



**P1/P2-P5945GC**

*ASUS PC (Desktop Barebone)*

## **User Guide**



**E3310**

**First Edition  
July 2007**

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# Notices

## Federal Communications Commission Statement

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

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

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

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



---

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

---

## Canadian Department of Communications Statement

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

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

# Safety information

## Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

## Operation safety

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

### ***Lithium-Ion Battery Warning***

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

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

### ***LASER PRODUCT WARNING***

**CLASS 1 LASER PRODUCT**

# About this guide

## Audience

This guide provides general information and installation instructions about the ASUS P1/P2-P5945GC 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 P1/P2-P5945GC. 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 information

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



## 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:** Instructions 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 P1/P2-P5945GC system package for the following items.



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

Item description	
1. ASUS book size barebone system with	
	• ASUS motherboard
	• 200W power supply unit
	• PCI riser card
	• CPU fan and heatsink assembly
2. Cables	
	• Power cable and plug
	• Serial ATA power cable and signal cable
	• IDE cable (preinstalled)
4. CDs	
	• Support CD
	• Recover PRO CD (only support 2000/XP)
5. Quick Installation Guide	

# Chapter 1

This chapter gives a general description of the ASUS P1/P2-P5945GC. The chapter lists the system features including introduction on the front and rear panel, and internal components.



ASUS P1/P2-P5945GC

# System introduction

## 1.1 Welcome!

Thank you for choosing the ASUS P1/P2-P5945GC!

The ASUS P1/P2-P5945GC is an all-in-one barebone system with a versatile home entertainment feature.

The system comes in a stylish mini-tower casing and powered by the ASUS motherboard P1 that supports the Intel® Pentium® D, Intel® Pentium® 4, Intel® Conroe® or Intel® Celeron® processor in the 775-land package.

The system supports up to 4 GB of system memory using DDR2-667/533/400 DIMMs, high-resolution graphics via integrated graphics controller, Serial ATA, USB 2.0, and 8-channel audio features the system takes you ahead in the world of power computing.

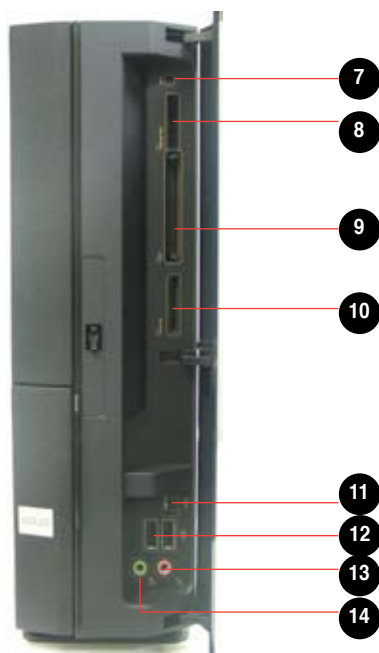
## 1.2 Front panel

The front panel includes the optical drive bays, power button, and several I/O ports are located at the front panel.

Close



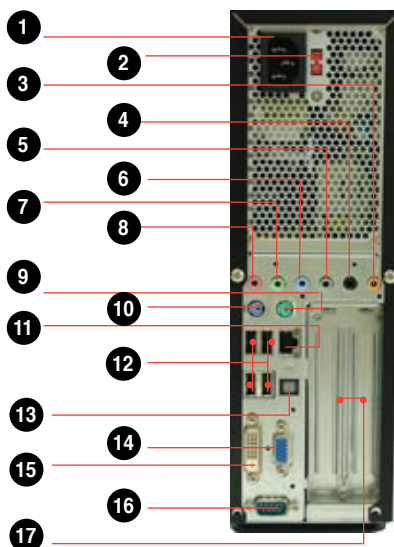
Open



1. **Optical drive eject button.**
2. **HDD LED.** This LED lights up when data is read from or written to the hard disk drive.
3. **Optical drive bay cover.**
4. Press to open the front panel cover.
5. **Power button.** Press this button to turn the system on.
6. **Power LED.**
7. **Reset button**
8. **MS/MS Pro card slot.**
9. **CompactFlash™ Card slot.**
10. **SD/MMC card slot.**
11. **4-pin IEEE 1394 port**
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. **Microphone port (pink).** This port connects a microphone.
14. **Headphone port (lime).** This port connects a headphone or a speaker.

## 1.3 Rear panel

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



### WARNING!

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

1. **Power connector**
2. **Voltage selector.** This switch allows you to adjust the system input voltage according to the voltage supply in your area. If the voltage supply in your area is 100-127V, set this switch to 115V. If the voltage supply in your area is 200-240V, set this switch to 230V.
3. **Center/Sub (yellow orange).** This port connects the center/subwoofer speakers.
4. **Surr-Side (black).** This port connects the side speakers in an 8-channel audio configuration.
5. **Surr-Rear (grey).** This port connects the rear speakers on a 4-channel, 6-channel, or 8-channel audio configuration.
6. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
7. **Line Out port (lime).** This port connects a headphone or a speaker. In 4-channel and 6-channel configuration, the function of this port becomes Front Speaker Out.
8. **Microphone port (pink).** This port connects a microphone.
9. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
10. **PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.

11. **LAN (RJ-45) port.** This port allows Gigabit connection to a Local Area Network (LAN) through a network hub.
12. **USB 2.0 ports 1, 2, 3 and 4.** These 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0 devices.
13. **SPDIF Out port** This port connects an external audio output device via an optical S/PDIF cable.
14. **VGA port**
15. **DVI-D port**
16. **Serial port**
17. **PCI slot metal brackets**



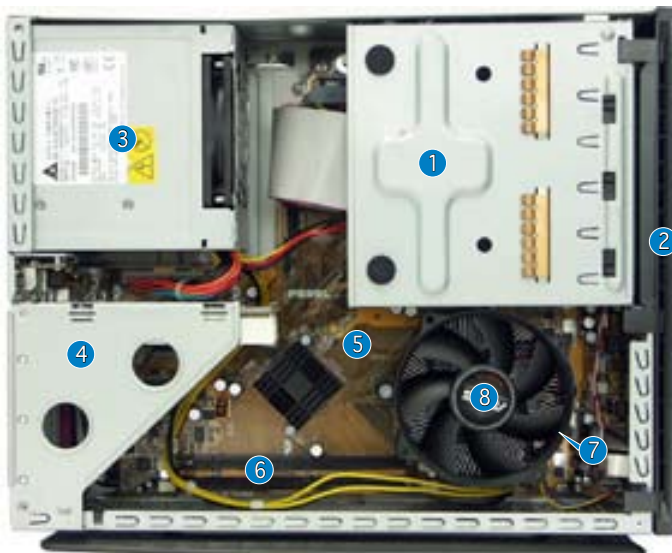
Refer to the audio configuration table below for the function of the audio ports in 2, 4, or 6-channel configuration.

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

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

## 1.4 Internal components

The illustration below is the internal view of the system when you remove the top cover. The installed components are labeled for your reference. Proceed to Chapter 2 for instructions on installing additional system components.



- |   |  |
|---|--|
| 1. 5.25-inch optical drive and 3.5 inch hard disk drive cage      | 5. ASUS motherboard  |
| 2. Front panel cover  | 6. DIMM sockets  |
| 3. Power supply unit  | 7. LGA775 socket (under the CPU fan and heatsink assembly) |
| 4. PCI card riser bracket (connected to the motherboard PCI slot) | 8. CPU fan and heatsink assembly                           |



# Chapter 2

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



ASUS P1/P2-P5945GC

## Basic installation

## 2.1 Preparation

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

### Basic components to install

1. Central Processing Unit (CPU)
2. DDR2 Dual Inline Memory Module (DIMM)
3. Expansion card(s)
4. Hard disk drive
5. Optical drive

### Tool

Phillips (cross) screw driver

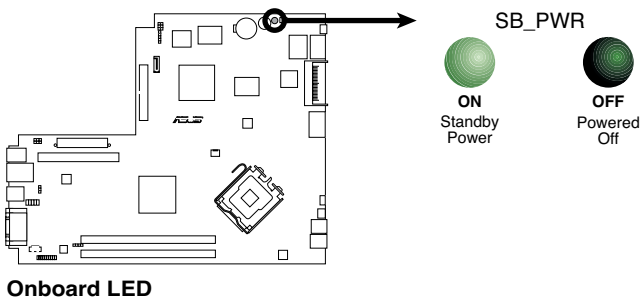
## 2.2 Before you proceed

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 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. This LED lights up to indicate that the system is ON, in sleep mode or in soft-off mode, and not powered OFF. Unplug the power cable from the power outlet and make sure that the standby power LED is OFF before installing any system component.



## 2.3 Removing the chassis cover and front panel assembly

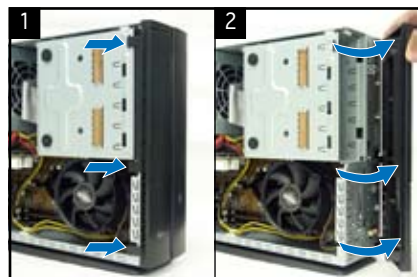
To remove the chassis cover:

1. Remove the cover screws. Keep the screws for later use.
2. Pull the cover slightly toward the rear panel.
3. Lift the cover, then set aside.



To remove the front panel cover

1. Lift the front panel cover hooks outward.
2. Carefully remove the front panel cover, then set it aside.



## 2.4 Central Processing Unit (CPU)

### 2.4.1 Overview

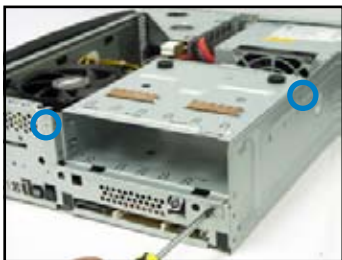
The motherboard comes with a surface mount LGA775 socket designed for the Intel® Pentium® 4 processor in the 775-land package.



- Check your motherboard to make sure that the PnP cap is on the CPU socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA775 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

### 2.4.2 Removing the storage drive assembly

1. Lay the system on its side, then locate and remove three storage drive assembly screws.
2. Lift the storage drive assembly, then set aside.



### 2.4.3 Installing CPU

To install a CPU:

1. Locate the CPU socket on the motherboard.

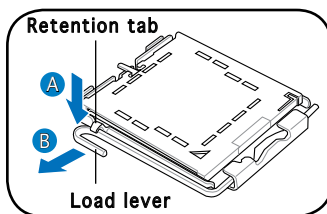


Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

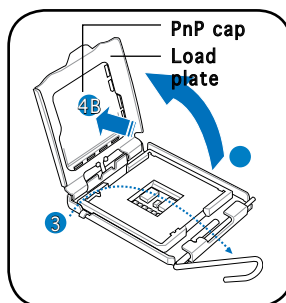
2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.



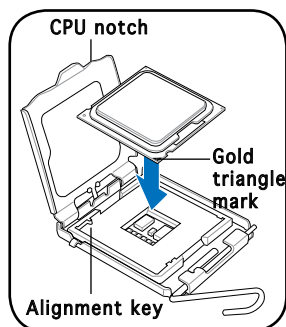
To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.



