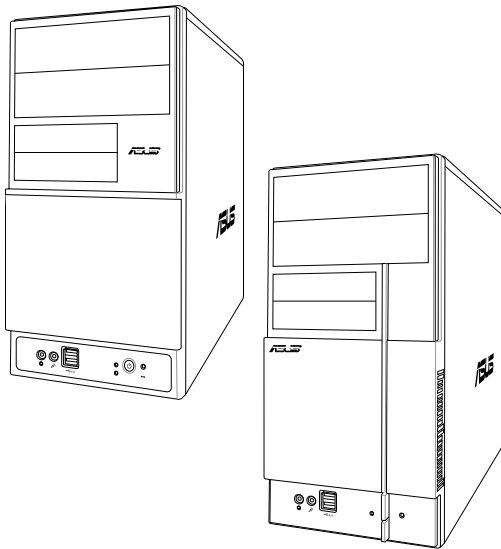




V-Series P5945GC

ASUS PC (Desktop Barebone)

Installation Manual



E3244

First Edition V1

May 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 Vintage V-Series P5945GC barebone system. This guide is intended for experienced users and integrators with hardware knowledge of personal computers.

How this guide is organized

This guide contains the following parts:

1. Chapter 1: System introduction

This chapter gives a general description of the ASUS V-Series 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 V-Series P5945GC system package for the following items.

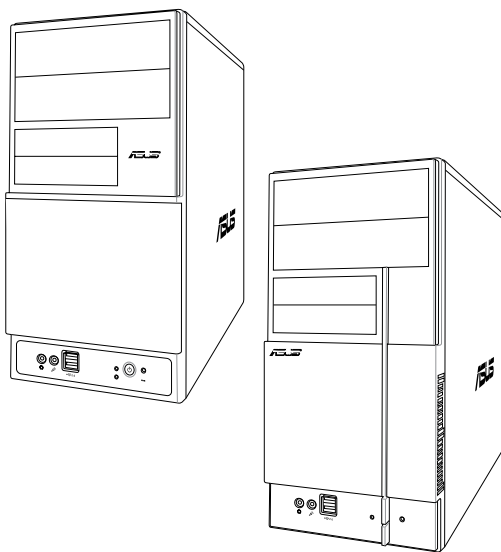


If any of the items is damaged or missing, contact your retailer immediately.

| Item description |
|--|
| 1. ASUS V-Series P5945GC barebone system with |
| • ASUS motherboard |
| • Power supply unit |
| • ASUS chassis |
| 2. Cable |
| • AC power cable |
| 3. Support CD |
| 4. User guide |
| 5. Telecom Adapter Card (Optional) |

Chapter 1

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



System introduction

1.1 Welcome!

Thank you for choosing the ASUS V-Series P5945GC!

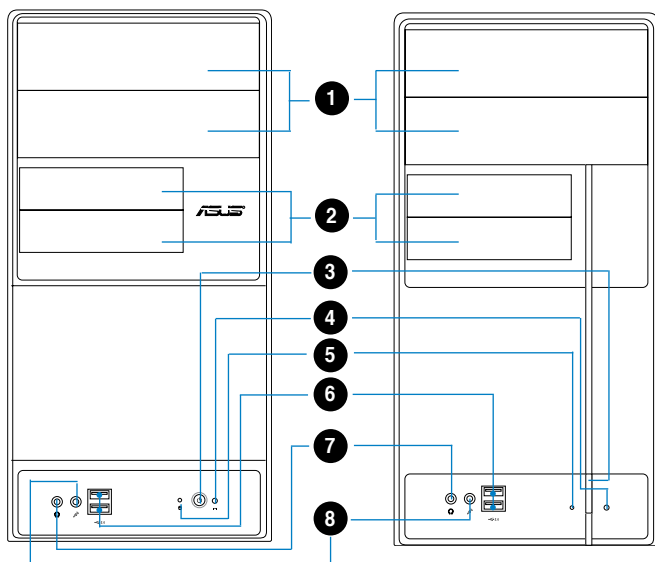
The ASUS V-Series P5945GC is an all-in-one barebone system with a versatile home entertainment feature.

The system comes in a stylish casing and powered by the ASUS motherboard that supports the Intel® Core™2 Extreme / Core™2 Duo / Pentium® D / Pentium® 4 / Celeron® D processors in the 775-land package.

The system supports up to 2 GB of system memory using DDR2-667/533/400 DIMMs. High-resolution graphics via integrated graphics controller or PCI Express x16 slot, Serial ATA, USB 2.0, and 6-channel audio feature the system and take you ahead in the world of power computing.

1.2 Front panel

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



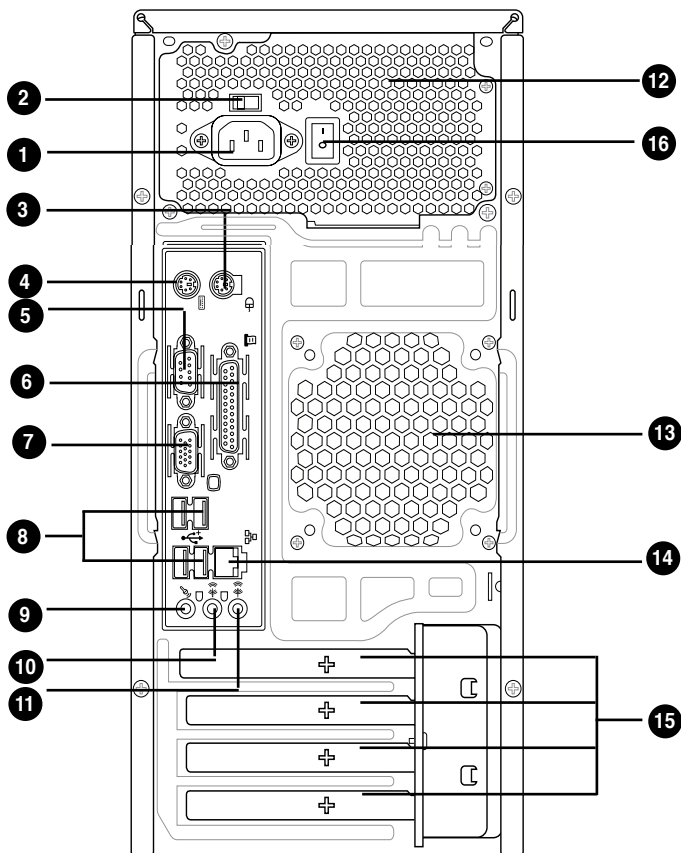
1. **Two empty 5.25-inch bays.** These bays are for IDE optical drives.
2. **3.5-inch drive bays.** These slots are for 3.5-inch floppy or hard disk drives.
3. **Power button.** Press this button to turn the system on.
4. **Reset button.** Press this button to reboot the system without turning off the power.
5. **HDD LED.** This LED lights up when data is read from or written to the hard disk drive.
6. **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.
7. **Headphone port.** This Line In (green) port connects a headphone with a stereo mini-plug.
8. **Microphone port.** This Mic (pink) port connects a microphone.



This V-series provide V2/V3 two types of front panel for users to choose, please refer to your product package for the front panel type you purchased.

1.3 Rear panel

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



1. **Power connector.** This connector is for the power cable and plug.
2. **Voltage selector.** This switch allows you to adjust the system input voltage according to the voltage supply in your area. See the section “Voltage selector” on page 1-6 before adjusting this switch.
3. **PS/2 mouse port.** This green 6-pin connector is for a PS/2 mouse.
4. **PS/2 keyboard port.** This purple 6-pin connector is for a PS/2 keyboard.
5. **Serial port.** This 9-pin COM port is for serial devices
6. **Parallel port.** This 25-pin port connects a printer, scanner, or other devices.
7. **VGA port.** This port connects a VGA monitor.

- 8. **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.
- 9. **Microphone port (pink).** This port connects a microphone.
- 10. **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.
- 11. **Line In port (light blue).** This port connects the tape, CD, DVD player, or other audio sources.
- 12. **Power supply unit fan vent.** This vent is for the PSU fan that provides ventilation inside the power supply unit.
- 13. **Chassis fan vent.** This vent is for the fan that provides ventilation inside the system chassis.
- 14. **LAN (RJ-45) port.** This port allows 10/100 connection to a Local Area Network (LAN) through a network hub.
- 15. **Expansion slot covers.** Remove these covers when installing expansion cards.
- 16. **Power Switch.** This switch is for switching on/off the power supply unit.



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

Audio 2, 4, or 6-channel configuration

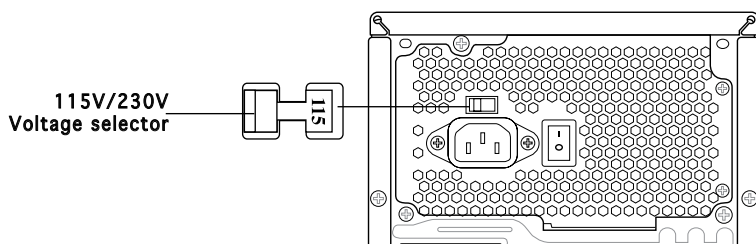
| Port | Headset 2-speaker | 4-speaker | 6-speaker |
|------------|----------------------|-------------------|-------------------|
| Light Blue | Line In | Surround Out | Surround Out |
| Lime | Line Out | Front Speaker Out | Front Speaker Out |
| Pink | Mic In | Mic In | Center/Bass |

Voltage selector

The PSU has a 115 V/230 V voltage selector switch located beside the power connector. Use this switch to select the appropriate system input voltage according to the voltage supply in your area.

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

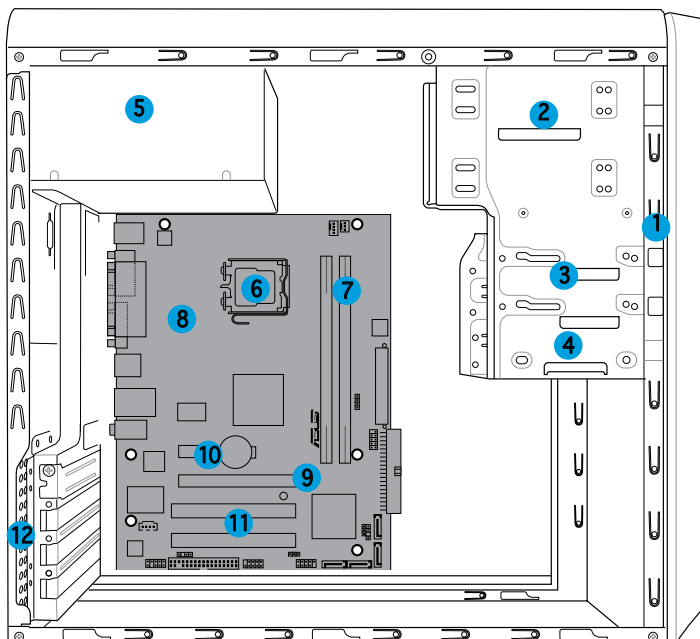
If the voltage supply in your area is 200-240 V, set this switch to 230 V.



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

1.4 Internal components

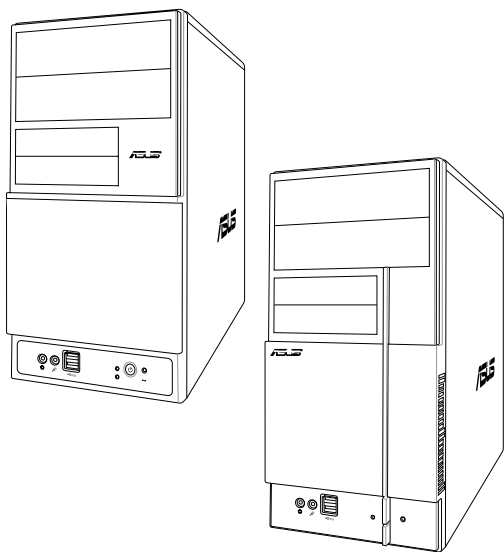
The illustration below is the internal view of the system when you remove the top cover and the power supply unit. The installed components are labeled for your reference. Proceed to Chapter 2 for instructions on installing additional system components.



