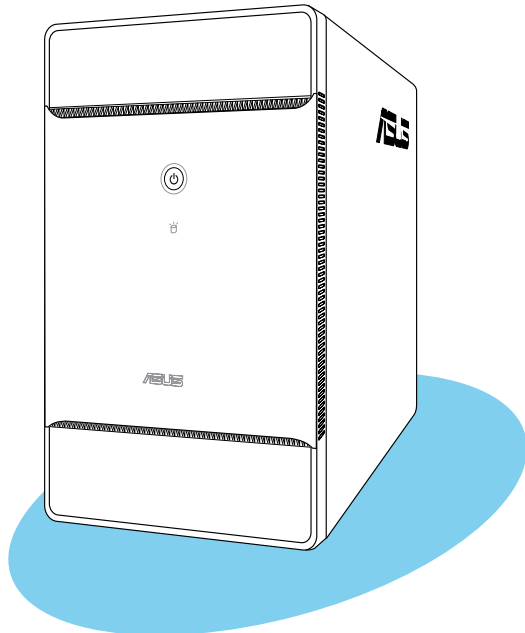


**ASUS**<sup>®</sup>

**T3-M2NC51PV**

*ASUS PC (Desktop Barebone)*



**E2672**

**First Edition  
March 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.



---

**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 T3-M2NC51PV 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 T3-M2NC51PV. 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.

### 6. Appendix

The Appendix includes the power supply unit specification for this system.



## 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 T3-M2NC51PV system package for the following items.

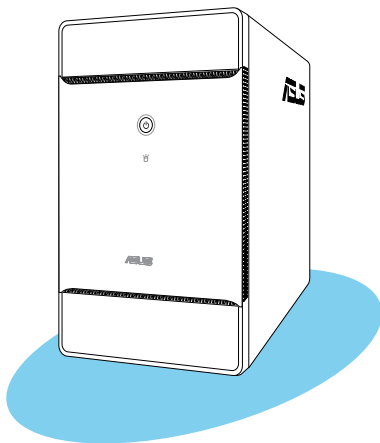


If any of the items is damaged or missing, contact your retailer immediately.

Item description	
1. ASUS T3-M2NC51PV barebone system with	
• ASUS motherboard	• 6 x USB 2.0 ports
• 250 W PFC power supply unit	• 2 x IEEE 1394a ports
• Gigabit LAN port	• LED panel
• CPU fan and heatsink assembly	• 7-in-1 storage card reader
• 1 x 5.25" drive bays	• 2 x 3.5" hard disk drive bay
2. Cables	
• AC power cable	
• IDE cable	
• Serial ATA cable	
• Serial ATA power cable	
3. Support CD	
4. Quick Installation Guide	

# Chapter 1

This chapter gives a general description of the ASUS T3-M2NC51PV. 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 T3-M2NC51PV!

The ASUS T3-M2NC51PV is an all-in-one barebone system with a versatile home entertainment feature.

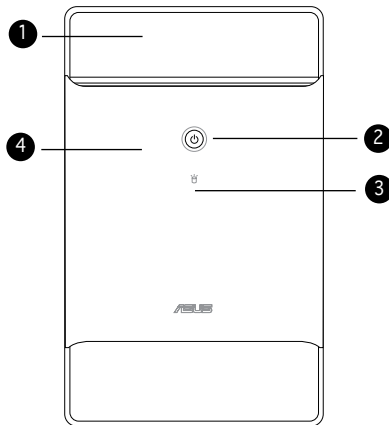
The system comes in a stylish mini-tower casing, and powered by the ASUS motherboard with the AMD Socket AM2 that supports the AMD Athlon™ 64 X2/AMD Athlon™ 64/AMD Athlon™ 64 FX/AMD Sempron™ processors.



The system supports up to 4 GB of system memory using DDR2-800/667/533 DIMMs. With audio functions, extensive connectivity, and Gigabit LAN capability, the T3-M2NC51PV is designed for the sophisticated.

With these and many more, the T3-M2NC51PV definitely delivers the cutting edge technology for your computing and multimedia needs!

## 1.2 Front panel (external)

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

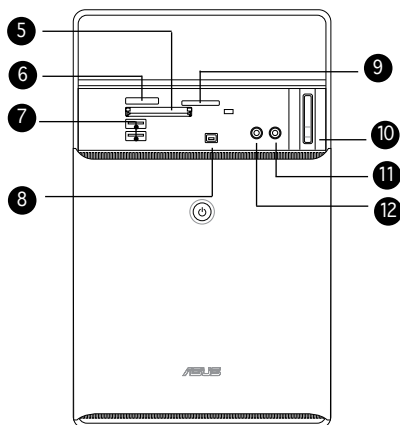







1. **Drive door.** Open this door to access the optical drive.
2. **Power button** . Press this button to turn the system on.
3. **HDD LED** . This LED lights up when data is being read from or written to the hard disk drive
4. **Front panel I/O door.** Push down this door to show the input/output ports.

## 1.3 Front panel (internal)

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

Open the front panel door by pushing it downwards.

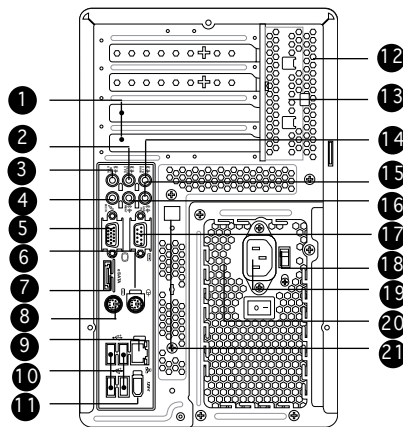


5. **CompactFlash®/Microdrive™ card slot** . This slot is for a CompactFlash®/Microdrive™ storage card.
6. **Memory Stick®/Memory Stick Pro™ card slot**. This slot is for a Memory Stick®/Memory Stick Pro™ storage card.
7. **USB 2.0 ports** . These Universal Serial Bus 2.0 (USB 2.0) ports are available for connecting USB 2.0 devices such as a mouse, printer, scanner, camera, PDA, and others.
8. **4-pin IEEE 1394a port** . This port provides high-speed connectivity for IEEE 1394a-compliant audio/video devices, storage peripherals, and other PC devices.
9. **Secure Digital™/MultimediaCard slot** . This slot is for a Secure Digital™/MultimediaCard storage card.
10. **Eject button**. Press this button to eject the optical drive loading tray.
11. **Microphone port** . This Mic (pink) port connects a microphone.







12. **Headphone port** 🎧. This port connects a headphone with a stereo mini-plug.

## 1.4 Rear panel

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

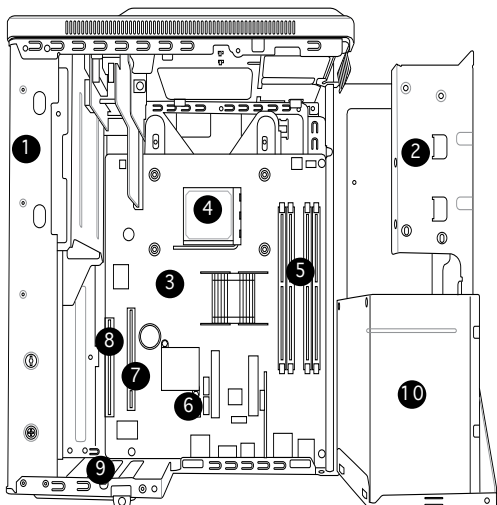


1. **Expansion slots.** Use these slots when installing expansion cards.
2. **Rear surround speakers.** This port connects to a high-definition 6-channel speaker.
3. **Side surround speakers.** This port connects to a high-definition 6-channel speaker.
4. **Microphone port** 🎤. This Microphone (pink) port connects a microphone. In 4/6-channel mode, the function of this port becomes Low Frequency Enhanced Output/Center.
5. **DVI-out port.** This port connects a Digital Visual Interface (DVI-D) card.
6. **PS/2 mouse port** 🖱️. This green 6-pin connector is for a PS/2 mouse.
7. **External SATA port.** This port connects to a SATA hard disk drive.
8. **PS/2 keyboard port** ⌨️. This purple 6-pin connector is for a PS/2 keyboard.

9. **LAN (RJ-45) port** . This port allows Gigabit connection to a Local Area Network (LAN) through a network hub.
10. **USB 2.0 ports**  **2.0**. 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.
11. **6-pin IEEE 1394a port** . This port provides high-speed connectivity for IEEE 1394a-compliant audio/video devices, storage peripherals, and other PC devices.
12. **Chassis vent**. This vent is for the fan that provides ventilation inside the system chassis.
13. **Expansion card lock**. This lock secures installed expansion cards. See page 2-15 for details.
14. **Center & woofer speakers**. This port connects to a high-definition 6-channel speaker.
15. **Line In port** . This Line In (light blue) port connects a tape player or other audio sources. In 6-channel mode, the function of this port becomes Surround output.
16. **Line Out port** . This Line Out (lime) port connects a headphone or a speaker. In 4/6-channel mode, the function of this port becomes Front Speaker Out.
17. **VGA port** . This port connects a VGA monitor.
18. **Voltage selector**. This switch allows you to adjust the system input voltage according to the voltage supply in your area.
19. **Power connector**. This connector is for a power cable and plug.
20. **Power switch**. This switch allows you to turn your PC on/off.
21. **S/PDIF Out port**. This port connects your audio system for 5.1-channel surround sound and enhanced 3D audio.

## 1.5 Internal components

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

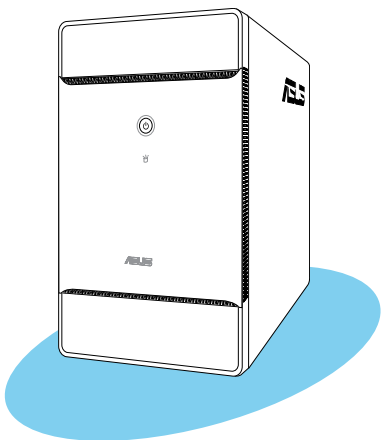


1. 5.25-inch optical drive
2. Hard disk drive metal tray
3. ASUS motherboard
4. AMD® AM2 socket
5. DIMM sockets
6. Serial ATA connectors
7. PCI Express™ x16 slot
8. PCI slot
9. Expansion card slots
10. Power supply unit



# 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

### Tool

Phillips (cross) screw driver

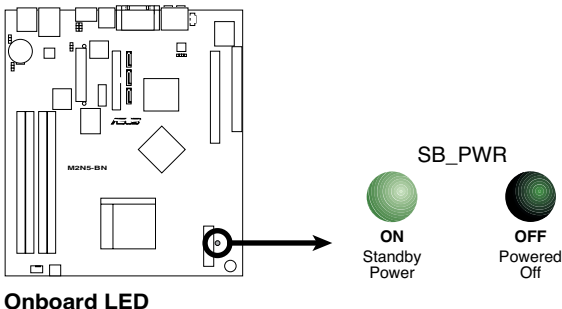
## 2.2 Before you proceed

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.