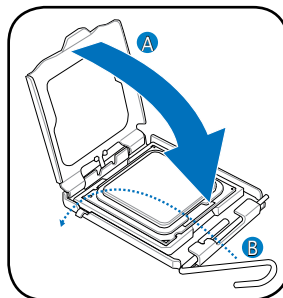
3. Lift the load lever in the direction of the arrow to a 135° angle.
4. Lift the load plate with your thumb and forefinger to a 100° angle (4A), then push the PnP cap from the load plate window to remove (4B).



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



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



## 2.4.4 Removing and Installing the CPU fan and heatsink assembly

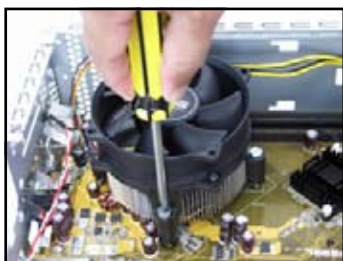
The system package includes a proprietary CPU fan and heatsink assembly to ensure optimum thermal condition and performance.



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

To remove the CPU fan and heatsink assembly:

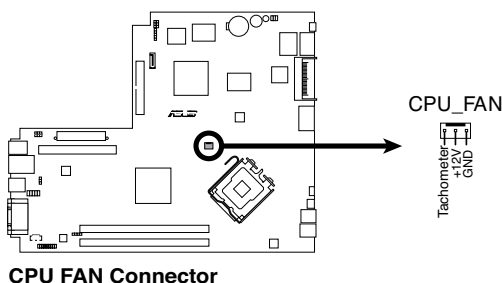
1. Disconnect the CPU fan cable.
2. Loosen the CPU fan and heatsink assembly screws.
3. Lift the CPU fan and heatsink assembly, then set aside.



To reinstall the CPU fan and heatsink assembly:

Reinstall the CPU fan and heatsink assembly, then reconnect the CPU fan cable to the CPU fan connector on the motherboard.

Refer to the figure below for the location of the CPU fan connector on the motherboard.

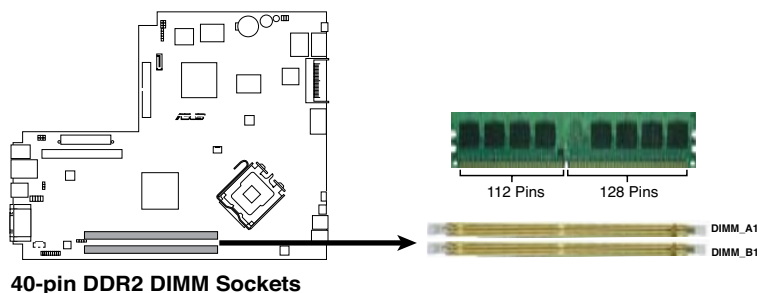


Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

## 2.5 Installing a DIMM

The system motherboard comes with two Double Data Rate 2 (DDR2) Dual Inline Memory Module (DIMM) sockets.

The following figure illustrates the location of the sockets:



### 2.5.1 Memory configurations

You may install up to 2 GB system memory using 256 MB, 512 MB, and 1 GB DDR2 DIMMs.



- Install only **identical** (the same type and size) DDR2 memory modules.
- Install only ASUS-certified memory modules. Refer to the DDR2 Qualified Vendors List on the next page for details.
- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend that you obtain memory modules from the same vendor.

# Qualified Vendors Lists (QVL)

## DDR2-667

Size	Vendor	Model	Side(s)	Component	DIMM Support	
					A	B
256MB	Kingston	KVR667D2N5/256	SS	E2508AB-6E-E	v	v
256MB	Kingston	KVR667D2N5/256	SS	D3216TLSAKL3U	v	v
256MB	Kingston	KVR667D2N5/256	SS	HYB18T256800AF3SW65 33154	v	v
512MB	Kingston	KVR667D2N5/512	SS	D6408TE8WL-27	v	v
512MB	Kingston	KVR667D2N5/512	SS	E5108AGBG-6E-E	v	v
1G	Kingston	KVR667D2N5/1G	DS	D6408TE8WL-3	v	v
1G	Kingston	KVR667D2N5/1G	DS	D6408TEBGL3U	v	v
1G	Kingston	KVR667D2N5/1G	DS	E5108AGBG-6E-E	v	v
512MB	Samsung	KR M378T6553CZ0-CE6	SS	K4T51083QC	v	v
512MB	Samsung	KR M378T6453FZ0-CE6	DS	K4T56083QF-ZCE6	v	v
512MB	Samsung	M378T6553CZ3-CE6	SS	K4T51083QC-ZCE6	v	v
1G	Samsung	M378T2953CZ3-CE6	DS	K4T51083QC-ZCE6	v	v
1G	Samsung	KR M378T2953CZ0-CE6	DS	K4T51083QC-ZCE6	v	v
256MB	Qimonda	HY564T32000HU-3S-A	SS	HYB18T512160AF-3SSSS17310	v	v
512MB	Qimonda	HY564T32000HU-3S-A	SS	HYB18T512800AF-3SSSS27416	v	v
512MB	Qimonda	HY564T64000HU-3S-A	SS	HYB18T512800AF3SFSS05346	v	v
1G	Qimonda	HY564T128020HU-3S-A	DS	HYB18T512800AF3SSSS28104	v	v
512MB	Corsair	V5S12MB667D2	SS	64M8CFEGP0900647	v	v
512MB	Corsair	V5S12MB667D2	DS	MIII0052532M8CEC	v	v
1G	Corsair	V51GB667D2	DS	MID095D62864M8CEC	v	v
1G	Corsair	XMS2-5400	DS	Heat-Sink Package	v	v
256MB	HY	HYMP532U64CP6-Y5 AB	SS	HYSP5121621CFP-Y5	v	v
512MB	HY	HYMP564U64AP8-Y4 AA	SS	HYSP512821AFP-Y4	v	v
512MB	HY	HYMP564U64AP8-Y5 AA	SS	HYSP512821AFP-Y5	v	v
1G	HY	HYMP512U64AP8-Y5 AB	DS	HYSP512821AFP-Y5	v	v
1G	HY	HYMP512U64CP8-Y5 AB	DS	HYSP512521CFP-Y5	v	v
512MB	Kingmax	KLCC28F-A8EB5	SS	E5108AE-6E-E	v	v
512MB	Kingmax	KLCC28F-A8KB5	SS	KKEA88B4LAUG-29DX	v	v
1G	Kingmax	KLCD48F-A8KB5	DS	KKEA88B4LAUG-29DX	v	v
512MB	Apacer	78.01092.420	SS	E5108AE-6E-E	v	v
512MB	Apacer	AU512E667C5KBGC	SS	AM4B5708MJS7E0627B	v	v
512MB	Apacer	AU512E667C5KBGC	SS	AM4B5708GJS7E06332F	v	v
1G	Apacer	AU01GE667C5KBGC	DS	AM4B5708GJS7E0636B	v	v
1G	Apacer	78.01092.420	DS	E5108AE-6E-E	v	v
1G	Apacer	AU01GE667C5KBGC	DS	AM4B5708MJS7E0627B	v	v
512MB	ADATA	M20EL5G3H3160B1C0Z	SS	E5108AE-6E-E	v	v
512MB	ADATA	M20AD5G3H316611C52	SS	AD29608A8A-3EG20648	v	v
512MB	ADATA	M20AD5G3H316611C52	SS	AD29608A8A-3EG20718	v	v
1G	ADATA	M20AD5G3417611C52	DS	AD29608A8A-3EG20645	v	v
512MB	VDATA	M2GVD5G3H31A411C52	SS	VD29608A8A-3EC20615	v	v
512MB	VDATA	M2YVD5G3H31P411C52	SS	VD29608A8A-3EG20627	v	v
512MB	VDATA	M2GVD5G3H16611C52	SS	VD29608A8A-3EG20637	v	v
1G	VDATA	M2GVD5G341P611C52	DS	VD29608A8A-3EG20627	v	v
1G	VDATA	M2GVD5G341C411C52	DS	VD29608A8A-3EC20620	v	v
1G	VDATA	M2GVD5G3417611C52	DS	VD29608A8A-3EG20641	v	v
512MB	PSC	AL6E8E63B-6E1K	SS	A3R12E3GEF637BLC5N	v	v
1G	PSC	AL7E8E63B-6E1K	DS	A3R12E3GEF637BLC5N	v	v
256MB	Nanya	NT256T64UH4A1FY-3C	SS	NT5TU32M16AG-3C	v	v
512MB	Nanya	NT512T64U88A1BY-3C	SS	NT5TU64M8AE-3C	v	v



## DDR2-533

Size	Vendor	Model	Side(s)	Component	DIMM Support	
					A	B
512MB	Kingston	KVR533D2N4/512	SS	HYB18T512800AF3733336550	v	v
1G	Kingston	KVR533D2N4/1G	DS	D6408TE7BL-37	v	v
256MB	Samsung	M378T3253FG0-CD5	SS	K4T56083QF-GCD5	v	v
512MB	Samsung	M378T6553BG0-CD5	SS	K4T51083QB-GCD5	v	v
256MB	Qimonda	HYS64T32000HU-3.7-A	SS	HYB18T512160AF-3.7AFSS31270	v	v
512MB	Qimonda	HYS64T64000GU-3.7-A	SS	HYB18T512800AC37SSS11511	v	v
512MB	Qimonda	HYS64T64000HU-3.7-A	SS	HYB18T512800AF37SSS12079	v	v
512MB	Qimonda	HYS64T64000HU-3.7-A	SS	HYB18T512800AF37FSS29334	v	v
256MB	HY	HYMP532U64CP6-C4 AB	SS	HY5PS121621CFP-C4	v	v
1G	HY	HYMP512U64CP8-C4 AB	DS	HY5PS12821CFP-C4	v	v
512MB	Micron	MT 16HTF6464AG-53EB2	DS	D9BOM	v	v
512MB	Micron	MT 16HTF6464AG-53EB2	DS	Z9BQT	v	v
1G	Micron	MT 16HTF12864AY-53EA1	DS	D9CRZ	v	v
512MB	Corsair	VS512MB533D2	DS	M110052532M8CEC	v	v
512MB	Corsair	VS512MB533D2	DS	M110052532M8CEC	v	v
1G	Corsair	VS1GB533D2	DS	64M8CFEGQJB0900718	v	v
512MB	Elpida	EBE51UD8ABFA-5C-E	SS	E5108AB-5C-E	v	v
512MB	Kingmax	KLBC28F-A8KB4	SS	KKEA88B4IAK-37	v	v
256MB	Kingmax	KLBB68F-36EP4	SS	E5116AB-5C-E	v	v
512MB	Kingmax	KLBC28F-A8EB4	SS	E5108AE-5C-E	v	v
512MB	ADATA	M20AD2G3H316611B52	SS	AD29608A8A-37DG20719	v	v
2G	ADATA	M20AD2H3J417011B53	DS	AD20908A8A-37DG30721	v	v

**Side(s):** SS - Single-sided DS - Double-sided

**CL:** CAS Latency

### DIMM support:

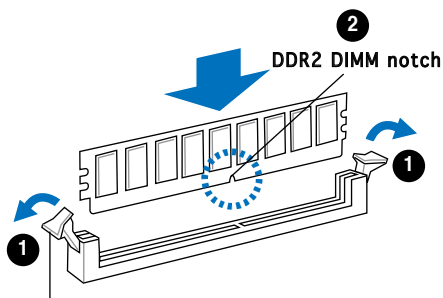
- A** - Supports one module inserted into either slot, in Single-channel memory configuration.
- B** - Supports one pair of modules inserted into both slots as one pair of Dual-channel memory configuration.