- | | |
|---------------------------------|-------------------------|
| 1. Front panel cover | 8. ASUS motherboard |
| 2. 5.25-inch optical drive bays | 9. PCI Express x16 slot |
| 3. Floppy disk drive bay | 10. PCI Express x1 slot |
| 4. Hard disk drive bay | 11. PCI slots |
| 5. Power supply unit | 12. Metal bracket lock |
| 6. CPU socket | |
| 7. DIMM sockets | |

Chapter 2

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



Basic installation

2.1 Preparation

Before you proceed, make sure that you have all the components 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
6. Floppy disk drive

Tool

Phillips (cross) screw driver

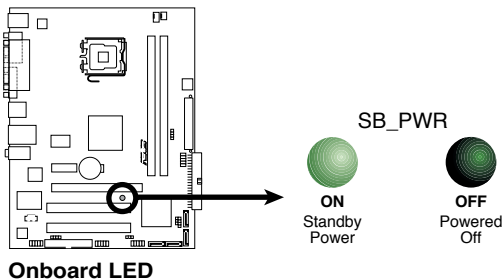
2.2 Before you proceed

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



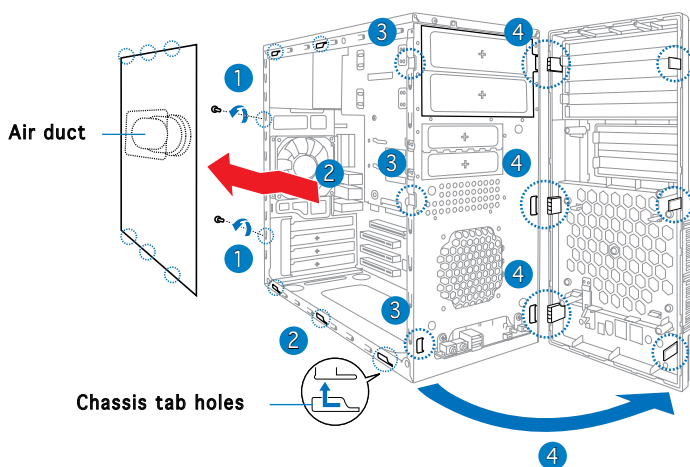
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components to avoid damaging them due to static electricity.
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place 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 side cover and front panel assembly

1. Remove the cover screws on the rear panel.
2. Pull the side cover toward the rear panel until its hooks disengage from the chassis tab holes. Set the side cover aside.
3. Locate the front panel assembly hooks, then lift them until they disengage from the chassis.
4. Swing the front panel assembly to the right, until the hinge-like tabs on the right side of the assembly are exposed.
5. Remove the front panel assembly, then set aside.



2.4 Central Processing Unit (CPU)

2.4.1 Overview

The motherboard comes with a surface mount LGA775 socket supporting Intel® processors in the 775-land package. This system is designed for Intel® Core™2 Duo Desktop processors (65W) and well verified. Any other processor family higher than 65W may trigger the CPU throttle protection.



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

To install a CPU:

1. Locate the CPU socket on the motherboard.

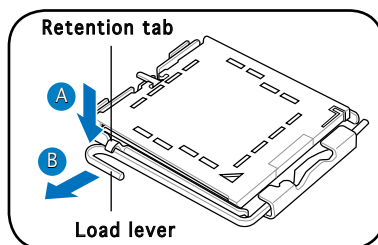


Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

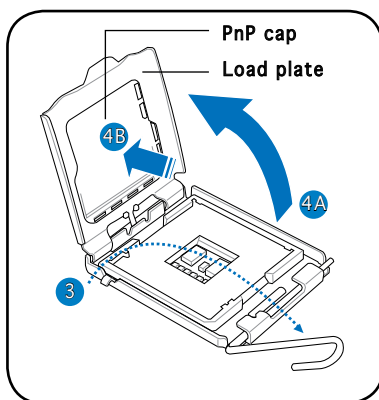
2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.



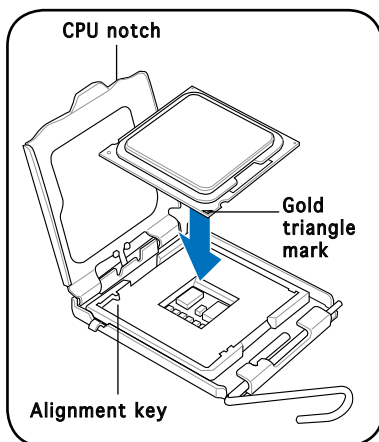
To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.



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).



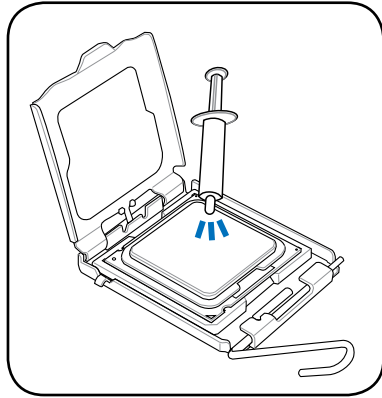
5. Position the CPU over the socket, making sure that the gold triangle is on the bottom-left corner of the socket then fit the socket alignment key into the CPU notch.



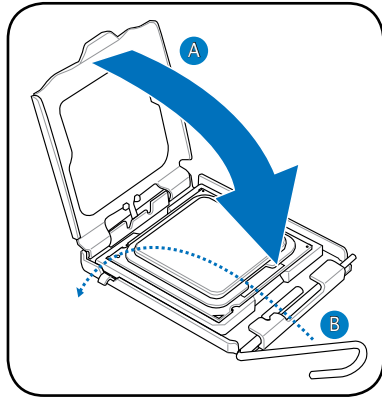
6. Apply Thermal Interface Material on the CPU before closing the load plate.



DO NOT eat the Thermal Interface Material. If it gets into your eyes or touches your skin, make sure to wash it off immediately, and seek professional medical help.



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



2.4.3 Installing the CPU fan and heatsink assembly

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



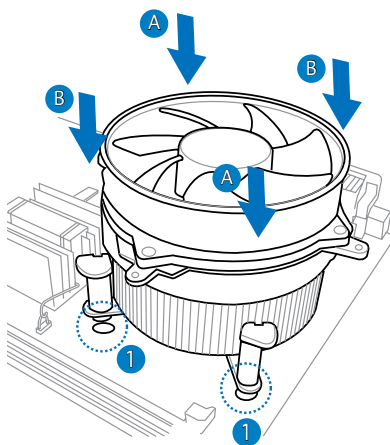
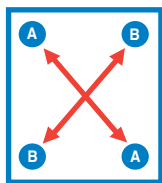
- When you buy a boxed Intel® Pentium® 4 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel®-certified multi-directional heatsink and fan.
- Your Intel® Pentium® 4 LGA775 heatsink and fan assembly comes in a push-pin design and requires no tool to install.



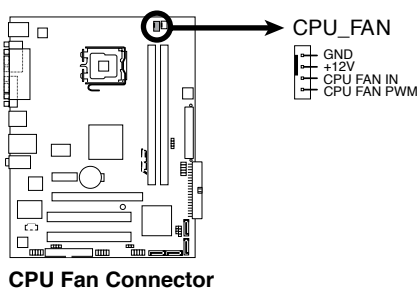
If you purchased a separate CPU heatsink and fan assembly, make sure that the Thermal Interface Material is properly applied to the CPU heatsink or CPU before you install the heatsink and fan assembly.

To install the CPU heatsink and fan:

1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.
2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.



3. When the fan and heatsink assembly is in place, connect the CPU fan cable to the connector on the motherboard.

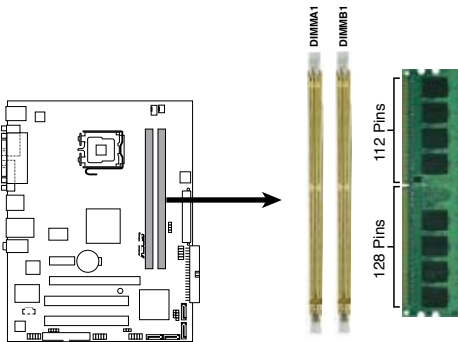


Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

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:



240-pin DDR2 DIMM Sockets

| Channel | Sockets |
|-----------|---------|
| Channel A | DIMM_A1 |
| Channel B | DIMM_B1 |

2.5.1 Memory configurations

You may install up to 2 GB system memory using 256 MB, 512 MB, 1 GB, unbuffered non-ECC DDR2 DIMMs.



- Always install DIMMs with the same CAS latency. For optimum compatibility, it is recommended that you obtain memory modules from the same vendor. Refer to the DDR2 Qualified Vendors List for details.
- This motherboard does not support memory modules made up of 128 Mb chips.

2.5.2 DDR2 Qualified Vendors List

The following table lists the memory modules that have been tested and qualified for use with this motherboard. Visit the ASUS website (www.asus.com) for the latest DDR2 DIMM modules for this motherboard.



Make sure to choose the right QVLs (Qualified Vendors List) from ASUS website according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.

DDR2 533 Qualified Vendors List

| Size | Vendor | Model | Brand | Side(s) | Component | DIMM support | |
|-------|----------|-----------------------|----------|---------|-----------------------------|--------------|---|
| | | | | | | A | B |
| 256MB | Kingston | KVR533D2N4/256 | Elpida | SS | E5116AB-5C-E | • | • |
| 256MB | Kingston | KVR533D2N4/256 | Elpida | SS | E5116AF-5C-E | • | • |
| 512MB | Kingston | KVR533D2N4/512 | Hynix | DS | HY5PS56821F-C4 | • | • |
| 512MB | Kingston | KVR533D2N4/512 | Infineon | SS | HYB18T512800AF3733336550 | • | • |
| 1G | Kingston | KVR533D2N4/1G | Kingston | DS | D6408TE7BL-37 | • | • |
| 256MB | Samsung | M378T3253FG0-CD5 | Samsung | SS | K4T56083QF-GCD5 | • | • |
| 512MB | Samsung | M378T6553BG0-CD5 | Samsung | SS | K4T51083QB-GCD5 | • | • |
| 256MB | Qimonda | HY564T32000HU-3.7-A | Qimonda | SS | HYB18T512160AF-3.7AFSS31270 | • | • |
| 512MB | Qimonda | HY564T64000GU-3.7-A | Qimonda | SS | HYB18T512800AC37SSS11511 | • | • |
| 512MB | Qimonda | HY564T64000HU-3.7-A | Qimonda | SS | HYB18T512800AF37SSS12079 | • | • |
| 512MB | Qimonda | HY564T64000HU-3.7-A | Qimonda | SS | HYB18T512800AF37SSS29334 | • | • |
| 256MB | HY | HYMP532U64CP6-C4 AB | Hynix | SS | HY5PS121621CFP-C4 | • | • |
| 1G | HY | HYMP512U64CP8-C4 AB | Hynix | DS | HY5PS12821CFP-C4 | • | • |
| 512MB | Micron | MT 16HTF6464AG-53EB2 | Micron | DS | D9B0M | • | • |
| 512MB | Micron | MT 16HTF6464AG-53EB2 | Micron | DS | Z9BQT | • | • |
| 1G | Micron | MT 16HTF12864AY-53EA1 | Micron | DS | D9CRZ | • | • |
| 512MB | Corsair | VS512MB533D2 | Corsair | DS | MIII0052532M8CEC | • | • |
| 512MB | Elpida | EBE51UD8ABFA-5C-E | Elpida | SS | E5108AB-5C-E | • | • |
| 512MB | Kingmax | KLBC28F-A8KB4 | Kingmax | SS | KKEA8884IAK-37 | • | • |
| 256MB | Kingmax | KLBB68F-36EP4 | Elpida | SS | E5116AB-5C-E | • | • |
| 512MB | Kingmax | KLBC28F-A8EB4 | Elpida | SS | E5108AE-5C-E | • | • |
| 512MB | PQI | MEAB-323LA | PQI | SS | D2-E04180W025 | • | • |
| 512MB | AENEON | AET660UD00-370A98Z | AENEON | SS | AET93F370A G 0513 | • | • |
| 256MB | AENEON | AET560UD00-370A98Z | AENEON | SS | AET94F370AWVV34635G0520 | • | • |
| 512MB | AENEON | AET660UD00-370A98Z | AENEON | SS | AET93F370A 3VV36328G 0522 | • | • |
| 512MB | AENEON | AET660UD00-370A98X | AENEON | SS | AET93F370A 0518 | • | • |
| 12MB | AENEON | AET660UD00-370A88S | AENEON | DS | AET82F370A 0550 | • | • |
| 512MB | AENEON | AET660UD00-370B97X | AENEON | SS | AET93R370B 0640 | • | • |
| 1G | AENEON | AET760UD00-370A98Z | AENEON | DS | AET93F370A 0551 | • | • |
| 1G | AENEON | AET760UD00-370A98S | AENEON | DS | AET92F370A 0606 | • | • |
| 1G | AENEON | AET760UD00-370B97X | AENEON | DS | AET93R370B 0640 | • | • |
| 1G | AENEON | AET760UD00-370B97S | AENEON | DS | AET92R370B 0644 | • | • |
| 512MB | REMAXEL | RML1040EG38D6F-533 | Elpida | SS | E5108AG-5C-E | • | • |

(continued on the next page)

| Size | Vendor | Model | Brand | Side(s) | Component | DIMM support | |
|-------|----------|---------------------|----------|---------|--------------------------|--------------|---|
| | | | | | | A | B |
| 1G | VERITECH | GTP01GHLTMS6DG | VERITECH | DS | VTD264M8PC6G01A164129621 | • | • |
| 256MB | TAKEMS | TMS25B264B161-534KQ | takeMS | SS | MS18T51216-3.70711 | • | • |
| 512MB | TAKEMS | TMS51B264C081-534QI | takeMS | SS | MS18T51280-3.7 | • | • |
| 512MB | TAKEMS | TMS51B264C081-534AP | takeMS | SS | MS18T51280-3.7P0704D | • | • |
| 512MB | TAKEMS | TMS51B264C081-534AE | takeMS | SS | MS18T51280-3.7EA07100 | • | • |
| 1G | TAKEMS | TMS1GB264C081-534AE | takeMS | DS | MS18T51280-3.7EA0651D | • | • |
| 1G | TAKEMS | TMS1GB264C081-534QI | takeMS | DS | MS18T51280-3.7 | • | • |
| 1G | TAKEMS | TMS1GB264C081-534AP | takeMS | DS | MS18T51280-3.7P0645D | • | • |