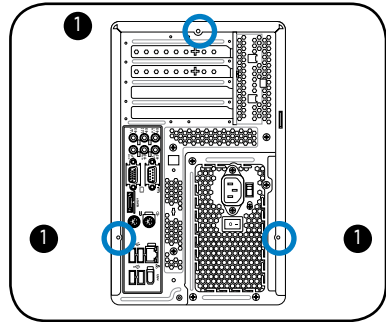
The motherboard comes with an onboard standby power LED. This LED lights up to indicate that the system is ON, in sleep mode or in soft-off mode, and not powered OFF. Unplug the power cable from the power outlet and make sure that the standby power LED is OFF before installing any system component.



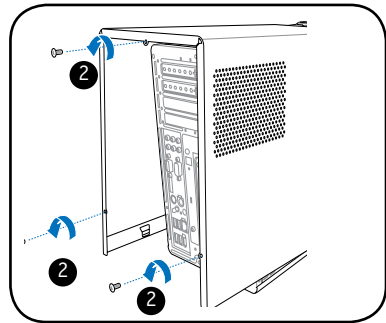
## 2.3 Removing the cover

To remove the cover:

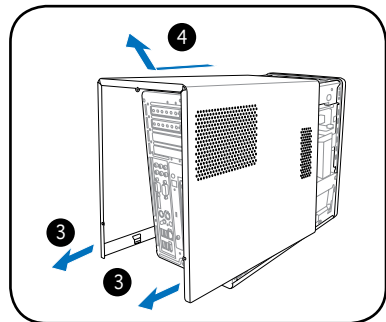
1. On the rear panel, locate the three screws that secure the cover to the chassis.



2. Use a Phillips screw driver to remove the cover screws. Keep the screws for later use.



3. Slightly pull the cover toward the rear panel until the side tabs are disengaged from the chassis.
4. Lift the cover, then set aside.

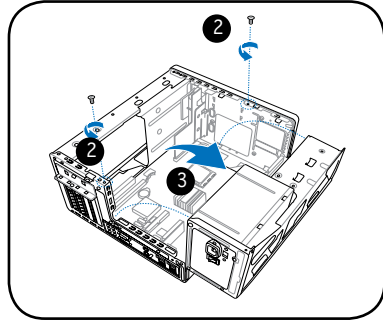


## 2.4 Lifting the power supply

You must lift the power supply unit (PSU) before you can install a central processing unit (CPU) and other system components.

To lift the PSU:

1. Lay the system on its side on a flat, stable surface.
2. Locate and remove the two screws that secures the PSU to the chassis.
3. Lift the PSU in the direction of the arrow to a 90° angle.



---

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

---

## 2.5 Installing a CPU

The motherboard comes with a 940-pin AM2 socket designed for the AMD Athlon™ 64/AMD Athlon™ 64 FX/AMD Athlon™ 64 X2 and AMD Sempron™ processors.

### 2.5.1 Removing the CPU fan and heatsink assembly

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



---

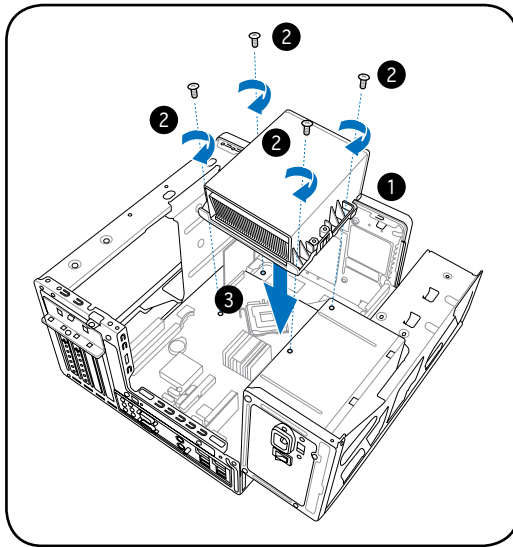
**DO NOT** replace the proprietary CPU fan and heatsink with other models.

---

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

To remove the CPU fan and heatsink assembly:

1. Disconnect the CPU fan cable from the CPU fan connector on the motherboard.
2. Using a Phillips screw driver, remove and set aside the four screws that secure the fan and heatsink assembly to the motherboard.
3. Carefully lift the fan and heatsink assembly, and set it aside.



## 2.5.2 CPU installation

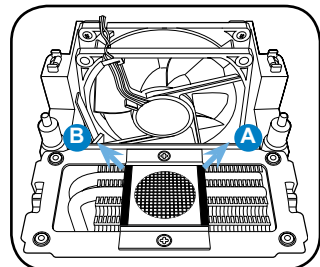


The AM2 socket has a different pinout from the 940-pin socket designed for the AMD Opteron™ processor. Make sure you use a CPU is designed for the AM2 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

### Installing the CPU

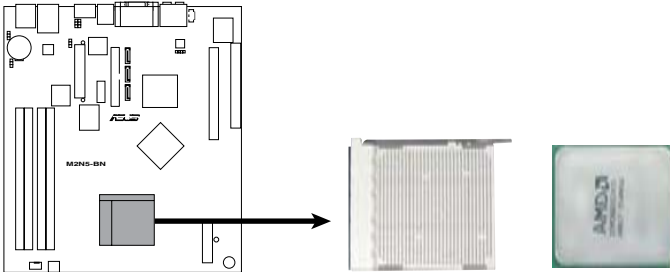


**IMPORTANT!** Before installing the CPU, remove the two rubbers (A and B) attached to the bottom of the cooler / fan.



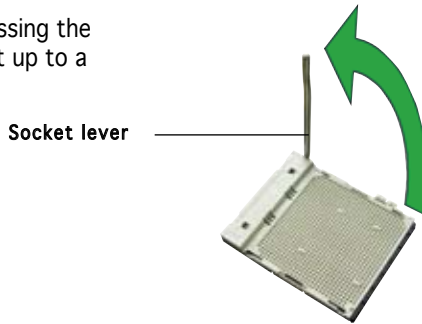
To install a CPU:

1. Locate the CPU socket on the motherboard.



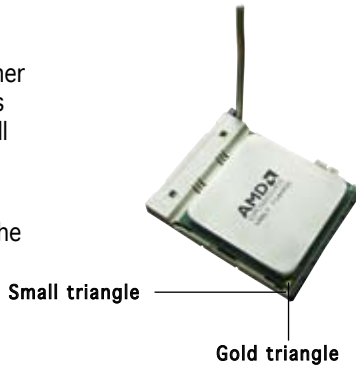
**CPU Socket AM2**

2. Unlock the socket by pressing the lever sideways, then lift it up to a 90°-100° angle.



Make sure that the socket lever is lifted up to 90°-100° angle, otherwise the CPU does not fit in completely.

3. Position the CPU above the socket such that the CPU corner with the gold triangle matches the socket corner with a small triangle.
4. Carefully insert the CPU into the socket until it fits in place.





The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to prevent bending the pins and damaging the CPU!

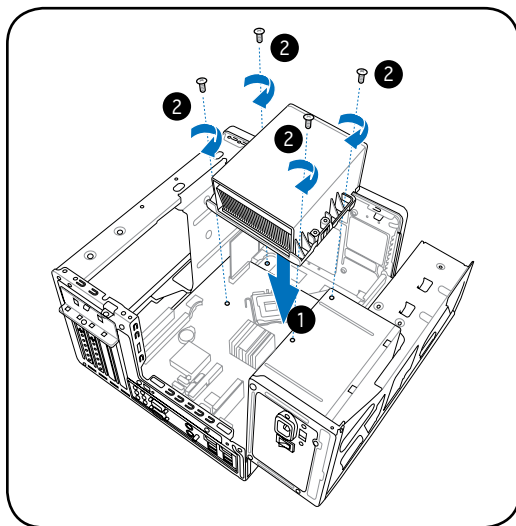
5. When the CPU is in place, push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



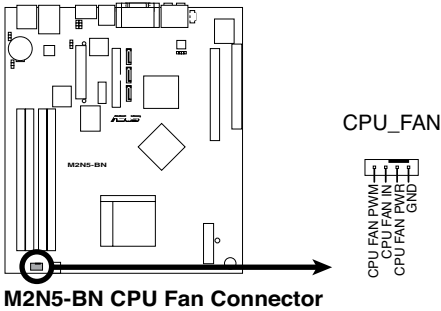
### 2.5.3 Reinstalling the CPU fan and heatsink assembly

To reinstall the CPU fan and heatsink assembly:

1. Position the CPU fan and heatsink assembly on top of the installed CPU.
2. Drive in the four screws you removed earlier into the CPU fan screw holes to secure the fan and heatsink assembly to the motherboard.



3. Connect the CPU fan cable to the CPU\_FAN connector on the motherboard.

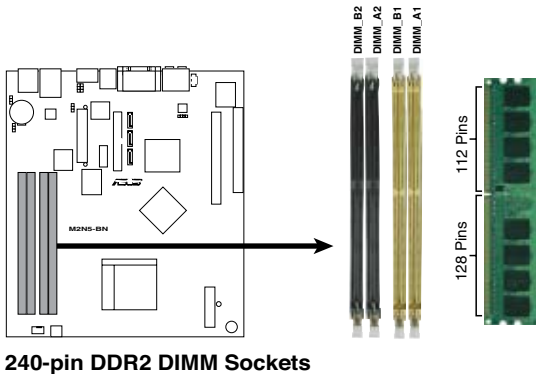


Do not forget to connect the CPU fan connector! Hardware monitoring errors can occur if you fail to plug this connector.

## 2.6 Installing a DIMM

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

The following figure illustrates the location of the sockets:





## 2.6.1 Memory configurations

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



- Installing DDR2 DIMMS other than the recommended configurations may cause memory sizing error or system boot failure. Use any of the recommended configurations in the table on the next page.
- Install only **identical** (the same type and size) DDR2 DIMMs in DIMM\_A1 and DIMM\_B1.
- Always install DIMMs with the same CAS latency. For optimum compatibility, we recommend that you obtain memory modules from the same vendor.
- Due to chipset resource allocation, the system may detect less than 2 GB system memory when you installed two 1 GB DDR2 memory.
- This motherboard does not support memory modules made up of 128 Mb chips or double-sided x16 memory modules.

### Recommended memory configurations

Mode	Sockets	
	DIMM_A1	DIMM_B1
Single-channel	(1) Installed	—
	(2) —	Installed
Dual-channel	(3)* Installed	Installed

\* Use only identical DDR2 DIMM pairs.