## 2.5.2 Installing a DDR2 DIMM



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

1. Unlock a DDR2 DIMM socket by pressing the retaining clips outward.
2. Align a DIMM on the socket such that the notch on the DIMM matches the break on the socket.

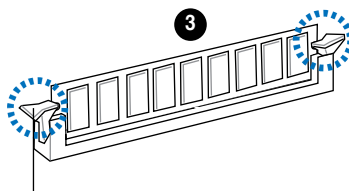


Unlocked retaining clip



A DDR2 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.

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

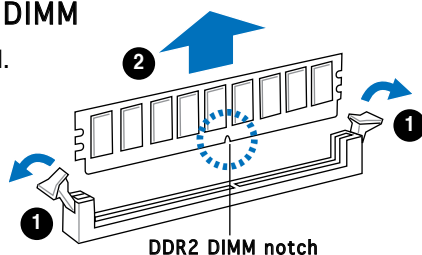


Locked Retaining Clip

## 2.5.3 Removing a DDR2 DIMM

Follow these steps to remove a DIMM.

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



Support the DIMM lightly with your fingers when pressing the retaining clips. The DIMM might get damaged when it flips out with extra force.

2. Remove the DIMM from the socket.

## 2.6 Expansion slots

This motherboard provides two PCI expansion slots, which locate on the PCI riser card that is connected to its slot on the motherboard.

### 2.6.1 PCI slots

The PCI slots support cards such as a LAN card, SCSI card, USB card, another cards that comply with PCI specifications.



---

Before installing an expansion card, read the documentation that came with it and make the necessary hardware settings for the card.

---



---

The length of the PCI card should be less than 150mm on the system.

---

### 2.6.2 Expansion card installation



---

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

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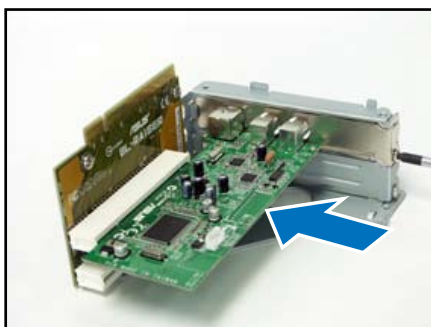
1. Lift the PCI riser card assembly to remove.



2. Remove the metal cover opposite the slot that you intend to use.



3. Insert the card connector to the slot, then press the card firmly until it fits in place. Secure the card with a screw.



4. Reinstall the PCI riser card assembly. Make sure that the riser card connector sits properly on the motherboard PCI slot.



## Standard interrupt assignments

IRQ	Standard Function
0	System Timer
1	Keyboard Controller
2	Re-direct to IRQ#9
3	IRQ holder for PCI steering*
4	Communications Port (COM1)*
5	IRQ holder for PCI steering*
6	Floppy Disk Controller
7	Printer Port (LPT1)*
8	System CMOS/Real Time Clock
9	IRQ holder for PCI steering*
10	IRQ holder for PCI steering*
11	IRQ holder for PCI steering*
12	PS/2 Compatible Mouse Port*
13	Numeric Data Processor
14	Primary IDE Channel
15	Secondary IDE Channel

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

## IRQ assignments for this motherboard

	A	B	C	D	E	F	G	H
PCI slot 1	shared	—	—	—	—	—	—	—
PCI slot 2	—	shared	—	—	—	—	—	—
Onboard USB controller 1	—	—	—	—	shared	—	—	—
Onboard USB controller 2	—	shared	—	—	—	—	—	—
Onboard USB controller 3	—	—	shared	—	—	—	—	—
Onboard USB controller 4	—	—	—	shared	—	—	—	—
Onboard USB 2.0 controller	—	—	—	—	shared	—	—	—
Onboard IDE port	—	—	shared	—	—	—	—	—
Onboard HD audio	—	—	—	shared	—	—	—	—
Onboard LAN	shared	—	—	—	—	—	—	—



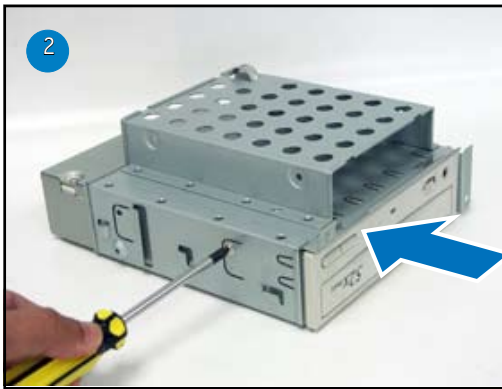
When using PCI cards on shared slots, ensure that the drivers support “Share IRQ” or that the cards do not need IRQ assignments. Otherwise, conflicts will arise between the two PCI groups, making the system unstable and the card inoperable.

## 2.7 Installing an optical drive and reinstalling the storage drive assembly

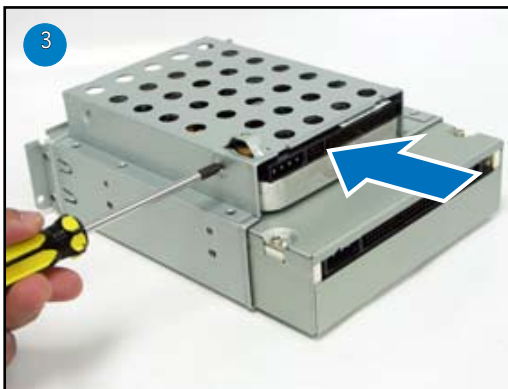
Refer to the instructions in this section if you wish to install a new optical drive.

Follow these steps to install an optical drive:

1. Turn the storage drive assembly upside down with the 3.5-inch bay on top of the 5.25-inch bay.
2. Insert the optical drive upside down to the 5.25-inch bay, then secure it with two screws on both sides.



3. Turn the storage drive assembly, insert the hard disk drive upside down to the 3.5-inch bay, then secure it with two screws on both sides.



Follow these steps to reinstall the storage drive assembly:

Before reinstalling the storage drive assembly, connect the IDE/SATA and power plugs to the IDE/SATA and power connectors at the back of the drives.

1. Connect the black plug of the IDE cable to the optical drive, then the gray plug to the hard disk drive. If you have the SATA HDD, connect the SATA cable to the SATA HD.
2. Connect the 4-pin power plugs to the power connectors at the back of the drives.
3. Install the storage drive assembly to the chassis.



4. Secure the storage drive assembly with three screws.



## 2.8 Installing the foot stand

To install the foot stand:

1. Match the foot stand hooks to the holes on the chassis.



2. Pull the foot stand to the direction of the arrow until the lock clicks in place.



To remove the foot stand, lift the lock, then slightly push the foot stand to the direction of the rear panel until it disengages from the chassis.



## 2.9 Reinstalling the front panel cover

To reinstall the front panel cover:

1. Insert the front panel cover tabs to the holes at the right side of the chassis, then close.



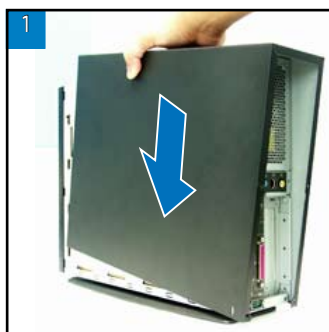
2. Insert the front panel cover hooks to the chassis tabs until the front panel cover fits in place.



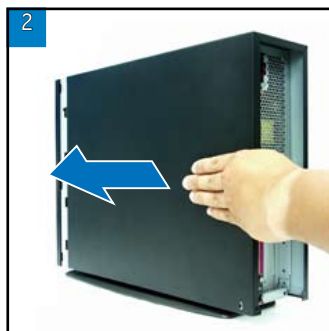
## 2.9 Reinstalling the cover

To reinstall the cover:

1. Install the cover to the chassis. Make sure the cover tabs fit the chassis rails.



2. Push the cover toward the front panel until it fits in place.



3. Secure the cover with two screws.



# Chapter 3

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



ASUS P1/P2-P5945GC

# Starting up

## 3.1 Installing an operating system

The barebone system 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

Press the system power button (⏻) to enter the OS.



Press to turn ON the system

## 3.3 Support CD information

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



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

### 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 icon to display support CD/motherboard information

Click an item to install



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.

#### ASUS InstAll - Installation Wizard for Drivers

Automatically installs all the necessary drivers for this motherboard.

#### Intel(R) Chipset Inf Update Program

Installs the Intel(R) Chipset Inf Update Program. Please install Win2000 Service Pack 4/WinXP Service Pack1 first.

#### Intel(R) Graphics Accelerator Driver

Installs Intel (R) Graphics Accelerator Driver.

#### SoundMAX AD1988B Audio Driver

Allows you to install the SoundMAX AD1988B audio driver.

#### Realtek RTL8111B/C 10/100/1000M LAN Driver

Installs the Realtek RTL8111B/C 10/100/1000M LAN Driver.

### 3.3.2 Utilities menu

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



#### **ASUS InstAll-Installation Wizard for Utilities**

Installs the ASUS InstAll-Installation Wizard Utilities.

#### **ASUS PC Probe II**

This smart utility monitors the fan speed, CPU temperature, and system voltages, and alerts you of any detected problems. This utility helps you keep your computer in healthy operating condition.

#### **ASUS Update**

The ASUS Update utility allows you to update the motherboard BIOS in a Windows® environment. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See page 5-8 for details.

#### **Adobe Reader V7.0**

Installs the Adobe® Acrobat® Reader V7.0 that allows you to open, view, and print documents in Portable Document Format (PDF).

#### **Microsoft DirectX 9.0c Driver**

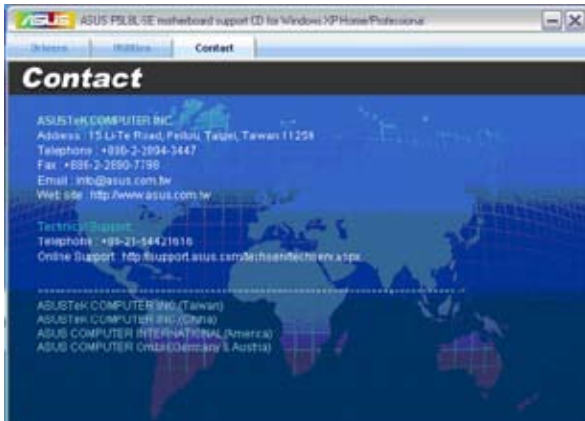
Installs the Microsoft® DirectX 9.0c driver.