DDR2 667 Qualified Vendors List

| Size | Vendor | Model | Brand | Side(s) | Component | DIMM support | |
|-------|----------|---------------------|----------|---------|----------------------------|--------------|---|
| | | | | | | A | B |
| 256MB | Kingston | KVR533D2N4/256 | Elpida | SS | E5116AB-5C-E | • | • |
| 256MB | Kingston | KVR667D2N5/256 | Elpida | SS | E2508AB-6E-E | • | • |
| 512MB | Kingston | KVR667D2N5/512 | Kingston | SS | D6408TE8WL-27 | • | • |
| 1G | Kingston | KVR667D2N5/1G | Kingston | DS | D6408TE8WL-3 | • | • |
| 512MB | Samsung | KR M378T6553CZ0-CE6 | Samsung | SS | K4T51083QC | • | • |
| 512MB | Samsung | KR M378T6453FZ0-CE6 | Samsung | DS | K4T56083QF-ZCE6 | • | • |
| 512MB | Samsung | M378T6553CZ3-CE6 | Samsung | SS | K4T51083QC-ZCE6 | • | • |
| 1G | Samsung | M378T2953CZ3-CE6 | Samsung | DS | K4T51083QC-ZCE6 | • | • |
| 1G | Samsung | KR M378T2953CZ0-CE6 | Samsung | DS | K4T51083QC-ZCE6 | • | • |
| 256MB | Qimonda | HYS64T32000HU-3S-A | Qimonda | SS | HYB18T512160AF-3SSSS17310 | • | • |
| 512MB | Qimonda | HYS64T32000HU-3S-A | Qimonda | SS | HYB18T5128000AF-3SSSS27416 | • | • |
| 512MB | Qimonda | HYS64T64000HU-3S-A | Qimonda | SS | HYB18T512800AF3SFS05346 | • | • |
| 1G | Qimonda | HYS64T128020HU-3S-A | Qimonda | DS | HYB18T512800AF3SSSS28104 | • | • |
| 512MB | Corsair | VS512MB667D2 | Corsair | DS | MII0052532M8CEC | • | • |
| 512MB | Corsair | CM2X512-5400C4 | Corsair | SS | Heat-Sink Package | • | • |
| 1G | Corsair | VS1GB667D2 | Corsair | DS | MID095D62864M8CEC | • | • |
| 256MB | HY | HYMP532U64CP6-Y5 AB | Hynix | SS | HY5PS121621CFP-Y5 | • | • |
| 512MB | HY | HYMP564U64AP8-Y4 AA | Hynix | SS | HY5PS12821AFP-Y4 | • | • |
| 512MB | HY | HYMP564U64AP8-Y5 AA | Hynix | SS | HY5PS12821AFP-Y5 | • | • |
| 1G | HY | HYMP512U64AP8-Y5 AB | Hynix | DS | HY5PS12821AFP-Y5 | • | • |
| 1G | HY | HYMP512U64CP8-Y5 AB | Hynix | DS | HY5PS12521CFP-Y5 | • | • |
| 512MB | Kingmax | KLCC28F-A8EB5 | Elpida | SS | E5108AE-6E-E | • | • |
| 512MB | Kingmax | KLCC28F-A8KB5 | Kingmax | SS | KKEA88B4LAUG-29DX | • | • |
| 1G | Kingmax | KLCD48F-A8KB5 | Kingmax | DS | KKEA88B4LAUG-29DX | • | • |
| 512MB | Apacer | 78.91092.420 | Elpida | SS | E5108AE-6E-E | • | • |
| 512MB | Apacer | AU512E667C5KBGC | Apacer | SS | AM4B5708MJS7E0627B | • | • |
| 512MB | Apacer | AU512E667C5KBGC | Apacer | SS | AM4B5708GQS7E06332F | • | • |
| 1G | Apacer | AU01GE667C5KBGC | Apacer | DS | AM4B5708GQS7E0636B | • | • |
| 1G | Apacer | 78.01092.420 | Elpida | DS | E5108AE-6E-E | • | • |
| 1G | Apacer | AU01GE667C5KBGC | Apacer | DS | AM4B5708MJS7E0627B | • | • |
| 512MB | ADATA | M20EL5G3H3160B1C0Z | Elpida | SS | E5108AE-6E-E | • | • |
| 512MB | ADATA | M20AD5G3H3166I1C52 | ADATA | SS | AD29608A8A-3EG20648 | • | • |
| 1G | ADATA | M20AD5G3I4176I1C52 | ADATA | DS | AD29608A8A-3EG20645 | • | • |

(continued on the next page)

| Size | Vendor | Model | Brand | Side(s) | Component | DIMM support | |
|-------|----------|---------------------|----------|---------|--------------------------|--------------|---|
| | | | | | | A | B |
| 512MB | VDATA | M2GVD5G3H31A41C52 | VDATA | SS | VD29608A8A-3EC20615 | • | • |
| 512MB | VDATA | M2YVD5G3H31P41C52 | VDATA | SS | VD29608A8A-3EG20627 | • | • |
| 512MB | VDATA | M2GVD5G3H1661C52 | VDATA | SS | VD29608A8A-3EG20637 | • | • |
| 1G | VDATA | M2GVD5G341P61C52 | VDATA | DS | VD29608A8A-3EG20627 | • | • |
| 1G | VDATA | M2GVD5G341C41C52 | VDATA | DS | VD29608A8A-3EC20620 | • | • |
| 1G | VDATA | M2GVD5G341761C52 | VDATA | DS | VD29608A8A-3EG20641 | • | • |
| 512MB | PSC | AL6E8E63B-6E1K | PSC | SS | A3R12E3GEF637BLC5N | • | • |
| 1G | PSC | AL7E8E63B-6E1K | PSC | DS | A3R12E3GEF637BLC5N | • | • |
| 256MB | Nanya | NT256T64UH4A1FY-3C | Nanya | SS | NT5TU32M16AG-3C | • | • |
| 512MB | Nanya | NT512T64U88A1BY-3C | Nanya | SS | NT5TU64M8AE-3C | • | • |
| 512MB | MDT | MDT 512MB | MDT | SS | 18D51280D-30648 | • | • |
| 1G | MDT | MDT 1024MB | MDT | DS | 18D51200D-30646 | • | • |
| 1G | MDT | MDT 1024MB | MDT | DS | 18D51280D-30646E | • | • |
| 1G | PQI | DDR2-667U 1G | Hynix | DS | HY5PS12821BFP-E3 A | • | • |
| 512MB | AENEON | AET660UD00-30DA98Z | AENEON | SS | AET93F30DA 0552 | • | • |
| 512MB | AENEON | AET660UD00-30DB97X | AENEON | SS | AET93R300B 0634 | • | • |
| 1G | AENEON | AET760UD00-30DA98Z | AENEON | DS | AET93F30DA8EE47414G 0540 | • | • |
| 512MB | AENEON | AET660UD00-30DA98Z | AENEON | SS | AET93F300A 0606 | • | • |
| 1G | AENEON | AET760UD00-30DA98Z | AENEON | DS | AET93F30DA 0604 | • | • |
| 1G | AENEON | AET760UD00-30DB97X | AENEON | DS | AET93R300B 0639 | • | • |
| 512MB | VERITECH | GTP512HLT4M5EG | VERITECH | SS | VTD264M8PCGG01A164129621 | • | • |
| 1G | VERITECH | GTP01GHLT5M5EG | VERITECH | DS | VTD264M8PCGG01A164129621 | • | • |
| 512MB | TEAM | TVDD512M667C5 | TEAM | SS | T2D648MT-6 | • | • |
| 1G | TEAM | TVDD1.02M667C4 | TEAM | DS | T2D648PT-6 | • | • |
| 512MB | Century | CENTURY 512MB | Nanya | SS | NT5TU64M8AE-3C | • | • |
| 512MB | Century | CENTURY 512MB | Hynix | SS | HY5PS12821AFP-Y5 | • | • |
| 1G | Century | CENTURY 1G | Hynix | DS | HY5PS12821AFP-Y5 | • | • |
| 1G | Century | CENTURY 1G | Nanya | DS | NT5TU64M8AE-3C | • | • |
| 512MB | KINGBOX | 512MB 667MHz | KINGBOX | SS | EPD264082200-4 | • | • |
| 1G | KINGBOX | DDRII 1G 667MHz | KINGBOX | DS | EPD264082200-4 | • | • |
| 512MB | TAKEMS | TMS51B264C081-665QJ | takeMS | SS | MS18T51280-3 | • | • |
| 512MB | TAKEMS | TMS51B264C081-665AP | takeMS | SS | MS18T51280-3S0627D | • | • |
| 1G | TAKEMS | TMS1GB264C081-665QJ | takeMS | DS | MS18T51280-3 | • | • |
| 1G | TAKEMS | TMS1GB264C081-665AE | takeMS | DS | MS18T51280-3SEA07100 | • | • |
| 1G | TAKEMS | TMS1GB264C081-665AP | takeMS | DS | MS18T51280-3SP0717 | • | • |

Side(s): SS - Single Sided

DS - Double Sided

DIMM Support:

A - supports one module inserted into either slot, in a Single-channel memory configuration.

B - supports one pair of modules inserted into the yellow slots as one pair of Dual-channel memory configuration.



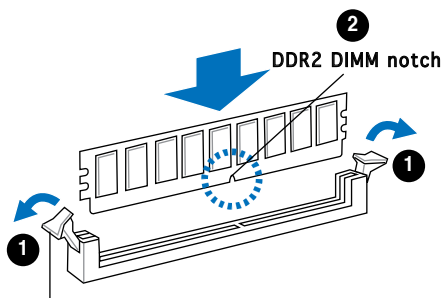
Visit the ASUS website (www.asus.com) for the latest memory Qualified Vendor List (QVL). Make sure to choose the right QVLs according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.

2.5.3 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.

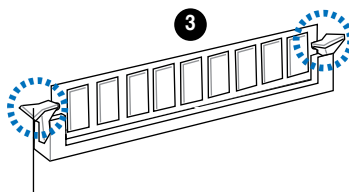


Unlocked retaining clip



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.

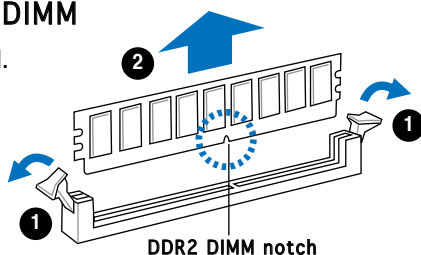


Locked Retaining Clip

2.5.4 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

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



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

2.6.1 Installing an expansion card

To install an expansion card:

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

2.6.2 Configuring an expansion card

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

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 5 for information on BIOS setup.
2. Assign an IRQ to the card. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

Standard interrupt assignments

| IRQ | Standard Function |
|-----|------------------------------|
| 0 | System Timer |
| 1 | Keyboard Controller |
| 2 | Re-direct to IRQ#9 |
| 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 |

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

IRQ assignments for this motherboard

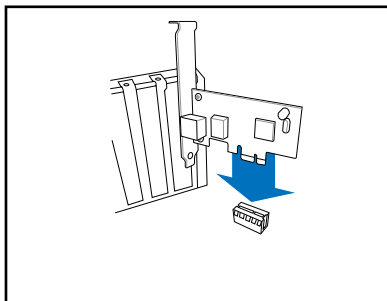
| | A | B | C | D | E | F | G | H |
|----------------------------|--------|--------|--------|--------|--------|------------|--------|---|
| PCI slot 1 | — | shared | — | — | — | — | — | — |
| PCI slot 2 | — | — | — | — | — | non-shared | — | — |
| PCI Express x16 slot | shared | — | — | — | — | — | — | — |
| PCI Express x1 slot | shared | — | — | — | — | — | — | — |
| Onboard USB controller 1 | — | — | — | — | shared | — | — | — |
| Onboard USB controller 2 | — | shared | — | — | — | — | — | — |
| Onboard USB controller 3 | — | — | shared | — | — | — | — | — |
| Onboard USB controller 4 | — | — | — | shared | — | — | — | — |
| Onboard USB 2.0 controller | — | — | — | — | shared | — | — | — |
| Onboard 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.

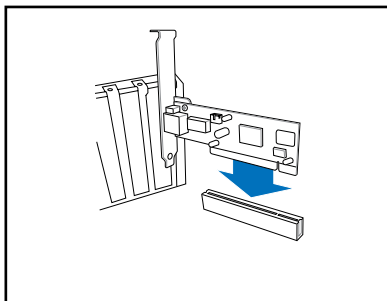
2.6.3 PCI Express x1 slot

This motherboard supports PCI Express x1 network cards, SCSI cards and other cards that comply with the PCI Express specifications. The figure shows a network card installed on the PCI Express x1 slot.



