/SUS® *Terminator 2*

Barebone System
Model T2-R
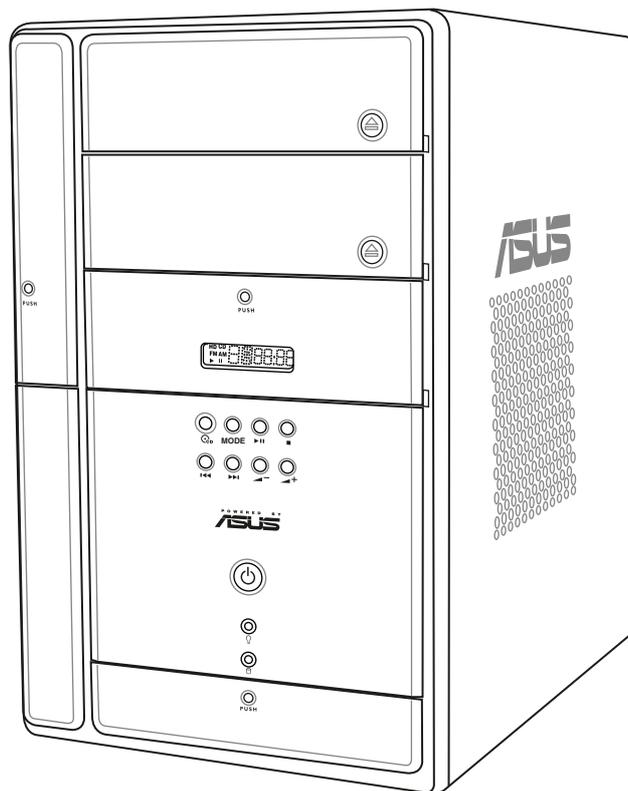
User Guide

E1521

Revised Edition V2

February 2004

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Notices

Federal Communications Commission Statement

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

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

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

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

> **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 manufacturerís instructions.

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

LASER PRODUCT WARNING

CLASS 1 LASER PRODUCT

About this guide

Audience

This guide provides general information on the ASUS Terminator 2 barebone system. Included in this guide are installation instructions and other information regarding the 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: Starting up**

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

4. **Chapter 4: Motherboard information**

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

5. **Chapter 5: BIOS setup**

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

6. **Appendix**

    The Appendix includes the IEEE 802.11b channels for the wireless LAN adapter (available on Deluxe-Commercial models only).

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

Check your Terminator 2 system package for the following items.

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

Item Description	T2-R Models		
	Commercial Deluxe	Deluxe	Standard
1. **ASUS Terminator 2 barebone system** with	✓	✓	✓
• ASUS P4R8T motherboard	✓	✓	✓
• 3-in-1 PCI card*	✓		
• Floppy disk drive	✓	✓	✓
• 6-in-1 storage card reader	✓	✓	
• FM radio module and radio antenna	✓	✓	
• LED panel	✓	✓	
• CPU fan and heatsink assembly	✓	✓	✓
2. **AC power cable**	✓	✓	✓
3. **Support CD**	✓	✓	✓
4. **User Guide**	✓	✓	✓
Optional items • Optical drive** • Modem module			

* *IEEE 1394, wireless LAN adapter (with dipolar antenna), and Gigabit LAN*
** *CD-ROM/CD-RW/DVD-ROM/DVD-RW*

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.

ASUS Terminator 2 barebone system

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.

Delivered in a stylish mini-tower casing and powered by the ASUS P4R8T motherboard that supports Intel® Pentium® 4 Northwood/Prescott processor with an 800MHz FSB, and up to 2GB system memory, the Terminator 2 system is designed for the sophisticated.

Superb video and audio capabilities, Fast Ethernet/wireless networking, and extensive connectivity are just some of the many features of the Terminator 2 system. 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.

Commercial Deluxe & Deluxe model

Standard model
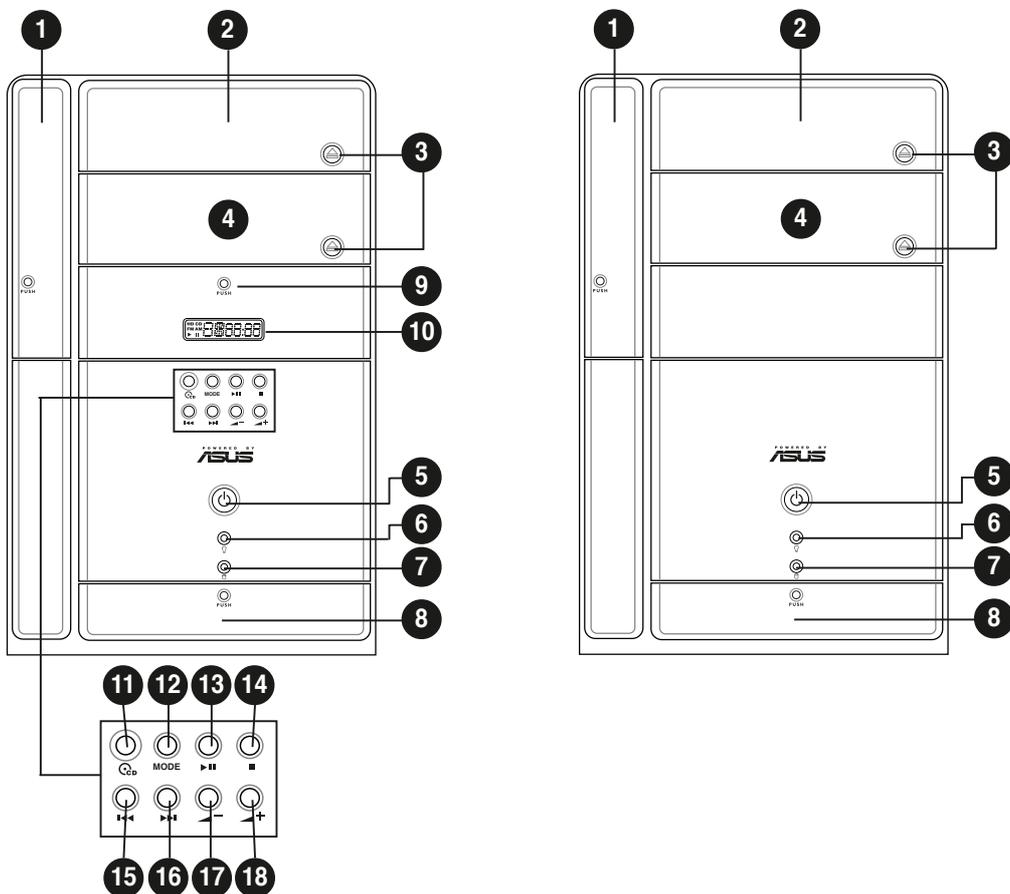
1. **Floppy drive door.** Open this door to access the floppy disk drive.

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. **Empty drive bay door.** This door covers an empty 5.25-inch drive bay for a second optical drive.

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 6-in-1 storage card reader.

10. **LED panel** *(Deluxe models only).* The LED panel displays the audio medium (CD/FM), radio frequency, player status (►/ıı), real time clock, track number, and time. See page 20 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 audio tracks, or tune into an FM radio station without entering the operating system. See page 55 for details. The audio control buttons are available only on Deluxe models.

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 (▶/ıı).** Press this button to perform various functions in different modes.

    In **CD mode**, plays or pauses an audio CD 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 55 on how to preset a radio station.

14. **STOP button (■).** Press this button to stop the audio track being played.

15. **PREVIOUS button (ı◀◀).** 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 (▶▶ı).** Press this button to perform various functions in different modes.

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

    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.

1.3   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.

Commercial Deluxe &
Deluxe model
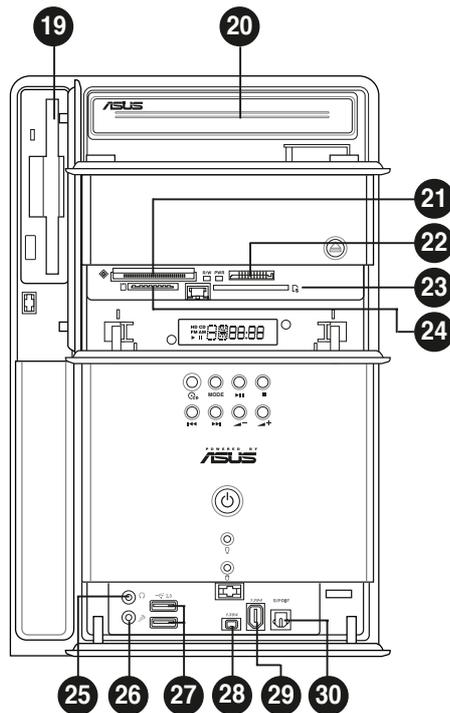
Standard model
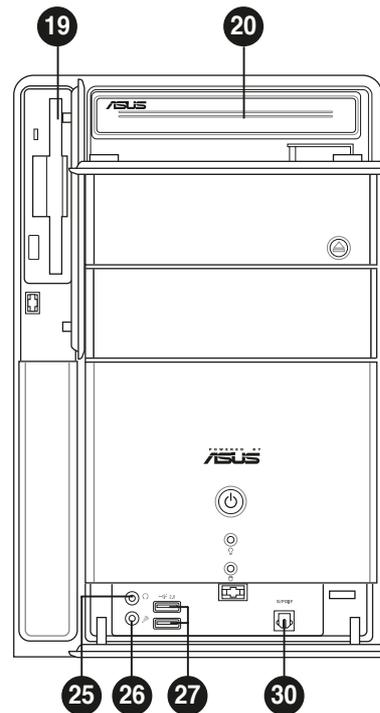
19. **Floppy disk drive.** This drive is for 1.44MB, 3.5-inch floppy disk.

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 (ᴅ).** This slot is for a Secure Digital™/MultimediaCard storage card.

24. **SmartMedia® card slot (ᵔ).** 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 port.** This port connects a headphone with a stereo mini-plug.

26. **Microphone port.** This Mic (pink) port connects a microphone.

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.

Commercial Deluxe model
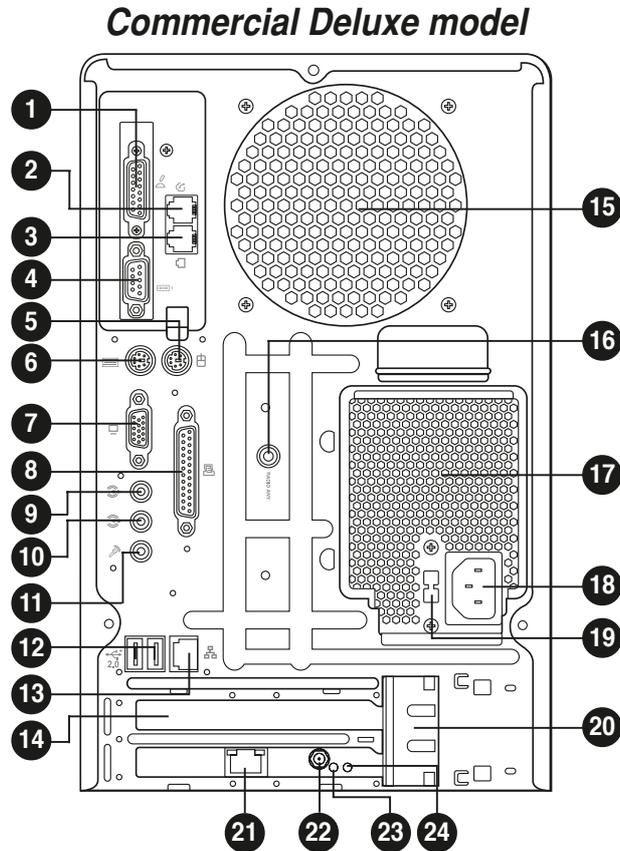
1. **GAME/MIDI port.** This port connects a joystick, or game pad for playing games, and MIDI devices for audio editing.

2. **Telephone port** *(optional)***.** The optional modem module comes with a telephone port. 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)***.** The optional modem module comes with an RJ-11 port to connect 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 speakers. 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.

Audio ports function variation

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

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 38 before adjusting this switch.

20. **Expansion card lock.** This metal lock secures installed expansion cards. See page 31 for details.

21. **Gigabit LAN port.** *(Commercial Deluxe models only.)* This port allows high speed connection to the Internet via an ADSL or cable modem, or local area network.

22. **Wireless LAN adapter antenna connector.** *(Commercial Deluxe models only.)* This connects the dipolar antenna of the wireless LAN adapter.

23. **Link LED.** *(Commercial Deluxe models only.)* This yellow LED lights up when the wireless LAN adapter radio is on but has no activity.

24. **AIR LED.** *(Commercial Deluxe models only.)* This green LED blinks when the wireless LAN adapter is transmitting or receiving data.

> See page 58 for the wireless LAN adapter LED indications.

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. The installed components are labeled for your reference. Proceed to Chapter 2 for instructions on installing other system components.
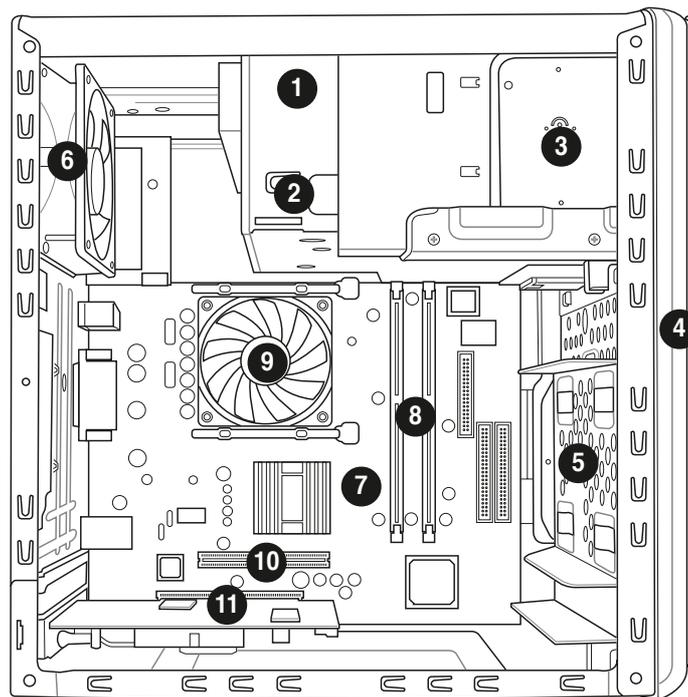
1. Optical drive
2. Empty 5.25-inch drive bay
3. Floppy disk drive
4. Front panel cover
5. Hard disk drive tray
6. Chassis fan
7. ASUS P4R8T motherboard
8. DIMM sockets
9. CPU fan and heatsink assembly
10. AGP slot
11. PCI slot (with an installed PCI card)

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 track being played.

CD mode, play/paused status

In Radio mode, the LED panel displays the station preset number and station frequency.

FM radio mode
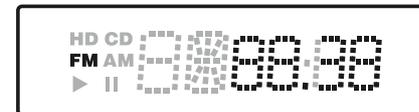
Refer to page 55 on how to turn on the Audio DJ feature and how to preset a radio station.

Chapter 2

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

Basic installation

ASUS Terminator 2 barebone system

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. Second 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.

- 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.

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

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

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.

P4R8T Onboard LED

SB_PWR

ON
Standby
Power

OFF
Powered
Off
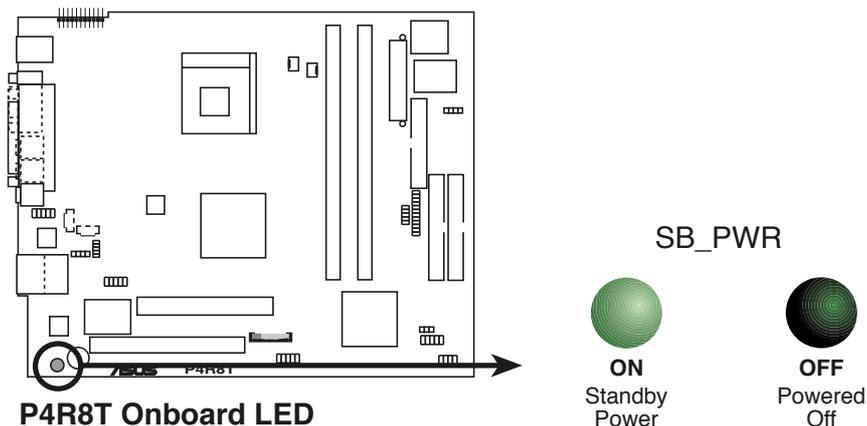
2.3   Removing the cover

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.
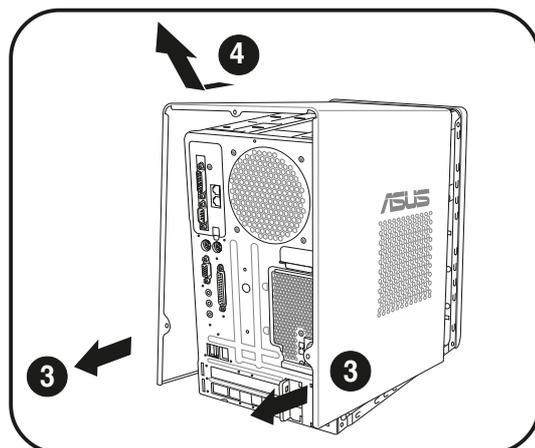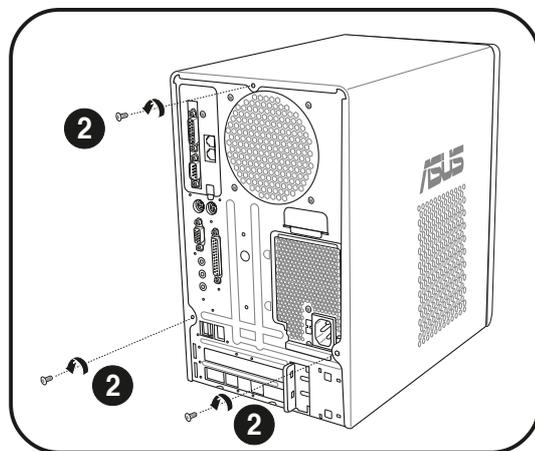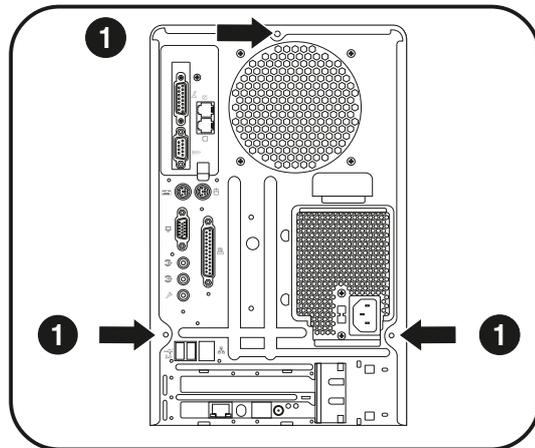
2.4   Removing the power supply

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 the optical drive and floppy disk drive power plugs.

3.   Remove the screw that secures the PSU to the chassis.
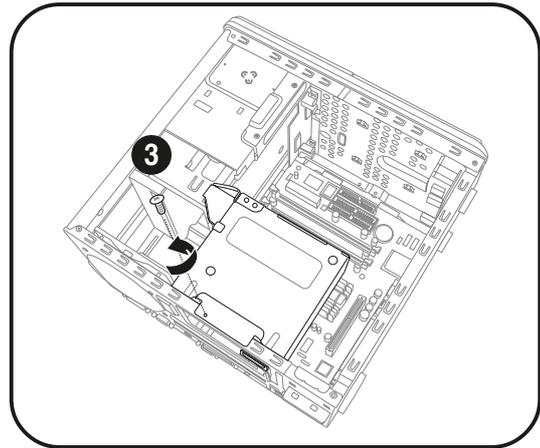
4.   Slide the PSU to the left until the side hook disengages from the chassis.