#### **Anti-Virus Utility**

Install Anti-virus utility.

### 3.3.3 ASUS Contact information

Click the **Contact** tab to display the ASUS contact information. You can also find this information on the inside front cover of this user guide.



## 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.

### ASUS PC Probe II

PC Probe II is a utility that monitors the computer's vital components and alerts you of any problem with these components. PC Probe II senses fan rotations, CPU temperature, and system voltages, among others. PC Probe II is software-based, allowing you to start monitoring your computer the moment you turn it on. With this utility, you are assured that your computer is always at a healthy operating condition.

### Installing PC Probe II

To install PC Probe II on your computer:

1. Place the support CD to the optical drive. The **Drivers** installation tab appears if your computer has an enabled Autorun feature.



If Autorun is not enabled in your computer, browse the contents of the support CD to locate the setup.exe file from the ASUS PC Probe II folder. Double-click the setup.exe file to start installation.

2. Click the **Utilities** tab, then click **ASUS PC Probe II**.
3. Follow the screen instructions to complete installation.

### Launching PC Probe II

You can launch the PC Probe II right after installation or anytime from the Windows® desktop.

To launch the PC Probe II from the Windows® desktop, click **Start > All Programs > ASUS > PC Probe II**. The PC Probe II main window appears.

After launching the application, the PC Probe II icon appears in the Windows® taskbar. Click this icon to close or restore the application.

### Using PC Probe II










#### Main window

The PC Probe II main window allows you to view the current status of your system and change the utility configuration. By default, the main window displays the **Preference** section. You can close or restore the **Preference** section by clicking on the triangle on the main window right handle.



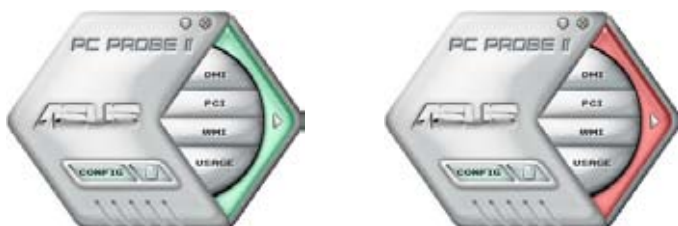
Click to close the Preference panel



Button	Function
	Opens the <b>Configuration</b> window
	Opens the <b>Report</b> window
	Opens the <b>Desktop Management Interface</b> window
	Opens the <b>Peripheral Component Interconnect</b> window
	Opens the <b>Windows Management Instrumentation</b> window
	Opens the hard disk drive, memory, CPU usage window
	Shows/Hides the <b>Preference</b> section
	Minimizes the application
	Closes the application

### Sensor alert

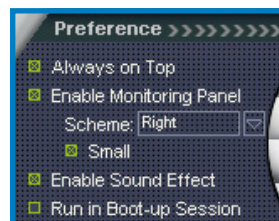
When a system sensor detects a problem, the main window right handle turns red, as the illustrations below show.



When displayed, the monitor panel for that sensor also turns red. Refer to the **Monitor panels** section for details.

## Preferences

You can customize the application using the Preference section in the main window. Click the box before each preference to activate or deactivate.



# Hardware monitor panels

The hardware monitor panels display the current value of a system sensor such as fan rotation, CPU temperature, and voltages.

The hardware monitor panels come in two display modes: hexagonal (large) and rectangular (small). When you check the **Enable Monitoring Panel** option from the **Preference** section, the monitor panels appear on your computer’s desktop.



Large display



Small display

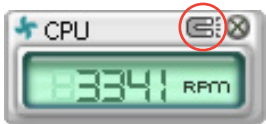
## Changing the monitor panels position

To change the position of the monitor panels on the desktop, click the arrow down button of the **Scheme** options, then select another position from the list box. Click **OK** when finished.



## Moving the monitor panels

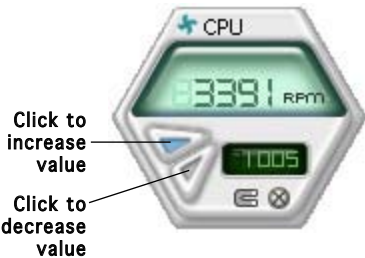
All monitor panels move together using a magnetic effect. If you want to detach a monitor panel from the group, click the horseshoe magnet icon. You can now move or reposition the panel independently.



## Adjusting the sensor threshold value

You can adjust the sensor threshold value in the monitor panel by clicking the arrow buttons. You can also adjust the threshold values using the **Config** window.

You cannot adjust the sensor threshold values in a small monitoring panel.

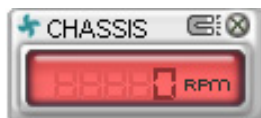


### Monitoring sensor alert

The monitor panel turns red when a component value exceeds or is lower than the threshold value. Refer to the illustrations below.



Large display



Small display

## WMI browser

Click **WMI** to display the WMI (Windows Management Instrumentation) browser. This browser displays various Windows® management information. Click an item from the left panel to display on the right panel. Click the plus sign (+) before **WMI Information** to display the available information.



You can enlarge or reduce the browser size by dragging the bottom right corner of the browser.

## DMI browser

Click **DMI** to display the DMI (Desktop Management Interface) browser. This browser displays various desktop and system information. Click the plus sign (+) before **DMI Information** to display the available information.



## PCI browser

Click **PCI** to display the PCI (Peripheral Component Interconnect) browser. This browser provides information on the PCI devices installed on your system. Click the plus sign (+) before the **PCI Information** item to display available information.

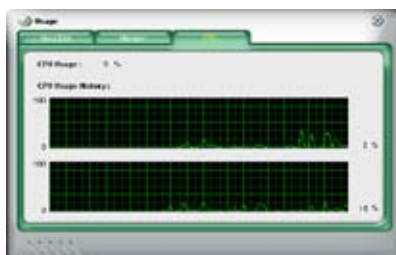


## Usage

The **Usage** browser displays real-time information on the CPU, hard disk drive space, and memory usage. Click **USAGE** to display the Usage browser.

### CPU usage

The **CPU** tab displays real-time CPU usage in line graph representation. If the CPU has an enabled Hyper-Threading, two separate line graphs display the operation of the two logical processors.



### Hard disk drive space usage

The **Hard Disk** tab displays the used and available hard disk drive space. The left panel of the tab lists all logical drives. Click a hard disk drive to display the information on the right panel. The pie chart at the bottom of the window represents the used (blue) and the available HDD space.



### Memory usage

The **Memory** tab shows both used and available physical memory.

The pie chart at the bottom of the window represents the used (blue) and the available physical memory.



## Configuring PC Probe II

Click **COMFEG** to view and adjust the sensor threshold values.

The **Config** window has two tabs: **Sensor/Threshold** and **Preference**. The **Sensor/Threshold** tab enables you to activate the sensors or to adjust the sensor threshold values. The **Preference** tab allows you to customize sensor alerts, change temperature scale, or enable the Q-Fan feature.



Loads the default  
threshold values  
for each sensor

Applies your  
changes

Cancels or  
ignores your  
changes

Loads your saved  
configuration  
Saves your  
configuration

# 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.

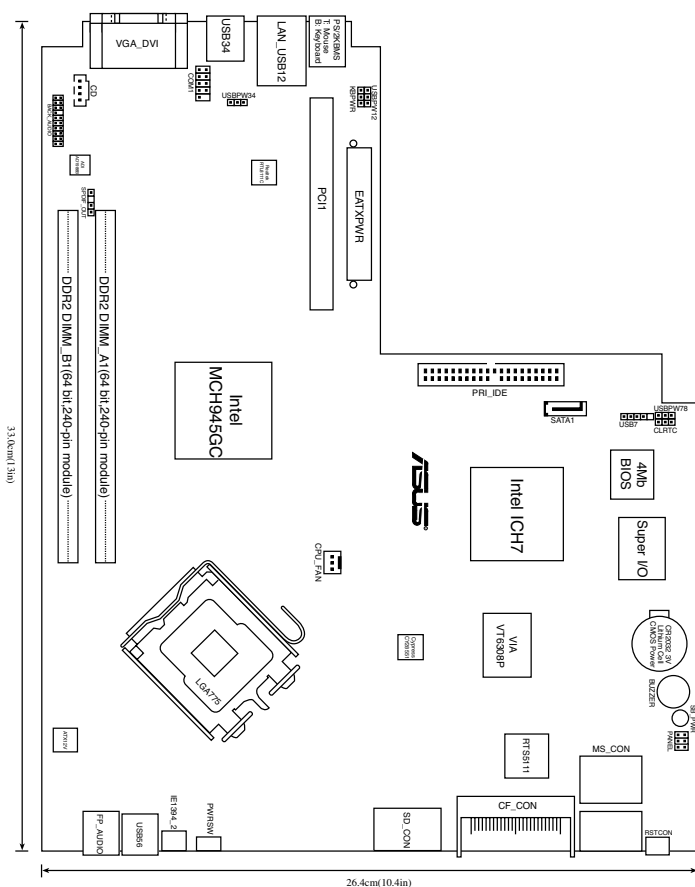


ASUS P1/P2-P5945GC

## 4.1 Introduction

The P1/P2-P5945GC barebone system comes with an ASUS motherboard. This chapter provides technical information about the motherboard for future upgrades or system reconfiguration.

## 4.2 Motherboard layout



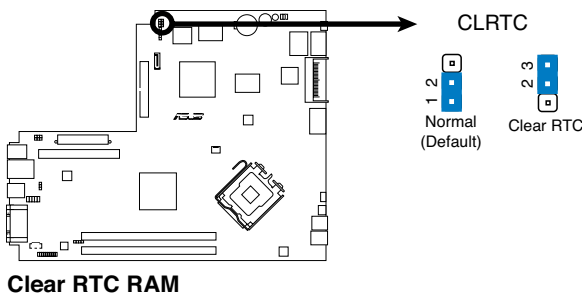
## 4.3 Jumpers

### 1. 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 onboard button cell battery powers the RAM data in the CMOS, which includes the system setup information such as system passwords.

To erase the RTC RAM:

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

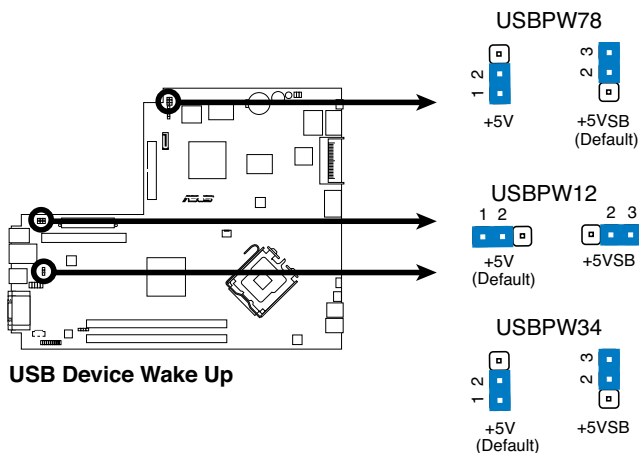


Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure.