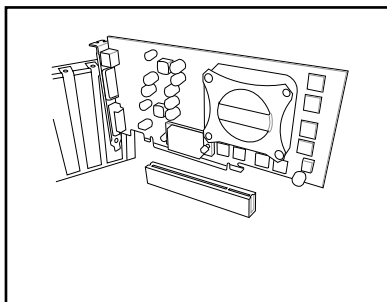
2.6.4 PCI slots

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



2.6.5 PCI Express x16 slot

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

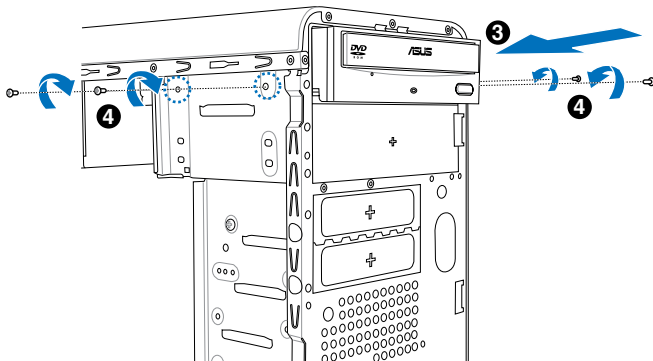


2.7 Installing an optical drive

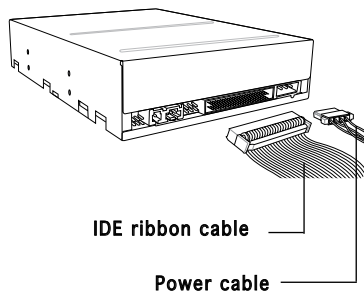
Refer to the instructions in this section if you wish to install a new optical drive.

Follow these steps to install an optical drive:

1. Place the chassis upright.
2. Remove the drive slot metal plate cover.
3. Insert the optical drive into the upper 5.25-inch drive bay and carefully push the optical drive into the bay until its screw holes align with the holes on the bay as shown.
4. Secure the optical drive with two screws on both sides of the bay.



5. Connect a power cable from the power supply to the power connector at the back of the optical drive.
6. Connect one end of the IDE ribbon cable to the IDE interface at the back of the optical drive, matching the red stripe on the cable with Pin 1 on the IDE interface.

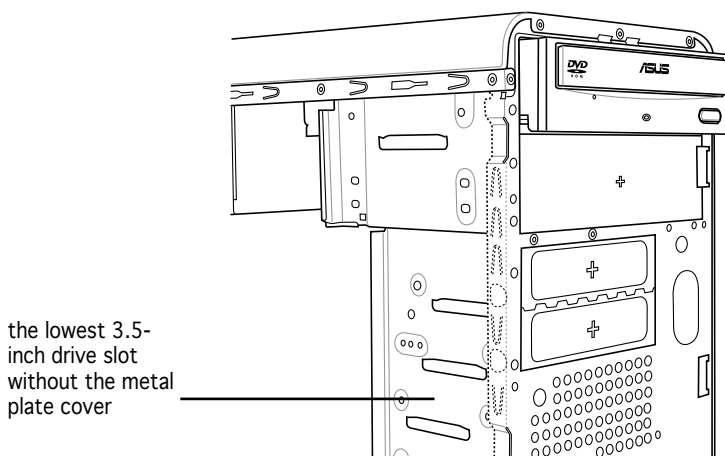


7. Connect the other end of the IDE ribbon cable to the IDE connector on the motherboard.
8. Remove the dummy drive slot cover from the front panel.
9. Replace the front panel.

2.8 Installing a hard disk drive

To install a Serial ATA hard disk drive:

1. Carefully place the hard disk into the the lowest 3.5-inch drive slot (without the metal plate cover).
2. Fasten the screws to secure the hard disk to the drive slot.



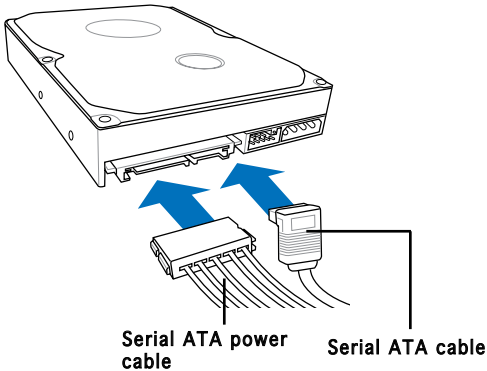
If you do not need to install the optional card reader into your system, you can install the HDD in the one of the 3.5-inch external bay (with the metal plate cover).

3. Connect one end of the Serial ATA cable to the SATA connector at the back of the drive, then connect the other end to a Serial ATA connector on the motherboard.

4. Connect a 5-pin Serial ATA power plug from the power supply unit to the 5-pin power connector at the back of the drive.

- OR -

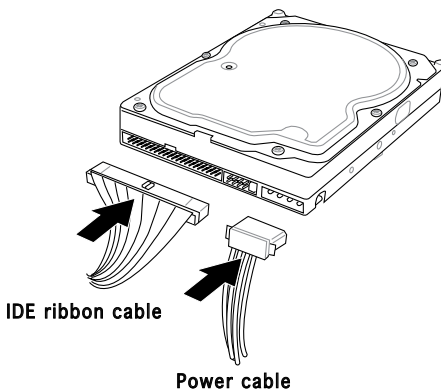
Connect a 4-pin (female) power plug from the power supply unit to the 4-pin (male) power connector at the back of the drive.



If your Serial ATA HDD has both 4-pin and 5-pin connectors at the back, use either the 5-pin SATA power adapter plug **OR** the legacy 4-pin power connector. **DO NOT** use both to prevent damage to components and to keep the system from becoming unstable.

To install an IDE hard disk drive:

1. Follow steps 1-2 of the previous section.
2. Connect the blue interface of the IDE ribbon cable to the IDE connector on the motherboard.





- If you will install only one hard disk drive, make sure to configure your hard disk drive as Master device before connecting the IDE cable and power plug. Refer to the HDD documentation on how to set the drive as a Master device.
- If you will install two IDE hard disk drives, configure the other device as Slave.

3. Connect the gray interface of the IDE ribbon cable to the IDE connector on the drive.
4. If you install two IDE hard disk drives, connect the black interface of the IDE ribbon cable to the IDE connector on the second (Slave) IDE hard disk drive.
5. Connect a 4-pin power plug from the power supply unit to the power connector at the back of the drive(s).

2.9 Installing the card reader

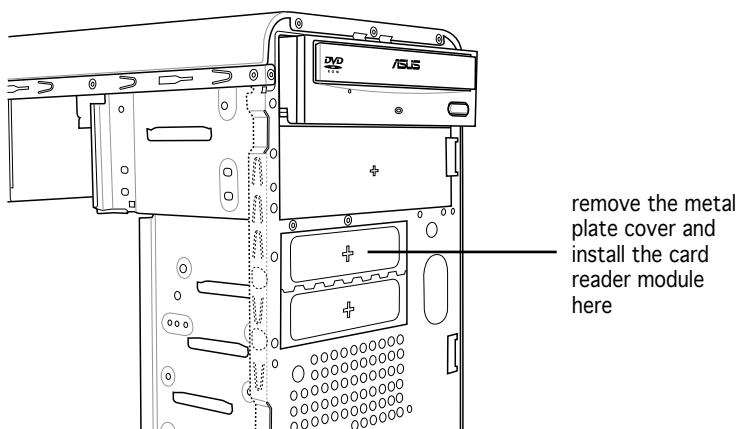
An optional card reader module (see the figure below) is available with the system. If you want to install the card reader into your system, follow the steps on the next page.

Note: the card reader is optional and users need to purchase separately.



To install the card reader module:

1. Remove the drive slot metal plate cover.
2. Carefully insert the card reader module into the 3.5-inch bay until the screw holes align with the holes on the bay.
3. Secure the card reader module with two screws on both sides.



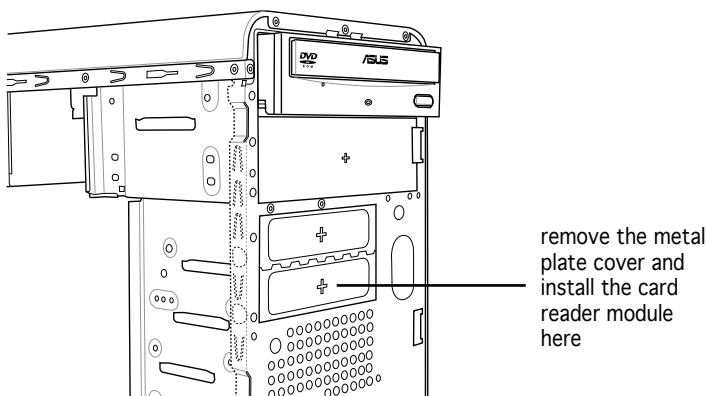
4. Connect the USB cable of the card reader to the USB connector on the motherboard.

2.10 Installing a floppy disk drive

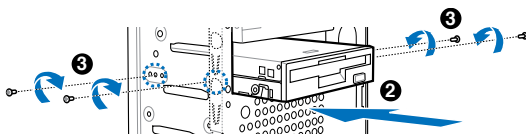
The system comes with one 3.25-inch drive bay for a floppy disk drive.

To install a floppy disk drive:

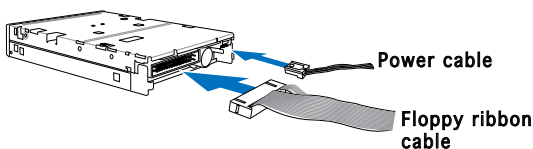
1. Remove the drive slot metal plate cover.



2. Carefully insert the floppy disk drive into the floppy drive bay until the screw holes align with the holes on the bay.
3. Secure the floppy disk drive with two screws on both sides.



4. Connect the floppy disk drive signal cable to the signal connector at the back of the drive.

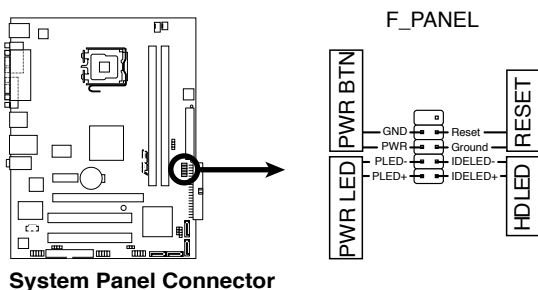
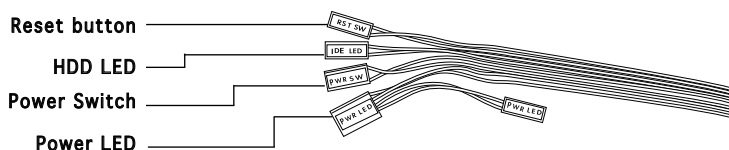


5. Connect the other end of the signal cable to the floppy disk drive connector on the motherboard. See page 4-6 for the location of the floppy disk drive connector.
6. Connect a 4-pin power cable from the power supply unit to the power connector at the back of the floppy disk drive.

2.11 Re-connecting cables

You may have disconnected some cables when you were installing components. You must re-connect these cables before you replace the chassis cover.

LED cables

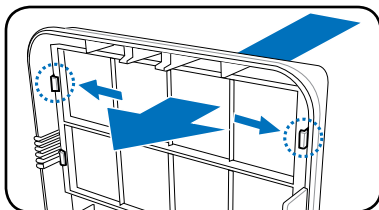


Connect the **reset button**, **power switch**, **power LED**, and **HDD LED** cables to their respective leads in the system panel connector on the motherboard.

2.12 Removing the bay covers and reinstalling the front panel assembly and side cover

If you installed an optical and/or floppy disk drive, remove the bay cover(s) on the front panel assembly before reinstalling it to the chassis. To do this:

1. Locate the bay cover locks.
2. Press the locks outward to release the bay cover.
3. Push the bay cover inward, then set it aside.
4. Follow the same instructions to remove the 3.5" drive bay cover.

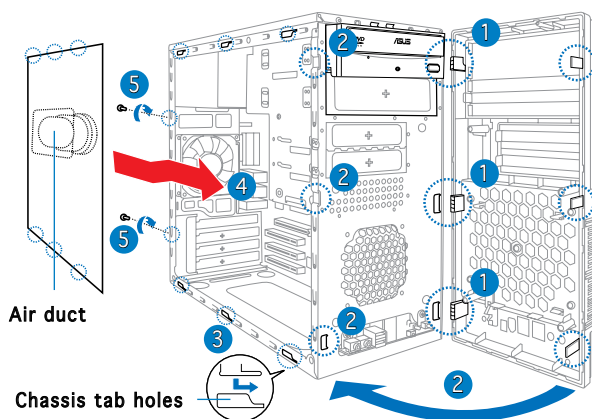


To reinstall the front panel assembly and side cover:

1. Insert the front panel assembly hinge-like tabs to the holes on the right side of the chassis.
2. Swing the front panel assembly to the left, then insert the hooks to the chassis until the front panel assembly fits in place.
3. Insert the six side cover hooks into the chassis tab holes .
4. Push the side cover to the direction of the front panel until it fits in place.
5. Secure the cover with two screws you removed earlier.

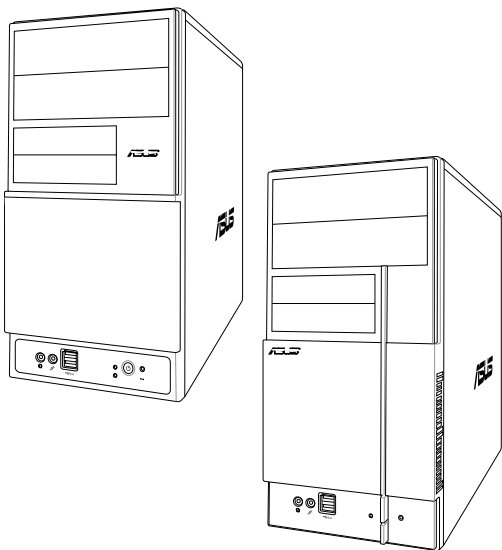


If the air duct interferes with the CPU fan, adjust the air duct accordingly.