5.   Push the PSU towards the front panel for about half an inch.

6.   Lift the PSU slightly.
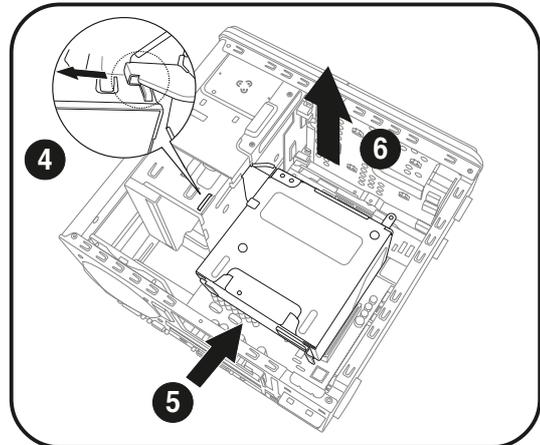
7.   Disconnect the power plugs on the motherboard.

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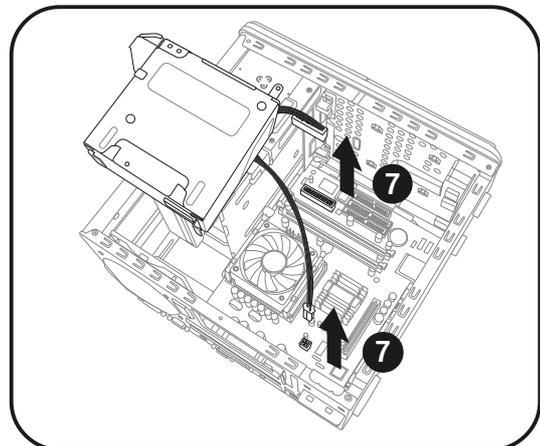
> When removing the PSU, make sure to hold or support it firmly. The unit may accidentally drop and damage the other system components.

2.5 Installing a CPU

The 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.
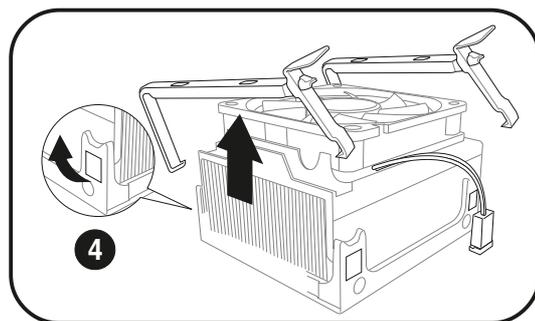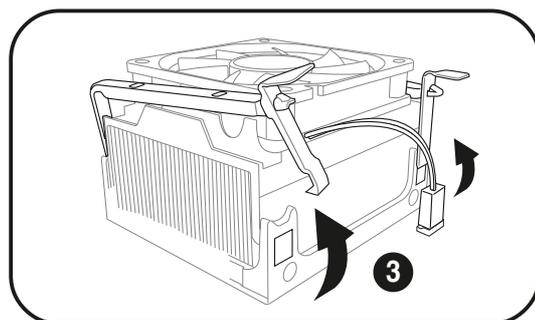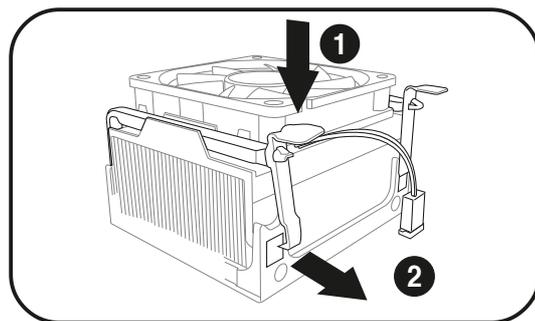
6. Disconnect the CPU fan cable from the CPU fan connector on the motherboard.

7. Lift the CPU fan and heatsink assembly, then set aside.
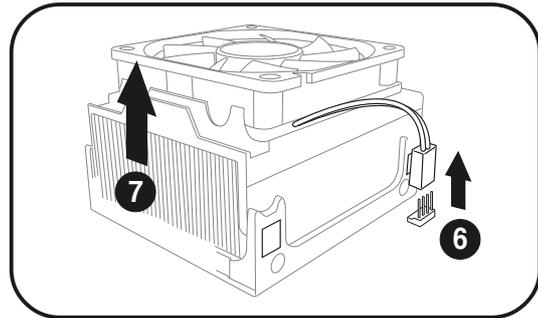
2.5.2 CPU installation

To install the CPU:

1. Locate the 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.
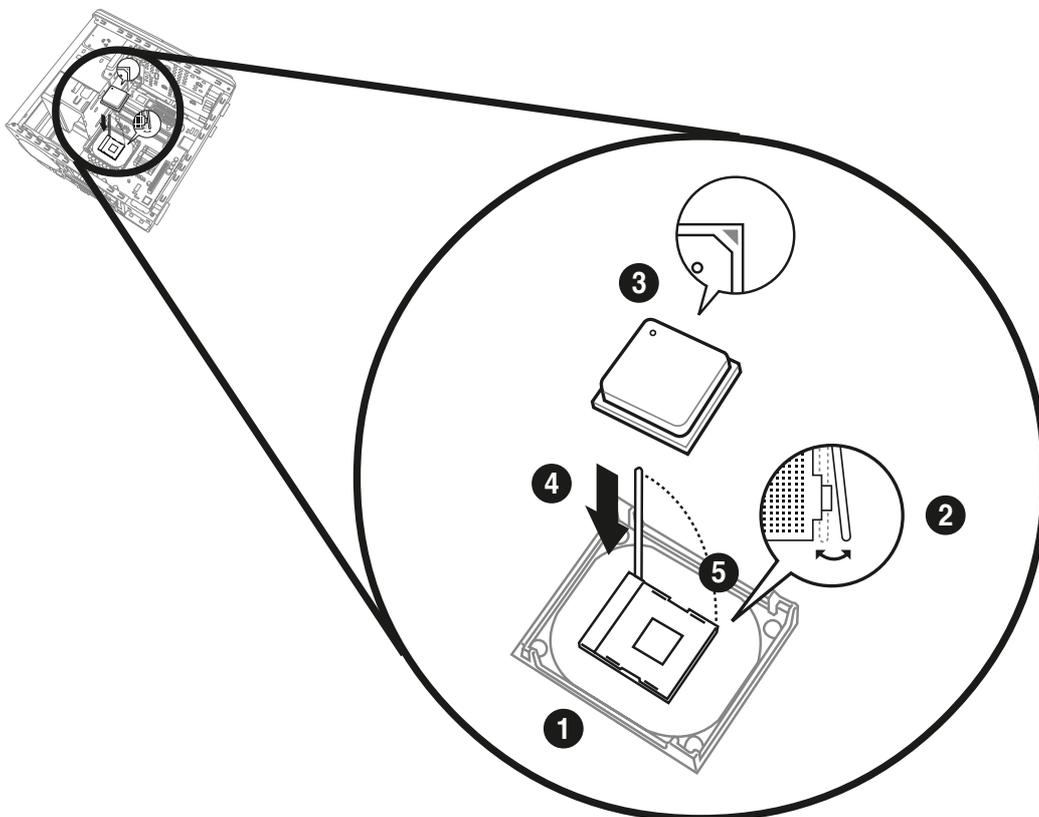
2.5.3 Re-installing the CPU fan and heatsink assembly

To re-install the CPU fan and heatsink assembly:

1. Position the CPU fan and heatsink assembly on top of the installed CPU.
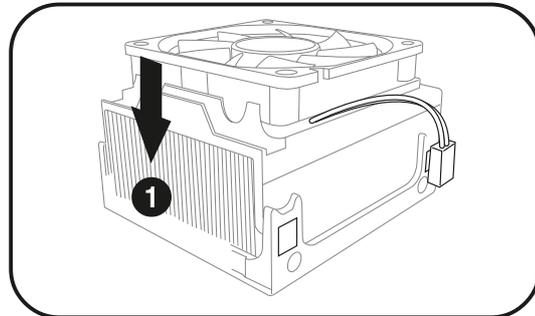
2. Align the retention bracket with the rails on the side of the CPU fan.

3. Attach the retention bracket hook into the retention module hole.
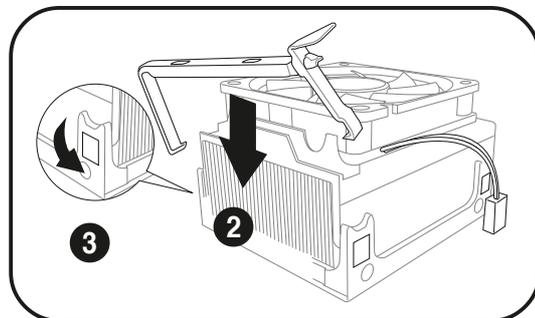
4. Carefully press down the locking lever on the other side of the retention bracket.

5. Attach the locking lever hook into the retention module hole to secure the fan and heatsink assembly in place.
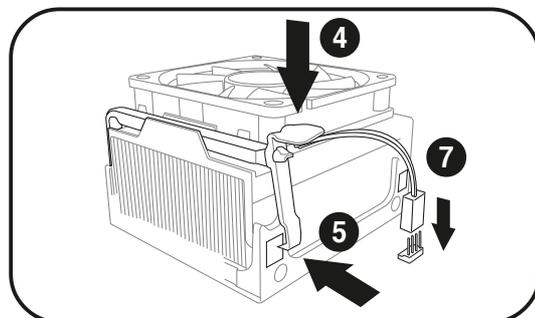
6. Follow steps 2 to 5 to re-install the second retention bracket.

7. Connect the CPU fan cable to the CPU fan connector on the motherboard.

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

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 table below. Visit the ASUS website (www.asus.com) for the latest Qualified Vendors List.

Qualified DDR400 vendors

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	MICRON	MT8VDDT3264AG-40BC4	MICRON	46V32M8
256MB	PSC	AL5D8B53T-5B1K	PSC	A2S56D30BTP
256MB	TwinMOS	M2G9108AIATT9F081AADT	TwinMOS	TMD7608F8E50D
256MB	SAMSUNG	M368L3223DTM-CC4	SAMSUNG	K4H560838D-TCC4
256MB	SAMSUNG	M368L3223DTM-CCC	SAMSUNG	K4H560838D-TCCC
256MB	Kingston	KVR400X64C25/256	Winbond	W9425088H-5
256MB	Transcend	TS32MLD64V4F3	MOSEL	V58C2256804SAT5
256MB	CORSAIR	CMX256A-3500C2PT	—	—
256MB	Infineon	HYS64D32300GU-5-B	Infineon	HYB25D256800BT-5

> • Install only **identical** (the same type and size) DDR DIMM in DIMM_A and DIMM_B.
>
> • Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor.
>
> • This motherboard only supports x4, x8, x16 chips/per module DDR DIMMs.

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.
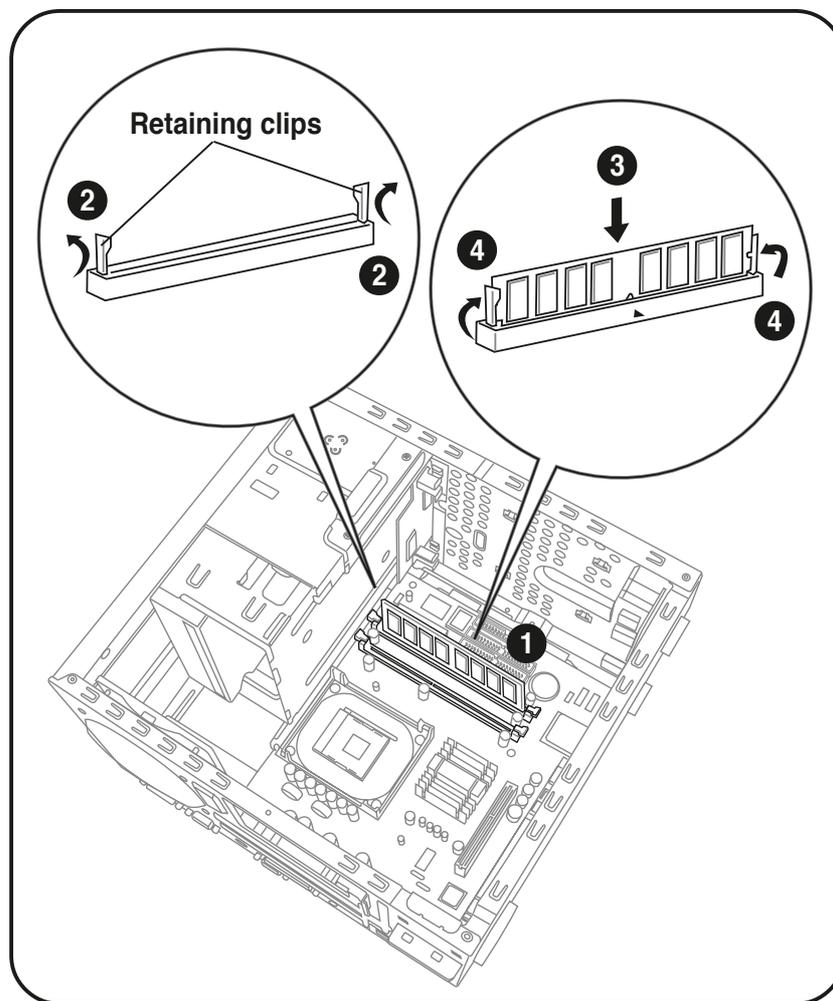
A DDR DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM!

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 Commercial Deluxe models, a 3-in-1 PCI card is pre-installed in the PCI slot. 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.
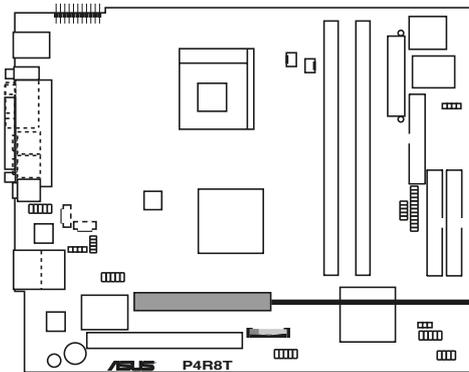
Keyed for 1.5v

P4R8T 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.

2.7.2 Expansion card installation

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.

Expansion card lock   **PCI slot**   **AGP slot**
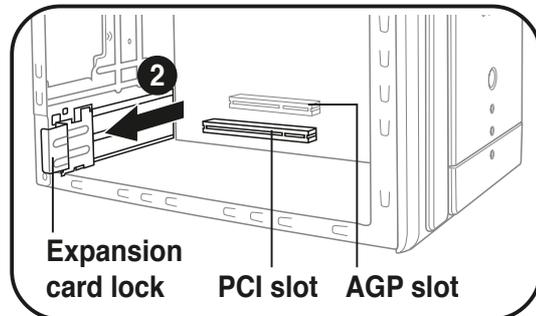
3. Remove the metal bracket opposite the slot that you intend to use.

Metal brackets
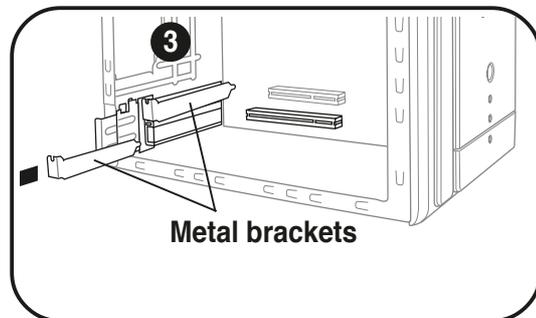
4. Align the card connector with the slot, then press firmly until the card is completely seated on the slot.

PCI card
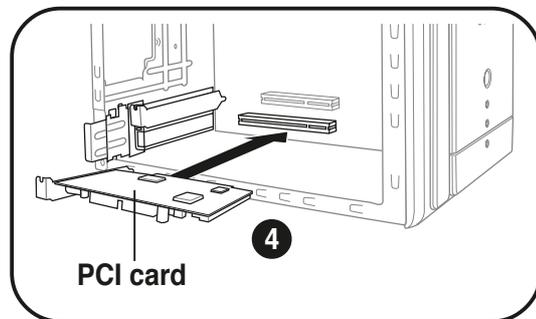
5. Replace the expansion card lock to secure the card.
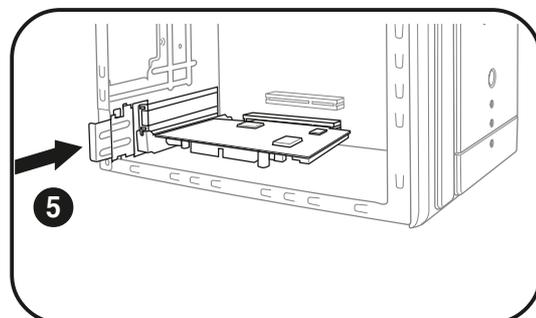
2.7.3 Configuring an expansion card

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 5 for information on the 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
PCI slot 1	—	—	shared	—
AGP slot	used	—	—	—
Onboard USB controller HC0	—	—	—	shared
Onboard USB controller HC1	—	—	—	shared
Onboard USB 2.0 controller	—	—	—	shared
Onboard LAN	—	—	shared	—
Onboard Audio	—	used	—	—

> 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 Terminator 2 system comes with two 5.25-inch drive bays for two optical drives. If your system came with a pre-installed optical drive, refer to this section when installing 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. Detach the front panel cover top hooks.
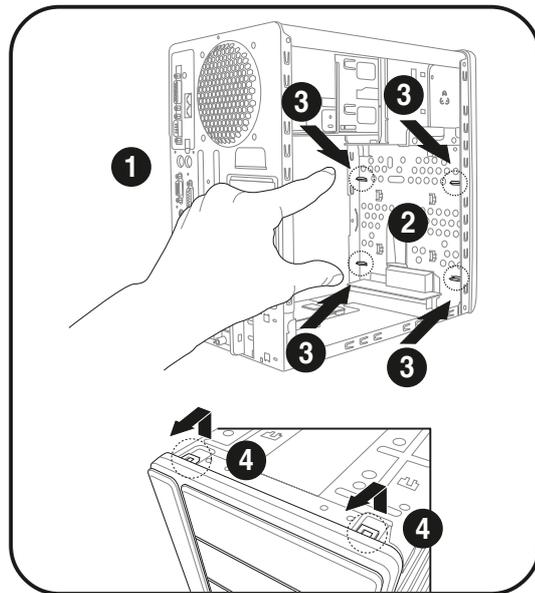
5. Push the the front panel cover slightly outwards, then set it aside.

> On Deluxe models, disconnect the LED panel and the front audio button panel cables from their respective connectors before removing the front panel cover.
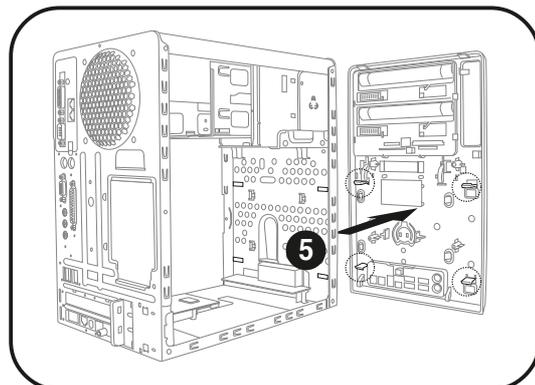
6. Carefully push the optical drive into the bay until its screw holes align with the holes on the bay as shown.

7. Secure the optical drive with two screws on one side of the bay.
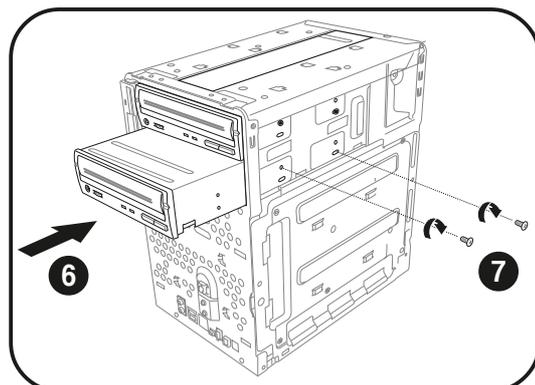
8. Connect a power cable from the power supply unit to the power connector at the back of the optical drive. See page 38 for details.
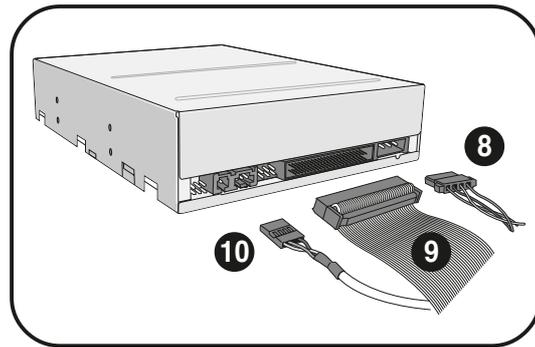
9. Connect one end of the IDE ribbon cable to the IDE interface at the back of the optical drive, matching the red stripe on the cable with Pin 1 on the IDE interface.

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

11. Connect the other end of the IDE ribbon cable to the secondary IDE connector (black connector labeled SEC_IDE) on the motherboard. See page 76 for the location of the secondary IDE connector.