## 2. USB device wake-up (3-pin USBPW12, USBPW34, USBPW78)

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



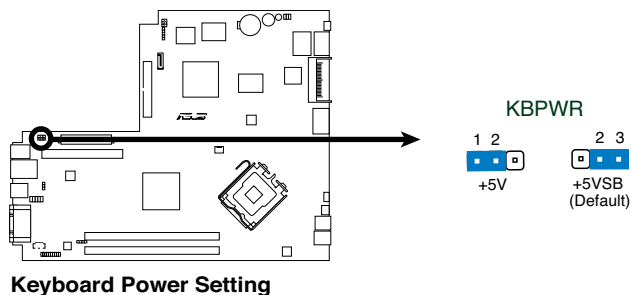
**USB Device Wake Up**



- The USB device wake-up feature requires a power supply that can provide 500mA on the +5VSB lead for each USB port; otherwise, the system would not power up.
- The total current consumed must NOT exceed the power supply capability (+5VSB) whether under normal condition or in sleep mode.

### 3. Keyboard power (3-pin KBPWR)

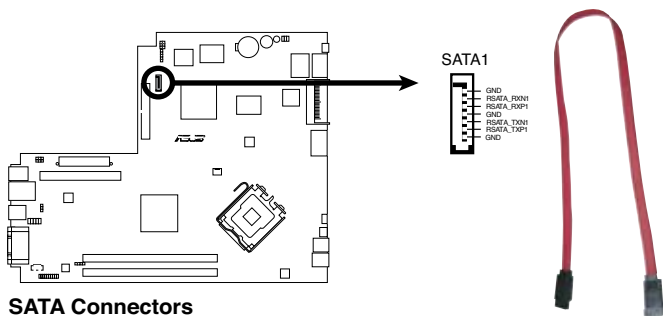
This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) if you wish to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 1A on the +5VSB lead,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



## 4.4 Connectors

### 1. Serial ATA connectors

The connector is for the Serial ATA signal cables for Serial ATA hard disk drives.

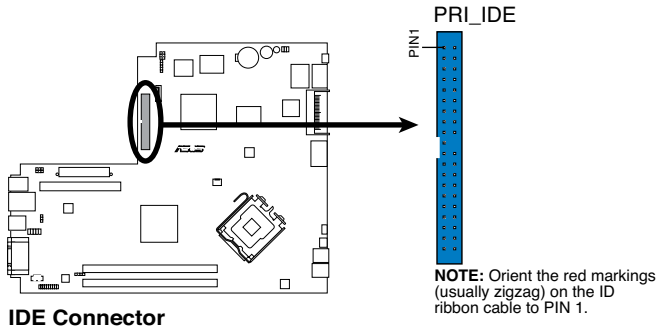


#### Important notes on Serial ATA:

- You must install Windows® 2000 Service Pack 4 or the Windows® XP Service Pack1 before using Serial ATA hard disk drives.
- When using the connectors in **Standard IDE** mode, connect the primary (boot) hard disk drive to the SATA1 connector.

2 IDE connectors (40-1 pin PRI\_IDE)

The onboard IDE connectors are for Ultra DMA 100/66/33 signal cable(s). There are three connectors on each Ultra DMA 100/66/33 signal cable: blue, black, and gray. Connect the blue connector to the motherboard's IDE connector, then select one of the following modes to configure your device(s).



	Drive jumper setting	Mode Cable of device(s)	Cable connector
Single device	Cable-Select or Master	-	Black
Two devices	Cable-Select	Master Slave	Black Gray
	Master Slave	Master Slave	Black or gray



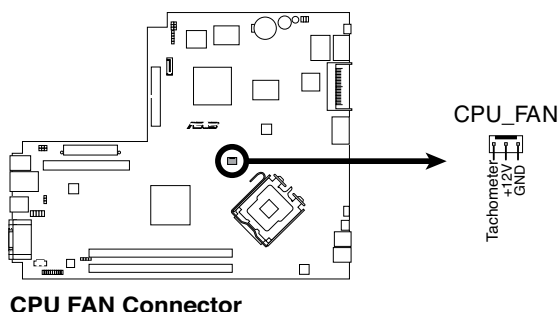
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 100/66/33 IDE devices.



If any device jumper is set as “Cable-Select”, make sure all other device jumpers have the same setting.

### 3. CPU Fan connector (3-pin CPU\_FAN)

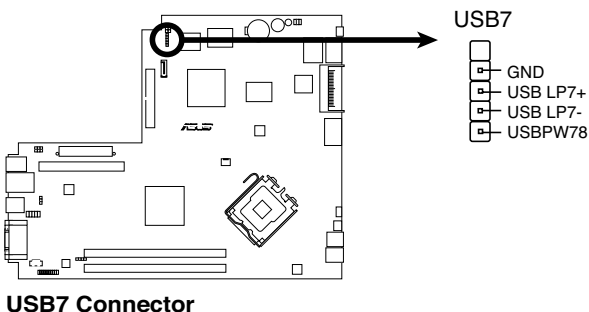
The fan connector support cooling fans of 350 mA~740 mA (8.88 W max.) or a total of 1 A~2.22 A (26.64 W max.) at +12V. Connect the fan cable to the fan connector on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.



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

### 4. USB connector (5-1 pin USB7)

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



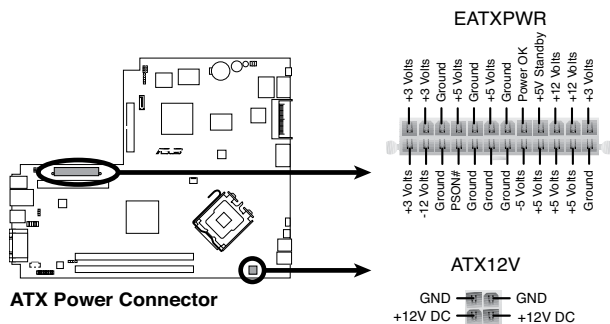
Never connect a **1394 cable** to the USB connectors. Doing so will damage the motherboard!



The USB module is purchased separately.

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

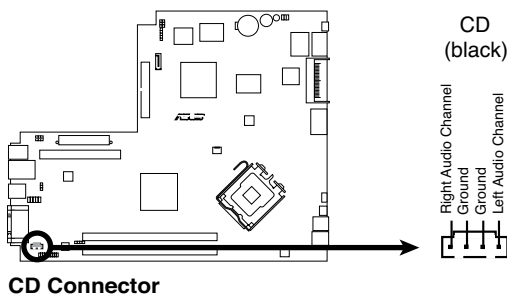
These connectors are for ATX power supply plugs. The plugs from the power supply are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.



- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot.
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.

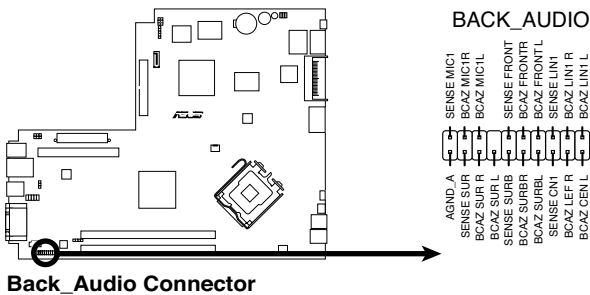
## 6. Internal audio connectors (4-pin CD)

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



Enable the CD-IN function in the audio utility when using this connector.

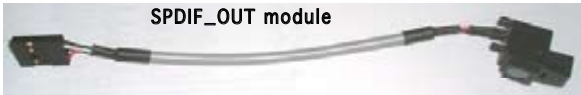
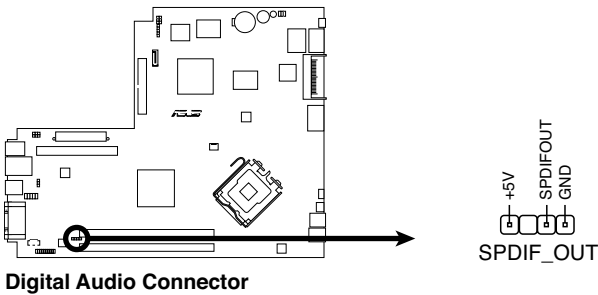
## 7. Back audio connector (20-1 pin Back\_Audio Connector)



We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

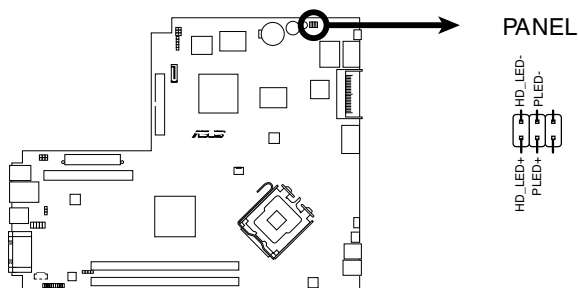
## 8. Digital audio connector (4-1 pin SPDIF\_OUT)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port(s). Connect the S/PDIF module cable to this connector, then install the module to a slot opening at the back of the system chassis.



The S/PDIF module is purchased separately.

## 9. System panel connector (6 pin PANEL)



**System Panel Connector**



Refer to the connector description below for details.

- **System power LED (2-pin PLED)**  
This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.
- **Hard disk drive activity (2-pin HDLED)**  
This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The IDE LED lights up or flashes when data is read from or written to the HDD.
- **Power/Soft-off button (2-pin PWRSW)**  
This connector is for the system power button. Pressing the power button turns the system ON or puts the system in SLEEP or SOFT-OFF mode depending on the BIOS settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.
- **Reset button (2-pin RESET)**  
This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

# 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. **ASUS EZ Flash** (Updates the BIOS using the motherboard support CD during POST.)
2. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable USB flash disk.)
3. **ASUS CrashFree BIOS 2** (Updates the BIOS using the motherboard support CD when the BIOS file fails or gets corrupted.)
4. **ASUS Update** (Updates the BIOS in Windows® environment.)

Refer to the corresponding sections for details on these utilities.



---

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

---

### 5.1.1 ASUS EZ Flash 2 utility

The ASUS EZ Flash 2 feature allows you to update the BIOS without having to go through the long process of booting and using a DOS-based utility. The EZ Flash 2 utility is built-in the BIOS chip so it is accessible by pressing <Alt> + <F2> during the Power-On Self-Test (POST).

To update the BIOS using EZ Flash 2:

1. Download the latest BIOS file from ASUS website ([www.asus.com](http://www.asus.com)), or obtain it from the support CD.
2. Save the BIOS file to a USB Flash, then boot the system from the USB Flash.
3. Press <Alt> + <F2> during POST, the following screen appears:

When the correct BIOS file is found, EZ Flash performs the BIOS update process and automatically reboots the system when done.