## DDR2 (533 MHz) Qualified Vendors List

Size	Vendor	Model	Brand	Side/s*	Component	DIMM support		
						A	B	C
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	•	•	•
1G	Kingston	KVR533D2N4/1G	Micron	DS	5YD11D9GCT	•	•	•
256MB	Samsung	M378T3253FG0-CD5	Samsung	SS	K4T56083QF-GCD5	•	•	•
512MB	Samsung	M378T6553BG0-CD5	Samsung	SS	K4T51083QB-GCD5	•	•	•
256MB	Infineon	HYS64T32000HU-3.7-A	Infineon	SS	HYB18T512160AF-3.7AFSS31270	•	•	
512MB	Infineon	HYS64T64000GU-3.7-A	Infineon	SS	HYB18T512800AC37SSS11511	•	•	•
512MB	Infineon	HYS64T64000HU-3.7-A	Infineon	SS	HYB18T512800AF37FSS29334	•	•	•
512MB	Micron	MT 16HTF6464AG-53EB2	Micron	DS	D9BOM	•	•	•
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	KKEA88B4IAK-37	•	•	•
256MB	Kingmax	KLBB68F-36EP4	Elpida	SS	E5116AB-5C-E	•	•	•
512MB	Kingmax	KLBC28F-A8EB4	Elpida	SS	E5108AE-5C-E	•	•	•

## DDR2 (667 MHz) Qualified Vendors List

Size	Vendor	Model	Brand	Side/s*	Component	DIMM support		
						A	B	C
256MB	Kingston	KVR667D2N5/256	Elpida	SS	E2508AB-6E-E	•	•	•
512MB	Kingston	KVR667D2N5/512	Kingston	SS	D6408TE8WL-27	•	•	•
512MB	Kingston	KVR667D2E5/512	Elpida	SS	E5108AE-6E-E	•	•	•
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	SS	K4T51083QC-ZCE6	•	•	•
256MB	Infineon	HYS64T32000HU-3S-A	Infineon	SS	HYB18T512160AF-3SSSS17310	•	•	•
512MB	Infineon	HYS64T32000HU-3S-A	Infineon	SS	HYB18T5128000AF-3SSSS27416	•	•	•
512MB	Infineon	HYS64T64000HU-3S-A	Infineon	SS	HYB18T512800AF3SFSS05346	•	•	•
1G	Infineon	HYS64T128020HU-3S-A	Infineon	DS	HYB18T512800AF3SSSS28104	•	•	•
512MB	Corsair	V5S12MB667D2	Corsair	SS	MIII0052532M8CEC	•	•	
512MB	HY	HYMP564U64AP8-Y4 AA	Hynix	DS	HY5PS12821AFP-Y4	•	•	•
512MB	HY	HYMP564U64AP8-Y5 AA	Hynix	SS	HY5PS12821AFP-Y5	•	•	•
1G	HY	HYMP512U64AP8-Y5 AB	Hynix	DS	HY5PS12821AFP-Y5	•	•	•
512MB	HY	HYMP564U72AP8-Y5	Hynix	SS	HY5PS12821AFP-Y5	•	•	•
512MB	HY	HYMP564U72AP8-Y4	Hynix	SS	HYMP564U72AP8-Y4	•	•	•
1G	HY	HYMP564U72AP8-Y5	Hynix	DS	HY5PS12821AFP-Y5	•	•	•
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	AU512E667C5KBG	Apacer	SS	AM4B5708MJS7E0627B	•	•	•
1G	Apacer	AU01GE667C5KBG	Apacer	DS	AM4B5708MJS7E0627B	•	•	•
512MB	ADATA	M20EL5G3H3160B1C0Z	Elpida	SS	E5108AE-6E-E	•	•	
512MB	VDATA	M2GVD5G3H31A41C52	VDATA	SS	VD29608A8A-3EC20615	•	•	•
512MB	VDATA	M2YVD5G3H31P41C52	VDATA	SS	VD29608A8A-3EG20627	•	•	•
1G	VDAT	M2GVD5G3I41P61C52	VDATA	DS	VD29608A8A-3EG20627	•	•	•
1G	VDATA	M2GVD5G3I41C41C52	VDATA	DS	VD29608A8A-3EC20620	•	•	•

## DDR2 (800 MHz) Qualified Vendors List

Size	Vendor	Model	Brand	Side/s*	Component	DIMM support		
						A	B	C
512MB	Kingston	KVR800D2N5/512	Samsung	SS	K4T51083QC-ZCE7	•	•	•
1G	Kingston	KVR800D2N5/1G	Samsung	DS	K4T51083QC-ZCE7	•	•	•
512MB	Kingston	KHX8500D2/512	Kingston	SS	Heat-Sink Package	•	•	•
1G	Kingston	KHX6400D2LL/1G	Kingston	DS	Heat-Sink Package	•	•	•
512MB	Samsung	KR M378T6553CZ3-CE7	Samsung	SS	K4T51083QC-ZCE7	•	•	•
1G	Samsung	KR M378T2953CZ3-CE7	Samsung	DS	K4T51083QC-ZCE7	•	•	•
512MB	Samsung	KR M391T6553CZ3-CE7	Samsung	SS	K4T51083QC-ZCE7	•	•	•
1G	Samsung	KR M391T6553CZ3-CE7	Samsung	DS	K4T51083QC-ZCE7	•	•	•
256MB	Infineon	HYS64T32001HU-2.5-A	Infineon	SS	HYB18T256800AF25SSS49313	•	•	•
512MB	Infineon	HYS64T64020HU-2.5-A	Infineon	DS	HYB18T256800AF25SSS25063	•	•	•
512MB	HY	HYMP564U64AP8-S6 AA	Hynix	SS	HY5PS12821AFP-S6	•	•	•
1G	HY	HYMP512U64AP8-S6 AA	Hynix	DS	HY5PS12821AFP-S6	•	•	•

### Legend:

- A** - supports one module inserted into either slot, in a Single-channel memory configuration.
- B** - supports one pair of modules inserted into either the blue slots or the black slots as one pair of Dual-channel memory configuration.
- SS** - Single-sided
- DS** - Double-sided

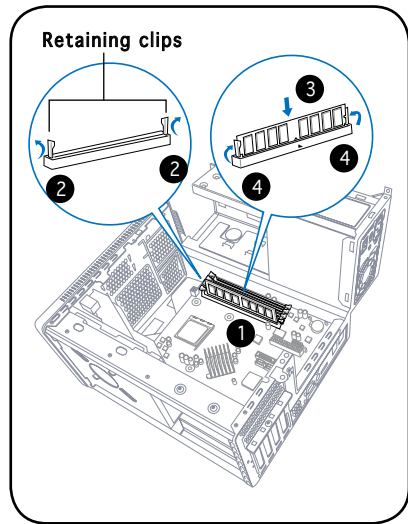


Obtain DDR DIMMs only from ASUS qualified vendors. Refer to the Qualified DDR2 533/667/800 vendors list on this page. Visit the ASUS website ([www.asus.com](http://www.asus.com)) for the latest DDR2 Qualified Vendors List.

## 2.6.2 DIMM installation

To install a DDR2 DIMM:

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



A 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!

## 2.7 Installing an expansion card

In the future, you may need to install expansion cards. The motherboard has one PCI and one PCI Express™ x16 slot. The following sub-sections describe the slots and the expansion cards that they support.

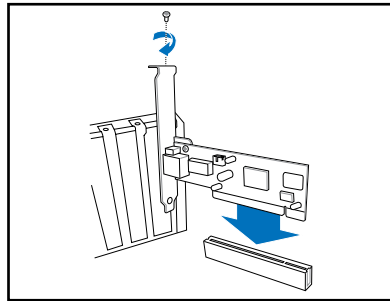


Make sure to unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage the motherboard.

### 2.7.1 Expansion slots

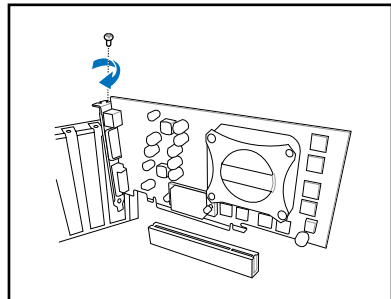
#### PCI slot

The PCI slots support PCI 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.



#### PCI Express™ x16 slot

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

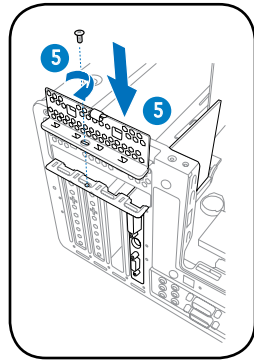
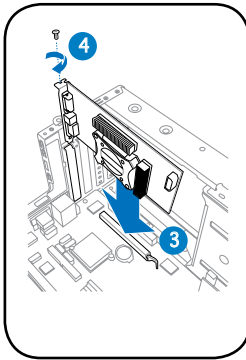
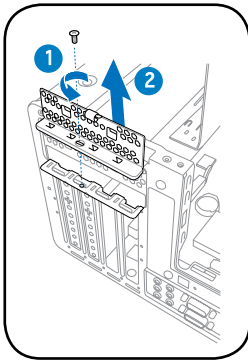


The chassis supports PCI Express x 16 cards with 204.63mm x 108mm x 16mm or smaller dimensions only.

## 2.7.2 Expansion card installation

To install an expansion card:

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Locate and remove one metal bracket lock screw.
3. Remove the metal bracket lock.
4. Align the card connector with the slot, then press firmly.
5. Secure the card with one screw.
6. Replace the metal bracket lock, then secure it with one screw.



### Standard interrupt assignments

IRQ	Standard Function
0	System Timer
1	Keyboard Controller
2	Programmable Interrupt
4	Communications Port (COM1)
6	Floppy Disk Controller
7*	Printer Port (LPT1)
8	System CMOS/Real Time Clock
9*	ACPI Mode when used
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

	LNKA	LINEA	LINEB	LINEC	LSMB	LUB2	LSA0	LUB0	LMAC	LAZA	LATA
PCI slot1	shared	--	--	--	--	--	--	--	--	--	--
PCIEx16 slot	--	shared	--	--	--	--	--	--	--	--	--
Onboard E-SATA	--	--	shared	--	--	--	--	--	--	--	--
LAN controller	--	--	--	--	--	--	--	--	shared	--	--
Onboard SMB controller	--	--	--	--	shared	--	--	--	--	--	--
Onboard USB1.1 controller	--	--	--	--	--	--	--	shared	--	--	--
Onboard USB2.0 controller	--	--	--	--	--	shared	--	--	--	--	--
Onboard SATA0 controller	--	--	--	--	--	--	shared	--	--	--	--
Onboard Azalia controller	--	--	--	--	--	--	--	--	--	shared	--
Onboard IDE controller	--	--	--	--	--	--	--	--	--	--	shared
Internal VGA	--	--	--	shared	--	--	--	--	--	--	--



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

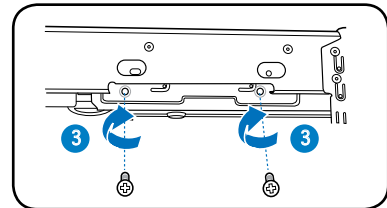
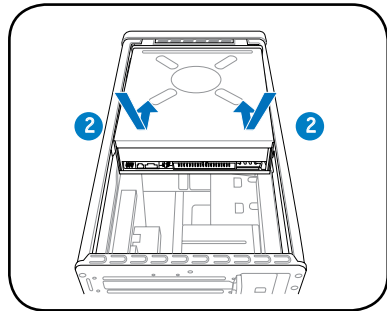


## 2.8 Installing an optical drive

The barebone system comes with a 5.25-inch drive bays for an optical drive.