12. Connect the other end of the audio cable to the black 4-pin connector labeled CD on the motherboard. See page 76 for the location of the CD connector.

13. 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 you re-install the front panel cover.
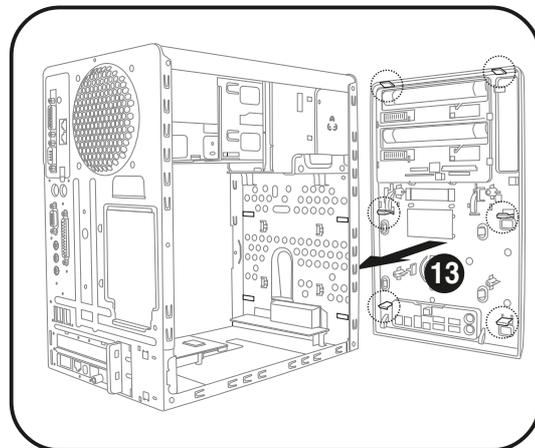
14. Snap the front panel cover hooks to the chassis holes as indicated.
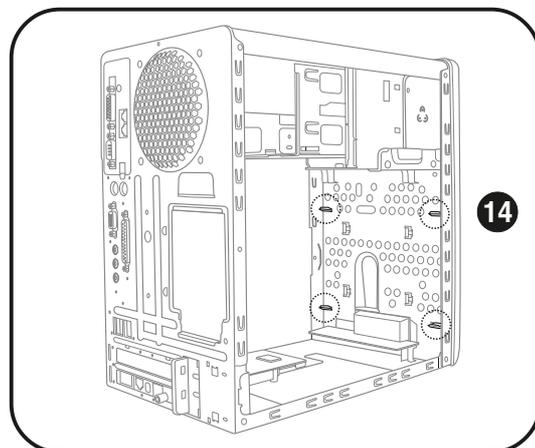
2.9 Installing a hard disk drive

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

To install a hard disk drive:

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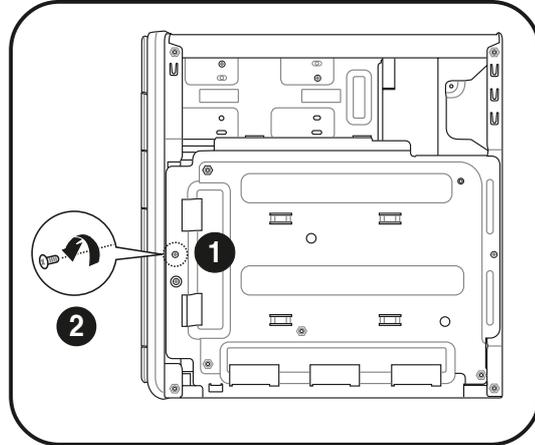
3. Slide the HDD tray outward until its slots are released from the tray locks.

Tray locks

Lock slots

Tray locks
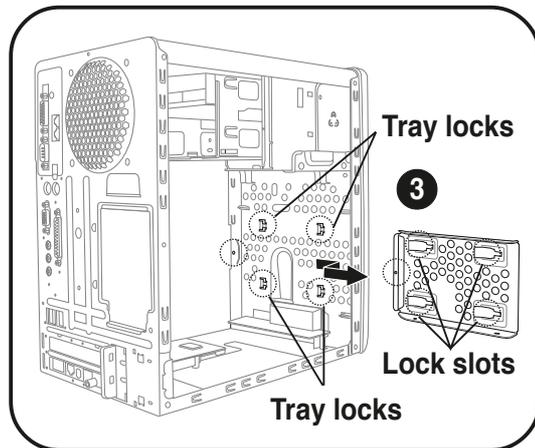
4. Place a hard disk drive on the tray with its bottom on the open side. Align the HDD and HDD tray screw holes.

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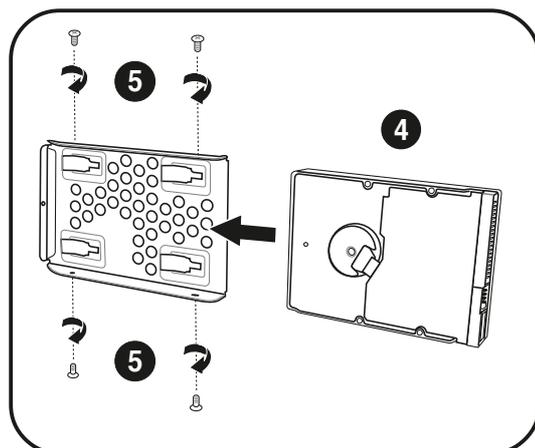
Configure your hard disk drive as Master device before connecting the IDE cable and power plug. Refer to the HDD documentation on how to set the drive as a Master device.

6. Re-install the HDD tray and HDD inside the chassis by slowly sliding it to the tray hooks.

7. Secure the HDD metal tray with the flat head screw you earlier removed.
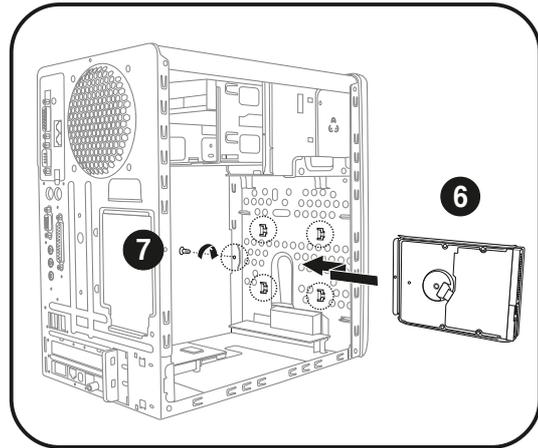
8. Connect one end of the 40-pin IDE cable to the IDE connector on the drive.

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 76 for the location of the primary IDE connector.
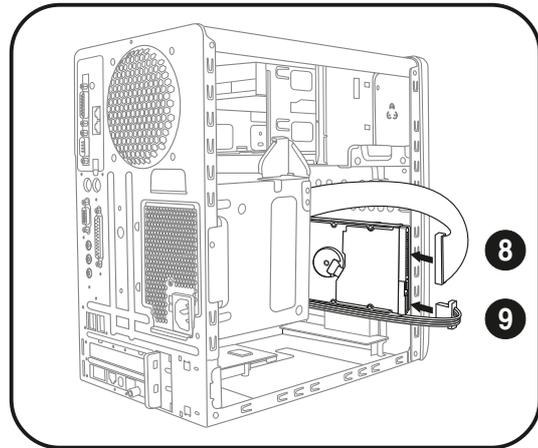
2.10 Re-installing the power supply unit

Re-install the power supply unit (PSU) after installing the system components and reconnecting the cables.

To reinstall the PSU:

1. Connect the 20-pin and 4-pin power plugs to the ATXPWR and ATX12V connectors on the motherboard labeled ATXPWR and ATX12V. See page 77 for the location of these connectors.
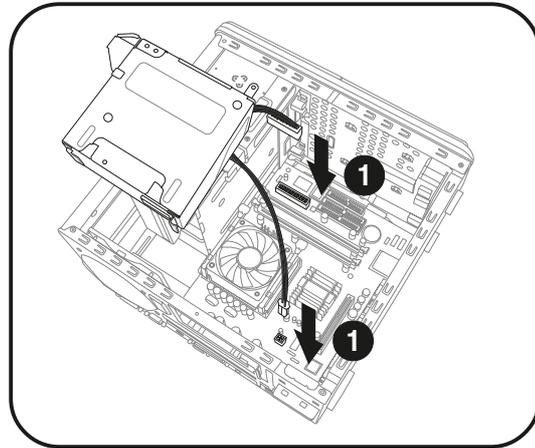
2. Position the PSU over the chassis.

3. Align the side hook with the metal slot on the side of the optical drive bay.

4. Slide the PSU toward the direction of the rear panel until it fits in place.
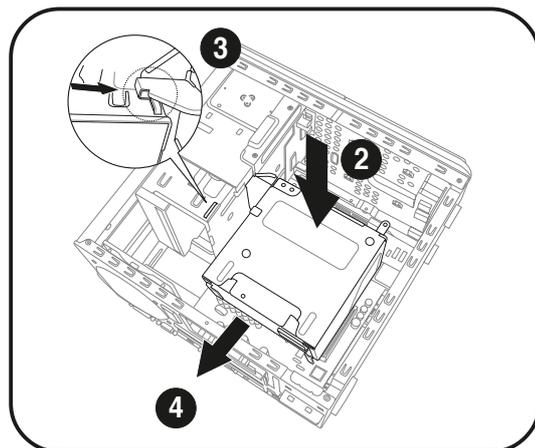
5. Secure the PSU with the screw you removed earlier.

   ⚠ Make sure the PSU cables do not interfere with the CPU and chassis fans.

Power supply unit plugs
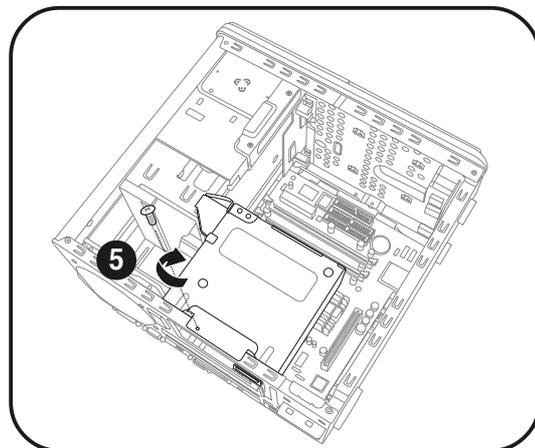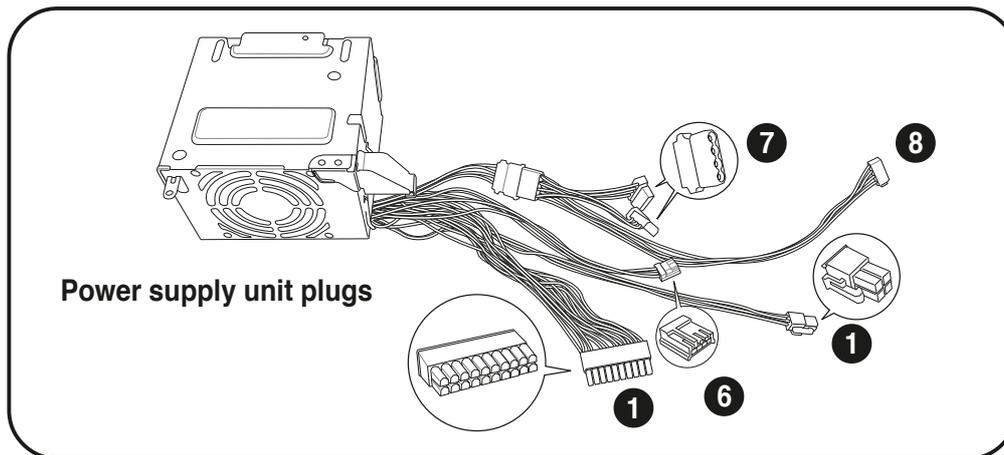
6. Connect the 4-pin power plug to the power connector of the floppy disk drive.

7. Connect the 4-pin power plug(s) to the power connector of the optical drive(s).

8. Connect the 4-pin power plug to the power connector of the hard disk drive.

2.10.1 Voltage selector

The PSU has a 115V/230V voltage selector switch located beside 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.

🖉 The voltage selector is set to 115V by default.
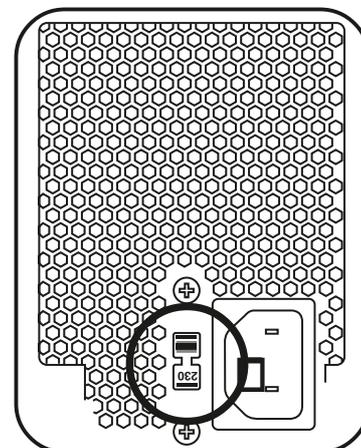
If the voltage supply in your area is 200-240V, set the switch to 230V.

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

2.10.2 Power supply specifications

Input characteristics

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

Output characteristics

Output Voltage	Load Range Min	Load Range Max	Regulation Min	Regulation Max	Ripple Max
+5V	1.5A	21A	-5%	+5%	50mV$_{p-p}$
+12V	0.5A	10A	-5%	+5%	120mV$_{p-p}$
-12V	0.05A	0.8A	-10%	+10%	150mV$_{p-p}$
+3.3V	0.3A	14A	-5%	+5%	60mV$_{p-p}$
+5VSB	0.01A	2A	-5%	+5%	60mV$_{p-p}$

Over-Voltage Protection (OVP)

Output Voltage	Maximum Voltage
+3.3V	4.6V
+5V	6.5V
+12V	15.6V

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.
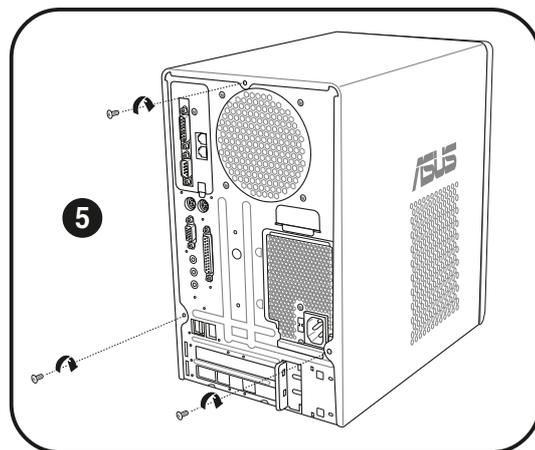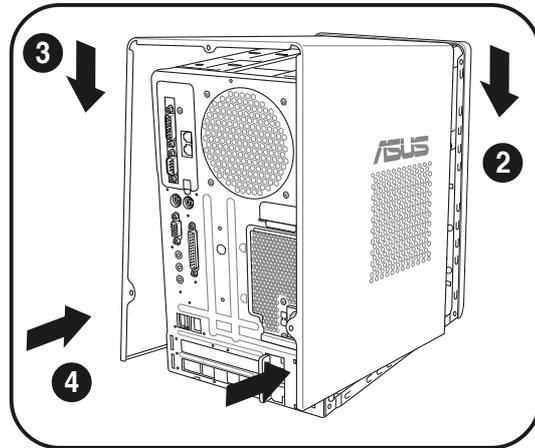
2.12 Connecting external devices

To the front panel

Commercial Deluxe & Deluxe model
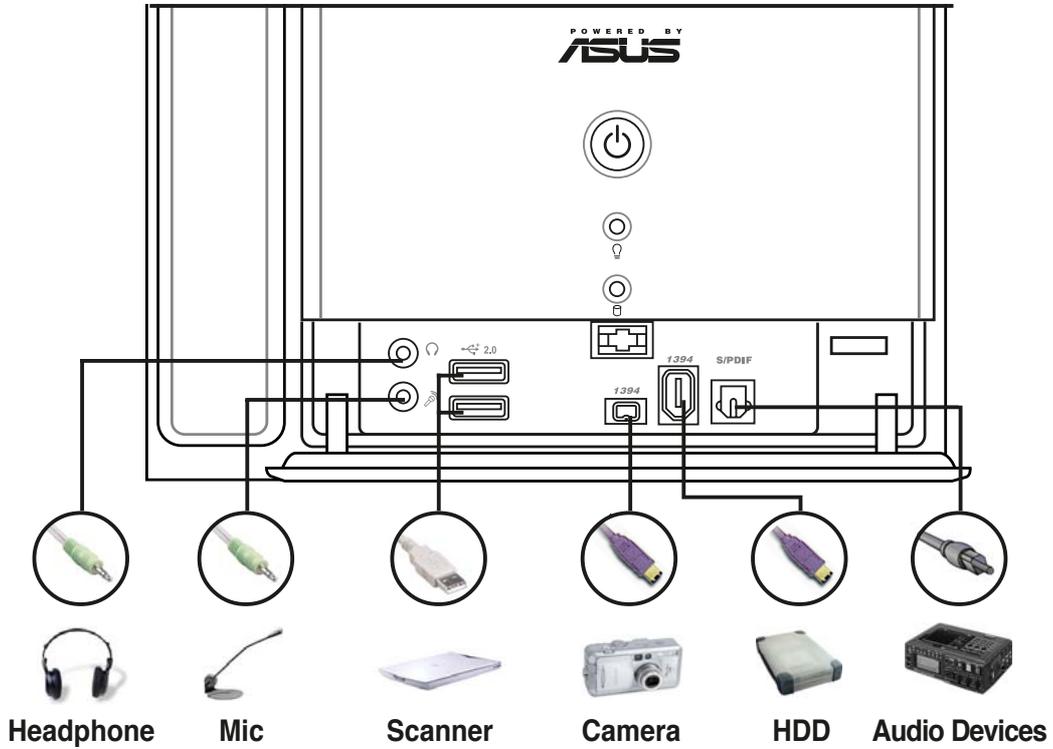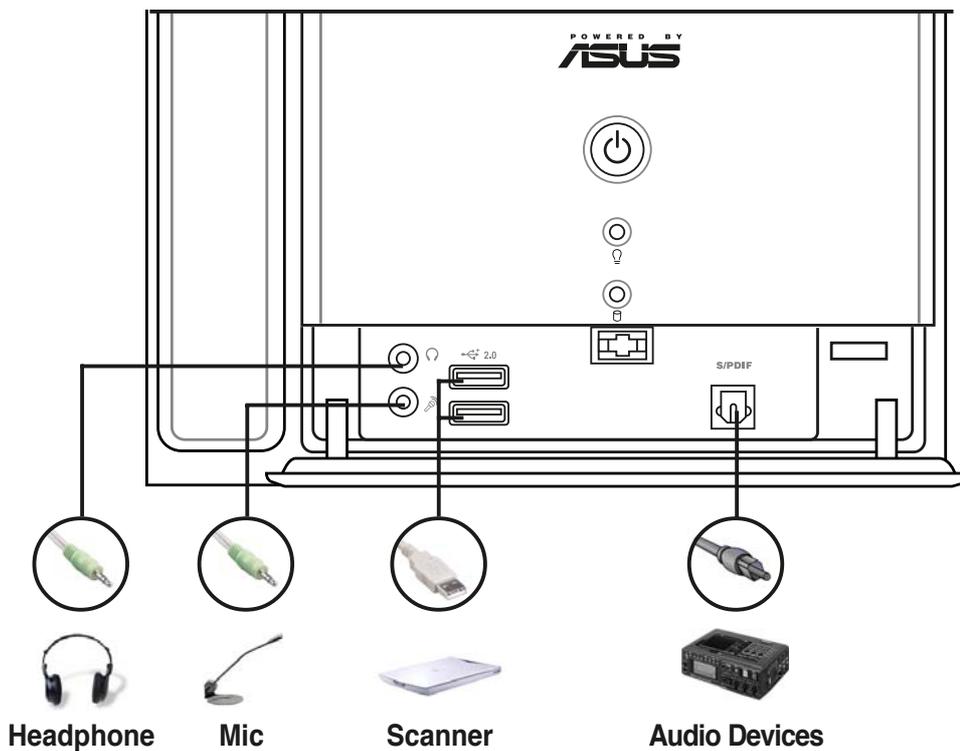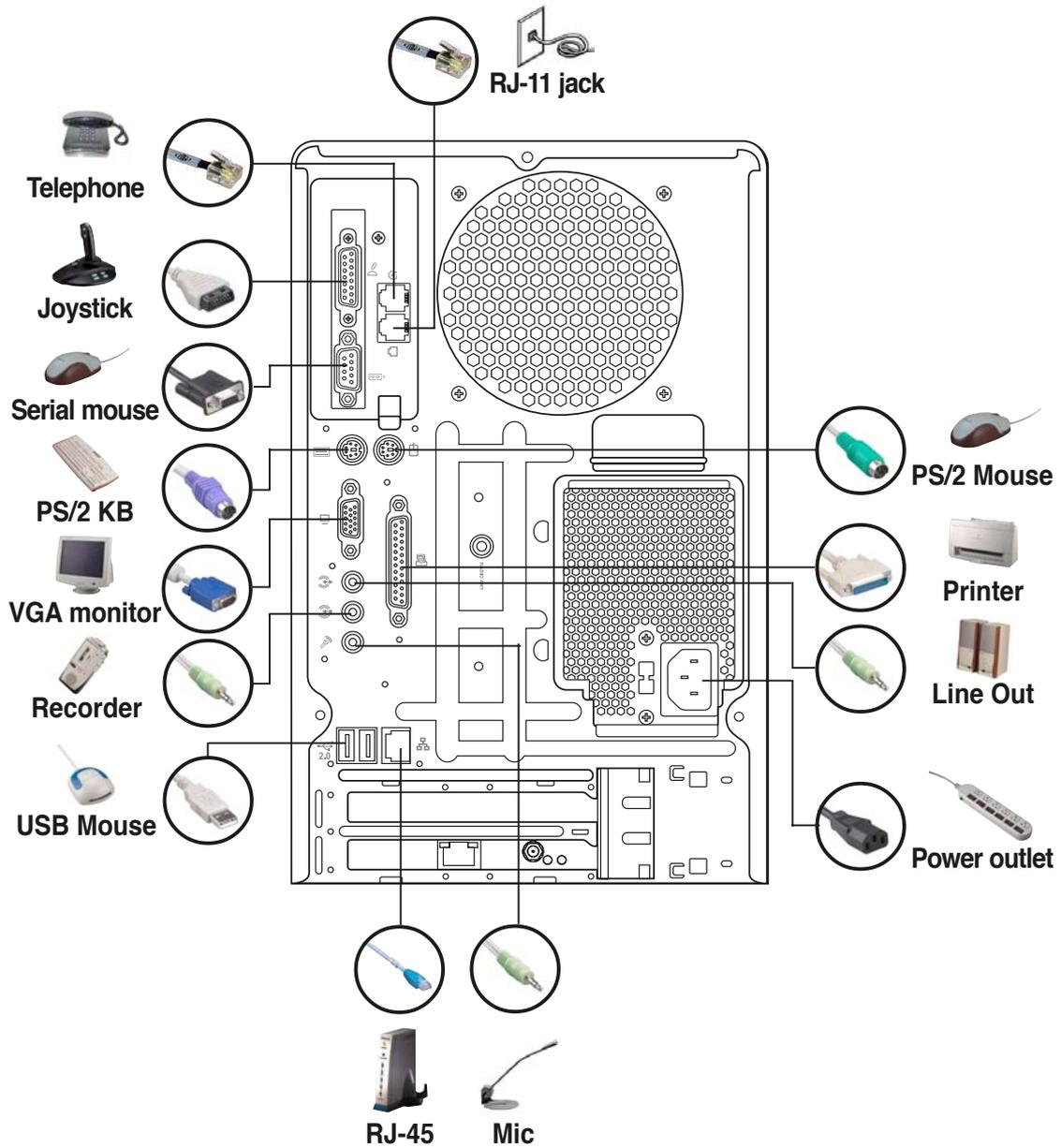
| Headphone | Mic | Scanner | Camera | HDD | Audio Devices |