---

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

---

## 5.1.2 AFUDOS utility

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

### Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:



- Make sure that the USB Flash has at least 1024KB free space to save the file.
- The succeeding BIOS screens are for reference only. The actual BIOS screen displays may not be same as shown.

1. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable USB Flash you created earlier.
2. Boot the system in DOS mode, then at the prompt type:

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

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

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

Main filename      Extension name

3. Press <Enter>. The utility copies the current BIOS file to the USB Flash.

```
A:\>afudos /oOLDBIOS1.rom
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.
Reading flash ..... done
Write to file..... ok
A:\>
```

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

## Updating the BIOS file

To update the BIOS file using the AFUDOS utility:

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



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

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable USB Flash you created earlier.
3. Boot the system in DOS mode, then at the prompt type:

```
afudos /i[filename]
```

where [filename] is the latest or the original BIOS file on the bootable USB Flash.

```
A:\>afudos /iP5L8LSE.ROM
```

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

```
A:\>afudos /iP5L8LSE.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

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

Advance Check .....
Erasing flash ..... done
Writing flash ..... 0x0008CC00 (9%)
```



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

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

```
A:\>afudos /iP5L8LSE.ROM
AMI Firmware Update Utility - Version 1.19(ASUS V2.07(03.11.24BB))
Copyright (C) 2002 American Megatrends, Inc. All rights reserved.

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

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

Please restart your computer

A:\>
```

### 5.1.3 ASUS CrashFree BIOS 2 utility

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



- Prepare the motherboard support CD, or the USB Flash containing the updated motherboard BIOS before using this utility.
- Make sure that you rename the original or updated BIOS file in the USB Flash to **P5L8LSE.ROM**.

#### Recovering the BIOS from a floppy disk

To recover the BIOS from a USB Flash:

1. Turn on the system.
2. Connect the USB Flash to the PC.
3. The utility displays the following message and automatically checks the USB Flash for the original or updated BIOS file.

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



If your display monitor is connected to the onboard VGA connector, the display monitor will turn-off and the system will beep once while the CrashFree BIOS 2 starts updating your system. The system will beep once again while the process is finished, and the display will return after the system restarts.

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

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy found!
Reading file "P5L8LSE.ROM". Completed.
Start flashing...
```



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

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

## Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Insert the support CD to the optical drive.

The utility automatically checks the optical drive for the original or updated BIOS file. The utility then updates the corrupted BIOS file.