To install an optical drive:

1. Place the chassis upright.
2. Insert the optical drive to the upper 5.25 in drive bay, then carefully push the drive until its screw holes align with the holes on the bay.
3. Secure the optical drive with four screws on both sides of the bay.
4. Connect the IDE and the power plugs to the connectors at the back of the drive.

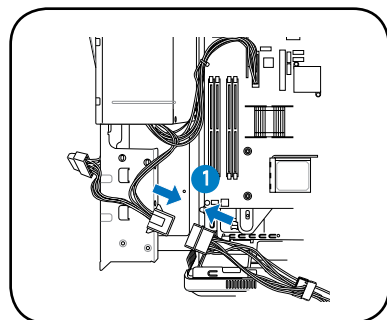


## 2.9 Installing a hard disk drive (HDD)

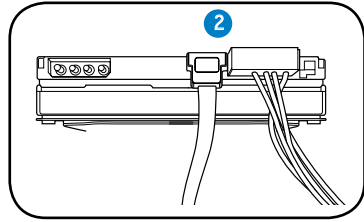
The system supports one Serial ATA hard disk drive.

To install a Serial ATA hard disk drive:

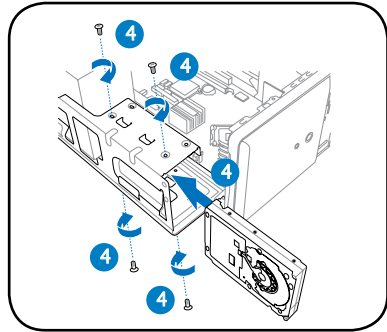
1. Connect the SATA power cable to the plug of the power supply unit.



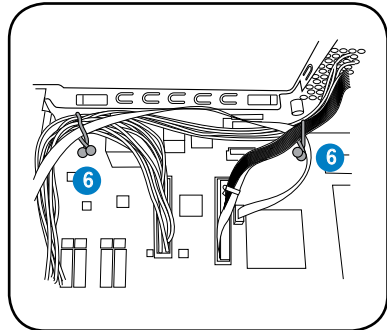
2. Connect the SATA signal cable and the power plugs to the connectors at the back of the drive.



3. Locate the HDD tray.
4. Insert a hard disk drive (with the HDD PCB facing the top of the chassis) to the tray, then secure it with four screws.



5. Connect the SATA signal cable to the SATA connector on the motherboard.
6. Tighten all the cables with the plastic coils.

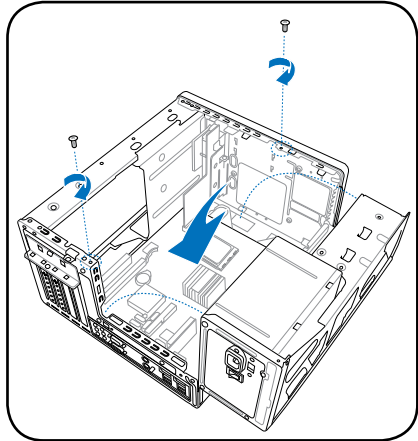


## 2.10 Reinstalling the power supply unit

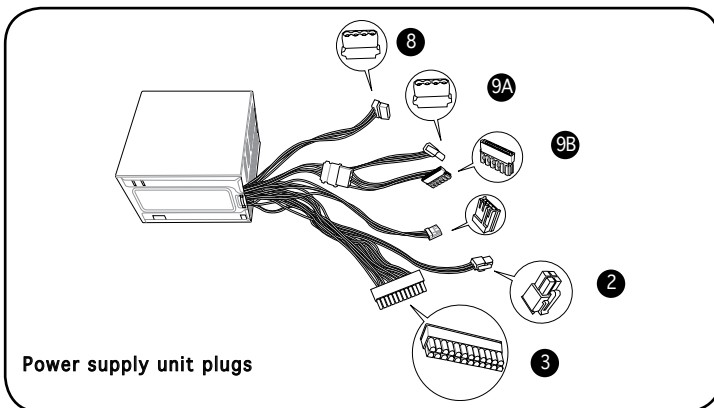
Reinstall the power supply unit (PSU) after installing the system components and reconnecting the cables.

To reinstall the PSU:

1. Lift the chassis to a 90° angle.
2. Connect the 4-pin 12 V power plug to the ATX12V connector on the motherboard.
3. Connect the 24-pin ATX power plug to the ATXPWR connector on the motherboard.
4. Position the PSU over the chassis.
5. Align the PSU side hook with the metal slot located on the side of the optical drive bay.
6. Slide the PSU toward the rear panel until it fits in place.
7. Secure the PSU with the screw you removed earlier.



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



8. Connect the 4-pin power plug(s) to the power connector of the optical drive(s).
- 9A. Connect the 4-pin power plug to the power connector of the IDE hard disk drive, or the Serial ATA hard disk drive with a 4-pin power plug.

- or -

- 9B. For Serial ATA hard disk drive without a 4-pin power plug, connect the 15-pin SATA power adapter plug to the power connector at the back of the drive, then connect the other end (4-pin male) to a 4-pin (female) power plug from the power supply unit.



---

See the Appendix for the power supply specifications.

---

## 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.

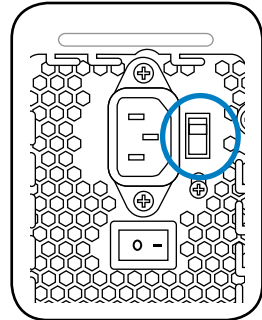


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NOTE. The voltage selector is set to 230 V by default.

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If the voltage supply in your area is 100-127 V, set the switch to 115 V. If the voltage supply in your area is 200-240 V, set the switch to 230 V.



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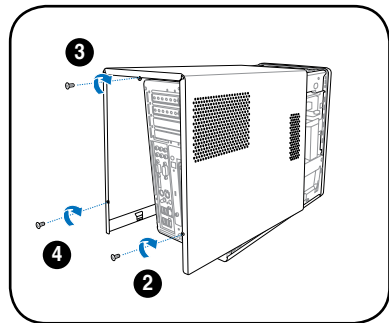
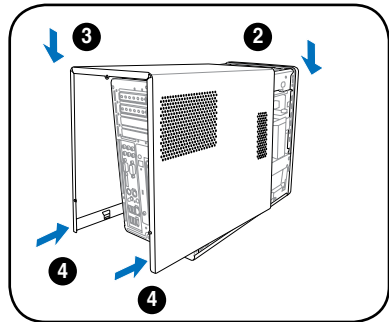
Setting the switch to 115 V in a 230 V environment will seriously damage the system!

---

## 2.11 Replacing the cover

To replace the cover:

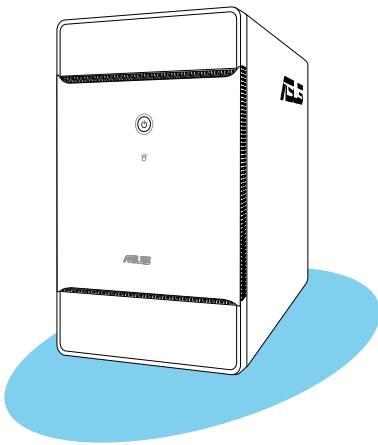
1. Turn the chassis upright.
2. Position the front edge of the cover at least two inches from the front panel cover. Fit the cover tabs with the chassis rail and the front panel tabs.
3. Lower the rear edge of the cover as shown.
4. Push the cover slightly toward the front panel until it fits in place.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





# 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

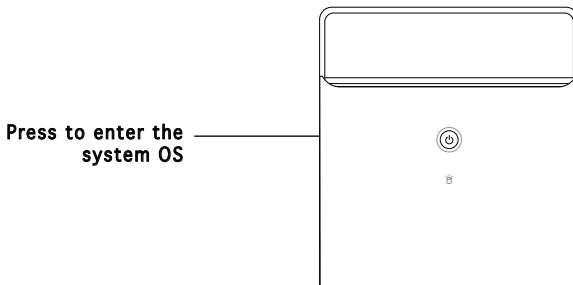
The barebone system supports Windows® 2000/XP operating systems (OS). Always install the latest OS version and corresponding updates so you can maximize the features of your hardware.



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.

### 3.2 Powering up

The system has one power buttons located on the front panel. Press the system power button (⏻) to enter the OS.



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

### 3.3 Support CD information

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

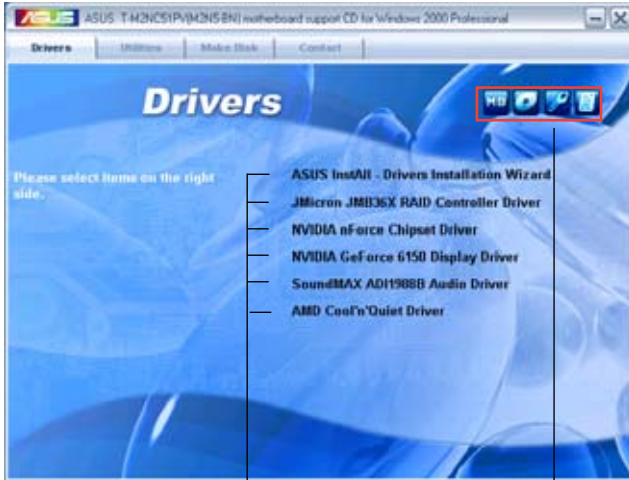


- Screen display and driver options may not be the same for other operating system versions.
- The contents of the support CD are subject to change at any time without notice. Visit the ASUS website for updates.



### 3.3.1 Running the support CD

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



Click an item to install

Click an icon to display other information



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

### 3.3.2 Drivers menu

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



#### **ASUS InstAll - Drivers Installation Wizard**

Launches the ASUS InstallAll driver installation wizard.

#### **JMicron JMB36X RAID Controller Driver**

Installs the JMicron® JMB36X RAID controller driver.

#### **Nvidia nForce Chipset Driver Program**

Installs the NVIDIA® Chipset drivers for the NVIDIA® nForce™ MCP 51 chipset.

#### **Nvidia GeForce 6150 Display Driver**

Installs the NVIDIA® GeForce 6150 driver.

#### **SoundMAX ADI1988B Audio Driver**

Installs the SoundMAX® ADI1988B audio driver and application.

#### **AMD Cool 'n' Quiet Driver**

Installs the AMD Cool 'n' Quiet™ technology driver.

### 3.3.3 Utilities menu

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



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

Launches the ASUS InstallAll utilities installation wizard.

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

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

#### **ASUS Update**

Installs the ASUS Update that allows you to update the motherboard BIOS and drivers. This utility requires an Internet connection either through a network or an Internet Service Provider (ISP). See page 5-4 for details.

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

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

## Microsoft DirectX 9.0c

Installs Microsoft® DirectX® 9.0c. The Microsoft® DirectX® 9.0c is a multimedia technology that enhances computer graphics and sounds. DirectX® improves the multimedia features of your computer so you can enjoy watching TV and movies, capturing videos, or playing games on your computer.