Standard model

| Headphone | Mic | Scanner | Audio Devices |

To the rear panel

RJ-11 jack

Telephone

Joystick

Serial mouse

PS/2 KB

VGA monitor

Recorder

USB Mouse

PS/2 Mouse

Printer

Line Out

Power outlet

RJ-45

Mic

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

Starting up

ASUS Terminator 2 barebone system
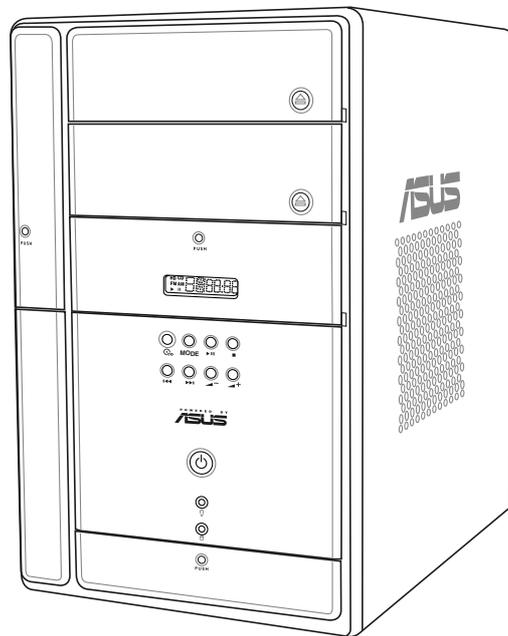
3.1 Installing an operating system

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.

3.2 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. See page 55 for details.

Press to put the system in Audio DJ mode

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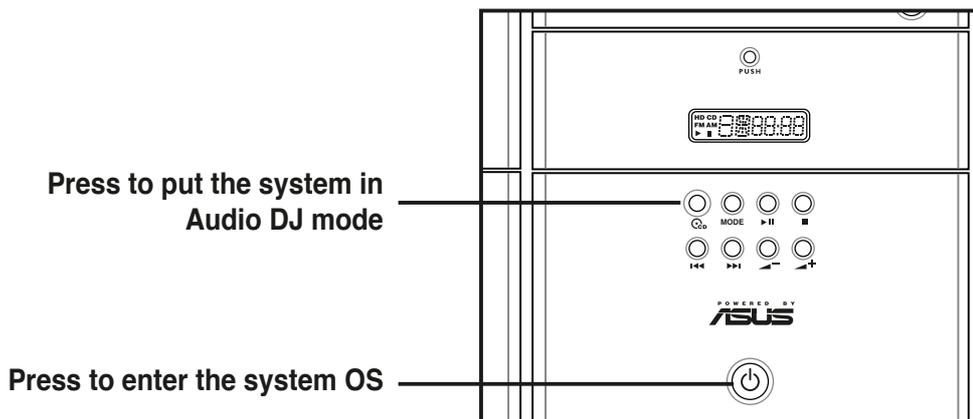
In Windows® mode, pressing the ⏼ button shuts down, restarts, or puts the system in sleep mode (S3) depending on the OS setting.

3.3.1 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.

Click an item to install   **Click an icon to display other information**
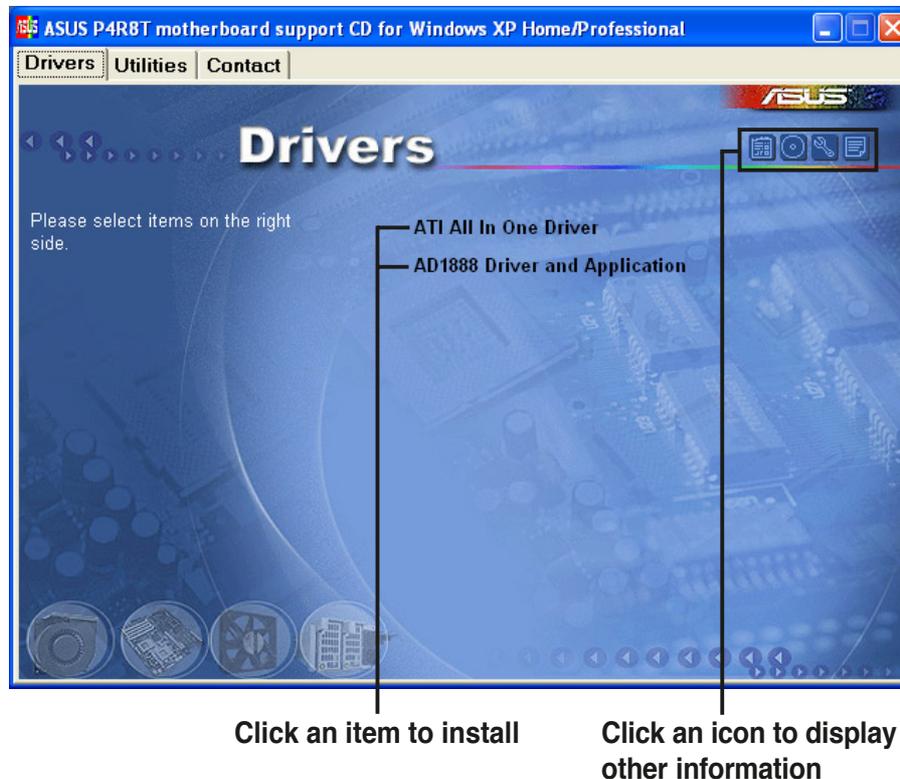
> If **Autorun** is NOT enabled in your computer, browse the contents of the support CD to locate the file ASSETUP.EXE from the BIN folder. Double-click the **ASSETUP.EXE** to run the CD.

3.3.2 Drivers menu

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

ATI All In One Driver

Click this item to install the ATI All In One Driver for the P4R8T motherboard.

AD1888 Driver and Application

This item installs the AD1888 audio driver and SoundMax® application. See page 48 for details.

> If your system comes with a 3-in-1 PCI card, the **Marvell Gigabit LAN Driver** and **ASUS Wireless LAN Adapter Driver** options appear in the Drivers window.

3.3.3 Utilities

The **Utilities** tab displays the applications and softwares that the motherboard supports.
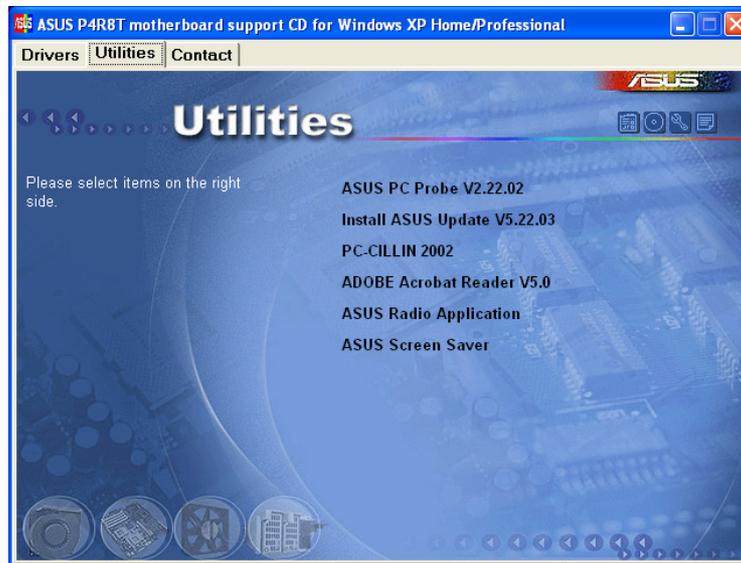
ASUS PC Probe

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.

Install ASUS Update VX.XX.XX

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 89 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® Acrobat Reader® software is for viewing files saved in Portable Document Format (PDF).

ASUS Radio Application

This item installs the ASUS radio application that allows you to tune in to an FM radio station. See page 51 for details.

ASUS Screensaver

This item installs the ASUS Screensaver.

3.3.4 ASUS contact information

Click the **Contact** tab to display the ASUS contact information.

3.3.5 Other information

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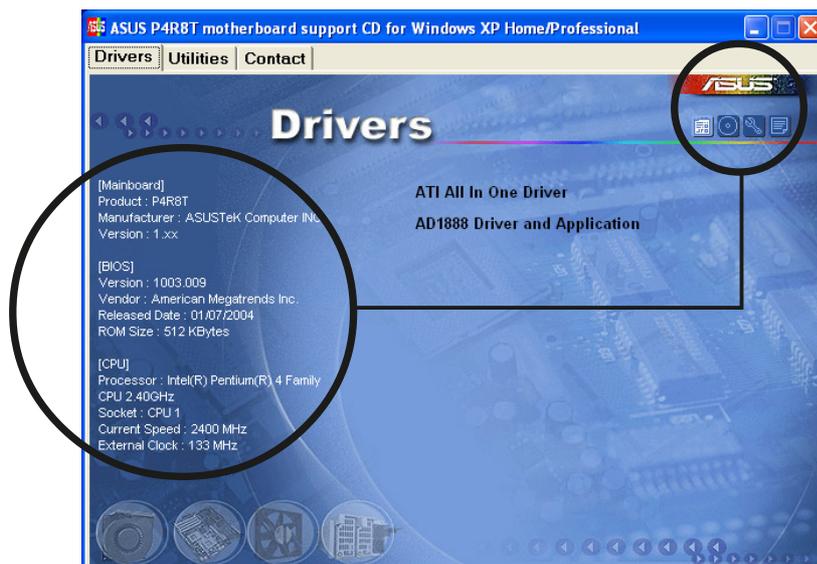
3.4   Software information

Most of the applications in the support CD have wizards that will conveniently guide you through the installation. View the online help or readme file that came with the software for more information.

3.4.1 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 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**.
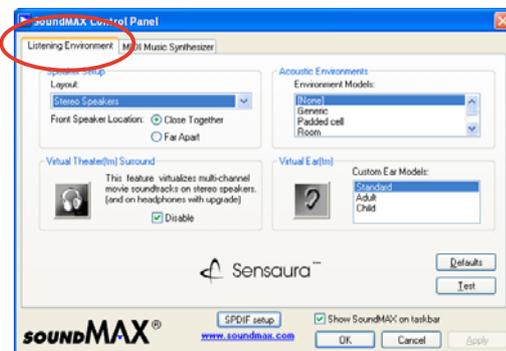
3.   The default setting is **Stereo Speakers** (2-channel). To set to a 6-channel speaker system, click the arrow under **Speaker Setup** to display a list of options.

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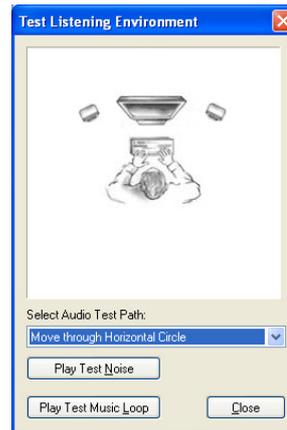
8. After selecting an option, test your setting by clicking the **Play Test Noise** button. While testing, you will see a black circle moving on the screen indicating the audio path.

   The **Play Test Noise** button becomes **Stop Playing** button. Click this button at any time to stop playing.
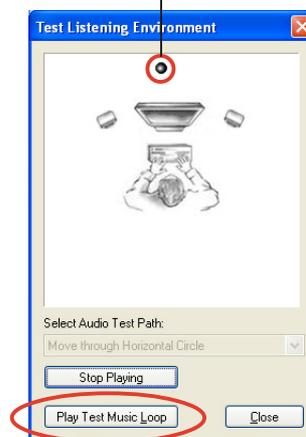
9. Click the **Close** button when done.

Audio path indicator

10. The **MIDI Music Synthesizer** tab allows you to select a setting for the MIDI.
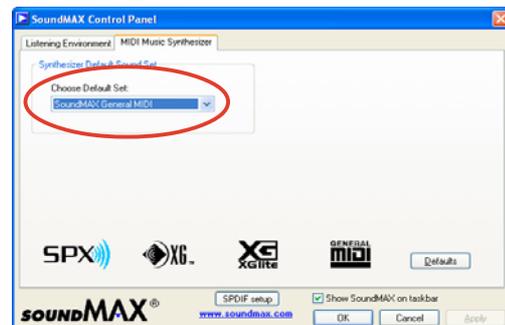
11. Click the **Synthesizer Default Set** drop-down menu to display a list of options. Choose the desired setting.

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

13. Reboot the computer.
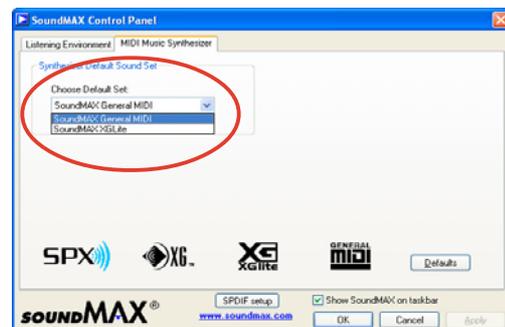
Adjusting the volume settings

1. After rebooting the system, click on the volume control icon on the Windows® taskbar to display the **Volume Control** window.
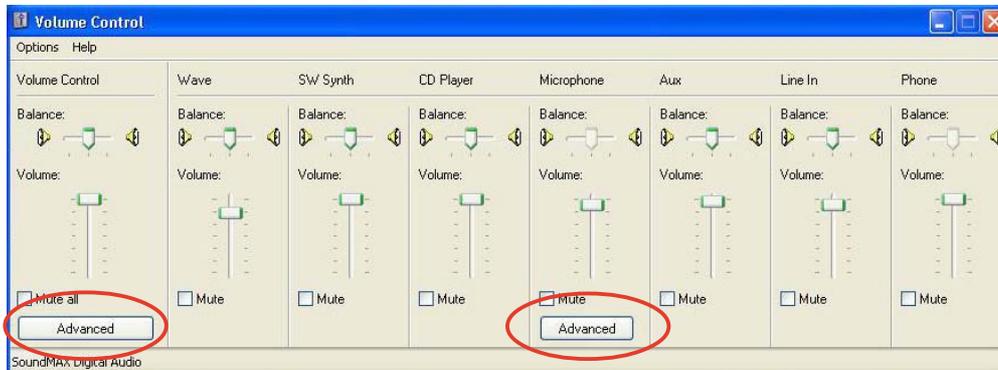
2. Click the Volume Control **Advanced** button. The **Advanced Controls for Volume Control** window appears.

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

    Click **Close**.
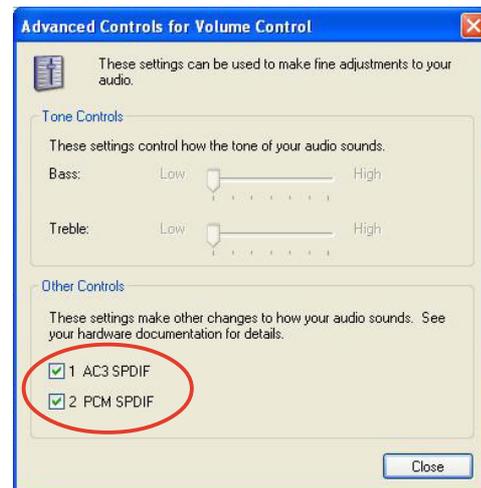
Adjusting the microphone settings

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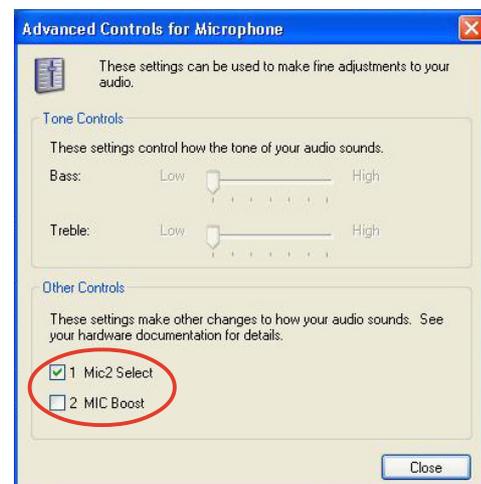
The rear panel Mic port (pink) is automatically disabled when you enable the front panel Mic port. Only one Mic port works at a time.

3.4.2 ASUS Radio Player

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

Launching the ASUS Radio Player

To launch the ASUS Radio Player:

1. Install the **ASUS Radio Application** from the **Utilities** tab of the support CD. See page 46 for details.

2. After installing the application, click **Start** > **All Programs** > **ASUS** > **ASUS Radio Player V1.0** > **ASUS Radio Player V1.0** from the Windows® desktop.