```
Checking for CD-ROM...
CD-ROM found!
Reading file "P5L8LSE.ROM". Completed.
Start flashing...
```



---

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

---

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



---

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

---

## 5.1.4 ASUS Update utility

The ASUS Update is a utility that allows you to manage, save, and update the motherboard BIOS in Windows® environment. The ASUS Update utility allows you to:

- Save the current BIOS file
- Download the latest BIOS file from the Internet
- Update the BIOS from an updated BIOS file
- Update the BIOS directly from the Internet, and
- View the BIOS version information.

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).

---

## Installing ASUS Update

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.
3. The ASUS Update utility is copied to your system.



---

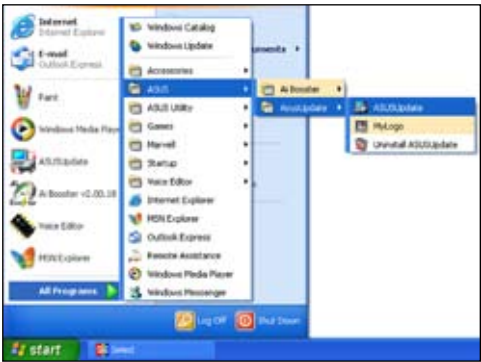
Quit all Windows® applications before you update the BIOS using this utility.

---

# Updating the BIOS through the Internet

To update the BIOS through the Internet:

1. Launch the ASUS Update utility from the Windows® desktop by clicking Start > Programs > ASUS > ASUSUpdate > ASUSUpdate. The ASUS Update main window appears.



2. Select Update BIOS from the Internet option from the drop-down menu, then click Next.



3. Select the ASUS FTP site nearest you to avoid network traffic, or click Auto Select. Click Next.

- From the FTP site, select the BIOS version that you wish to download. Click **Next**.
- Follow the screen instructions to complete the update process.



The ASUS Update utility is capable of updating itself through the Internet. Always update the utility to avail all its features.



## Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

- Launch the ASUS Update utility from the Windows® desktop by clicking **Start > Programs > ASUS > ASUSUpdate > ASUSUpdate**. The ASUS Update main window appears.
- Select **Update BIOS from a file** option from the drop-down menu, then click **Next**.



- Locate the BIOS file from the **Open** window, then click **Open**.
- Follow the screen instructions to complete the update process.





## 5.2 BIOS setup program

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

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

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

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

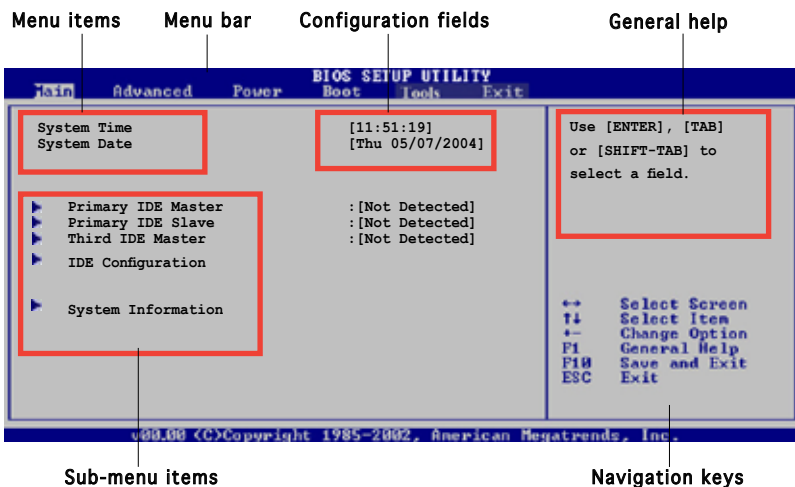
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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



- 
- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the Load Default Settings item under the Exit Menu. See section “2.8 Exit Menu.”
  - The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
  - Visit the ASUS website ([www.asus.com](http://www.asus.com)) to download the latest BIOS file for this motherboard and .
-

## 5.2.1 BIOS menu screen



## 5.2.2 Menu bar

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

<b>Main</b>	For changing the basic system configuration
<b>Advanced</b>	For changing the advanced system settings
<b>Power</b>	For changing the advanced power management (APM) configuration
<b>Boot</b>	For changing the system boot configuration
<b>Tools</b>	For setting EZ Flash 2 and O.C. Profile.
<b>Exit</b>	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.

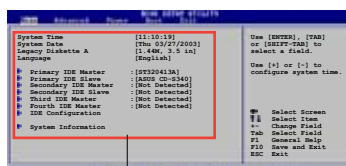


Some of the navigation keys differ from one screen to another.

## 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

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

## 5.2.6 Configuration fields

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

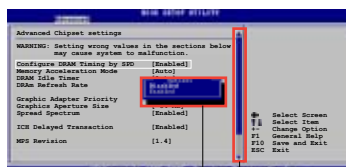
A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to “2.2.7 Pop-up window.”

## 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. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.



Pop-up window

Scroll bar

## 5.2.9 General help

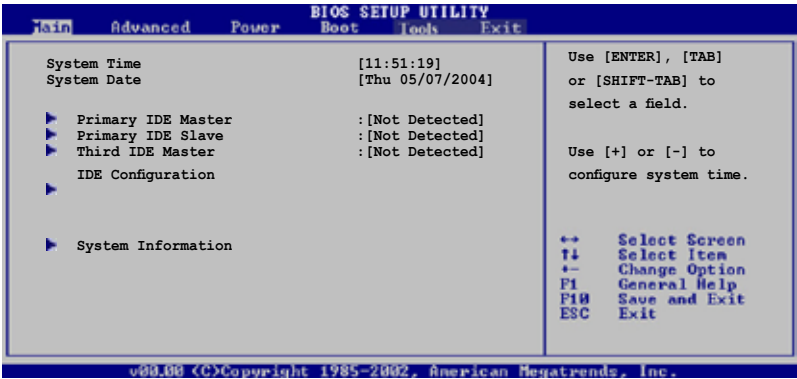
At the top right corner of the menu screen is a brief description of the selected item.

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



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

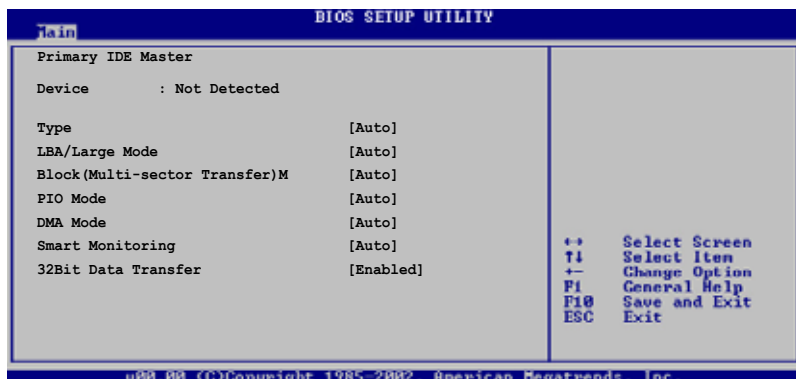
Allows you to set the system time.

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

Allows you to set the system date.

### 5.3.3 Primary and Third IDE Master/Slave

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



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

#### Type [Auto]

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

#### LBA/Large Mode [Auto]

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

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

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

## PIO Mode [Auto]

Selects the PIO mode.

Configuration options: [Auto] [0] [1] [2] [3] [4]

## DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5]

## SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.

Configuration options: [Auto] [Disabled] [Enabled]

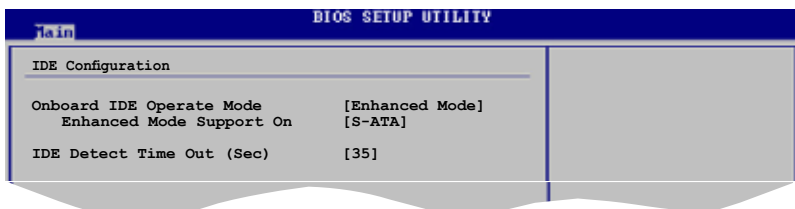
## 32Bit Data Transfer [Enabled]

Enables or disables 32-bit data transfer.

Configuration options: [Disabled] [Enabled]

## 5.3.4 IDE Configuration

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



## Onboard IDE Operate Mode [Enhanced Mode]

Disables or allows selection of the IDE operation mode depending on the operating system (OS) that you installed. Set to Enhanced Mode if you are using native OS, such as Windows® 2000/XP.

Configuration options: [Disabled] [Compatible Mode] [Enhanced Mode]

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

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

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

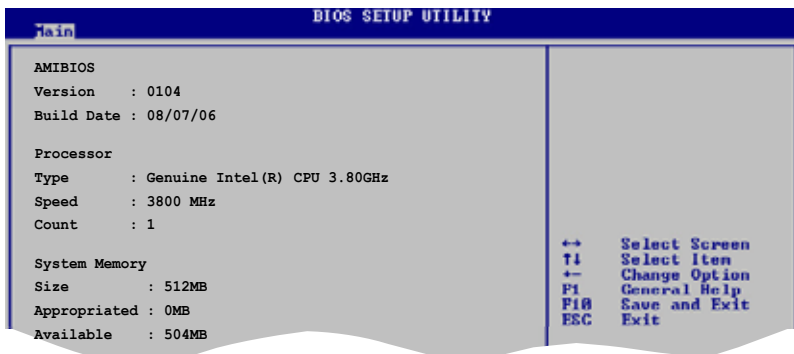
#### **IDE Detect Time Out [35]**

Selects the time out value for detecting ATA/ATAPI devices.

Configuration options: [0] [5] [10] [15] [20] [25] [30] [35]

### 5.3.5 System Information

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



#### AMI BIOS

Displays the auto-detected BIOS information

#### Processor

Displays the auto-detected CPU specification

#### System Memory

Displays the auto-detected system memory

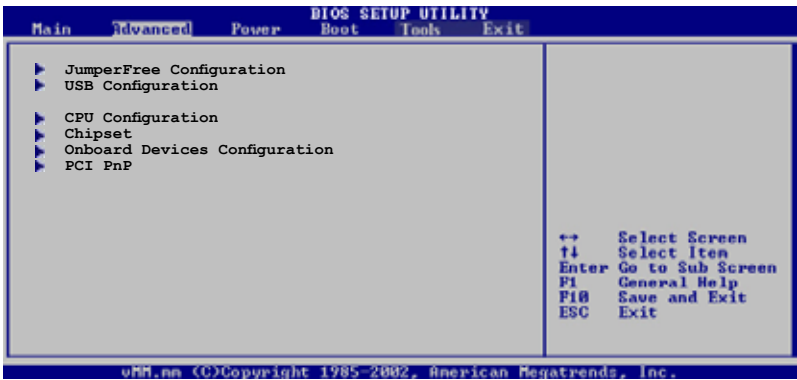


# 5.4 Advanced menu

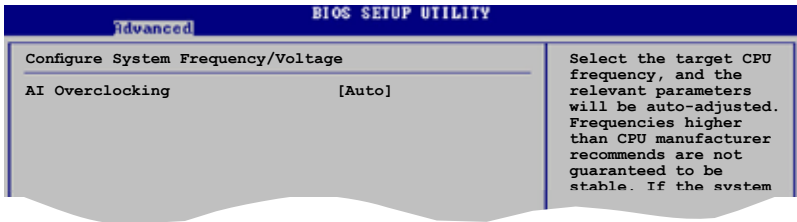
The Advanced menu items allow you to change the settings for the CPU and other system devices.



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



## 5.4.1 JumperFree Configuration



### AI Overclocking [Auto]

Allows selection of CPU overclocking options to achieve desired CPU internal frequency. Select either one of the preset overclocking configuration options:

**Overlock Profile** - allows you to individually set overclocking parameters.

**Auto** - loads the optimal settings for the system.

**Standard** - loads the standard settings for the system.



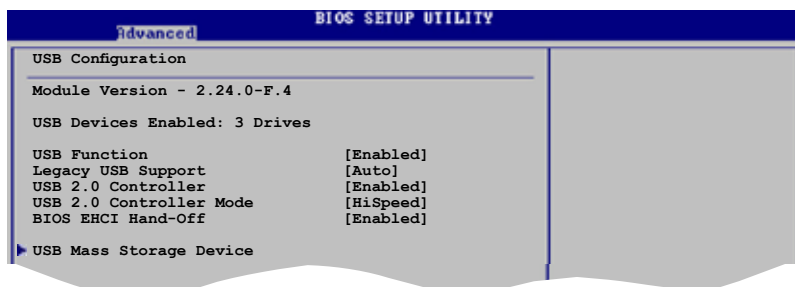
The following item appears only when you set the AI Overclocking item to [Overlock Profile].

## Overlock Options [Overlock 5%]

Configuration options: [Overlock 5%] [Overlock 10%]

## 5.4.2 USB Configuration

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



The Module Version and USB Devices Enabled items show the auto-detected values. If no USB device is detected, the item shows None.

### USB Function [Enabled]

Allows you to enable or disable the USB function.

Configuration options: [Disabled] [Enabled]

### Legacy USB Support [Auto]

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

### USB 2.0 Controller [Enabled]

Allows you to enable or disable the USB 2.0 controller.

Configuration options: [Disabled] [Enabled]

## USB 2.0 Controller Mode [HiSpeed]

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

## BIOS EHCI Hand-off [Enabled]

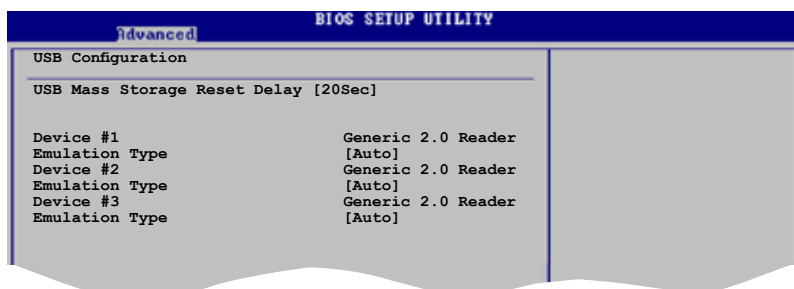
Allows you to enable support for operating systems without an EHCI hand-off feature. Configuration options: [Enabled] [Disabled]



Do not disable the BIOS EHCI Hand-Off option if you are running a Windows® operating system with USB device.

## USB Mass Storage Device

Allows you to configure the USB Mass Storage Class Devices.



## USB Mass Storage Reset Delay [20 Sec]

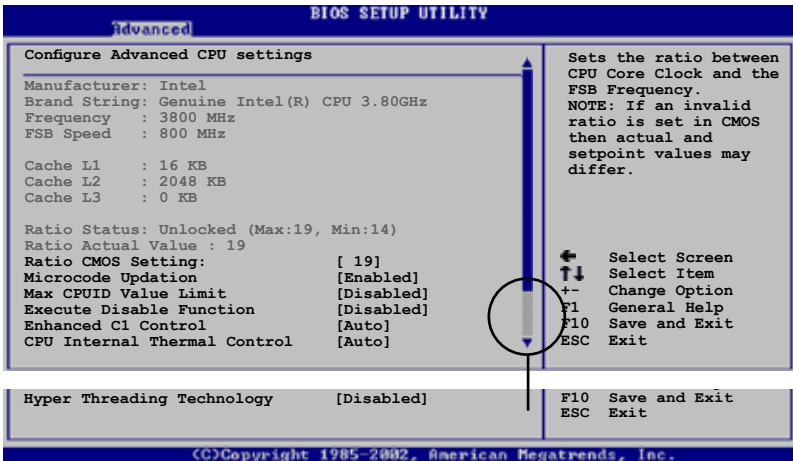
Allows you to configure the number of seconds POST waits for the USB mass storage device after start unit command. Configuration options: [10 Sec] [20 Sec] [30 Sec] [40 Sec]

## Emulation Type [Auto]

When it is set to [Auto], the USB devices that are less than 530MB will emulated as floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD (Ex. ZIP drive). Configuration options: [Auto] [Floppy] [Forced FDD] [Hard disk]

### 5.4.3 CPU Configuration

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



#### Ratio CMOS Setting [ 19]

Sets the ratio between the CPU Core Clock and the Front Side Bus frequency. The default value of this item is auto-detected by BIOS.

#### Microcode Updation [Enabled]

Allows you to enable or disable the microcode updation.

Configuration options: [Disabled] [Enabled]

### **Max CPUID Value Limit [Disabled]**

Enable this item to boot legacy operating systems that cannot support CPUs with extended CPUID functions.

Configuration options: [Disabled] [Enabled]

### **Execute Disable Function [Disabled]**

Enables or disables the Execute Disable function. This item appears only when you install a processor with the Execute Disable function.

Configuration options: [Disabled] [Enabled]