---

This application is already built into the Microsoft® Windows® XP Service Pack 2. If Microsoft® Windows® XP Service Pack 2 is installed in your system, skip Microsoft® DirectX® 9.0c installation.

---

## ASUS Cool'n'Quiet Utility

Launches the ASUS Cool'n'Quiet utility.

## Anti-Virus Utility

The anti-virus application scans, identifies, and removes computer viruses. View the online help for detailed information.

### 3.3.4 Make Disk menu

The Make Disk menu contains items to create JMicron® JMB363 SATA/PATA RAID driver disk.



#### NVIDIA 32bit Win2K SATA RAID Driver

Allows you to create an NVIDIA® Serial ATA RAID driver disk for a 32-bit Windows 2000 system.

## **NVIDIA 32bit WinXP SATA RAID Driver**

Allows you to create an NVIDIA® Serial ATA RAID driver disk for a 32-bit Windows XP system.

## **NVIDIA 64bit SATA RAID Driver**

Allows you to create an NVIDIA® Serial ATA RAID driver disk for a 32-bit system.

## **JMicron JMB36X 32/64bit Driver**

Allows you to create an JMicron® driver disk for a 32/64-bit system.

### **3.3.5 ASUS contact information**

The Contact tab displays the ASUS contact information.





# Chapter 4

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

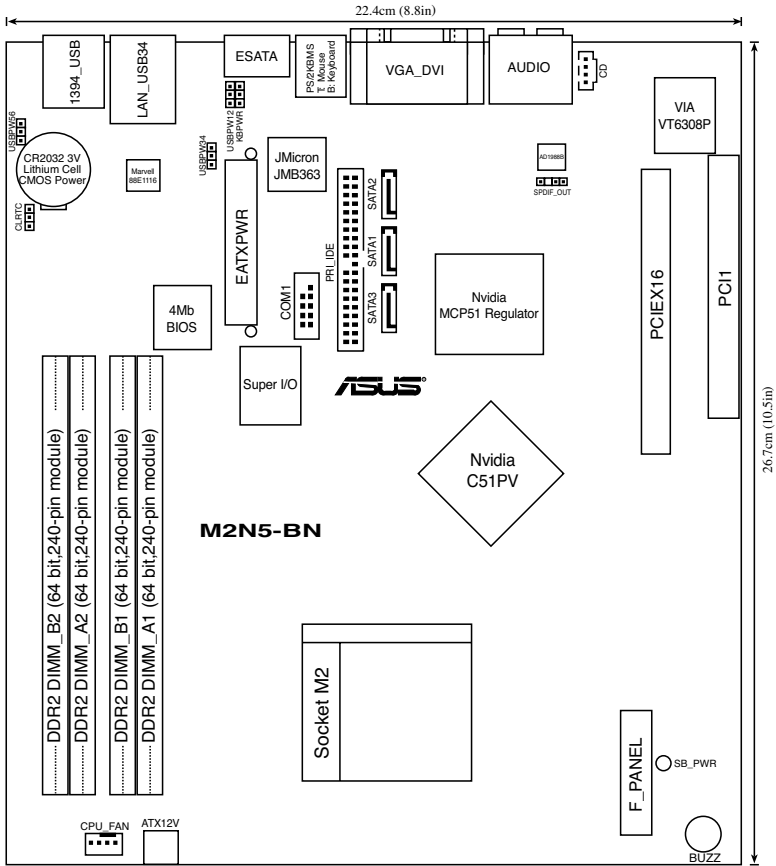


## Motherboard info

## 4.1 Introduction

The ASUS M2N5-BN motherboard comes already installed in the ASUS T3-M2NC51PV system. 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 (CLRRTC)

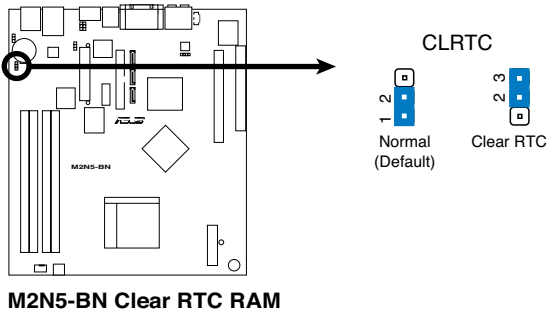
This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which include system setup information such as system passwords.

To erase the RTC RAM:

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



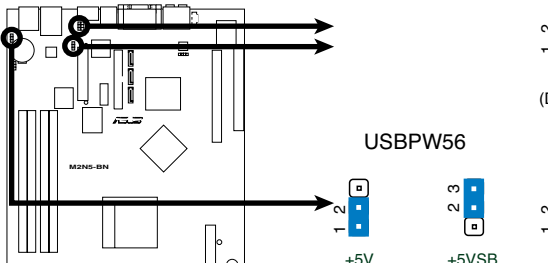
Except when clearing the RTC RAM, never remove the cap on CLRRTC jumper default position. Removing the cap will cause system boot failure!



## 2. USB device wake-up (3-pin USBPW123456)

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).

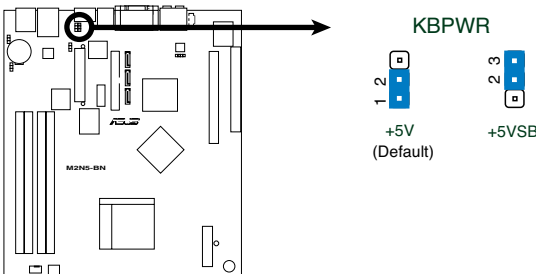
The USBPW1234 jumper is for the rear USB ports. The USBPW5678 jumper is for the internal USB connectors that you can connect to additional USB ports.



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

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

This jumper allows you to enable or disable the keyboard wake-up feature. Set this jumper to pins 2-3 (+5VSB) to wake up the computer when you press a key on the keyboard (the default is the Space Bar). This feature requires an ATX power supply that can supply at least 500 mA on the +5VSB lead, and a corresponding setting in the BIOS.



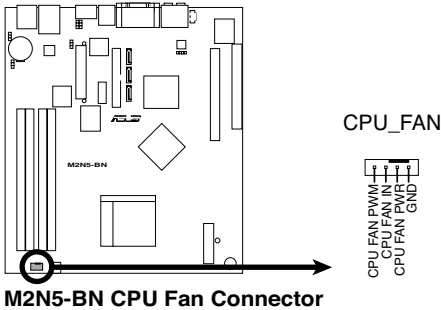
**M2N5-BN Keyboard Power Setting**

## 4.4 Connectors

This section describes and illustrates the connectors on the motherboard.

### 1. CPU fan connector (4-pin CPU\_FAN)

The fan connector supports the proprietary CPU fan. Connect the fan cable to the fan connector on the motherboard, making sure that the black wire of the cable matches the ground pin of the connector.



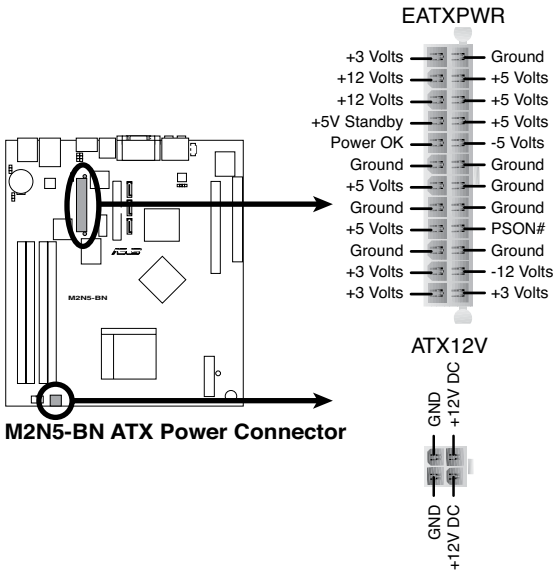
Do not forget to connect the fan cables to the fan connectors. Insufficient air flow within the system may damage the motherboard components. These are not jumpers! DO NOT place jumper caps on the fan connectors!

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

These connectors are for the 24-pin and 4-pin power plugs from the power supply unit. The plugs from the power supply unit are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

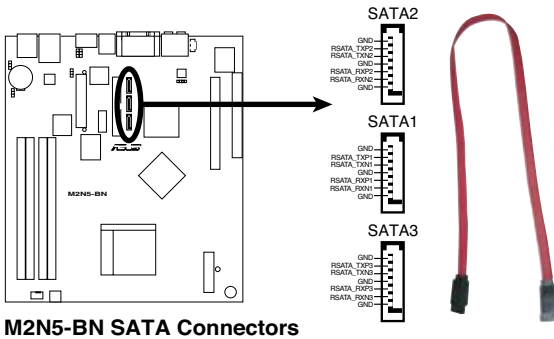


Do not forget to connect the 4-pin ATX12V power plug to the ATX12V connector on the motherboard; otherwise, the system will not boot up.



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

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



**M2N5-BN SATA Connectors**



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.

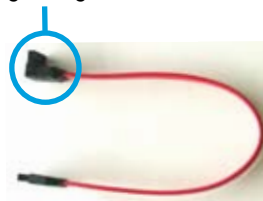
### Serial ATA hard disk drive connection

Connector	Color	Setting	Use
SATA1	Black	Master	Boot disk
SATA2/3	Black	Slave	Data Disk



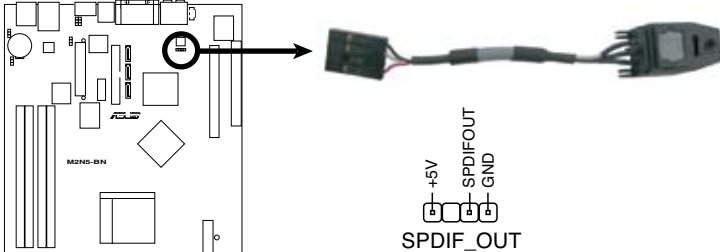
Connect the right-angle side of SATA signal cable to SATA device. Or you may connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

right angle side



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

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



**M2N5-BN Digital Audio Connector**



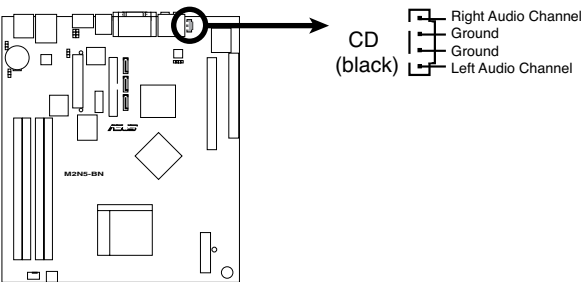
---

The S/PDIF module is purchased separately.

---

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

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



**M2N5-BN Internal Audio Connector**

# 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 CrashFree BIOS 2** (Updates the BIOS using a bootable floppy disk or the motherboard support CD when the BIOS file fails or gets corrupted.)
2. **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 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 containing the updated motherboard BIOS before using this utility.