3. The ASUS Radio Player panel appears.

Close ASUS Radio
Minimize ASUS Radio
Power button
Preset station list
Station frequency
Clock
Increase the volume
Decrease the volume
Mute/Sound on button
Store button
Edit button

Tune left   Stop   Tune right
        Scan left   Scan right
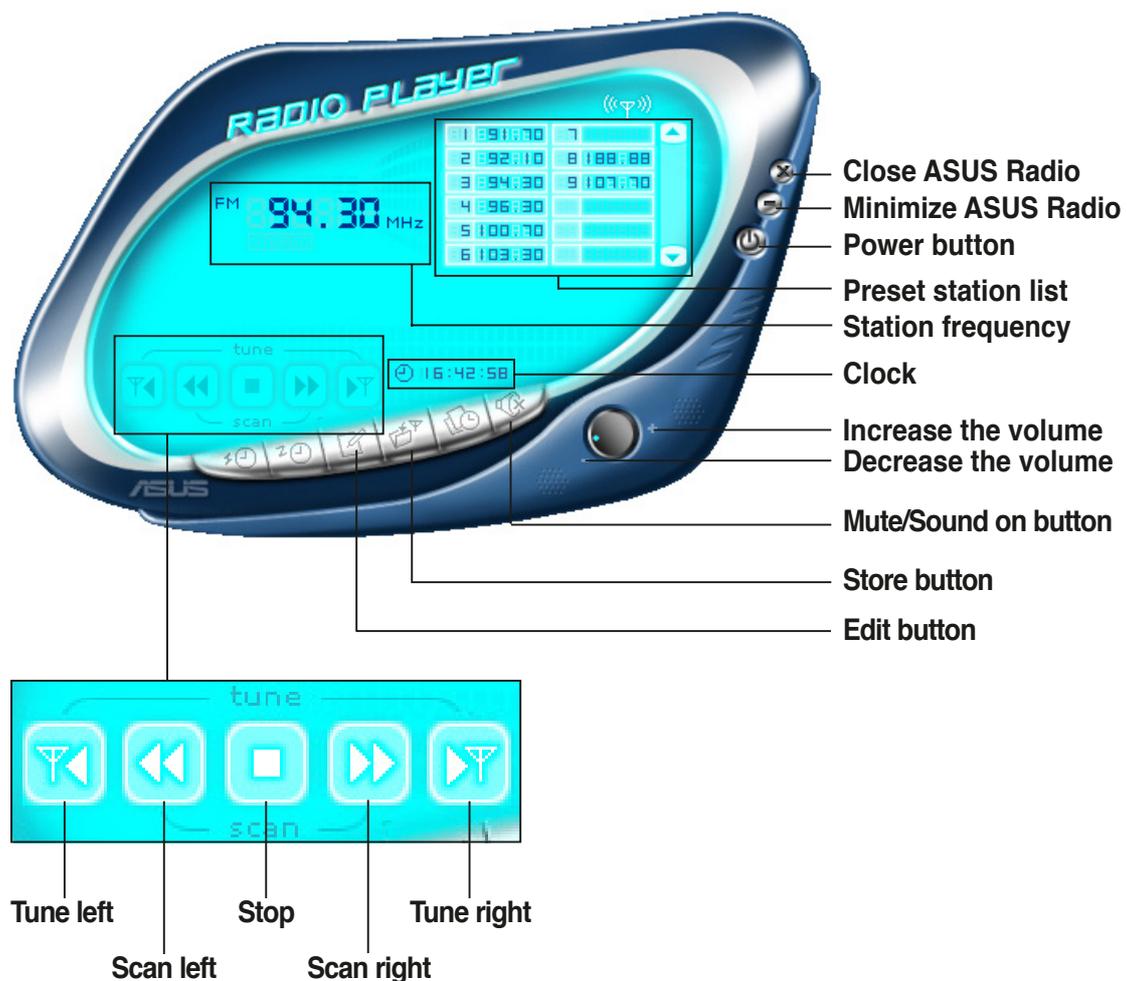
Storing a radio station

To store a radio station:

1. Use the **Scan** or **Tune** buttons to tune into a radio station you wish to store.

2. Click the **Store** button. A **Store Channel** window appears.

3. Assign a **Channel** (preset number) to the radio station using the arrow buttons.

4. Type the station name in the field, then click **OK**.

5. The stored channel is displayed in the preset station list.

Editing a stored radio

To edit a stored radio station:

1. Click the **Edit** button. An **Edit Channel** window appears.

2. Select a radio station you wish to edit, then click the **Edit** button.

3. Another **Edit Channel** window appears.

4. Edit the station frequency and name.

    Click **OK** when finished.

3.4.3   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, CD-RW, or DVD-RW).

> • Instant Music only supports CDs in audio format.
> • Instant Music does not work if you installed and enabled an add-on sound card.
> • Instant Music only supports PS/2 keyboard.
> • Set the optical drive as secondary master device.

To enable ASUS Instant Music:

1.   Connect the analog audio cable from the optical drive to the 4-pin CD connector (labeled CD) on the motherboard. See page 76 for the location of the CD connector.

> Make sure to connect the optical drive 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 5.4.1 "Instant Music Configuration" on page 98.

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.

> • The Scroll Lock LED is fixed to ON after enabling Instant Music.
> • The Caps Lock LED turns ON when you pause the CD playback.
> • 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.
> • 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. Plug the power cord of your PC to an electrical outlet.

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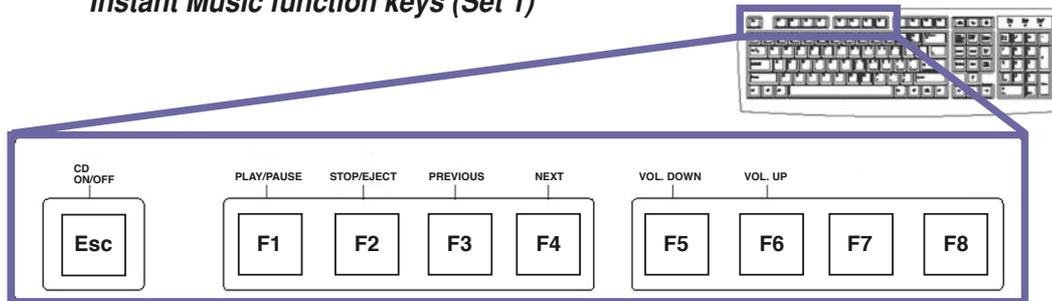
To guide you in using Instant Music, place the Instant Music label over the function keys on the keyboard. The Instant Music keyboard label comes with your motherboard package.

Instant Music function keys (Set 2)
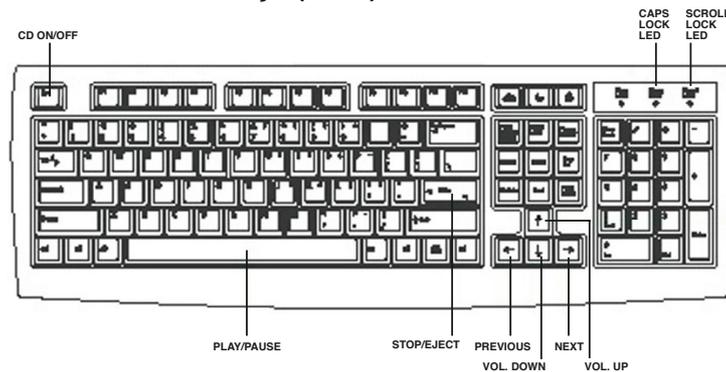
3. Connect the speakers to the Line Out (lime) port on the rear panel for audio output. You may also connect a headphone to the headphone port on the rear panel or on the optical drive front panel.

4. Insert an audio CD to the optical drive.

5. Press **Esc** to turn on Instant Music.

6. Press **F1** or the **Space Bar** to play the first track on the audio CD.

Iif there is no audio CD inside the optical drive, the drive tray ejects when you press <F1> or <Space Bar>.

7. Refer to the Instant Music keyboard label to select other tracks or control the volume.

8. Press **<F2>** or **<Enter>** *once* to stop playing the audio CD. Press **<F2>** or **<Enter>** *again* to eject the CD.

3.5   Audio DJ

Audio DJ is an application that allows you to play audio CD/DVD or tune into an FM radio station without entering the Terminator 2 operating system.

To put the system in Audio DJ mode:

1.   Connect the system power cord to an electrical outlet.

2.   Press the CD button (⊙ᴄᴅ) on the front panel to put the system in Audio DJ mode.

3.5.1 Playing an audio CD/DVD

To play an audio CD/DVD:

1.   Insert an audio CD/DVD to the optical drive.

2.   Press the PLAY/PAUSE (▶/ɪɪ) button to start playing the first track of the audio CD/DVD.

3.   Press the NEXT (▶▶ɪ) or the PREVIOUS (ɪ◀◀) button to skip to the next track or to return to the previous track.

4.   Press the STOP (■) button to stop playing the audio track.

3.5.2 Tuning into an FM radio station

To tune into an FM station:

1.   Press the **MODE** button to put Audio DJ in radio mode.

2.   Press the PLAY/PAUSE (▶/ɪɪ) button for less than 2 seconds to scan available radio stations in your location. The station scanning stops when a station is detected.

3.   Press the NEXT (▶▶ɪ) or the PREVIOUS (ɪ◀◀) button to select a preset station, if any.

3.5.3 Presetting a station

To preset a radio station:

1. Put the Audio DJ in radio mode.

2. Select the radio station you wish to preset by pressing the PLAY/PAUSE (▶/ıı) button for less than 2 seconds.

3. After selecting the radio station, press the PLAY/PAUSE (▶/ıı) button for more than 2 seconds or until the station frequency display in the LED panel blinks.

4. Use the NEXT (▶▶ı) button or the PREVIOUS (ı◀◀) button to select a preset number (1 ~ 9) for the selected station.

5. Press the PLAY/PAUSE (▶/ıı) button to assign the preset number to the radio station.

3.5.4 Adjusting the volume

Press the (◢⁺) button to increase the volume or the (◢⁻) button to decrease the volume.

> Connect a headphone or PC speakers to the rear or front panel Line Out port for audio output.

3.6 ASUS Wireless LAN adapter

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

> The 3-in-1 PCI card is available only on Commercial Deluxe models.

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

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

3.6.1 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.
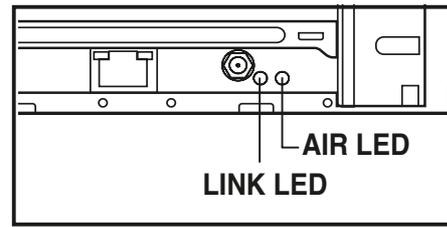
AIR	LINK	Indications
Fast Blink	ON	The wireless LAN adapter is on and is transmitting/receiving data.
ON	ON	The wireless LAN adapter is on but no data activity.
OFF	OFF	The wireless LAN adapter is off or disabled.
Blink	OFF	The wireless LAN adapter is not connected to a wireless network.

3.6.2 Antenna installation

Connect the dipolar antenna 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.

3.6.3 Installing the WLAN Card utilities and driver

To install the Wireless LAN adapter driver and the Control Center utility in your Terminator 2 system:

1. Insert the Terminator 2 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.
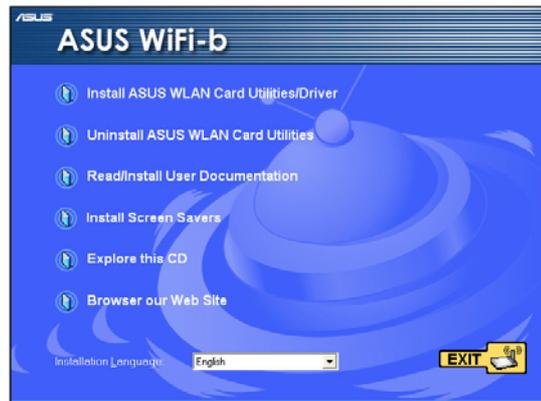
3.6.4 Other support CD options

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 user handbook, installation, and quick setup guides in PDF format.

Install Screen Savers. Click this option to install the WiFi@HOME screen savers in your Terminator 2 system.

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

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

Installation Language. This option allows you to change the installation language. Click the arrow to display available installation languages.

Click **EXIT** to close the installation window.
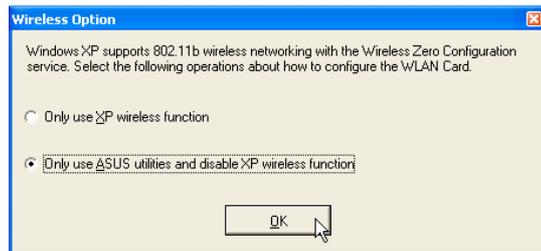
Refer to the ASUS Wireless LAN Adapter user guide in the support CD for details. You may access the user guide by clicking the **Read/Install User Documentation** from the installation window.

3.6.5 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.

Station Mode

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

Soft Access Point Mode

🗎	Wireless LAN adapter is in soft access point (Soft AP) mode.

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.

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.

Tabbed property sheets

Property window
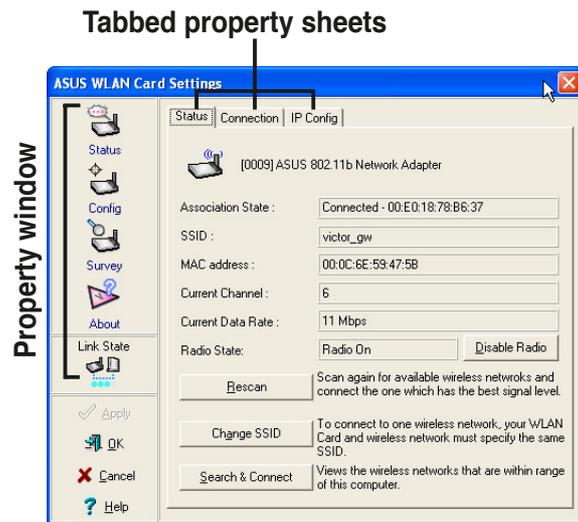
Status - Status tab

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 where the adapter 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 the adapter is currently tuned. The channel changes when the adapter scans available channels. See the Appendix for channel information.

The **Current Data Rate** field displays the data transfer rate between the 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.

ASUS Terminator 2 barebone system 61
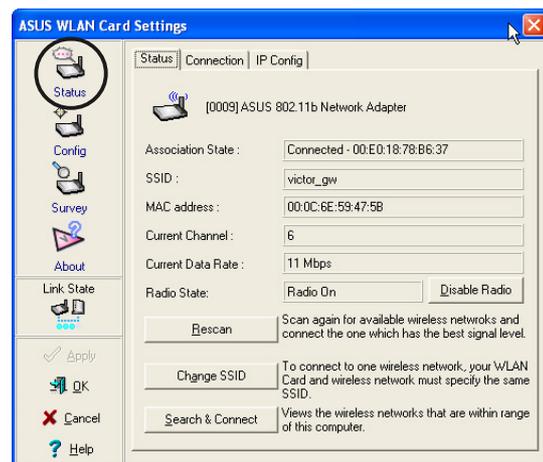
Rescan button - Click this button to allow the adapter to scan available wireless networks and to connect to the network with the best signal quality.

Change SSID button - Click this button to change the SSID. Refer to the "Config-Basic tab" section on the next page for details.

Search and Connect button - Click this button to view all wireless networks within the adapter range. Refer to the "Site survey" section on page 67 for details.

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.

> ✎ On Soft AP mode, only the Throughput and Frame Error fields appear.
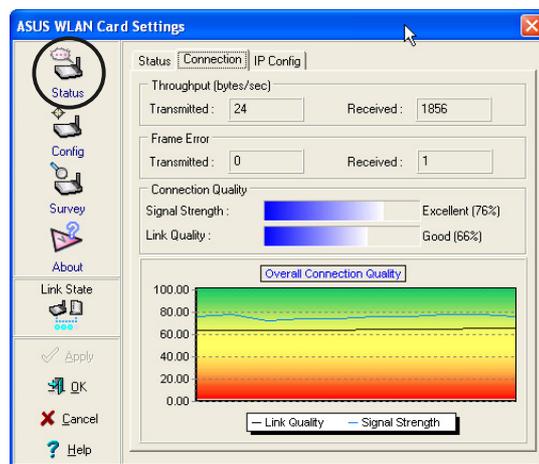
Status - IP Config tab

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.
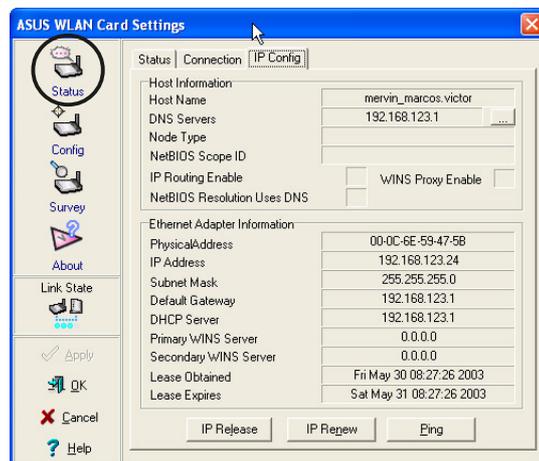
IP Release. Releases the DHCP IP address for the wireless LAN adapter.

IP Renew. Renews the DHCP IP address for the wireless LAN adapter.

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

> ✎ You may only use the IP Release and IP Renew buttons if the adapter is configured by a DHCP server.

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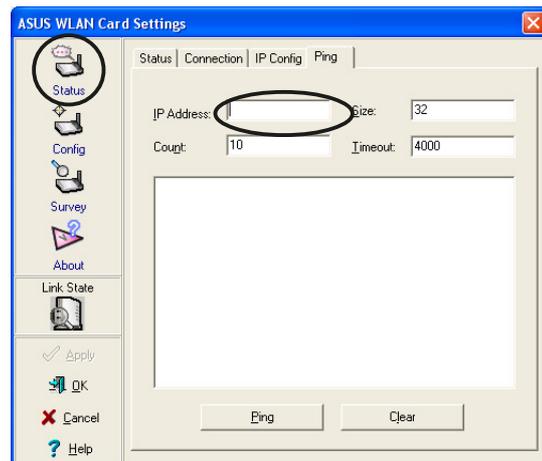
During the ping session, the **Ping** button toggles into a **Stop** button. Click **Stop** anytime to cancel the ping session.

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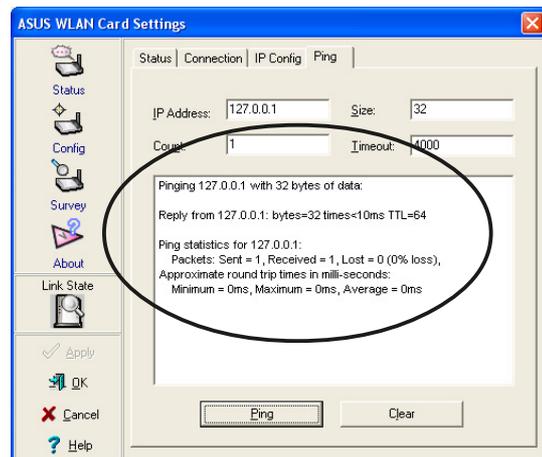
Click the **Clear** button to clear the ping session field.

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 wireless clients within the adapter operating range.
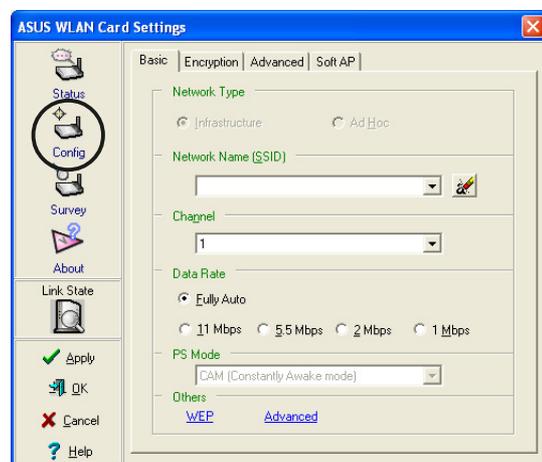
Network Name - Displays the network SSID. The network SSID is a string use to identify a wireless LAN. You may set the SSID to a null string to allow your station to connect to any available access point.

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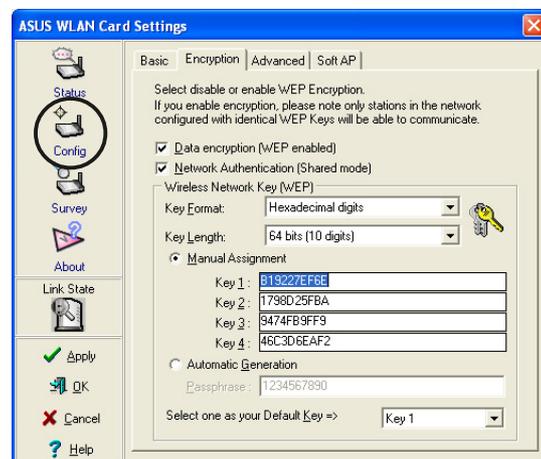
All wireless clients in a network must have identical WEP keys to communicate with each other or with an access point.

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 tab

The **Advanced** tab displays the wireless LAN adapter advanced settings. It is recommended that you keep the default settings for optimum performance.
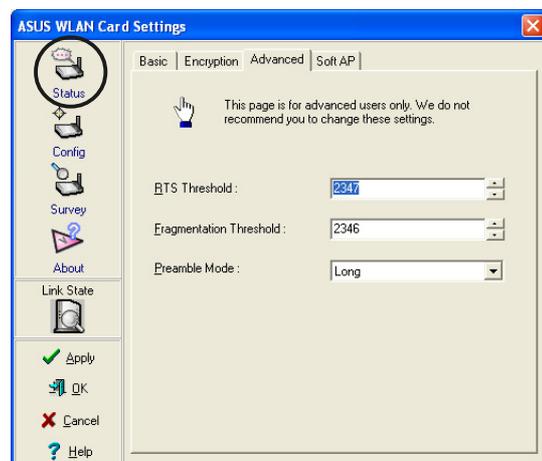
Config - Soft AP tab

The **Soft AP** tab displays the Internet Connection Sharing (ICS) and bridge features of the wireless LAN adapter.

> The Soft AP tab appears only on systems running on Windows® XP.