### **Enhanced C1 Control [Auto]**

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

### **CPU Internal Thermal Control [Auto]**

Disables or sets the CPU internal thermal control.

Configuration options: [Disabled] [Auto]

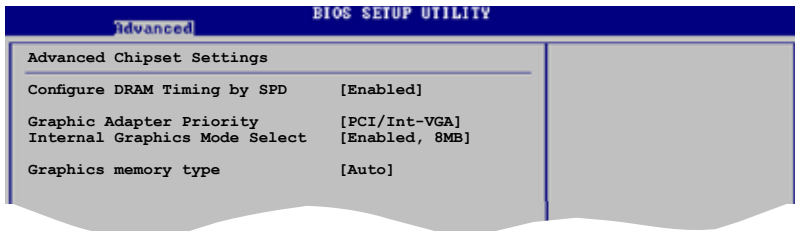
### **Hyper-Threading Technology [Disabled]**

Allows you to enable or disable the processor Hyper-Threading Technology.

Configuration options: [Disabled] [Enabled]

## 5.4.4 Chipset

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



### Configure DRAM Timing by SPD [Enabled]

When this item is enabled, the DRAM timing parameters are set according to the DRAM SPD (Serial Presence Detect). When disabled, you can manually set the DRAM timing parameters through the DRAM sub-items. The following sub-items appear when this item is Disabled.

Configuration options: [Disabled] [Enabled]

#### DRAM CAS# Latency [5 Clocks]

Controls the latency between the SDRAM read command and the time the data actually becomes available.

Configuration options: [6 Clocks] [5 Clocks] [4 Clocks] [3 Clocks]

#### DRAM RAS# Precharge [4 Clocks]

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

[5 Clocks] [6 Clocks]

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

Controls the latency between the DDR SDRAM active command and the read/write command. Configuration options: [2 Clocks] [3 Clocks] [4 Clocks] [5 Clocks] [6 Clocks]

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

Sets the RAS Activate timing to Precharge timing.

Configuration options: [4 Clock] [5 Clocks] ~ [18 Clocks]

#### DRAM Write Recovery Time [4 Clocks]

Sets the DRAM Write Recover Time.

Configuration options: [2 Clocks] [3 Clocks] [4 Clocks] [5 Clocks] [6 Clocks]

**Graphic Adapter Priority [PCI/Int-VGA]**

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

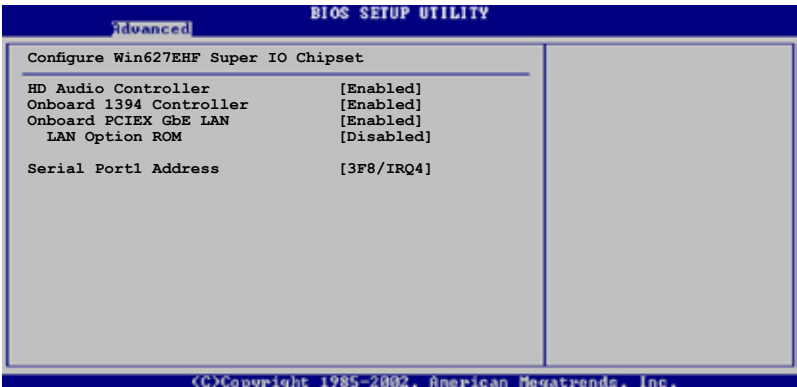
**Internal Graphics Mode Select [Enabled, 8MB]**

Sets the internal graphics mode.  
Configuration options: [Disabled] [Enabled, 1MB] [Enabled, 8MB]

**Graphics memory type [Auto]**

Sets the graphics memory type. Configuration options: [Auto] [DVMT]  
[FIX] [DVMT+FIX]

**5.4.5 Onboard Devices Configuration**



**HD Audio Controller [Enabled]**

Enables or disables the Azalia/AC'97 CODEC.  
Configuration options: [Enabled] [Disabled]

**OnBoard 1394 Controller [Enabled]**

Allows you to enable or disable the onboard 1394 controller.  
Configuration options: [Disabled] [Enabled]

**OnBoard PCIEX GbE LAN [Enabled]**

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

#### LAN Option ROM [Disabled]

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

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

Allows you to select the Serial Port1 base address.

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

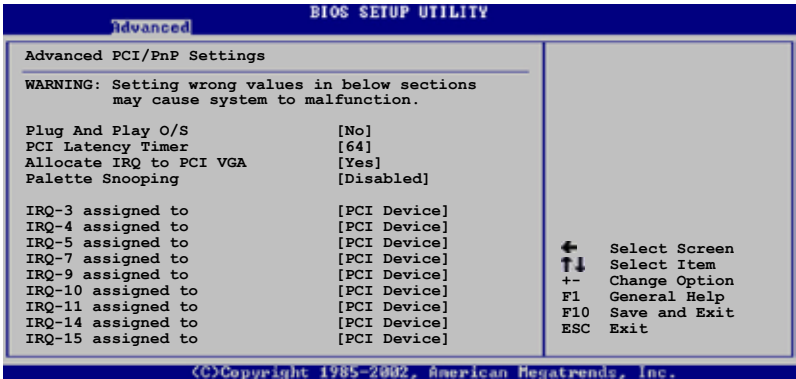


# 5.4.6 PCI PnP

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



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



## Plug and Play O/S [No]

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

## PCI Latency Timer [64]

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

## Allocate IRQ to PCI VGA [Yes]

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

## Palette Snooping [Disabled]

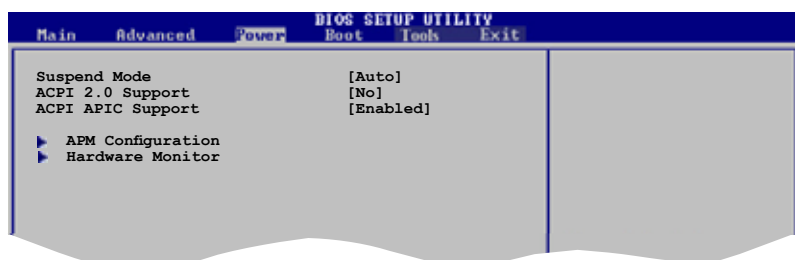
When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

## IRQ-xx assigned to [PCI Device]

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

## 5.5 Power menu

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



### 5.5.1 Suspend Mode [Auto]

Allows you to select the Advanced Configuration and Power Interface (ACPI) state to be used for system suspend.

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

### 5.5.2 ACPI 2.0 Support [No]

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

### 5.5.3 ACPI APIC Support [Enabled]

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

# 5.5.4 APM Configuration

BIOS SETUP UTILITY		
Power		
APM Configuration		Enabled or disable APM.
Power button Mode	[On/Off]	
Restore on AC Power Loss	[Power Off]	
Power On By RTC Alarm	[Disabled]	
Power On By External Modems	[Disabled]	
Power On By PCI Devices	[Disabled]	
Power On By PCIE Devices	[Disabled]	
Power On By PS/2 Keyboard	[Disabled]	
Power On By PS/2 Mouse	[Disabled]	

## Power Button Mode [On/Off]

Go into On/Off, or suspend when Power button is pressed. Configuration options: [On/Off] [Suspend]

## Restore on AC Power Loss [Power Off]

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

## Power On By RTC Alarm [Disabled]

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

## Power On By External Modems [Disabled]

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



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

## Power On By PCI Devices [Disabled]

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

### **Power On By PCIE Devices [Disabled]**

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

Configuration options: [Disabled] [Enabled]

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

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] [Space Bar] [Ctrl-Esc]

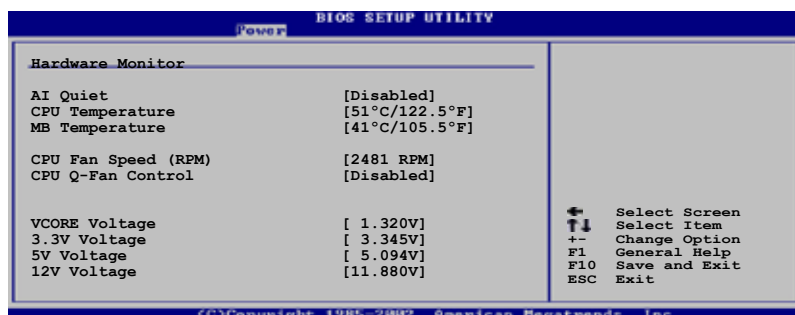
[Power Key]

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

When set to [Enabled], 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]

## 5.5.5 Hardware Monitor



### AI Quiet [Disabled]

Automatically optimize BIOS setting to Minimize CPU FAN speed according to system loading. Configuration options: [Disabled] [Enabled]

### CPU Temperature [xxxC/xxxF] MB Temperature [xxxC/xxxF]

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

Configuration options: [Ignored] [xxxC/xxxF]

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

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

Configuration options: [Ignored] [xxRPM]

### CPU Q-Fan Control [Disabled]

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

Configuration options: [Disabled] [Enabled]

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

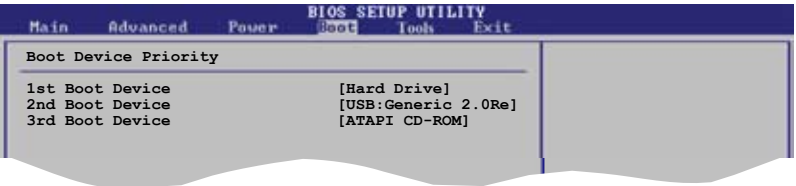
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

# 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.

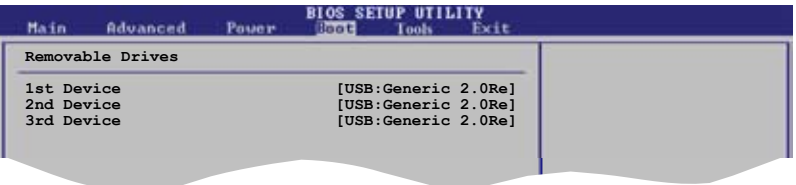


## 5.6.1 Boot Device Priority



## 5.6.2 Removable Drives

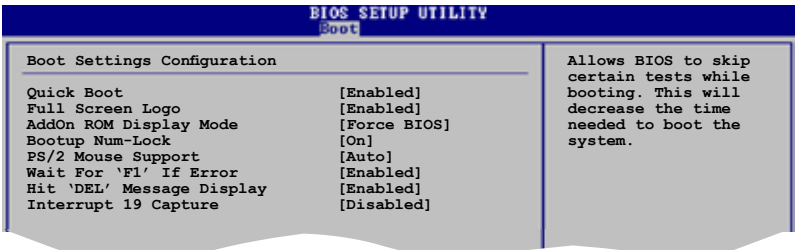
Specifies the Boot Device Priority sequence from available Removable Drives.



### 1st ~ 4th Device [USB:Generic 2.0Re]

Configuration options: [USB: Generic 2.0 Reader] [USB: Generic-Compact] [USB: Generic-SM/xD-Picture] [USB: Generic -SD/MMC] [USB: Generic -MS/MS Pro] [Disabled]

### 5.6.3 Boot Settings Configuration



#### Quick Boot [Enabled]

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

#### Full Screen Logo [Enabled]

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



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

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

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

#### Bootup Num-Lock [On]

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

#### PS/2 Mouse Support [Auto]

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

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

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

#### Hit 'DEL' Message Display [Enabled]

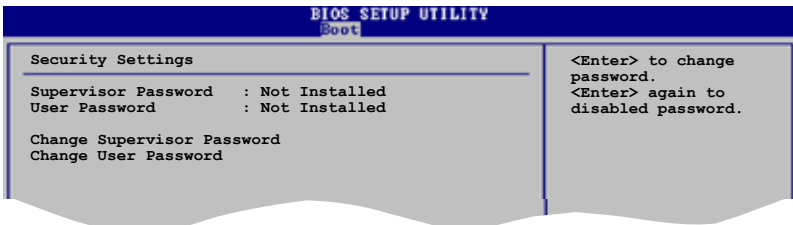
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

## Interrupt 19 Capture [Disabled]

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

### 5.6.4 Security

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



#### Change Supervisor Password

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

To set a Supervisor Password:

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

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

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

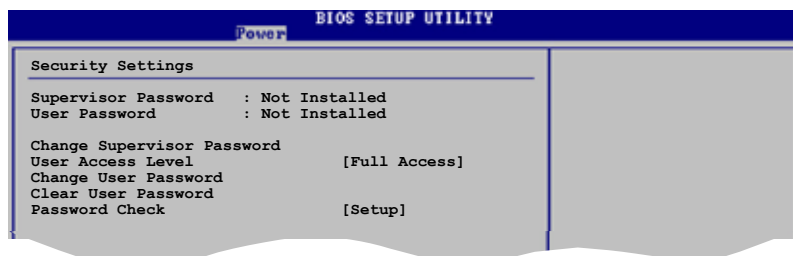
To clear the supervisor password, select the Change Supervisor Password then press <Enter>. The message "Password Uninstalled" appears.



If you forget your BIOS password, you can clear it by erasing the CMOS Real Time Clock (RTC) RAM. See section "2.6 Jumpers" for information on how to erase the RTC RAM.



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



## User Access Level [Full Access]

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

No Access prevents user access to the Setup utility.

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

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

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

## Change User Password

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

To set a User Password:

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

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

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

## Clear User Password

Select this item to clear the user password.

## Password Check [Setup]

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

Configuration options: [Setup] [Always]

## 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.



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

### Exit & Save Changes

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



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

## **Exit & Discard Changes**

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

## **Discard Changes**

This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select Ok 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 Ok to load default values. Select Exit & Save Changes or make other changes before saving the values to the non-volatile RAM.