---

## 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 "M2N5-BN.ROM". Completed.
Start flashing...
```



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

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



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

### 5.1.2 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 VX.XX.XX**. See page 3-5 for the **Utilities** screen menu.
3. The ASUS Update utility is copied to your system.



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



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



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



## Updating the BIOS through a BIOS file

To update the BIOS through a BIOS file:

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



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



## 5.2 BIOS setup program

This motherboard supports a programmable firmware chip that you can update using the provided utility described in section “5.1 Managing and updating your BIOS”.

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

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

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

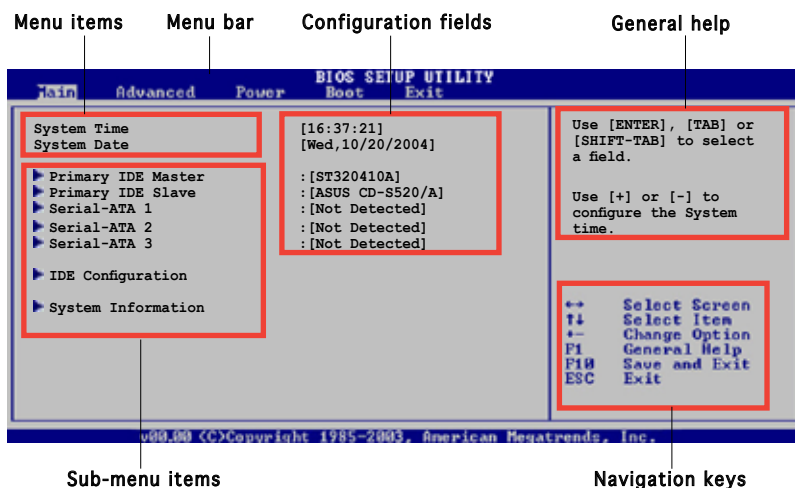
If you wish to enter Setup after POST, restart the system by pressing <Ctrl> + <Alt> + <Del>. You can also restart by turning the system off and then back on. Do this last option only if the first two failed.

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 “5.7 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](http://www.asus.com)) to download the latest BIOS file for this motherboard.
-

## 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.

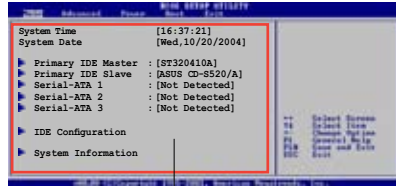


Some of the navigation keys differ from one screen to another.

## 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.

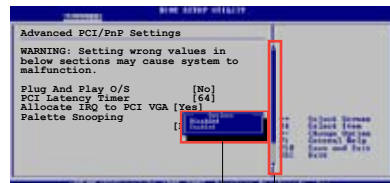
A configurable field is enclosed in brackets, and is highlighted when selected. To change the value of a field, select it then press <Enter> to display a list of options. Refer to “5.2.7 Pop-up window.”

## 5.2.7 Pop-up window

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

## 5.2.8 Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. 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 “5.2.1 BIOS menu screen” for information on the menu screen items and how to navigate through them.



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

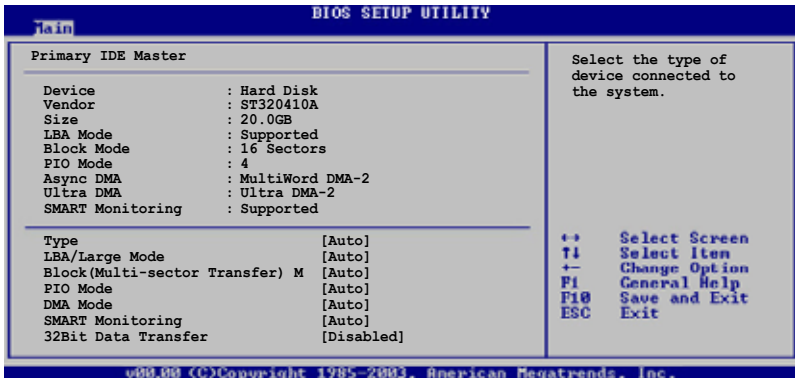
Allows you to set the system time.

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

Allows you to set the system date.

### 5.3.3 Primary IDE Master/Slave

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



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

#### Type [Auto]

Selects the type of IDE drive. Setting to Auto allows automatic selection of the appropriate IDE device type. Select CDROM if you are specifically configuring a CD-ROM drive. Select ARMD (ATAPI Removable Media Device) if your device is either a ZIP, LS-120, or MO drive.

Configuration options: [Not Installed] [Auto] [CDROM] [ARMD]

#### LBA/Large Mode [Auto]

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

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

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

Configuration options: [Disabled] [Auto]



### PIO Mode [Auto]

Selects the PIO mode.

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

### DMA Mode [Auto]

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

### SMART Monitoring [Auto]

Sets the Smart Monitoring, Analysis, and Reporting Technology.

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

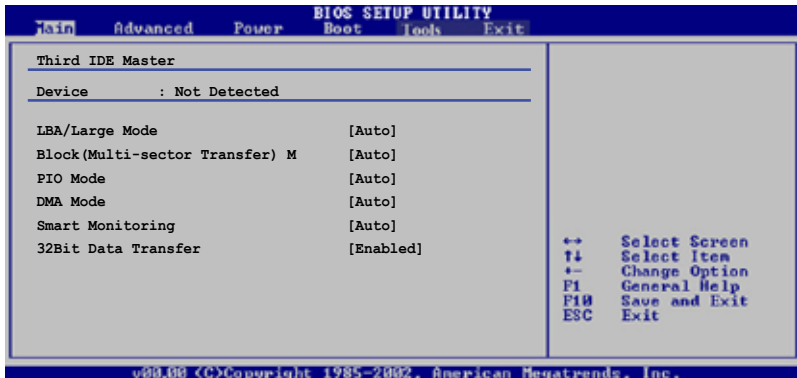
### 32Bit Data Transfer [Disabled]

Enables or disables 32-bit data transfer.

Configuration options: [Disabled] [Enabled]

## 5.3.4 Serial-ATA 1, Serial-ATA 2, Serial-ATA 3

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

### **LBA/Large Mode [Auto]**

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

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

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

### **PIO Mode [Auto]**

Selects the PIO mode. Configuration options: [Auto] [0] [1] [2] [3] [4]

### **DMA Mode [Auto]**

Selects the DMA mode. Configuration options: [Auto] [SWDMA0] [SWDMA1] [SWDMA2] [MWDMA0] [MWDMA1] [MWDMA2] [UDMA0] [UDMA1] [UDMA2] [UDMA3] [UDMA4] [UDMA5] [UDMA6]

### **SMART Monitoring [Auto]**

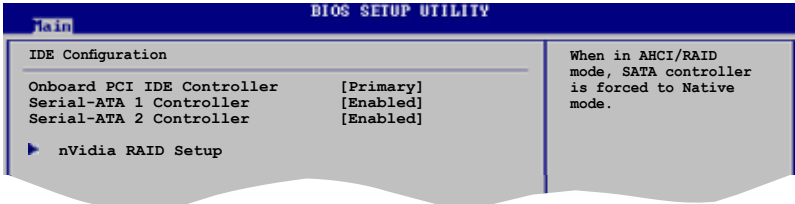
Sets the Smart Monitoring, Analysis, and Reporting Technology. Configuration options: [Auto] [Disabled] [Enabled]

### **32Bit Data Transfer [Disabled]**

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

### 5.3.5 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 want to configure the item.



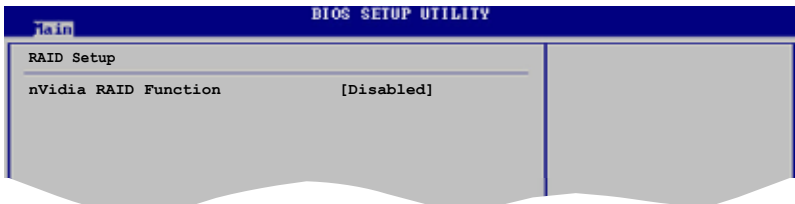
#### Onboard PCI IDE Controller [Primary]

Allows you to select the PCI IDE controller mode. Set this item to disabled to disable the integrated IDE controller. Set it to Primary to enable the Primary IDE controller. Configuration options: [Primary] [Disabled]

#### Serial-ATA 1/2 Controller [Enabled]

Allows you to enable or disable the Serial-ATA 1 and 2 controller. Serial-ATA 1 controller controls SATA1 and SATA2. Serial-ATA 2 controller controls SATA3. Configuration options: [Enabled] [Disabled]

#### nVidia RAID Setup

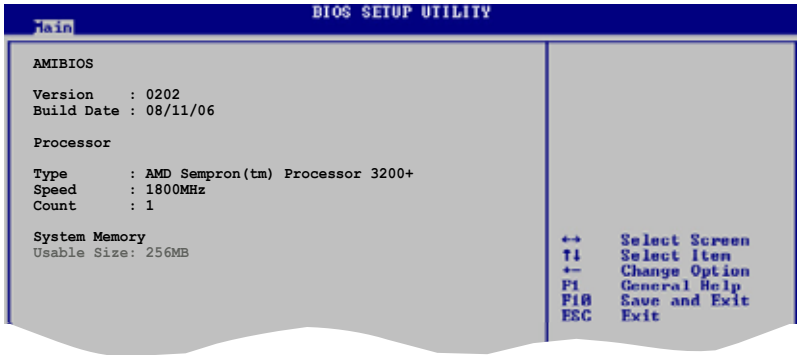


#### *nVidia RAID Function [Disabled]*

Allows you to disable or enable the nVidia RAID function. Configuration options: [Enabled] [Disabled]