Chapter 3

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



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.



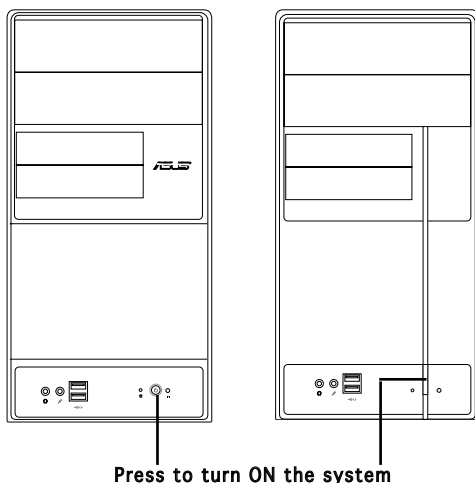
Because motherboard settings and hardware options vary, use the setup procedures presented in this chapter for general reference only. Refer to your OS documentation for more information.



- Windows XP OS setup cannot recognize Serial ATA hard drives without the necessary drivers. Use the bundled floppy disk when installing Windows XP OS to a Serial ATA hard drive.
- From the Windows XP setup screen, press F6 when prompted then follow succeeding screen instructions to install the SATA drivers.

3.2 Powering up

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



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.

Intel Chipset INF Update Program

This item installs the Intel® Chipset INF Update Program. This driver enables Plug-n-Play INF support for the Intel® chipset components on the motherboard. When installed to the target system, this driver provides the method for configuring the chipset components.

You can install this utility using three different modes: interactive, silent, or unattended preload. Installing the driver in interactive mode requires user input during installation. User input is not required when installing the driver in silent or unattended preload modes. Refer to the online help or readme file that came with the utility for details.

Intel Graphics Accelerator Driver

Installs the Intel Graphics Accelerator driver.

Realtek Audio Driver

Installs the Realtek Audio driver.

Attansic L2 Fast Ethernet

Installs the Attansic L2 Fast Ethernet.

3.3.2 Utilities menu

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



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).



You can also install the following utilities from the ASUS Superb Software Library CD.



ADOBE Acrobat Reader V7.0

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

Microsoft DirectX 9.0c

Installs the Microsoft® DirectX 9.0c driver. The Microsoft DirectX® 9.0c is a multimedia technology that enhances computer graphics and sound. DirectX® improves the multimedia features of your computer so you can enjoy watching TV and movies, capturing videos, or playing games in your computer. Visit the Microsoft website (www.microsoft.com) for updates.

Symantec Norton Internet Security

The anti-virus application detects and protects your computer from viruses that destroys data.

WinDVD Copy5 Trial

Installs the WinDVD Copy5 Trial version.

Corel Snapfire Plus SE

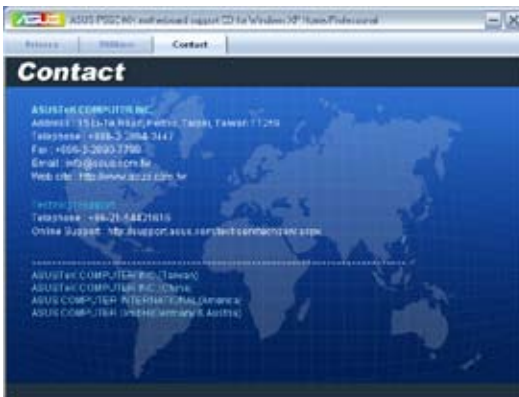
Installs the Corel Snapfire Plus SE software.



Most user manual files are in Portable Document Format (PDF). Install the Adobe® Acrobat® Reader from the Utilities menu before opening a user manual file.

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.












Click to close the Preference panel

Using PC Probe II

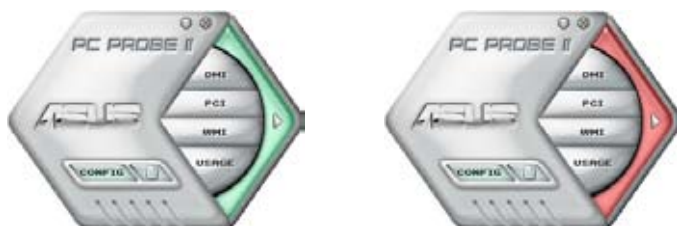
Main window

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.

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

Sensor alert

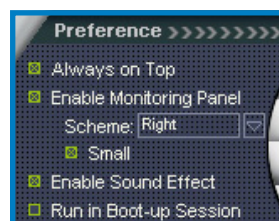
When a system sensor detects a problem, the main window right handle turns red, as the illustrations below show.



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.



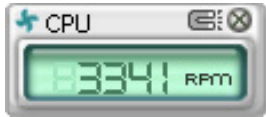
Hardware monitor panels

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

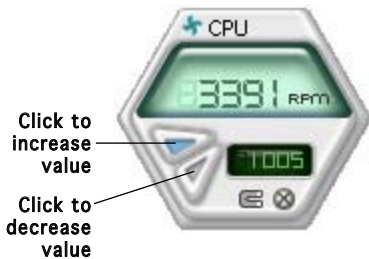
All monitor panels move together using a magnetic effect. If you want to detach a monitor panel from the group, click the horseshoe magnet icon. You can now move or reposition the panel independently.



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.

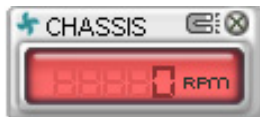


Monitoring sensor alert

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.

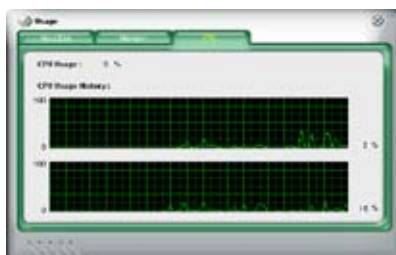


Usage

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

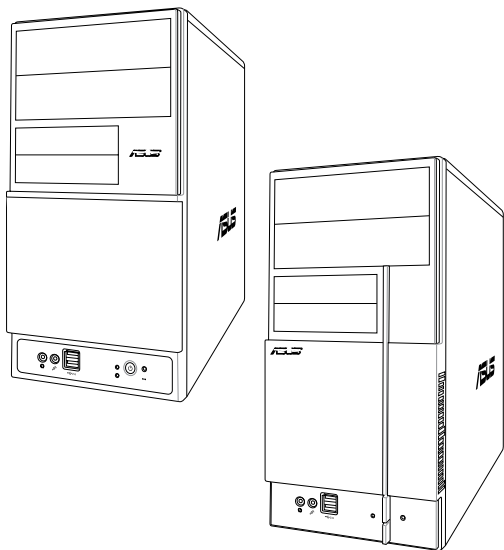
Applies your
changes

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.

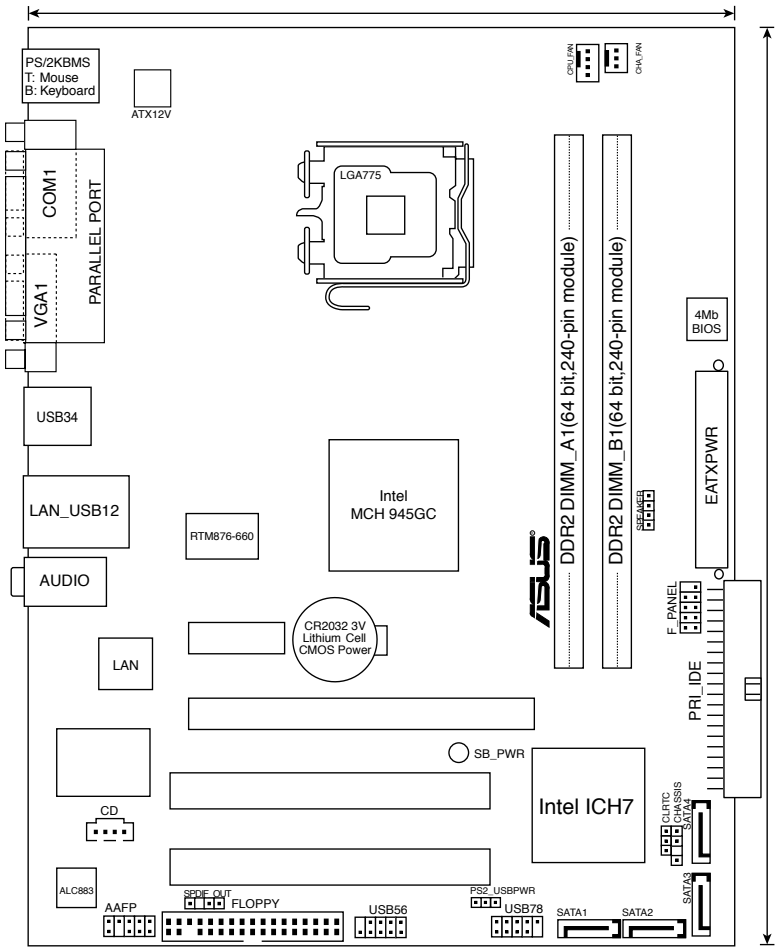


Motherboard introduction

4.1 Introduction

The Vintage V-Series 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)

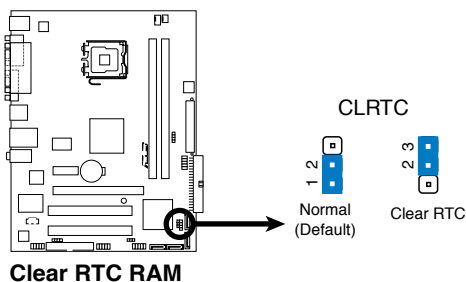
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the 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!

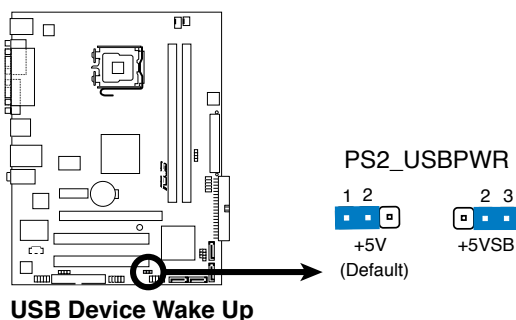


You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

3. USB device wake-up (3-pin USBPW12, USBPW56)

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

The USBPW12 jumper is for the rear USB ports (USB port 1-4). The USBPW56 jumper is for the internal USB connectors (USB port 5-8) that you can connect to additional USB ports.



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

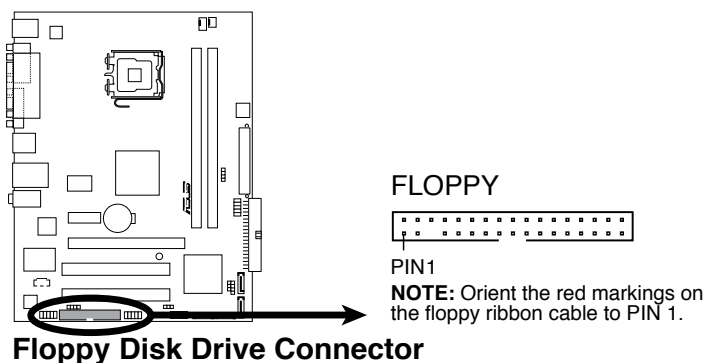
4.4 Connectors

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

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

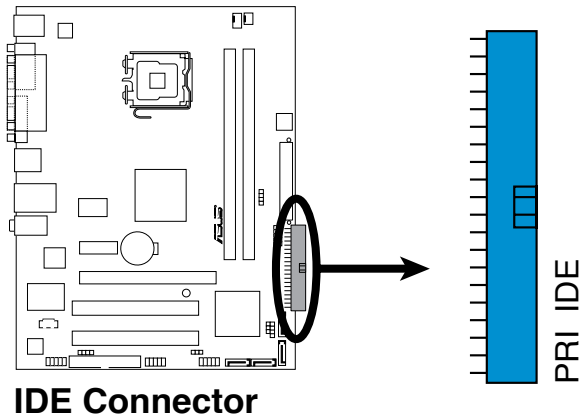


Pin 5 on the connector is removed to prevent incorrect cable connection when using an FDD cable with a covered Pin 5.



2. IDE connectors (40-1 pin PRI_IDE)

The onboard IDE connectors are for Ultra DMA 100/66/33 signal cables. 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 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 |



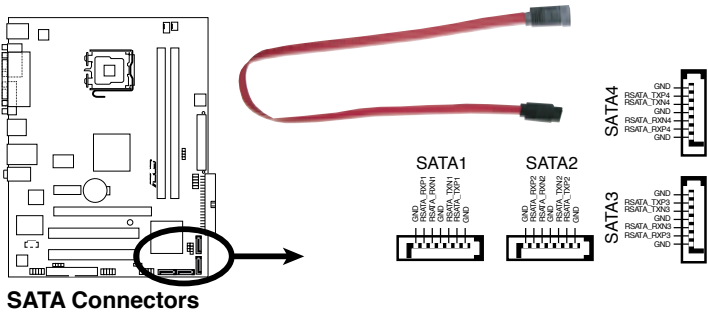
- Pin 20 on the IDE connector is removed to match the covered hole on the Ultra DMA cable connector. This prevents incorrect insertion when you connect the IDE cable.
- Use the 80-conductor IDE cable for Ultra DMA 100/66/33 IDE devices.



