Japan (TELEC)	Channels 1 to 14*
Luxembourg (RTT&E/EMC/LVD)	Channels 1 to 13
Malaysia (SIRIM/CMC)	Channels 1 to 13
Mexico	Channels 9 to 11
Netherlands Antilles (RTT&E/EMC/LVD)	Channels 1 to 13
Netherlands/Holland (RTT&E/EMC/LVD)	Channels 1 to 13
New Zealand (PTC)	Channels 1 to 13
Norway (RTT&E/EMC/LVD)	Channels 1 to 13
Portugal (RTT&E/EMC/LVD)	Channels 1 to 13
Saudi Arabia	Channels 1 to 13
Singapore	Channels 1 to 13
South Korea (KS)	Channels 1 to 13
Spain (RTT&E/EMC/LVD)	Channels 1 to 13
Sweden (RTT&E/EMC/LVD)	Channels 1 to 13
Switzerland (RTT&E/EMC/LVD)	Channels 1 to 13
Taiwan (DGT)	Channels 1 to 11
Turkey (TTAS)	Channels 1 to 13
United Kingdom (RTT&E/EMC/LVD)	Channels 1 to 13
United States (FCC)	Channels 1 to 11

\*Channel 14 only allows 1 to 2 Mbps data transmission rate.



Channels 1, 6 and 11 are independent and do not overlap each other. We recommended that you tune your wireless LAN adapter to these channels.