SoftAP/STA Mode. This field allows you to select the wireless LAN adapter mode. Select Station Mode if you wish to connect to an access point or to other wireless devices (Ad-hoc mode). Select Soft AP Mode to configure your computer as a soft access point. Fields in the network diagram are enabled when Soft AP mode is selected.

Enable ICS. This option allows you to share a single Internet connection with other computers in a wireless network. When this option is disabled, the available Internet connection may be bridged with the adapter.

> Refer to user guide in the support CD for detailed information on ICS and network bridge features.

Enable Firewall. This option is active when ICS is enabled. Check this item to activate the firewall and prevent unauthorized access to your home or small office network.

Available Network Connections. This field displays all available network connections in the host computer. To enable Internet Connection Sharing (ICS), drag the network connection to the Internet box, then click **Apply**.
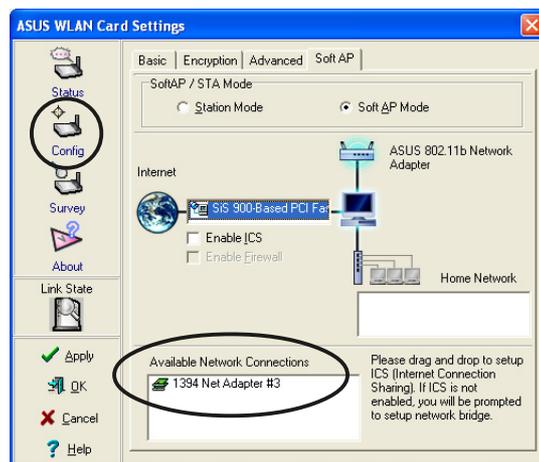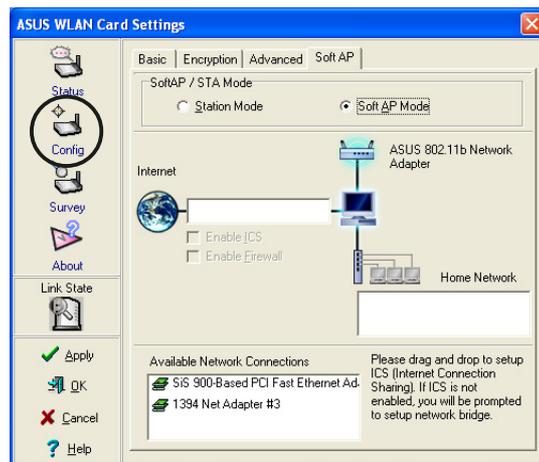
Site Survey

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.
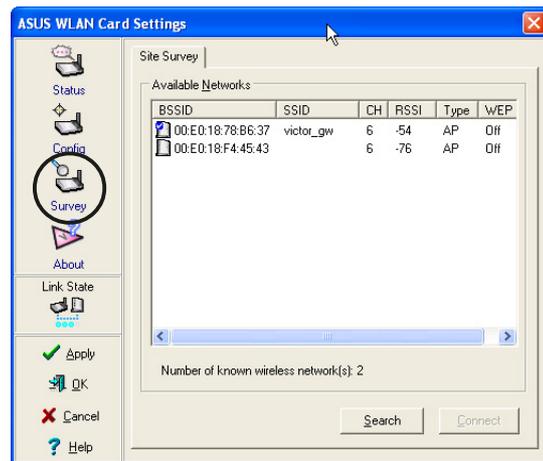
About

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

Link State

The **Link State** displays the current connection status of the wireless LAN adapter to the AP or to other Wi-Fi devices. An icon represents the Link State for easy identification. Refer to the table below for icon indications.
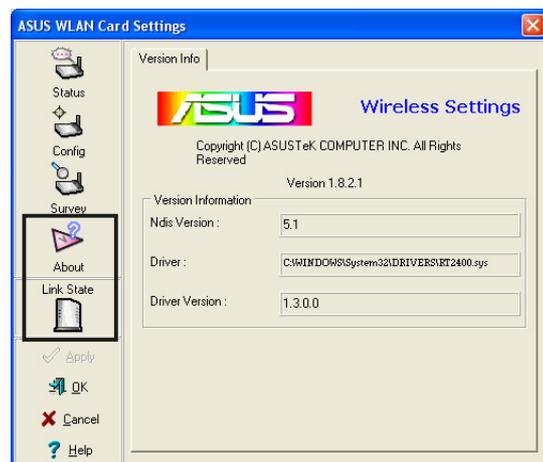
Table of Icon Indications

	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 the adapter configuration and settings.

OK. Click to close the Wireless Settings utility window.

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

Help. Click to display the help menu.
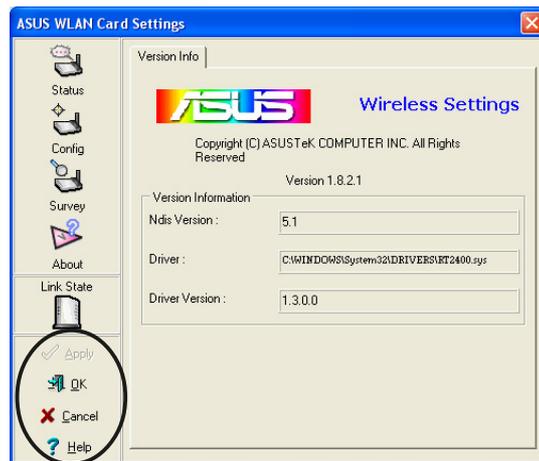
Help Menu

The Control Center utility comes with 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 the utility you wish to view the help files.

Change Mode

The Change Mode menu allows you to set the wireless LAN adapter in a Station (STA) or soft Access Point (AP) mode.

Refer to user guide in the support CD before setting the adapter in soft AP mode.

Preferences

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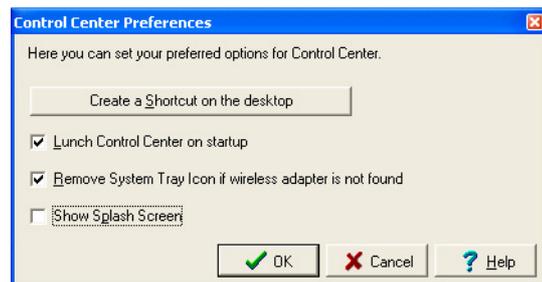
About Control Center

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

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

Chapter 4

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

Motherboard info

ASUS Terminator 2 barebone system

4.1   Introduction

The ASUS P4R8T motherboard comes already installed in the ASUS Terminator 2 system. This chapter provides technical information about the motherboard for future upgrades or system reconfiguration.

4.2   Motherboard layout

24.89cm (9.8in)

20.06cm (7.9in)

IOC_MB

PS/2
T:Mouse
B:Keyboard

VGA1

PARALLEL PORT

Line Out

Line In

Mic In

AUX

FP_AUDIO

AD1888

CD

MDC

SPDIF OUT

USB2.0
T: USB1
B: USB2

Top:
RJ-45

RTL
8201BL

SB_PWR

BUZZER

Socket 478

CHA_FAN

CPU_FAN

ATX12V

ATI
RS300

VIA
VT6202

AGP1

PCI Slot 1

BAT

USB34

P4R8T

DDR DIMM_A1 (64/72-bit, 184-pin module)

DDR DIMM_B1 (64/72-bit, 184-pin module)

ATX Power Connector

Flash
BIOS

Super
I/O

CIR_CON

FLOPPY

J1

LCD_PANEL

SEC_IDE

PRI_IDE

ATI
IXP200

CLRTC

USB56

PANEL

4.3   Jumper

Clear RTC RAM (CLRTC)

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.

CLRTC

1 2   2 3

Normal   Clear CMOS
(Default)

P4R8T Clear RTC RAM
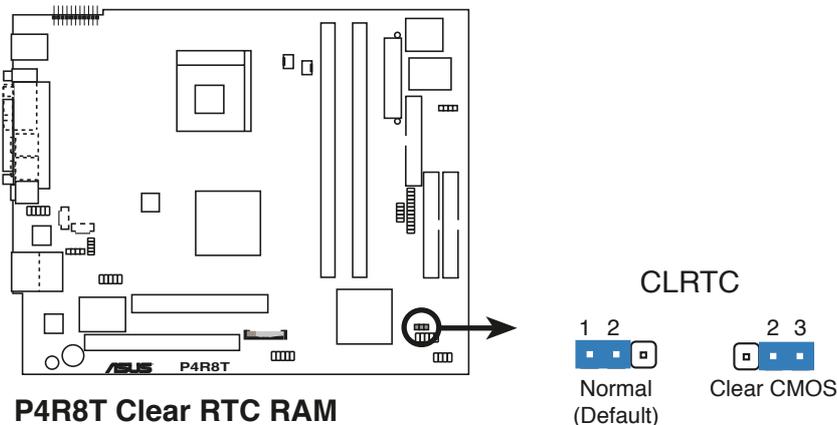
Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure.

4.4 Internal 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 USB34)

The USB34 header is connected to the USB_2 connector in the front panel I/O daughterboard.
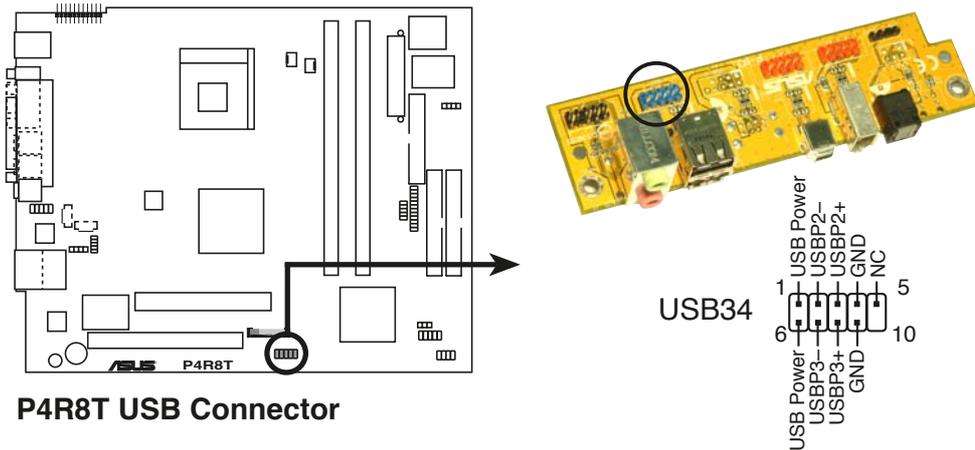
P4R8T USB Connector

2. 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.
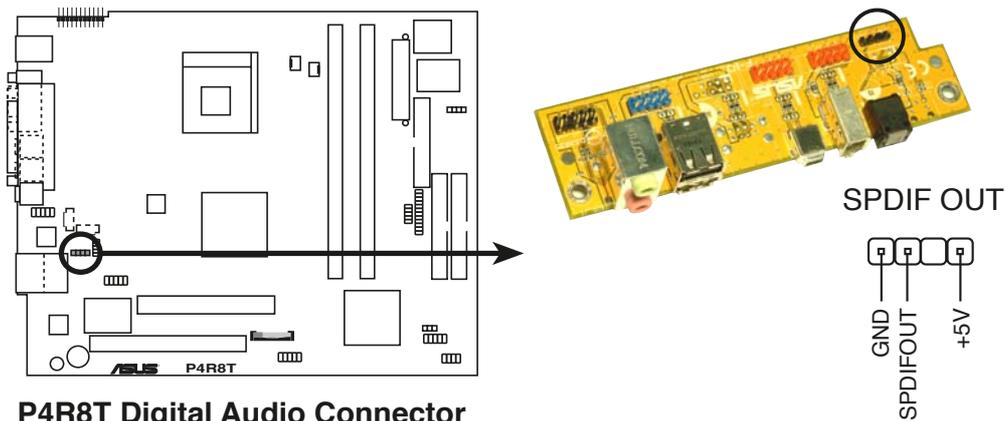
P4R8T Digital Audio Connector

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

This connector supports the front panel audio I/O ports. Connect this interface to the J1 connector in the front panel I/O daughterboard.

P4P8T Front Panel Audio Connector

FP_AUDIO

Line out_L
NC
Line out_R
MICPWR
MIC2

BLINE_OUT_L
BLINE_OUT_R
+5VA
AGND
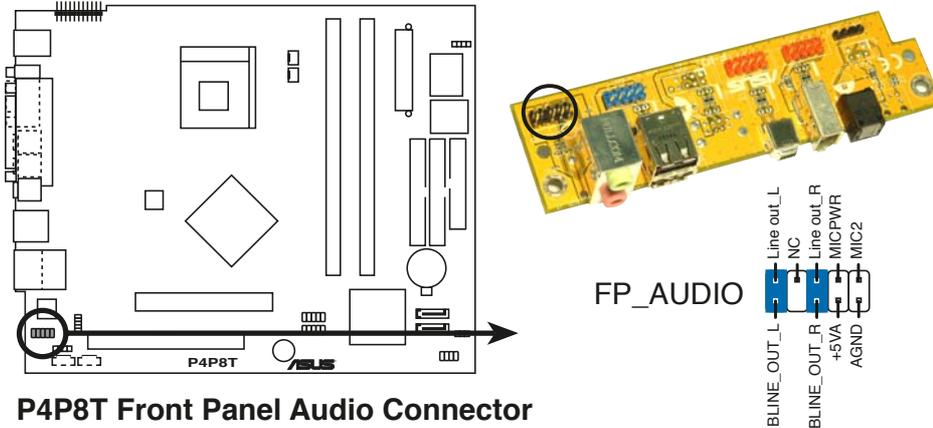
4. Optional modem connector (10-1 pin MDC)

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

P4R8T MDC Connector

MDC

1
GND — AC_SYNC
+3VSB — AC_SDIN1
AC_RST# — GND
AC_SDOUT — MDC_BITCLK
PHONE
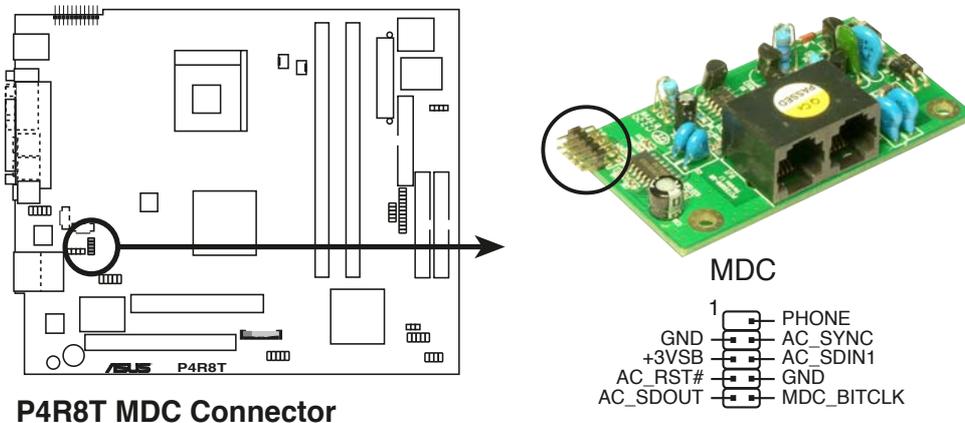
5. IDE connectors (40-1 pin PRI_IDE, SEC_IDE)

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 secondary master device (optical drive) and the black connector to the UltraATA100 primary master device (hard disk drive). Configure the hard disk drive and the optical drive as primary/secondary master device by adjusting their jumper settings. Refer to their respective documentation for details.

> 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.

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

SEC_IDE   PRI_IDE

PIN 1

P4R8T IDE Connectors
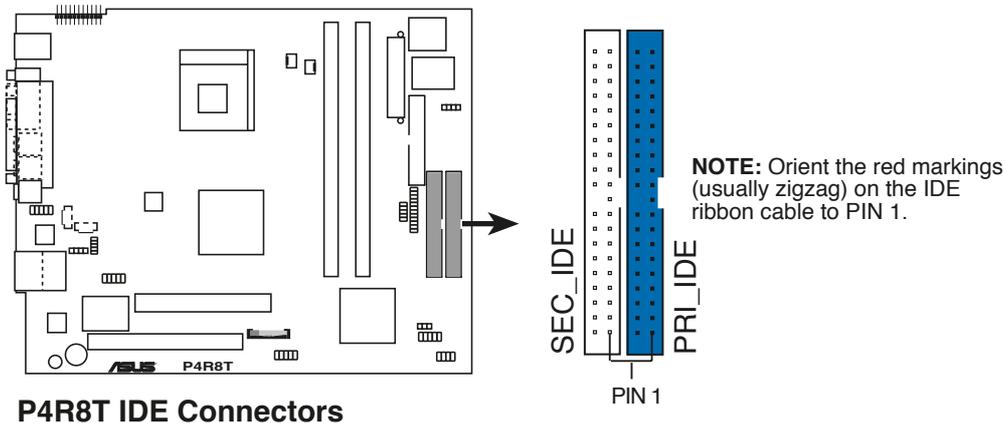
6. Internal audio connectors (4-pin AUX, CD)

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

Left Audio Channel
Ground
Right Audio Channel

AUX(White)

Left Audio Channel
Ground
Right Audio Channel

CD(Black)

P4R8T Internal Audio Connectors
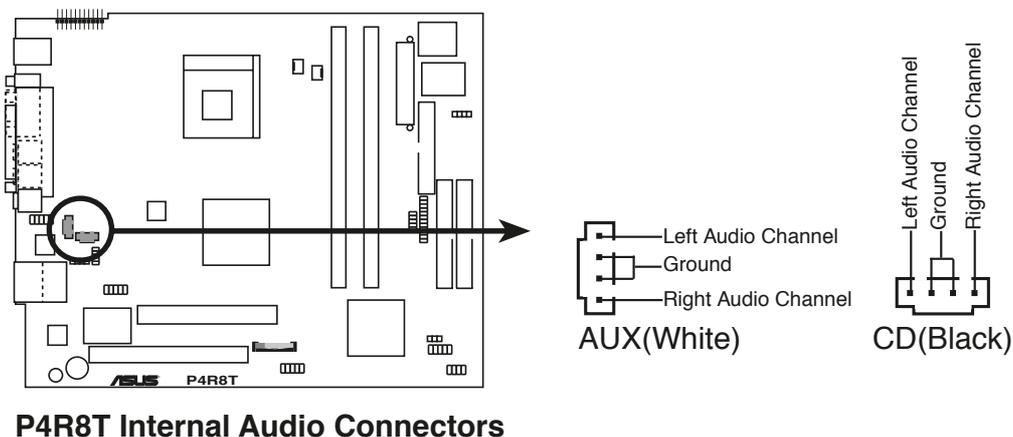
7. Floppy disk drive connector (34-1 pin FLOPPY)

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).

FLOPPY

PIN 1

NOTE: Orient the red markings on the floppy ribbon cable to PIN 1.
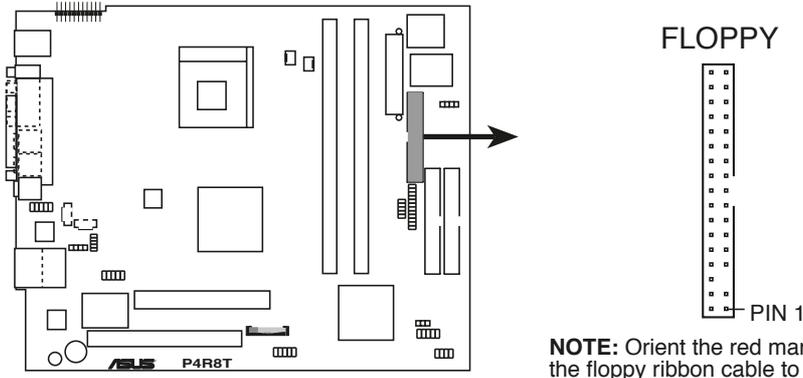
P4R8T Floppy Disk Drive Connector

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 39 for details on the power supply unit.