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

3. Serial ATA connectors
(7-pin SATA1, SATA2, SATA3, SATA4)

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



When using the connectors in Standard IDE mode, connect the primary (boot) hard disk drive to the SATA1/2 connector. Refer to the table below for the recommended SATA hard disk drive connections.

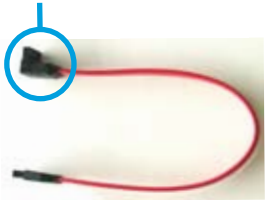
Serial ATA hard disk drive connection

| Connector | Color | Setting | Use |
|-----------|-------|---------|-----------|
| SATA1/2 | Red | Master | Boot disk |
| SATA3/4 | Black | Slave | Data Disk |



Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with a long card in PCI2 slot.

right angle side

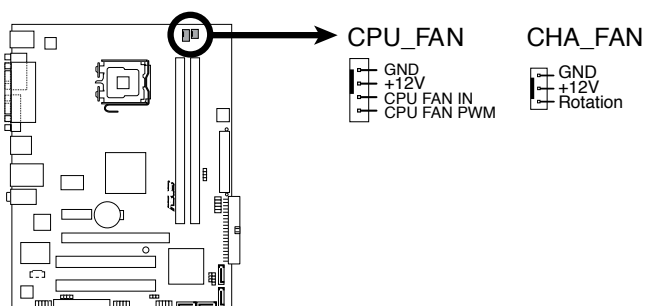


4. CPU, Power and Chassis fan connectors (4-pin CPU_FAN, 3-pin CHA_FAN)

The fan connectors support cooling fans of a total of 1A~2.2A (26.4W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.



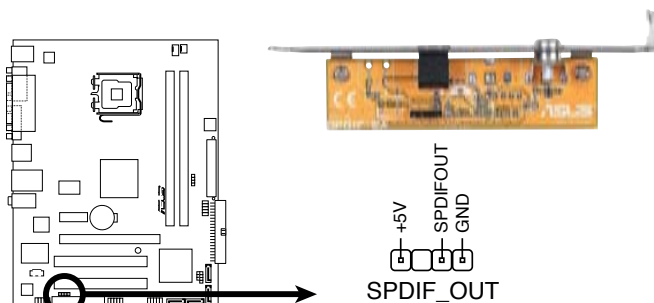
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors.



Fan Connectors

5. Digital Audio connector (4-1 pin SPDIF_OUT)

This connector is for the S/PDIF audio module to allow digital sound output. Connect one end of the S/PDIF audio cable to this connector and the other end to the S/PDIF module.



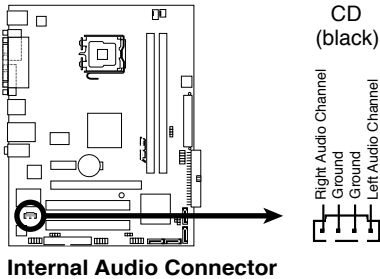
Digital Audio Connector



The S/PDIF out module is purchased separately.

7. Optical drive audio connector (4-pin CD)

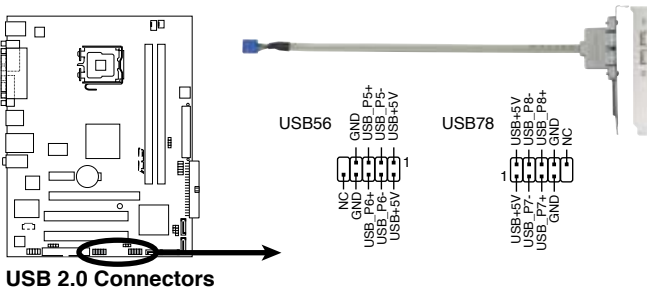
This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, TV tuner, or MPEG card.



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

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

These connectors are for USB 2.0 ports. Connect the USB 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.

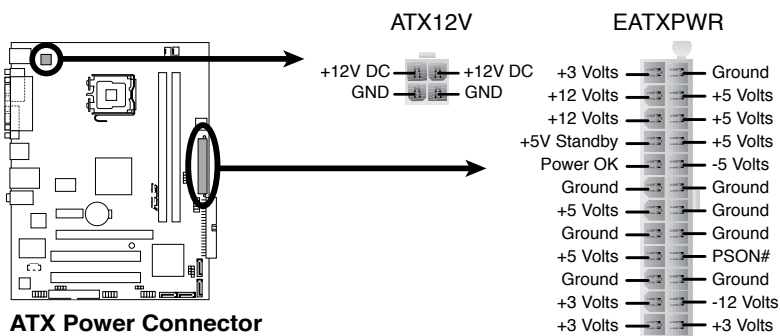
8. ATX power connectors (24-pin EATXPWR and 4-pin ATX12V)

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



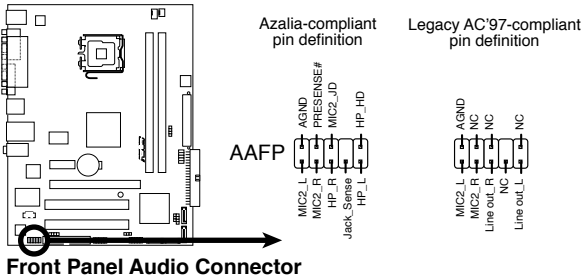
- Do not forget to connect the 4-pin ATX +12 V power plug; otherwise, the system will not boot.
- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system.
- If you intent to use a PSU with 20-pin and 4-pin power plugs, make sure that the 20-pin power plug can provide at least 15A on +12V and that the PSU has a minimum power rating of 350 W. The system may become unstable or may not boot up if the power is inadequate.
- The ATX 12 V Specification 2.0-compliant PSU passed the motherboard power requirement test with the following configuration:

| | | |
|-----------------------|---|------------------------------------|
| CPU | : | Intel® Pentium® 4 3.6 GHz |
| Memory | : | 512 MB DDR (x 4) |
| Graphics card | : | PCI Express x16 Nvidia EN5900 |
| Parallel ATA devices: | : | IDE hard disk drive (x 2) |
| Serial ATA device | : | SATA hard disk drive |
| Optical drive | : | CD-ROM (x2) |
| SCSI devices | : | SCSI card and SCSI hard disk drive |
- You must install a PSU with a higher power rating if you intend to install additional devices.



11. Front panel audio connector (10-1 pin AAFP)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC'97 audio standard.

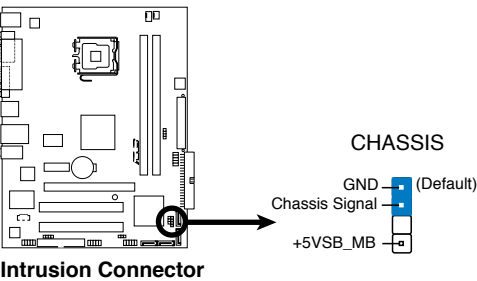


- We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.
- By default, this connector is set to AC97 Audio. If you want to connect a High Definition front panel audio module to this connector, set the **Front Panel Support Type** item in the BIOS to [HD Audio]. See section “2.4.5 Onboard Device Configuration” for details.

12. Chassis intrusion connector (4-1 pin CHASSIS)

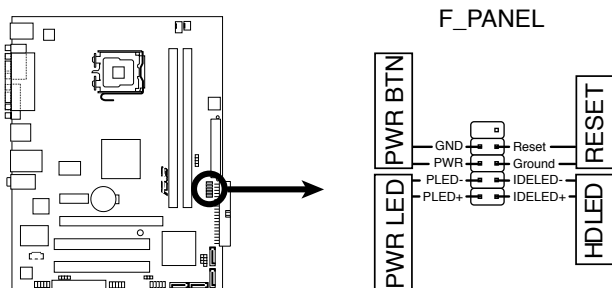
This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

By default, the pins labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.



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

This connector supports several chassis-mounted functions.

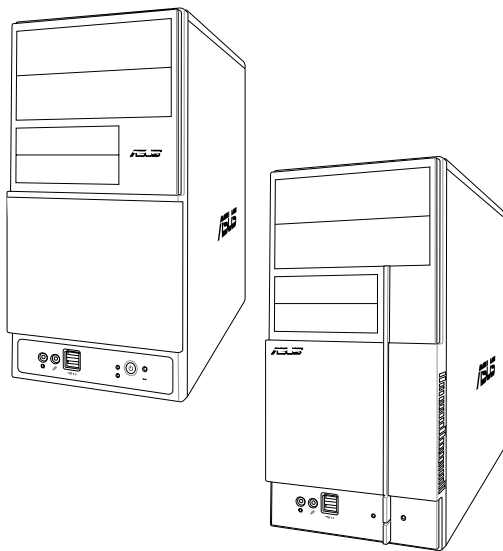


System Panel Connector

- **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 in DOS using a floppy disk or the motherboard support CD.)
2. **ASUS AFUDOS** (Updates the BIOS in DOS mode using a bootable floppy disk.)
3. **ASUS CrashFree BIOS 2** (Updates the BIOS using a bootable floppy, or 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 to a bootable floppy disk in case you need to restore the BIOS in the future. Copy the original motherboard BIOS using the ASUS Update or AFUDOS utilities.

5.1.1 Creating a bootable floppy disk


1. Do either one of the following to create a bootable floppy disk.
DOS environment
 - a. Insert a 1.44MB floppy disk into the drive.
 - b. At the DOS prompt, type `format a: /s` then press <Enter>.*Windows® XP environment*
 - a. Insert a 1.44 MB floppy disk to the floppy disk drive.
 - b. Click **Start** from the Windows® desktop, then select **My Computer**.
 - c. Select the 3 1/2 Floppy Drive icon.
 - d. Click **File** from the menu, then select **Format**. A **Format 3 1/2 Floppy Disk** window appears.
 - e. Select **Create an MS-DOS startup disk** from the format options field, then click **Start**.

Windows® 2000 environment

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

- a. Insert a formatted, high density 1.44 MB floppy disk into the drive.
- b. Insert the Windows® 2000 CD to the optical drive.
- c. Click **Start**, then select **Run**.
- d. From the Open field, type
`D:\bootdisk\makeboot a:`
assuming that D: is your optical drive.
- e. Press <Enter>, then follow screen instructions to continue.

Windows® Vista environment

- a. Insert a formatted, high density 1.44 MB floppy disk to the floppy disk drive.
 - b. Click  from the Windows® desktop, then select **Computer**.
 - c. Right-click **Floppy Disk Drive** then click **Format** to display the **Format 3 1/2 Floppy** dialog box.
 - d. Select the **Create an MS-DOS startup disk** check box.
 - e. Click **Start**.
2. Copy the original or the latest motherboard BIOS file to the bootable floppy disk.

5.1.2 ASUS EZ Flash utility

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

To update the BIOS using EZ Flash:

1. Visit the ASUS website (www.asus.com) to download the latest BIOS file for the motherboard and rename the same to VP5945GC.ROM.



Make sure to choose the right BIOS files from ASUS website according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.

2. Save the BIOS file to a floppy disk, then restart the system.
3. Press <Alt> + <F2> during POST to display the following.

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

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

```
EZFlash starting BIOS update
Checking for floppy...
Floppy found!
Reading file "VP5945GC.ROM". Completed.
Start erasing.....|
Start programming...|
Flashed successfully. Rebooting.
```



- Do not shut down or reset the system while updating the BIOS to prevent system boot failure!
- A "Floppy not found!" error message appears if there is no floppy disk in the drive. A "VP5945GC.ROM not found!" error message appears if the correct BIOS file is not found in the floppy disk. Make sure that you rename the BIOS file to VP5945GC.ROM.

5.1.3 AFUDOS utility

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

Copying the current BIOS

To copy the current BIOS file using the AFUDOS utility:



- Make sure that the floppy disk is not write-protected and has at least 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 floppy disk you created earlier.
2. Boot the system in DOS mode, then at the prompt type:

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

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

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

Main filename

Extension name

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

```
A:\>afudos /oOLDBIOS1.rom
AMI Firmware Update Utility - Version 1.19(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) and download the latest BIOS file for the motherboard. Save the BIOS file to a bootable floppy disk.



Make sure to choose the right BIOS files from ASUS website according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.



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

2. Copy the AFUDOS utility (afudos.exe) from the motherboard support CD to the bootable floppy disk you created earlier.
3. Boot the system in DOS mode, then at the prompt type:
afudos /i [filename]

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

```
A:\>afudos /iP5GCMX.ROM
```

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

```
A:\>afudos /iP5GCMX.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 /iP5GCMX.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:\>
```

5.1.4 ASUS CrashFree BIOS 2 utility

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



- Prepare the motherboard support CD, or the floppy disk containing the updated motherboard BIOS before using this utility.
- Make sure that you rename the original or updated BIOS file in the floppy disk to **VP5945GC.ROM**.

Recovering the BIOS from a floppy disk

To recover the BIOS from a floppy disk:

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

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



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 "VP5945GC.ROM". Completed.
Start flashing...
```



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

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

Recovering the BIOS from the support CD

To recover the BIOS from the support CD:

1. Remove any floppy disk from the floppy disk drive, then turn on the system.
2. Insert the support CD to the optical drive.
3. The utility displays the following message and automatically checks the floppy disk for the original or updated BIOS file.