### 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

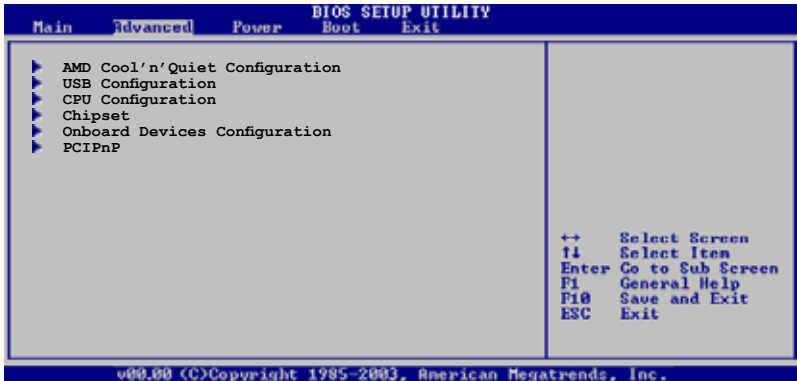
Displays the auto-detected system memory

## 5.4 Advanced menu

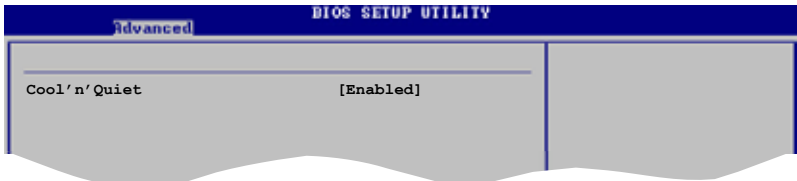
The Advanced menu items allow you to change the settings for the CPU and other system devices.



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



### 5.4.1 AMD Cool'n'Quiet Configuration



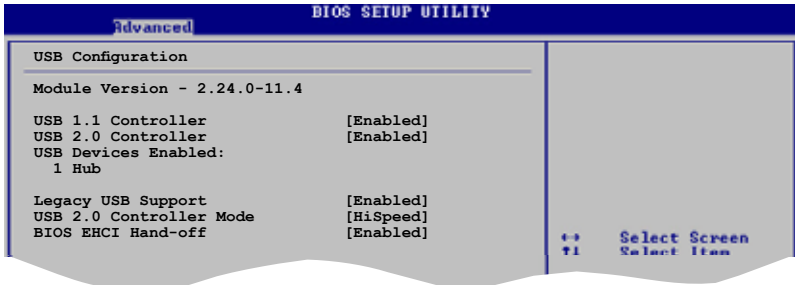
#### Cool'n'Quiet [Enabled]

Enables or disables the AMD Cool 'n' Quiet function.

Configuration options: [Disabled] [Enabled]

## 5.4.2 USB Configuration

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



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

### USB 1.1 Controller [Enabled]

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

### USB 2.0 Controller [Enabled]

Allows you to disable or enable the USB 2.0 controller.  
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 Mode [HiSpeed]

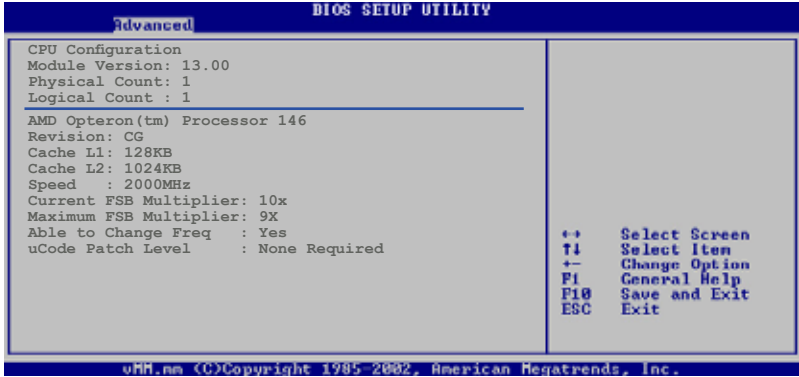
Allows you to configure the USB 2.0 controller in HiSpeed (480 Mbps) or Full Speed (12 Mbps). Configuration options: [HiSpeed] [Full Speed]

### BIOS EHCI Hand-off [Enabled]

Allows you to enable or disable the enhanced host controller interface (EHCI) hand-off support. This is a workaround for operating systems without EHCI hand-off support. The EHCI ownership change should be claimed by the EHCI driver. Configuration options: [Disabled] [Enabled]

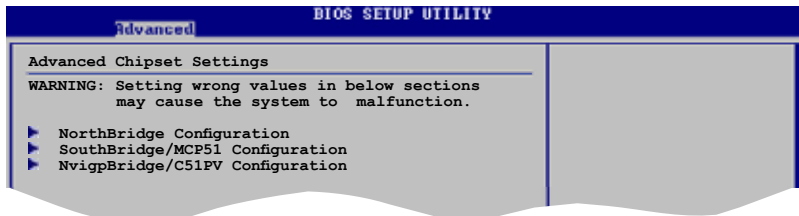
### 5.4.3 CPU Configuration

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

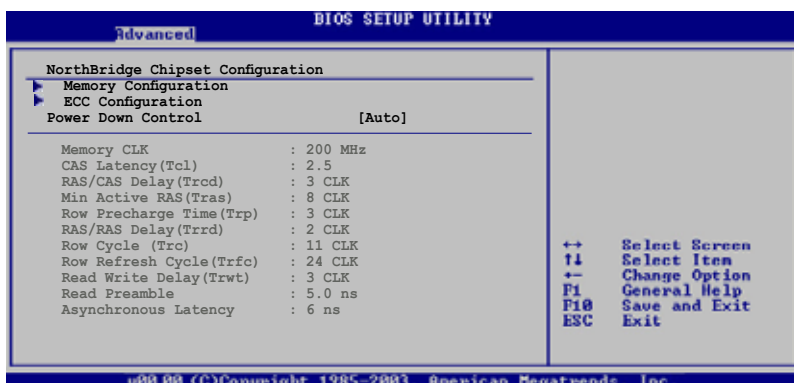


### 5.4.4 Chipset

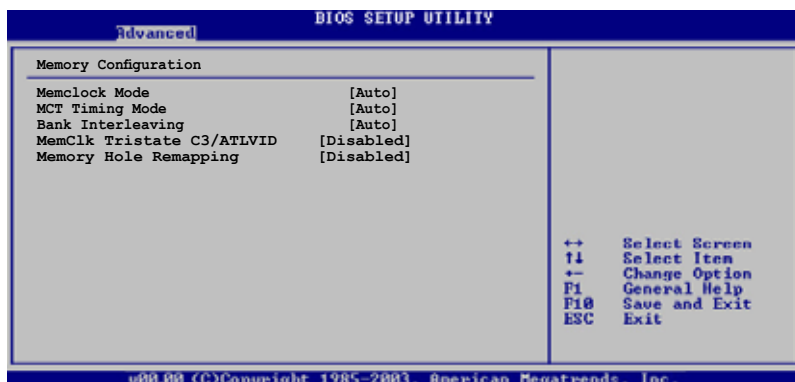
The Chipset menu allows you to change the advanced chipset settings. Select an item then press <Enter> to display the sub-menu.



# NorthBridge Configuration



## Memory Configuration



### **Memclock Mode [Auto]**

Sets the memory clock mode. Configuration options: [Auto] [Limit] [Manual]



The following item appears when the Memclock Mode item is set to [Limit] or [Manual].

### **Memclock Value [200MHz]**

Configuration options: [200MHz] [266MHz] [333MHz] [400MHz]



### **MCT Timing Mode [Auto]**

Sets the MCT Timing mode.

Configuration options: [Auto] [Manual]



---

The following item appears when the **MCT Time Mode** item is set to [Manual].

---

#### **CAS Latency (CL) [Auto]**

Configuration options: [Auto] [3.0] [4.0] [5.0][6.0]

#### **TRAS [Auto]**

Configuration options: [Auto] [5 CLK] [6 CLK]... [18 CLK]

#### **TRP [Auto]**

Configuration options: [Auto] [2 CLK] [3 CLK]... [6 CLK]

#### **TRCD [Auto]**

Configuration options: [Auto] [2 CLK] [3 CLK]... [6 CLK]

#### **TRRD [Auto]**

Configuration options: [Auto] [2T] [3T] [4T] [5T]

#### **TRC [Auto]**

Configuration options: [Auto] [11T] [12T] [13T]... [25T]

### **Bank Interleaving [Auto]**

Sets the bank interleaving feature.

Configuration options: [Auto] [Disabled]



---

The Bank Interleaving item appears only when you use a memory that supports this function.

---

### **MemClk Tristate C3/ATLVID [Disabled]**

Enables or disables the MemClk Tri-Stating during C3 and Alt VID.

Configuration options: [Enabled] [Disabled]

### **Memory Hole Remapping [Disabled]**

Enables or disables the memory remapping around the memory hole.

Configuration options: [Enabled] [Disabled]

## ECC Configuration

Advanced		BIOS SETUP UTILITY
ECC Configuration		
DRAM ECC Enable	[Enabled]	DRAM ECC allows hardware to report and correct memory errors automatically maintaining system integrity.
ECC MCE Enable	[Disabled]	
4-Bit ECC Mode	[Disabled]	
DRAM SCRUB REDIRECT	[Disabled]	

### **DRAM ECC Enable [Enabled]**

Allows you to enable or disable the DRAM ECC.  
Configuration options: [Disabled] [Enabled]

### **ECC MCE Enable [Disabled]**

Enables or disables the ECC MCE Enable.  
Configuration options: [Disabled] [Enabled]

### **4-Bit ECC Mode [Disabled]**

Enables or disables the ECC Chip Kill function.  
Configuration options: [Disabled] [Enabled]

### **DRAM SCRUB REDIRECT [Disabled]**

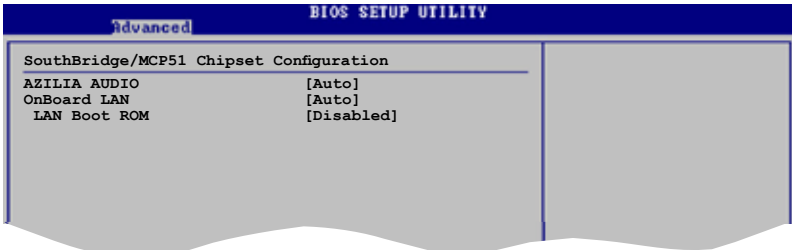
Enables or disables the DRAM SCRUB REDIRECT.  
Configuration options: [Disabled] [Enabled]

### Power Down Control [Auto]

Allows the DIMMs to enter power down mode by deasserting the clock enable signal when DIMMs are not in use. Configuration options: [Auto] [Disabled]

## SouthBridge/MCP51 Configuration

The SouthBridge Configuration menu allows you to change the SouthBridge settings.



### AZALIA AUDIO [Auto]

Allows you to disable or set the High-Definition audio function.  
Configuration options: [Auto] [Disabled]

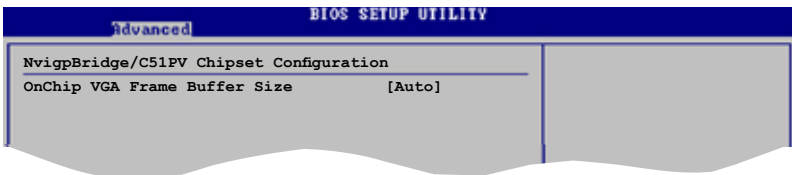
### OnBoard LAN [Auto]

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

#### LAN Boot ROM [Disabled]

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

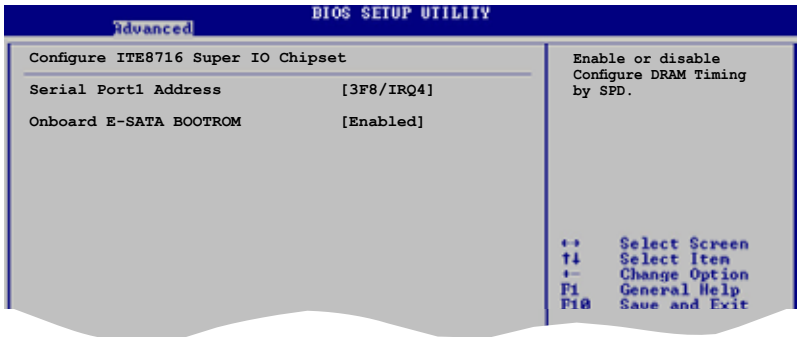
## NvlgpBridge/C51PV Configuration



### OnChip VGA Frame Buffer Size [Auto]

Allows you to select the C51PV share memory size.  
Configuration options: [Disabled] [16MB] [32MB] [64MB] [128MB] [256MB] [Auto]

## 5.4.5 Onboard Devices Configuration



### 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]

### OnBoard E-SATA BOOTROM [Enabled]

Allows you to enable or disable the Onboard E-SATA BOOTROM.

Configuration options: [Disabled] [Enabled]

## 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]

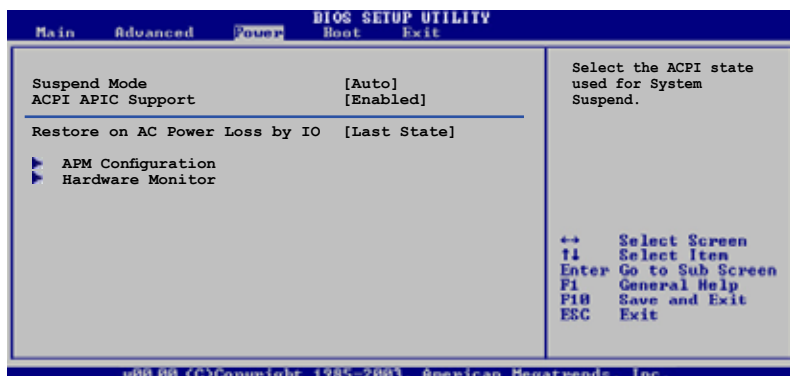