ATXPWR

+12.0Volts	+5.0 Volts
+5V Standby	+5.0 Volts
Power Good	-5.0 Volts
Ground	Ground
+5.0 Volts	Ground
Ground	Ground
+5.0 Volts	Power Supply On
Ground	Ground
+3.3 Volts	-12.0Volts
+3.3 Volts	+3.3Volts

ATX12V

+12V DC   COM

+12V DC   COM
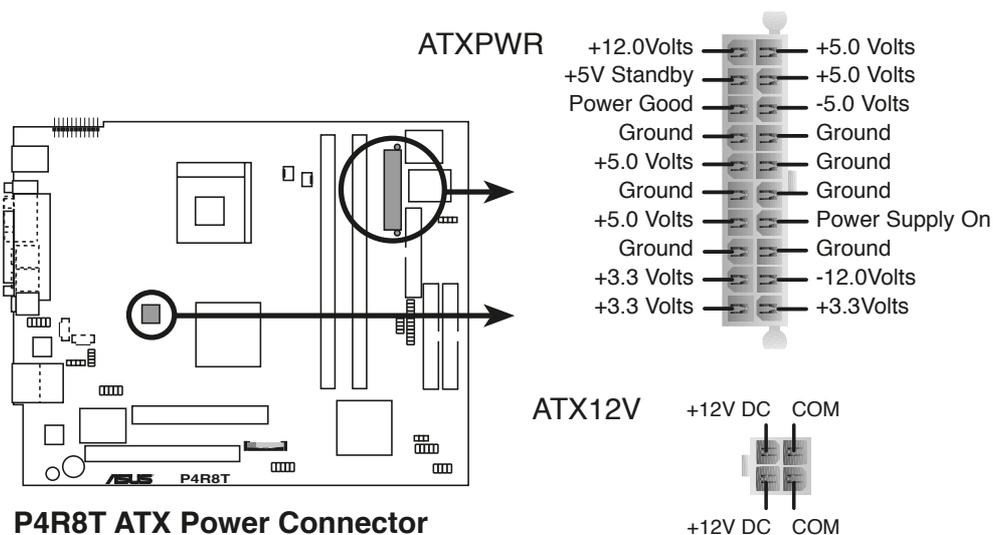
P4R8T ATX Power Connector

9. 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.

CHA_FAN

GND
+12V
Rotation

CPU_FAN

Rotation
+12V
GND
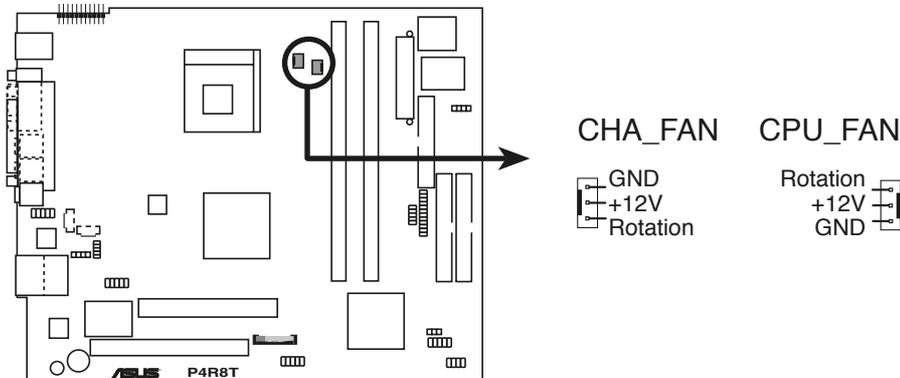
P4R8T 12-Volt Cooling Fan Power

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!

10. I/O extension module (22-pin IOC_MB)

This connector is for the CGAEX extension module. The CGAEX extension module supports the rear panel GAME/MIDI and serial ports.

COM1   GAME

ASUS
CGAEX
IOC_DC
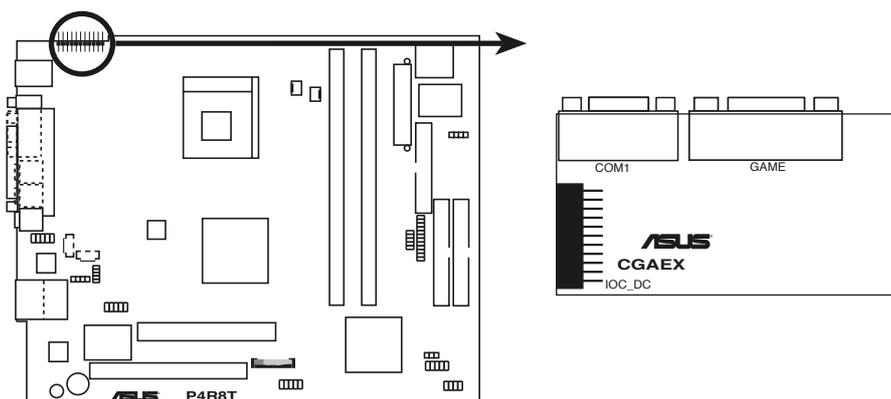
P4R8T IOC_MB Connector

11. USB card reader connector (10-1 pin USB56)

This connector supports the storage card reader. Connect one end of the storage card reader cable to pins 1-5 of this connector, as shown.

P4R8T USB Card Reader Connector
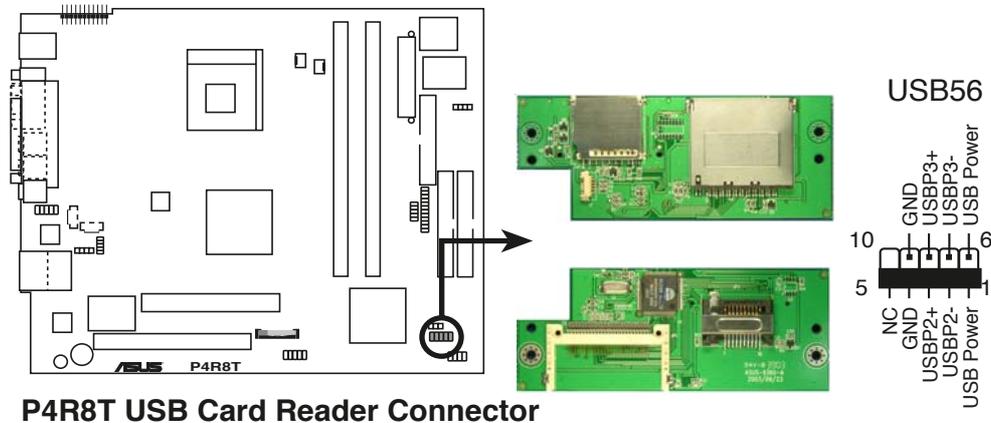
12. System panel connector (8-1 pin PANEL)

This connector accommodates several system front panel functions.

P4R8T System Panel Connector

* Requires an ATX power supply.
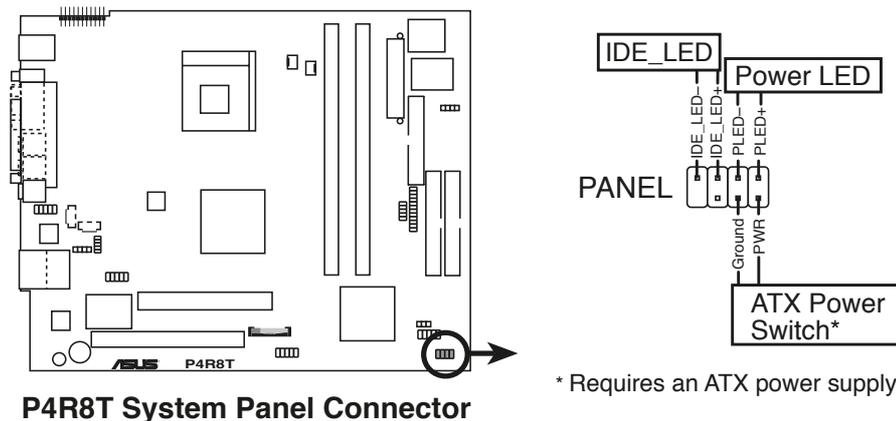
- **Power LED Lead**

  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 5

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

BIOS setup

5.1   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.

5.1.1   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.

    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.

5.1.2 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 /oBIOSOLD.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 /oBIOSOLD.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.

5.1.3 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) to download the latest BIOS file for your motherboard. Save the BIOS file to the bootable floppy disk you created earlier.

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 /ip4r8t.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 /ip4r8t.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.

5.1.4 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) 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 "**P4R8T.ROM not found!**"

4. Insert the floppy disk that contains the BIOS file. If the **P4R8T.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 "p4r8t.rom". Completed.
Start flashing...
Flashed successfully. Rebooting.
```

5.1.5 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** (P4R8T.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 "5.1.1 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 (**P4R8T.ROM**). If the BIOS file that you downloaded from the ASUS website has a different filename (e.g. **P4R8T11.ROM**), rename it to **P4R8T.ROM**. The BIOS update process continues when the **P4R8T.ROM** is found.

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

To recover the BIOS from the support CD:

> Make sure the optical drive is set as secondary master device when recovering the BIOS using 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) to download the latest BIOS file.

5.1.6   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.   Place the support CD in the optical drive. The **Drivers** menu appears.

2.   Click the **Utilities** tab, then click **Install ASUS Update VX.XX.XX**. See page 46 for the **Utilities** screen menu.

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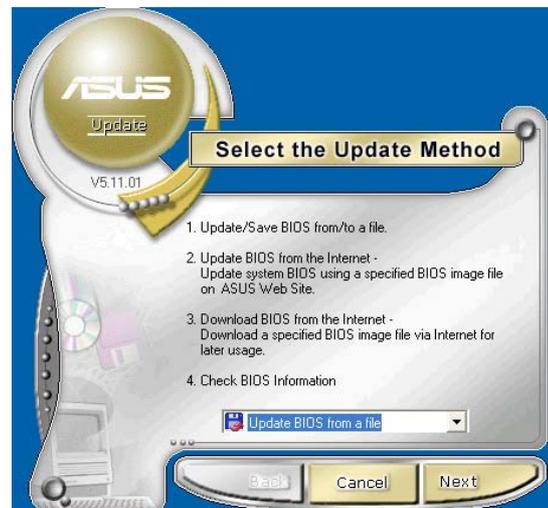
3.   If you selected updating/ downloading from the Internet, select the ASUS FTP site nearest you to avoid network traffic, or choose **Auto Select**. Click **Next**.
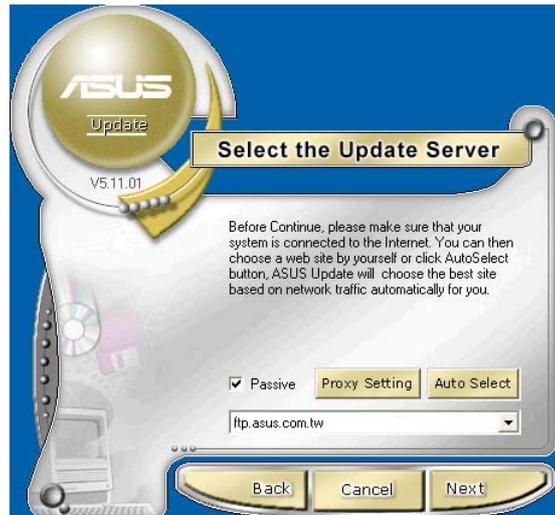
4.   From the FTP site, select the BIOS version that you wish to download. Click **Next**.

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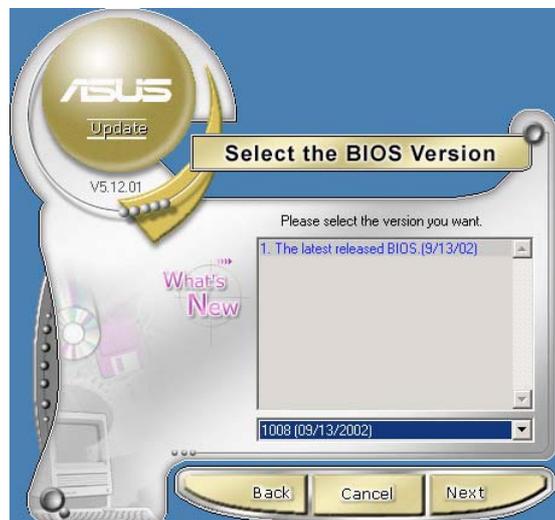
If you selected the option to update the BIOS from a file, a window pops up prompting you to locate the file. Select the file, click **Save**, then follow the screen instructions to complete the update process.

5.2   BIOS Setup program

This motherboard supports a programmable Firmware Hub (FWH) that you can update using the provided utility described in section "5.1 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.

5.2.1 BIOS menu screen

Menu items   **Menu bar**   **Configuration fields**   **General help**

```
                          BIOS SETUP UTILITY
Main

    System Time                [11:10:19]            Use [ENTER], [TAB] or
    System Date                [Thu, 09/27/2003]     [SHIFT-TAB] to select a
    Legacy Diskette A          [1.44M, 3.5 in.]      field.

   ▶ Primary IDE Master        [ST321122A]           Use [+] or [-] to
   ▶ Primary IDE Slave         [ASUS CDS520/]        configure system time.
   ▶ Secondary IDE Master      [Not Detected]
   ▶ Secondary IDE Slave       [Not Detected]

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

         vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```

Sub-menu items   **Navigation keys**

5.2.2 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.

5.2.3 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.

5.2.4 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

5.2.5 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>.

5.2.6 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 "5.2.7 Pop-up window."

5.2.7 Pop-up window

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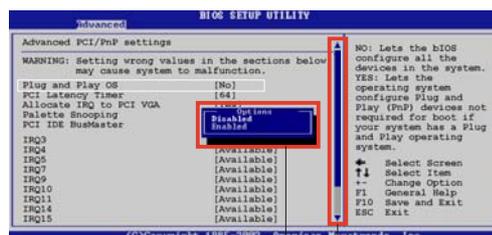
5.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen.

Pop-up window

Scroll bar

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

5.2.9 General help

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

5.3   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 5.2.1 BIOS menu screen" for information on the menu screen items and how to navigate through them.

```
                          BIOS SETUP UTILITY
   Main

   System Time                      [11:10:19]         Use [ENTER], [TAB] or
   System Date                      [Thu, 09/27/2003]  [SHIFT-TAB] to select a
   Legacy Diskette A                [1.44M, 3.5 in.]   field.

►    Primary IDE Master             [ST321122A]        Use [+] or [-] to
►    Primary IDE Slave              [ASUS CDS520/]     configure system time.
►    Secondary IDE Master           [Not Detected]
►    Secondary IDE Slave            [Not Detected]

►    System Information

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

            vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```

5.3.1 System Time [xx:xx:xxxx]

This item allows you to set the system time.

5.3.2 System Date [Day xx/xx/xxxx]

This item allows you to set the system date.

5.3.3 Legacy Diskette A [1.44M, 3.5 in.]

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

5.3.4 Primary and Secondary IDE Master/Slave

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.

```
                         BIOS SETUP UTILITY
  Main

  Primary IDE Master                               Select the type of
                                                   device connected to the
  Device      : Hard Disk                          system.
  Vendor      : Maxtor 6Y080L0
  Size        : 81.9GB
  LBA Mode    : Supported
  Block Mode  : 16 Sectors
  PIO Mode    : 4
  Async DMA   : MultiWord DMA-2
  Ultra DMA   : Ultra DMA-6
  SMART Monitoring: Supported
                                                   ↔     Select Screen
  Type                          [Auto]             ↑↓    Select Item
  LBA/Large Mode                [Auto]             +-    Change Option
  Block (Multi-sector Transfer) [Auto]             F1    General Help
  PIO Mode                      [Auto]             F10   Save and Exit
  Smart Monitoring              [Auto]             ESC   Exit
  32Bit Data Transfer           [Disabled]

          vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```

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]

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]

5.3.5 System Information

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

```
                        BIOS SETUP UTILITY
    Main

    AMI BIOS
    Version    : 08.00.09
    Build Date : 11/17/03

    Processor
    Type     : Intel(R) Pentium(R) 4 Family CPU 2.40G
    Speed    : 2400MHz
    Count    : 1

    System Memory
    Size     : 256MB
                                        ↔    Select Screen
                                        ↑↓   Select Item
                                        +-   Change Option
                                        F1   General Help
                                        F10  Save and Exit
                                        ESC  Exit


        vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
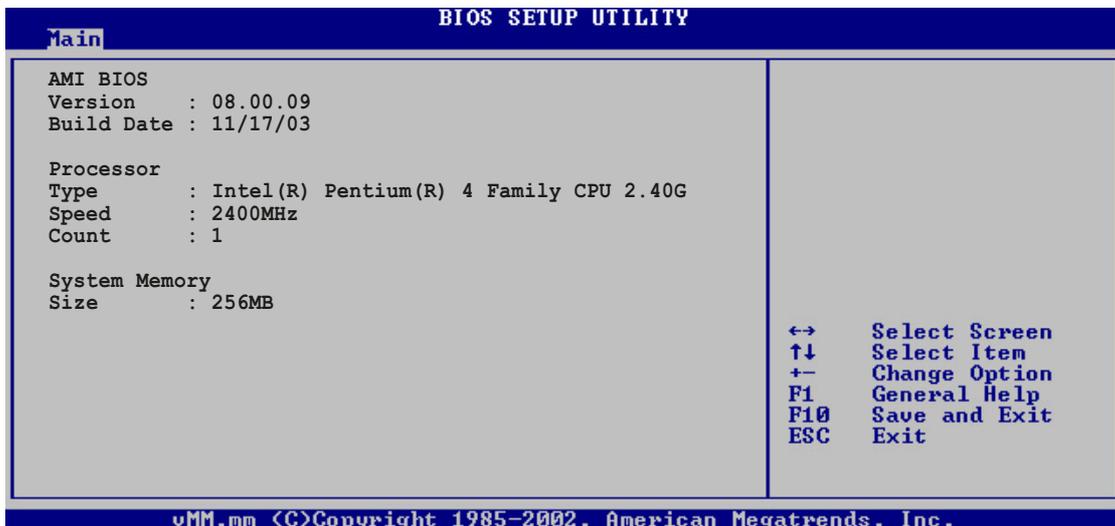
AMIBIOS
This item displays the auto-detected BIOS information.

Processor
This item displays the auto-detected CPU specification.

System Memory
This item displays the auto-detected system memory.

5.4 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.

```
                        BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

  ▶ Instant Music Configuration                     Configure CPU.