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

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

```
Bad BIOS checksum. Starting BIOS recovery...
Checking for floppy...
Floppy not found!
Checking for CD-ROM...
CD-ROM found!
Reading file "VP5945GC.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) to download the latest BIOS file.



Make sure to choose the right BIOS files according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.

5.1.5 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.

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**.

4. From the FTP site, select the BIOS version that you wish to download. Click **Next**.
5. 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:

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 a file** option from the drop-down menu, then click **Next**.



3. Locate the BIOS file from the **Open** window, then click **Open**.
4. 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 during the Power-On-Self-Test (POST) to enter the Setup utility; otherwise, POST continues with its test routines.

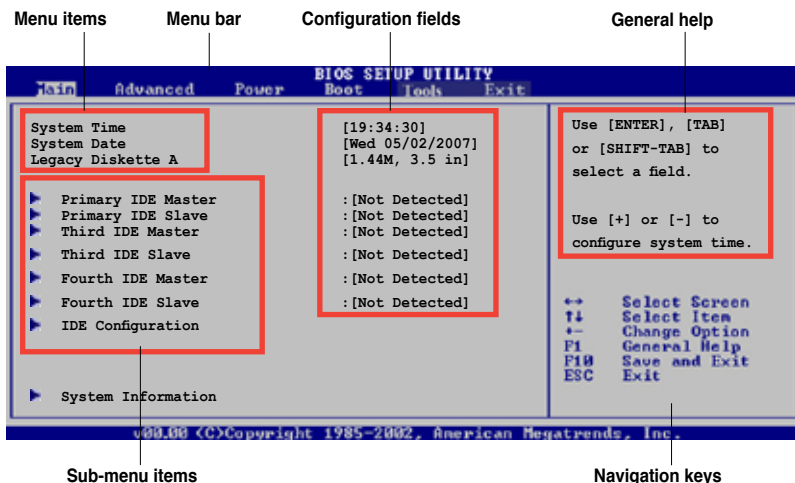
If you wish to enter Setup after POST, restart the system by pressing <Ctrl+Alt+Delete>, or by pressing the reset button on the system chassis. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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



- The default BIOS settings for this motherboard apply for most conditions to ensure optimum performance. If the system becomes unstable after changing any BIOS settings, load the default settings to ensure system compatibility and stability. Select the Load Default Settings item under the Exit Menu. See section “2.7 Exit Menu.”
- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Visit the ASUS website (www.asus.com) to download the latest BIOS file for this motherboard. Make sure to choose the right BIOS files according to the version of your mother board. Refer to your Printed Circuit Board (PCB) for version information.

5.2.1 BIOS menu screen



5.2.2 Menu bar

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

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

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

5.2.3 Navigation keys

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

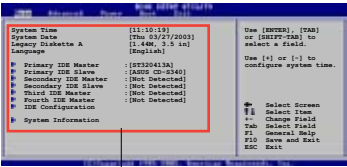


Some of the navigation keys differ from one screen to another.

5.2.4 Menu items

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

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



Main menu items

5.2.5 Sub-menu items

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.

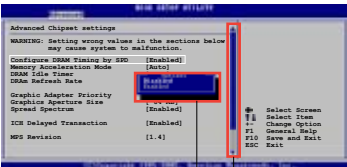
A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to “2.2.7 Pop-up window.”

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

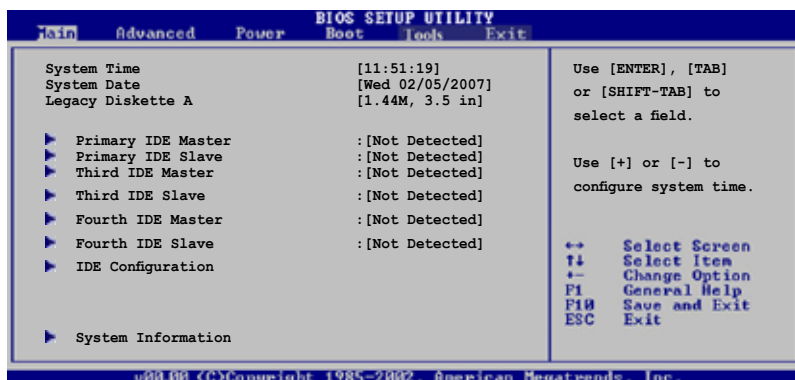
At the top right corner of the menu screen is a brief description of the selected item.

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:xx]

Allows you to set the system time.

5.3.2 System Date [Day xx/xx/xxxx]

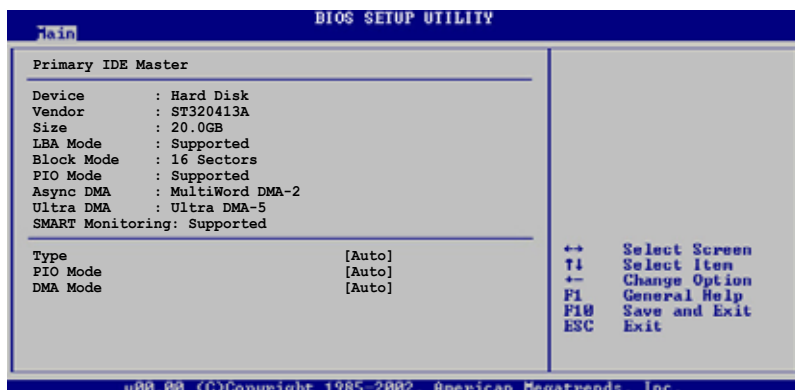
Allows you to set the system date.

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

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

5.3.4 Primary, Third and Fourth IDE Master/Slave

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



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

Type [Auto]

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

PIO Mode [Auto]

Selects the PIO mode.

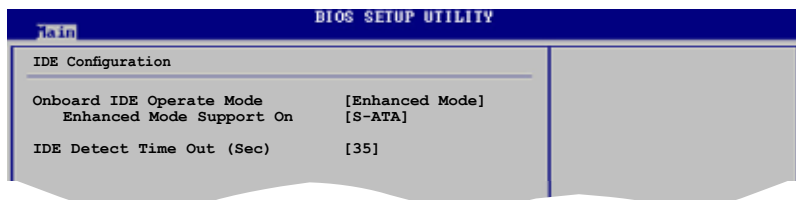
Configuration options: [Auto] [0] [1] [2] [3] [4]

DMA Mode [Auto]

Selects the DMA mode. Configuration options: [Auto]

5.3.5 IDE Configuration

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



Onboard IDE Operate Mode [Enhanced Mode]

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/Vista.

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]

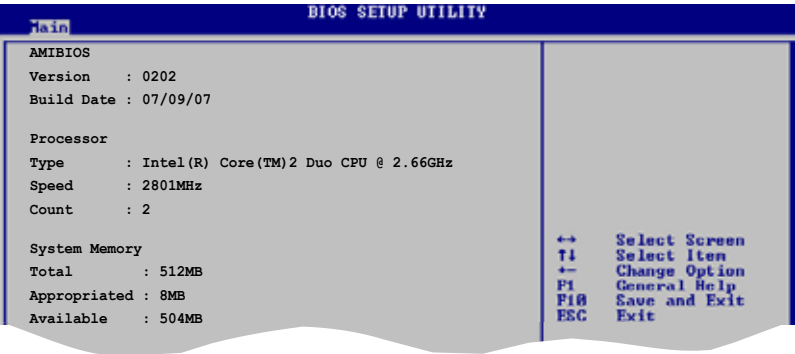
IDE Detect Time Out (Sec) [35]

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

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

5.3.6 System Information

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



AMI BIOS

Displays the auto-detected BIOS information

Processor


Displays the auto-detected CPU specification

System Memory

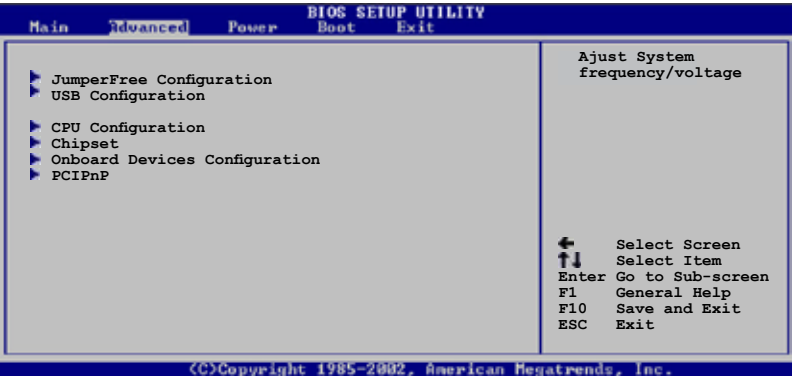
Displays the auto-detected system memory

5.4 Advanced menu

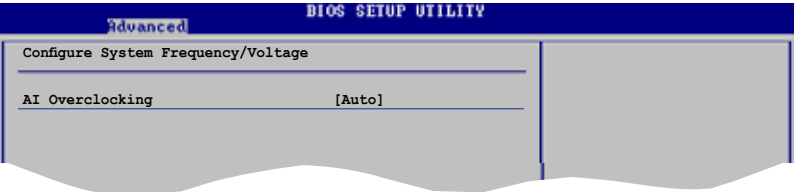
The Advanced menu items allow you to change the settings for the CPU and other system devices.



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

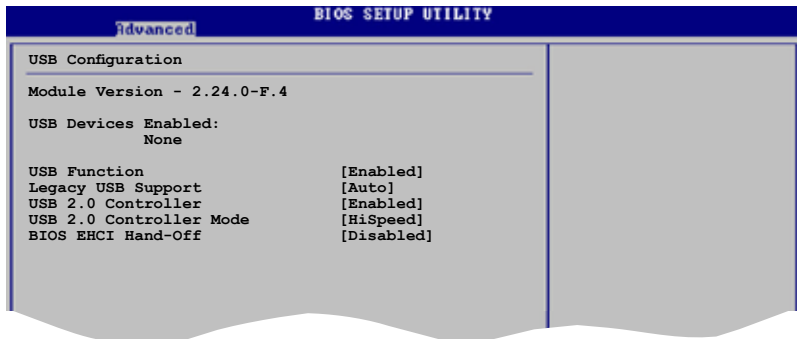


AI Overclocking [Auto]

Allows selection of CPU frequency and auto adjustment of relevant parameters. Frequencies higher than CPU manufacturer recommends are not guaranteed to be stable. If the system becomes unstable, return to the default. Configuration options: [Manual] [Auto] [Overclock Profile]

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: [Enabled] [Disabled]

USB 2.0 Controller Mode [HiSpeed]

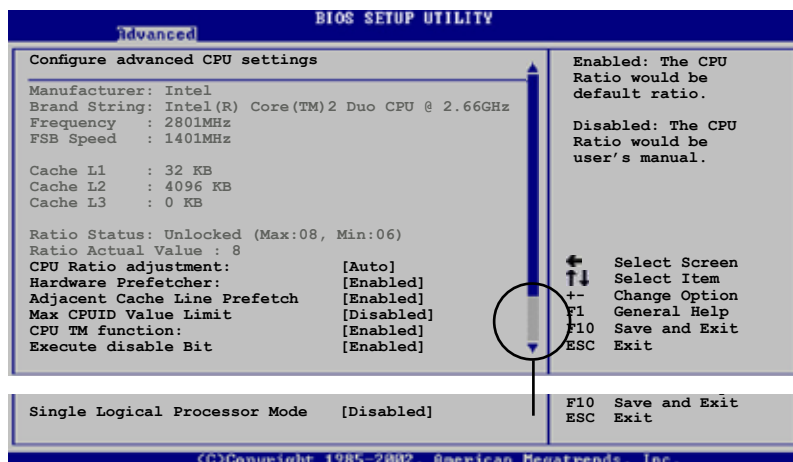
Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [FullSpeed] [HiSpeed]

BIOS EHCI Hand-Off [Disabled]

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

5.4.3 CPU Configuration

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



CPU Ratio adjustment [Auto]

Configuration options: [Auto] [MANUAL]

Hardware Prefetcher [Enabled]

Configuration options: [Disabled] [Enabled].

Adjacent Cache Line Prefetch [Enabled]

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]

CPU TM function [Enabled]

Configuration options: [Disabled] [Enabled]

Execute Disable Bit [Enabled]

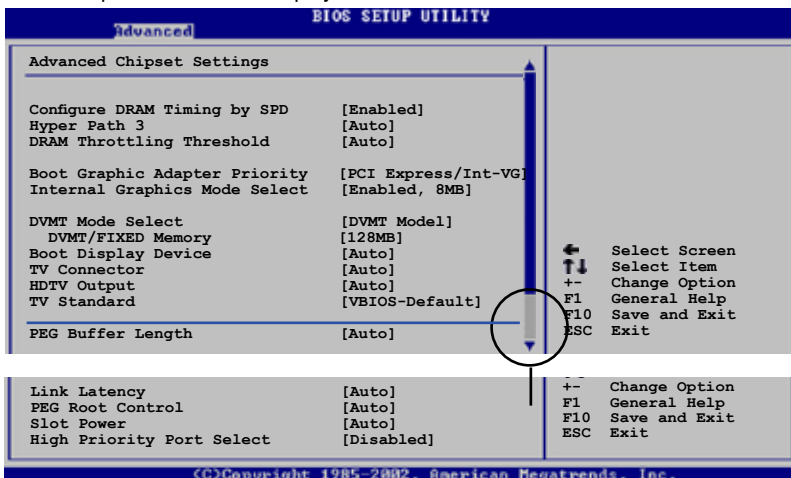
Configuration options: [Disabled] [Disabled]

Single Logical Processor Mode [Disabled]

Configuration options: [Enabled] [Disabled]

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]

Hyper Path 3 [Auto]

Sets this item to enabled to reduce bottlenecks of memory bandwidth. Sets it to disabled for safe mode. Configuration options: [Disabled] [Enabled] [Auto]

DRAM Throttling Threshold [Auto]

Allows you to enable DRAM Thermal Throttling to make your system more stable. Configuration options: [Disabled] [Auto]

Boot Graphic Adapter Priority [PCI Express/Int-VGA]

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

Configuration options: [Internal VGA] [PCI Express/Int-VGA]

[PCI Express/PCI] [PCI/PCI Express] [PCI/Int-VGA]

Internal Graphics Mode Select [Enabled, 8MB]

Sets the internal graphics mode.

Configuration options: [Disabled] [Enabled, 1MB] [Enabled, 8MB]

DVMT Mode Select [DVMT Mode]

Allows you to select the graphics memory type.

Configuration options: [Fixed MODE] [DVMT Mode] [Combo Mode]

DVMT/FIXED Memory [128MB]

Configuration options: [64MB] [128MB] [Maximum DVMT]

Boot Display Device [Auto]

Configuration options: [Auto] [CRT on Port 0] [LFP on Port 2] [LFP on Port 3] [DFP on Port 2] [DFP on Port 3] [TV on Port 2] [TV on Port 3] [CRT-Port 0 & CRT-Port 2] [CRT-Port 0 & CRT-Port 3] [CRT-Port 0 & LFP-Port 2] [CRT-Port 0 & LFP-Port 3] [CRT-Port 0 & DFP-Port 2] [CRT-Port 0 & DFP-Port 3] [DFP-Port 2 & DFP-Port 3]

TV Connector [Auto]

Configuration options: [Auto] [Composite] [Component] [Composite & RGB] [S-Video] [SCART Composite] [SCART Compos.&RGB] [SCART Compos & S-Vdo] [SMPTE2353 Compon. RGB]

HDTV Output [Auto]

Configuration options: [Auto] [480i60] [480p60] [576i50] [576p50] [720p60] [1080i50] [1080i60] [1080p24] [1080p25] [1080p30] [1080p50] [1080p60]

TV Standard [VBIOS-Default]

Configuration options: [VBIOS-Default] [NTSC] [PAL] [SECAM] [SMPTE240M] [ITU-R television] [SMPTE295M] [SMPTE296M] [ETA-770.2] [EIA-770.3]

PEG Buffer Length [Auto]

Sets PCIEX graphics card buffer length. Configuration options: [Auto] [Long] [Short]

Link Latency [Auto]

Sets link latency. Configuration options: [Auto] [Slow] [Normal]

PEG Root Control [Auto]

Enables, disables or set to Auto of the link latency.

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

Slot Power [Auto]

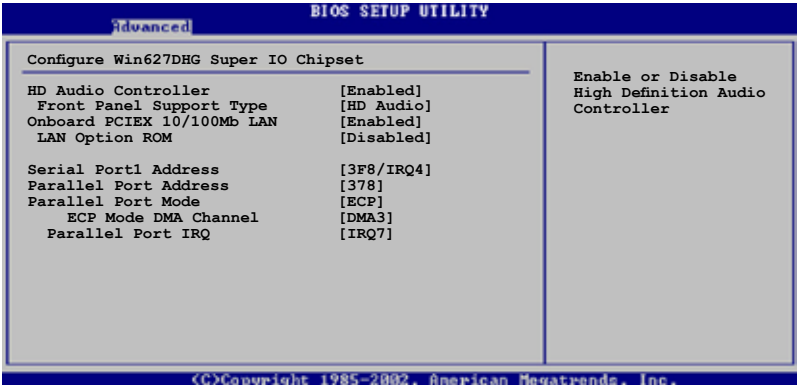
Sets the slot power. Configuration options: [Auto] [Light] [Normal] [Heavy] [Heavier]

High Priority Port Select [Disabled]

Selects the high priority port. Configuration options: [Disabled]

[PCI Express Port 2]

5.4.5 Onboard Devices Configuration



HD Audio Controller [Enabled]

Enables or disables the Azalia/AC'97 CODEC.

Configuration options: [Enabled] [Disabled]

Front Panel Support Type [AC97]

Allows you to set the front panel audio connector (AAFP) mode to legacy AC'97 or high-definition audio depending on the audio standard that the front panel audio module supports. Configuration options: [AC97][HD Audio]

Onboard PCIEX 10/100Mb LAN [Enabled]

Allows you to enable or disable the onboard PCIEX 10/100Mb LAN controller.

Configuration options: [Enabled] [Disabled]

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]

Parallel Port Address [378]

Allows you to select the Parallel Port base addresses.

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

Parallel Port Mode [ECP]

Allows you to select the Parallel Port mode.

Configuration options: [Normal] [Bi-Directional] [EPP] [ECP]

ECP Mode DMA Channel [DMA3]

Appears only when the Parallel Port Mode is set to [ECP]. This item allows you to set the Parallel Port ECP DMA.

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

Parallel Port IRQ [IRQ7]

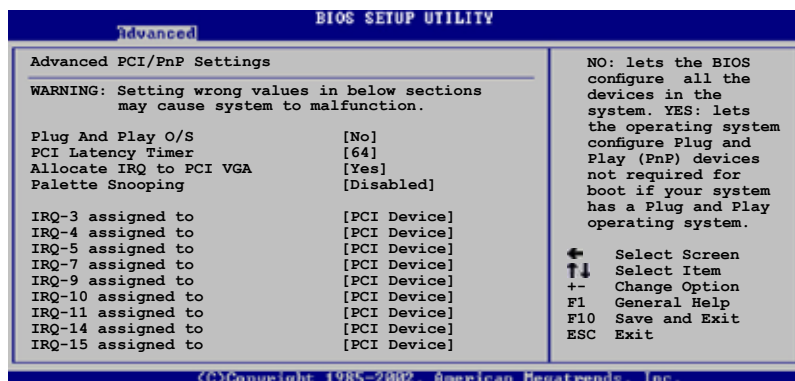
Configuration options: [IRQ5] [IRQ7]

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: [Yes] [No]

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]

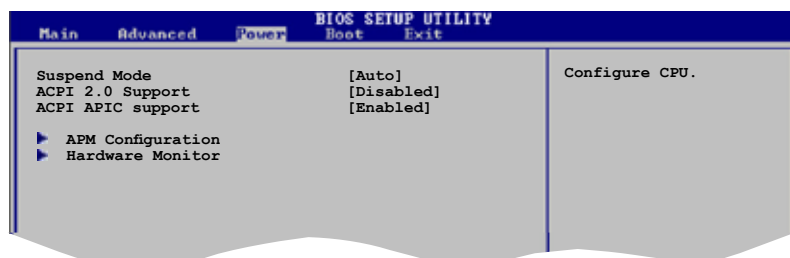
IRQ-xx assigned to [PCI Device]

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 [Disabled]

Allows you to add more tables for Advanced Configuration and Power Interface (ACPI) 2.0 specifications.

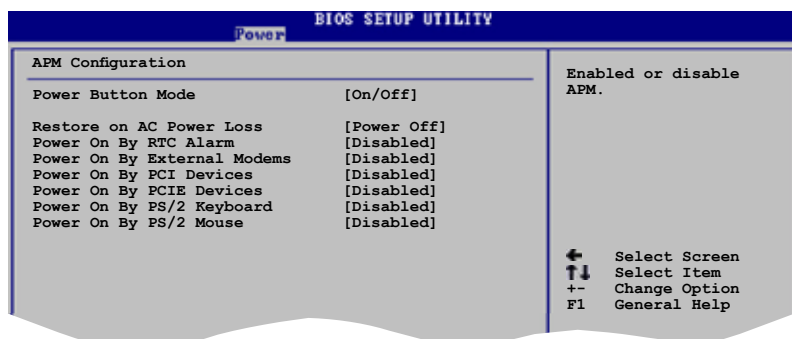
Configuration options: [Disabled] [Enabled]

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



Power Button Mode [On/Off]

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

Restore on AC Power Loss [Power Off]

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

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

Power On By RTC Alarm [Enabled]

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]

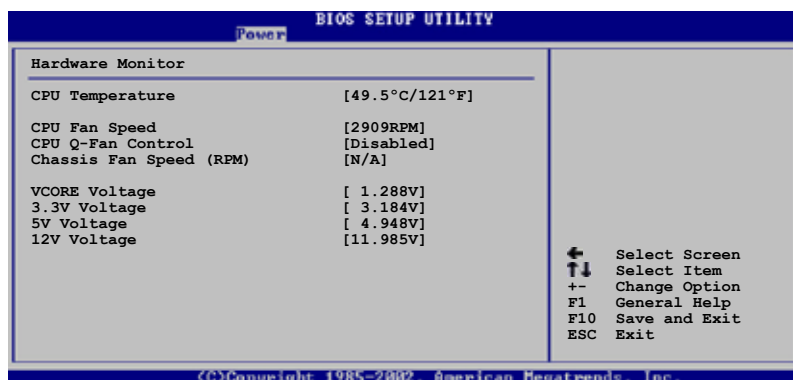
Allows you to use specific keys on the keyboard to turn on the system. This feature requires an ATX power supply that provides at least 1A on the +5VSB lead.

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



CPU Temperature [xxx°C/xxx°F]

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] [xxx°C/xxx°F]

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] [xxxRPM]

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]

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

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

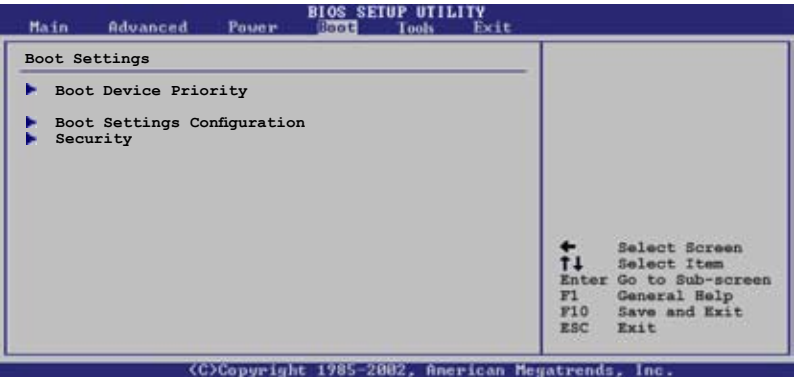
Configuration options: [Ignored] [N/A]

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

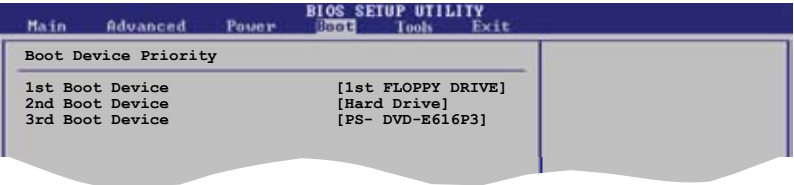
The onboard hardware monitor automatically detects the voltage output through the onboard voltage regulators.

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

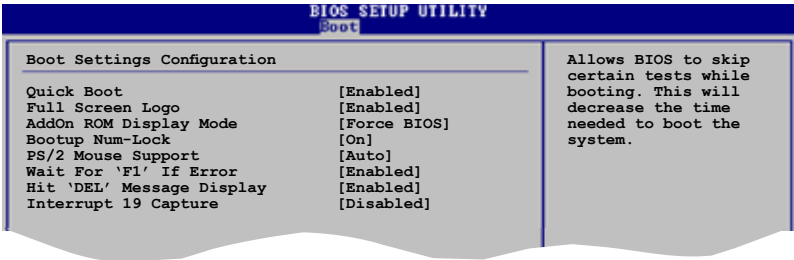


1st ~ xxth Boot Device [1st Floppy Drive]

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

Configuration options: [xxxxx Drive] [Disabled]

5.6.2 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]

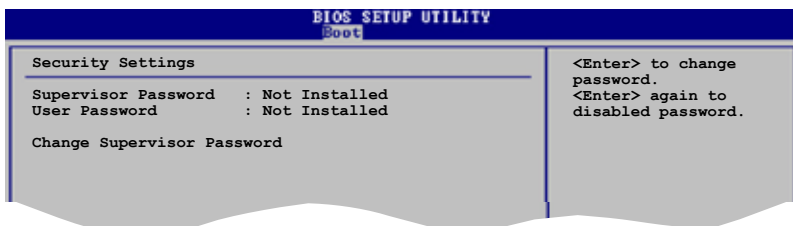
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

Interrupt 19 Capture [Disabled]

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

5.6.3 Security

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



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.

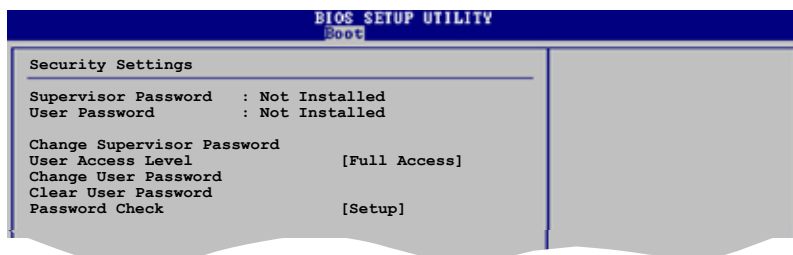
To change the supervisor password, follow the same steps as in setting a user password.

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.