  ▶ CPU Configuration
  ▶ Chipset
  ▶ Onboard Devices Configuration
  ▶ PCI PnP



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


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```

5.4.1 Instant Music Configuration

```
                          BIOS SETUP UTILITY
    Advanced
┌────────────────────────────────────────────┬──────────────────────────┐
│ Instant Music Option                        │  Disable/Enable Instant  │
│                                             │  Music feature.          │
│ Instant Music                  [Disabled]   │                          │
│                                             │                          │
│                                             │                          │
│                                             │                          │
│                                             │                          │
│                                             │                          │
│                                             │  ←→    Select Screen     │
│                                             │  ↑↓    Select Item       │
│                                             │  +-    Change Option     │
│                                             │  F1    General Help      │
│                                             │  F10   Save and Exit     │
│                                             │  ESC   Exit              │
│                                             │                          │
└────────────────────────────────────────────┴──────────────────────────┘
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```

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 53 for details on the
>   Instant Music feature.
>
> • The following item appears only if you enable the Instant Music
>   option.

Radio Region [Europe]

This item allows you to select the radio region for the radio module.
Configuration options: [USA] [Europe] [Japan] [East Europe].

> This item appears only on Commercial Deluxe and Deluxe models.

5.4.2   CPU Configuration

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

```
                        BIOS SETUP UTILITY
        Advanced

   Configure advanced CPU settings

   Manufacturer  : Intel(R)
   Brand String  : Intel(R)  Pentium(R)  4 Family CPU 2.40G
   Frequency     : 2400MHz
   FSB Speed     : 533MHz

   Cache L1      : 8 KB
   Cache L2      : 512 KB
   Cache L3      : 0 KB

   Ratio Status  : Locked             ←→   Select Screen
   Ratio Actual Value   : 18          ↑↓   Select Item
   CPU Internal Thermal Control      [Auto]   +-   Change Option
                                             F1   General Help
                                             F10  Save and Exit
                                             ESC  Exit

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```

CPU Internal Thermal Control [Auto]

This item allows you to activate the CPU Internal Thermal control feature. Configuration options: [Auto] [Disabled]

5.4.3   Chipset

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

```
                        BIOS SETUP UTILITY
        Advanced

   ▶ NorthBridge Configuration         Options for NB.
   ▶ SouthBridge Configuration



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

       vMM.mm (C)Copyright 1985-2002, American Megatrends, Inc.
```
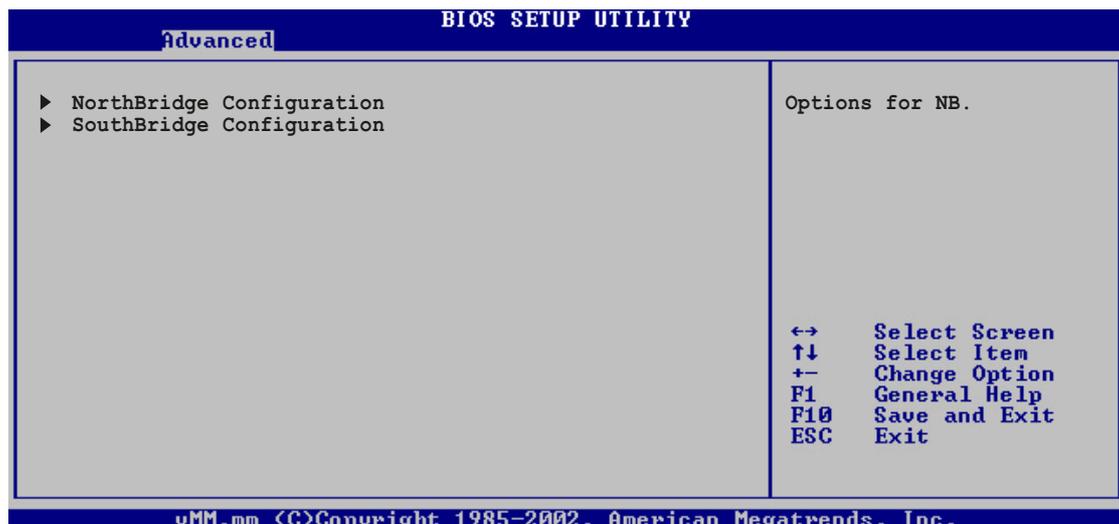
NorthBridge Configuration

```
                              BIOS SETUP UTILITY
        Advanced

  Init. Graphic Adapter Priority      [PCI/AGP]        Select which graphics
                                                       controller to use as the
  DRAM CAS Select                     [Slow]           primary boot device.
  AGP Aperture Size                   [64MB]
  UMA Frame Buffer Size               [64MB]




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

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```

Init. Graphic Adapter Priority [PCI/AGP]

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

DRAM CAS Select [Slow]

Allows you to select DRAM CAS speed.
Configuration options: [Slow] [Fast]

AGP Aperture Size [64MB]

Allows you to select the size of mapped memory for AGP graphic data.
Configuration options: [32MB] [64MB] [128MB] [256MB] [512MB]

UMA Frame Buffer Size [64MB]

Allows you to select the size of the onboard graphics controller memory
use. Configuration options: [8MB] [16MB] [32MB] [64MB] [128MB] [None]

SouthBridge Configuration

```
                          BIOS SETUP UTILITY
    Advanced

    AC97 Audio Device            [Auto]
    MC97 Modem Device            [Auto]
    Onboard LAN Device           [Enabled]
    USB 1.1 OHCI Controllers     [Enabled]
    USB 2.0 EHCI Controller      [Enabled]

    Legacy USB Support           [Auto]


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


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```
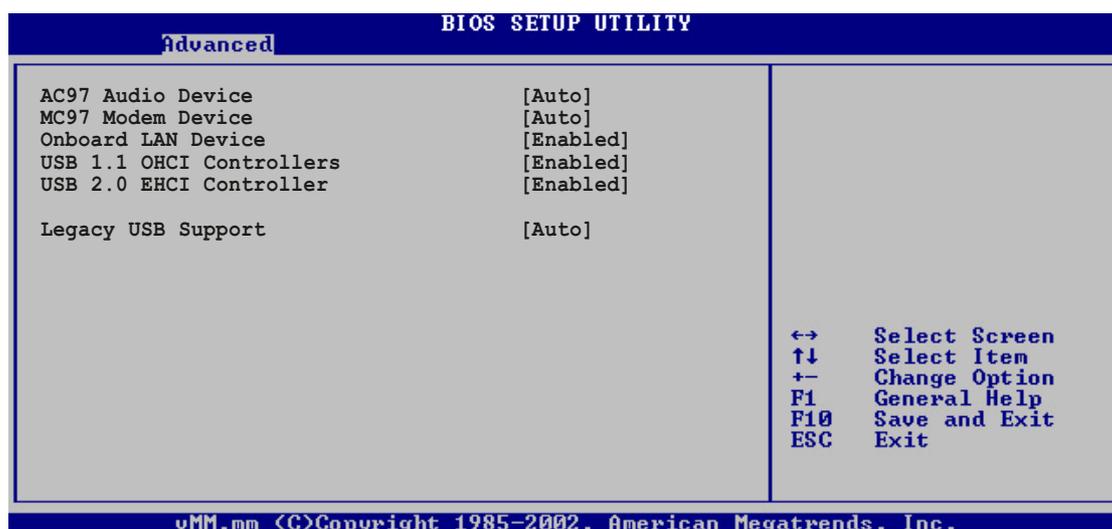
AC97 Audio Device [Auto]

[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]

MC97 Audio Device [Auto]

[Auto] allows the BIOS to detect whether you are using any modem device. If a modem is detected, the onboard modem controller is enabled; if no modem is detected, the controller is disabled.
Configuration options: [Auto] [Disabled]

OnBoard LAN Device [Enabled]

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

USB 1.1 OHCI Controllers [Enabled]

Allows you to enable or disable the USB 1.1 OHCI controller.
Configuration options: [Disabled] [Enabled]

USB 2.0 EHCI Controller [Enabled]

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

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: [Disabled] [Enabled] [Auto]

5.4.4 Onboard Devices Configuration

```
                        BIOS SETUP UTILITY
    Advanced

 Configure ITE8712 Super IO Chipset          Allows BIOS to select
                                             Serial Port1 Base
 Serial Port1 Address              [3F8/IRQ4]  Addresses.
 Parallel Port Address             [378]
 Parallel Port Mode                [EPP+ECP]
    EPP Version                    [1.9]
    ECP Mode DMA Channel           [DMA3]
   Parallel Port IRQ               [IRQ7]
 Onboard Game Port                 [Enabled]
 Onboard MIDI Port                 [Disabled]

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


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```

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: [Normal] [EPP] [ECP] [EPP+ECP]

EPP Version [1.9]

Allows selection of the Parallel Port EPP version. This item appears
only when the **Parallel Port Mode** is set to **EPP**.
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] [300/330]

5.4.5 PCI PnP

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

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

```
                        BIOS SETUP UTILITY
   Advanced

   Advanced PCI/PnP settings                        ▲   NO: Lets the BIOS
                                                        configure all the
   WARNING: Setting wrong values in the sections below  devices in the system.
            may cause system to malfunction.            YES: Lets the
                                                        operating system
   Plug and Play OS               [No]                  configure Plug and
   PCI Latency Timer              [64]                  Play (PnP) devices not
   Allocate IRQ to PCI VGA        [Yes]                 required for boot if
   Palette Snooping               [Disabled]            your system has a Plug
   PCI IDE BusMaster              [Enabled]             and Play operating
                                                        system.
   IRQ3                           [Available]
   IRQ4                           [Available]        ↔      Select Screen
   IRQ5                           [Available]        ↑↓     Select Item
   IRQ7                           [Available]        +-     Change Option
   IRQ9                           [Available]        F1     General Help
   IRQ10                          [Available]        F10    Save and Exit
   IRQ11                          [Available]        ESC    Exit
   IRQ14                          [Available]
   IRQ15                          [Available]        ▼

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```

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 pallete 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]

5.5 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.

```
                          BIOS SETUP UTILITY
   Main    Advanced    Power    Boot    Exit

   Suspend Mode                 [S1&S3]          Select the ACPI state
   Repost Video on S3 Resume    [Yes]            used for System Suspend.
   ACPI 2.0 Support             [No]
   ACPI APIC Support            [Enabled]

 ▶ APM Configuration
 ▶ Hardware Monitor




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

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```
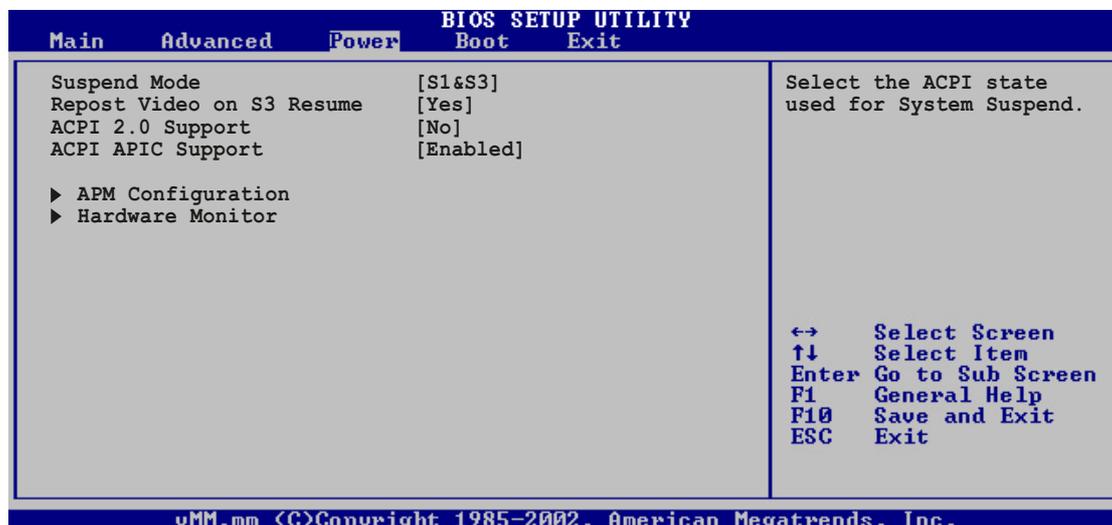
5.5.1 Suspend Mode [S1&S3]

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

5.5.2 Repost Video on S3 Resume [Yes]

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

5.5.3 ACPI 2.0 Support [No]

Allows you to add more tables for ACPI 2.0 specifications.
Configuration options: [No] [Yes]

5.5.4 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]

5.5.5 APM Configuration

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit
 ┌──────────────────────────────────────────────┬───────────────────────────┐
 │ Restore on AC Power Loss    [Power Off]       │ [Power OFF]: the system   │
 │ Power on with PS/2 Keyboard [Disabled]        │ goes into off state after │
 │ Power on with PS/2 Mouse    [Disabled]        │ an AC power loss.         │
 │ RTC Resume                  [Disabled]        │ [Power ON]: the system    │
 │                                               │ goes on after an AC power │
 │                                               │ loss.                     │
 │                                               │                           │
 │                                               │                           │
 │                                               │                           │
 │                                               │                           │
 │                                               │  ←→     Select Screen     │
 │                                               │  ↑↓     Select Item       │
 │                                               │  Enter  Go to Sub Screen  │
 │                                               │  F1     General Help      │
 │                                               │  F10    Save and Exit     │
 │                                               │  ESC    Exit              │
 │                                               │                           │
 └──────────────────────────────────────────────┴───────────────────────────┘
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```

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. Configuration options: [Power Off] [Power On]

Power On with PS/2 Keyboard [Disabled]

This parameter allows you to use specific keys on the keyboard 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 with PS/2 Mouse [Disabled]

This parameter allows you to use the PS/2 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]

RTC Resume [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]

5.5.6 Hardware Monitor

```
                         BIOS SETUP UTILITY
              Power

  Hardware Monitor                                 CPU temperature.

  MB Temperature              [36°C/96.5°F]
  CPU Temperature             [44°C/111°F]

  CPU Fan Speed               [5234RPM]
  Chassis Fan Speed           [N/A]

  VCORE Voltage               [1.808V]
  3.3V Voltage                [3.376V]
  5V Voltage                  [5.080V]
  12V Voltage                 [11.977V]        ←→    Select Screen
                                               ↑↓    Select Item
  SMART Q-Fan Function        [Enabled]        +-    Change Option
                                               F1    General Help
  Fan Auto Mode Start Voltage  [5.0V]          F10   Save and Exit
  Fan Auto Mode Start Temp     [30°C]          ESC   Exit
  Fan Auto Mode Full Speed Temp [70°C]

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```

MB Temperature [xxx°C/xxx°F]
CPU Temperature [xxx°C/xxx°F]

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

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

The onboard hardware monitor automatically detects and displays the CPU, chassis, 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 [Enabled]

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: [Enabled] [Disabled]

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 [30ºC]

Select the temperature for the auto start fan feature. The fan starts when the system reaches the specified temperature.
Configuration options: [25ºC]...[75ºC]

Fan Auto Mode Full Speed Temp [70ºC]

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: [25ºC]...[75ºC]

5.6   Boot menu

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

```
                          BIOS SETUP UTILITY
  Main    Advanced    Power    Boot    Exit

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

  ▶   Boot Settings Configuration
  ▶   Security

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

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```

5.6.1 Boot Device Priority

```
                          BIOS SETUP UTILITY
                               Boot

    Boot Device Priority                            Specifies the boot
                                                    sequence from the
  1st Boot Device         [First Floppy Drive]      available devices.
  2nd Boot Device         [PM-ST320413A]
  3rd Boot Device         [PS-ASUS CD-S340]         A device enclosed in
                                                    parenthesis has been
                                                    disabled in the
                                                    corresponding type
                                                    menu.


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

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```

1st ~ xxth Boot Device

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 your system.
Configuration options: [xxxxx Drive] [Disabled]

5.6.2 Boot Settings Configuration

```
                        BIOS SETUP UTILITY
                          Boot

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

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

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```

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]

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]

5.6.3 Security

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

```
                    BIOS SETUP UTILITY
                          Boot

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

  Change Supervisor Password
  Change User Password
  Clear User Password

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

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```
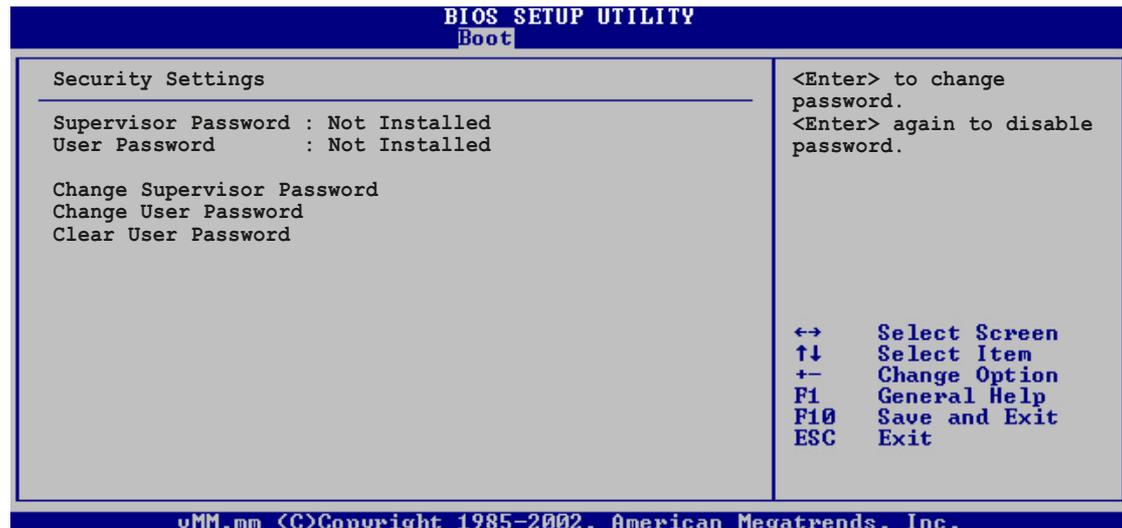
Change Supervisor Password

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 clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section 4.3 "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.
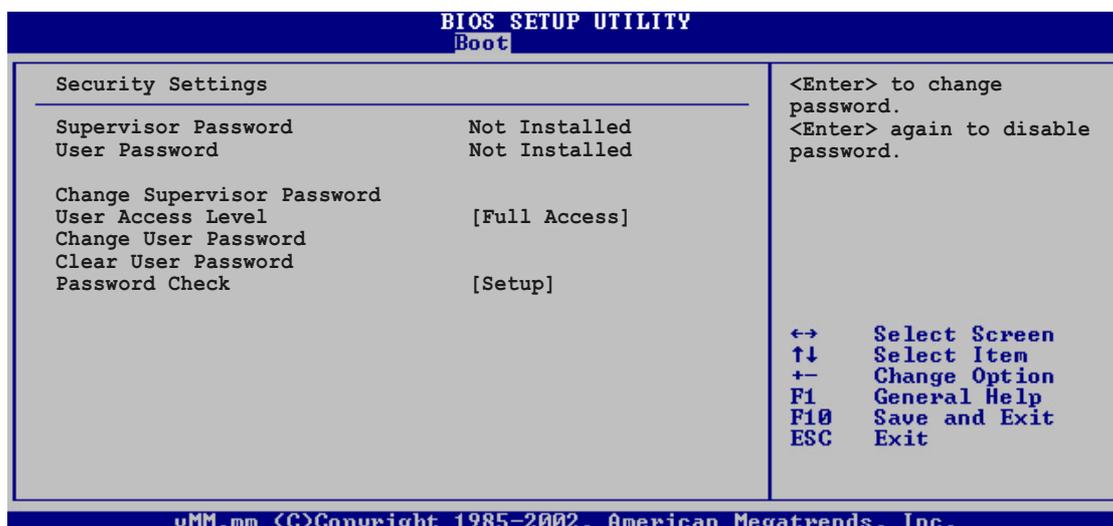
```
                         BIOS SETUP UTILITY
                              Boot

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

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

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

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```

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

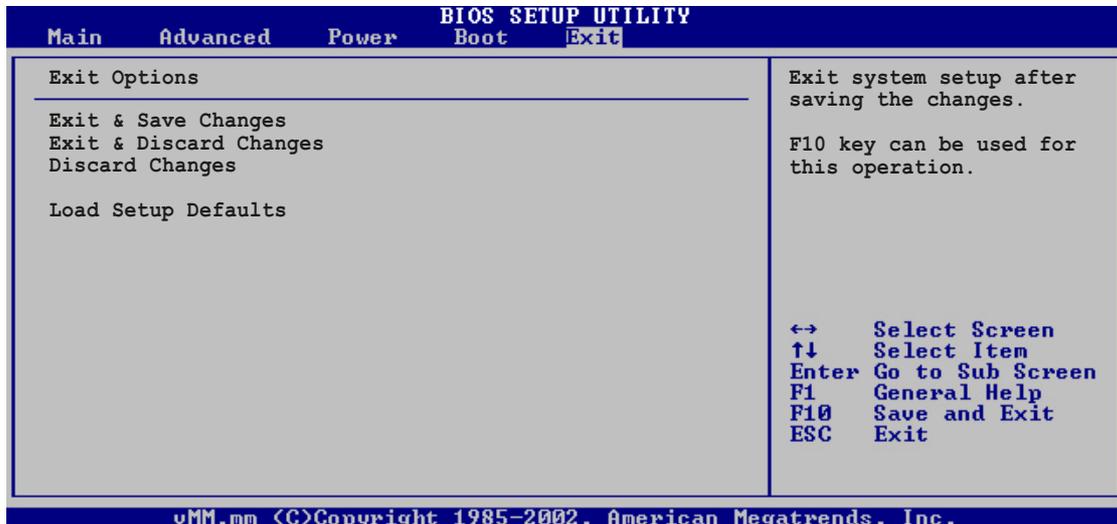Select this item if you wish to clear the user password.

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]

5.7 Exit menu

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

```
                        BIOS SETUP UTILITY
  Main     Advanced     Power     Boot     Exit

  Exit Options                               Exit system setup after
                                             saving the changes.
  Exit & Save Changes
  Exit & Discard Changes                     F10 key can be used for
  Discard Changes                            this operation.

  Load Setup Defaults



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


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```

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

Exit & Save Changes

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. 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 the default values. Select **Exit Saving Changes** or make other changes before saving the values to the non-volatile RAM.

Appendix

The Appendix includes the IEEE 802.11b channels for the wireless LAN adapter.
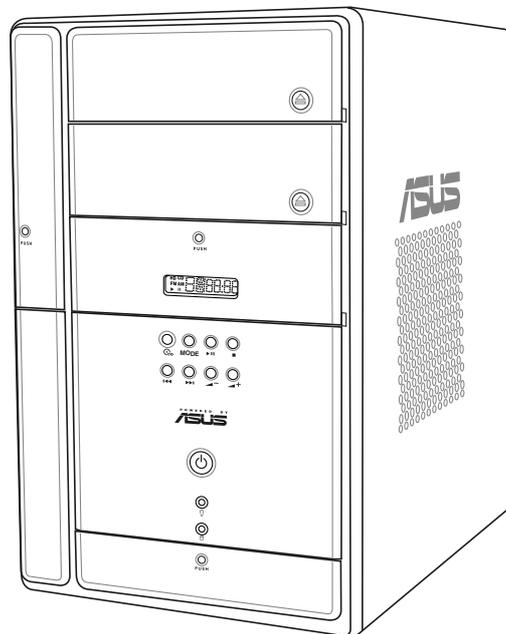
Appendix

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/cUL 950 3rd Edition)	Channels 1 to 11
China (MII)	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.