When set to [Enabled], the palette snooping feature informs the PCI devices that an ISA graphics device is installed in the system so that the latter can function correctly. Configuration options: [Disabled] [Enabled]

## 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 ACPI and 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 APIC Support [Enabled]

Allows you to enable or disable the Advanced Configuration and Power Interface (ACPI) support in the Advanced Programmable Interrupt Controller (APIC). When set to Enabled, the ACPI APIC table pointer is included in the RSDT pointer list. Configuration options: [Disabled] [Enabled]

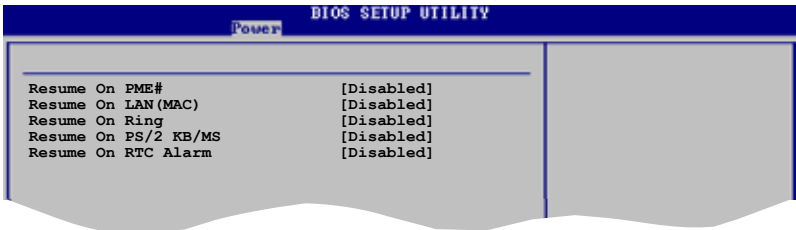
### 5.5.3 Restore on AC Power Loss by IO [Last State]

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]

## 5.5.4 APM Configuration



### Resume On PME# [Disabled]

Allows you to enable or disable the PME to generate a wake event.  
Configuration options: [Enabled] [Disabled]

### Resume On LAN(MAC) [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]

### Resume On Ring [Disabled]

Allows you to enable or disable the RI to generate a wake event.  
Configuration options: [Disabled] [Enabled]

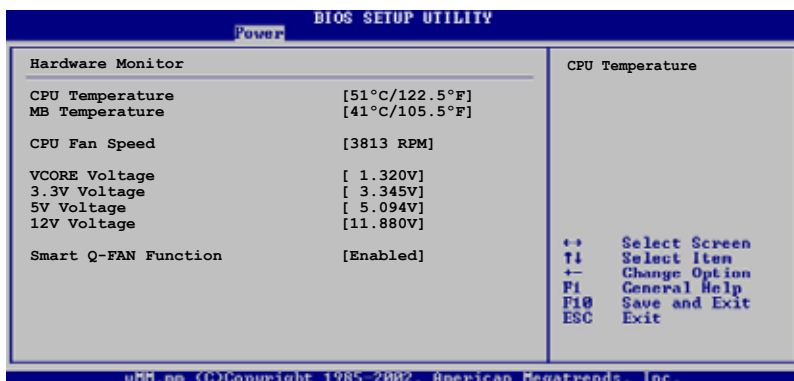
### Resume On PS/2 KB/MS [Disabled]

Allows you to use specific keys on the keyboard or 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]

### Resume On RTC Alarm [Disabled]

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

## 5.5.5 Hardware Monitor



### CPU Temperature [xxx°C/xxx°F]

### MB Temperature [xxx°C/xxx°F]

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

### CPU Fan Speed [xxxxRPM], [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.

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

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

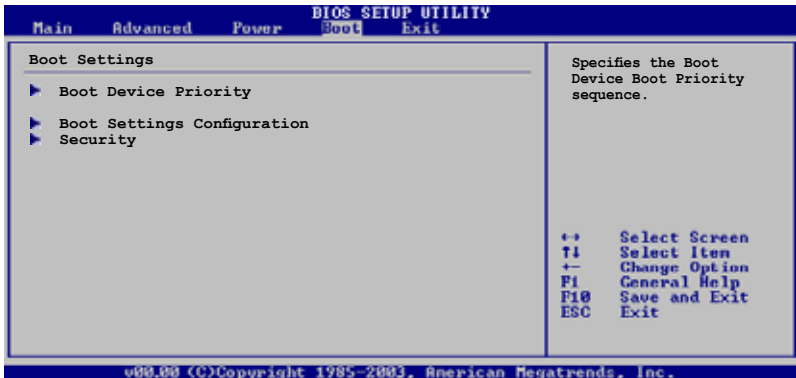
### Smart Q-FAN Function [Enabled]

Allows you to enable or disable smart Q-Fan function. Configuration options: [Disabled] [Enabled]

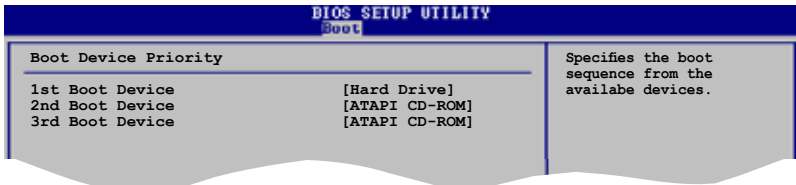


## 5.6 Boot menu

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 [Hard 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

BIOS SETUP UTILITY	
Boot	
Boot Settings Configuration	
Quick Boot	[Enabled]
Full Screen Logo	[Enabled]
AddOn ROM Display Mode	[Force BIOS]
Bootup Num-Lock	[On]
PS/2 Mouse Support	[Auto]
Wait For 'F1' If Error	[Enabled]
Hit 'DEL' Message Display	[Enabled]
Interrupt 19 Capture	[Disabled]

Allows BIOS to skip certain tests while booting. This will decrease the time needed to boot the system.

### 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 MyLogo2™ feature.

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

Sets the display mode for option ROM.

Configuration options: [Force BIOS] [Keep Current]

### Bootup Num-Lock [On]

Allows you to select the power-on state for the NumLock.

Configuration options: [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]

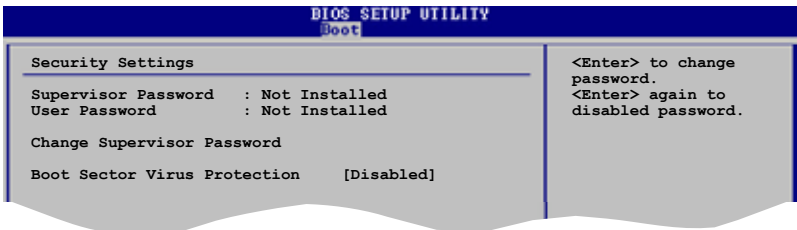
When set to Enabled, the system displays the message "Press DEL to run Setup" during POST. Configuration options: [Disabled] [Enabled]

## 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.

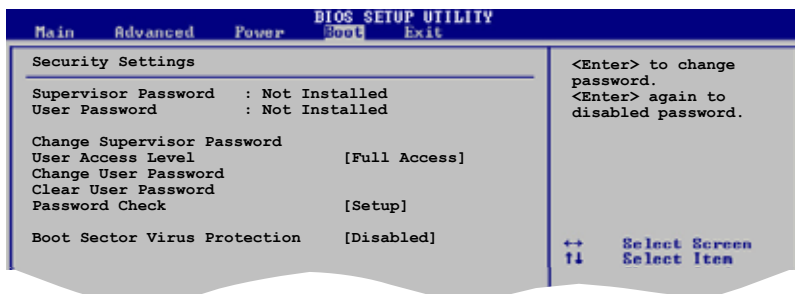
To change the supervisor password, follow the same steps as in setting a user password.

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 “4.3 Jumpers” for information on how to erase the RTC RAM.

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



## User Access Level (Full Access]

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

**No Access** prevents user access to the Setup utility.

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

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

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

## Change User Password

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

To set a User Password:

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

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

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

## Clear User Password

Select this item to clear the user password.

## Password Check [Setup]

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

Configuration options: [Setup] [Always]

## Boot Sector Virus Protection [Disabled]

Allows you to enable or disable the boot sector virus protection.

Configuration options: [Disabled] [Enabled]

# 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

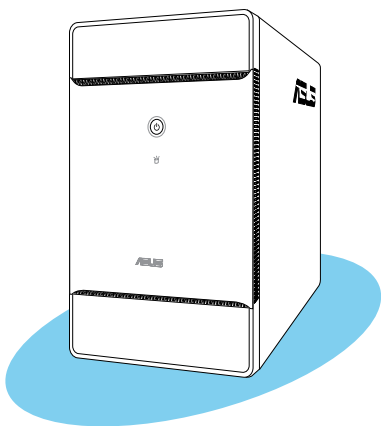
This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select **OK** to discard any changes and load the previously saved values.

## 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.

# Appendix

The Appendix includes the power supply unit specification for this system.



# Appendix

# Power supply specifications

## Input characteristics

Input Voltage Range	Minimum	Normal	Maximum
Range 1	100 V	115 V	130 V
Range 2	200 V	230 V	260 V
Input Frequency Range	50 Hz to 60 Hz		
Maximum Input AC Current	6 A max. at 115 Vac 3 A max. at 230 Vac, full load		
Inrush Current	No hazards to occur and damage components		
Efficiency	65% min. at 115Vac and output full load		
Current Harmonic	Meets EN61000-3-2 @ 100 Vac/50 Hz or 230 Vac/50 Hz at full load		
EPA	50% min. at input 115 Vac, 60 Hz		

## Output characteristics

Output Voltage	Load Range		Regulation		Ripple
	Min	Max	Min	Max	Max
+5 V	0.3 A	18 A	-5%	+5%	50 mVp-p
+12 V	1 A	14 A	-5%	+5%	150 mVp-p
-12 V	0 A	0.3 A	-10%	+10%	200 mVp-p
+3.3 V	0.3 A	16 A	-5%	+5%	50 mVp-p
+5 VSB	0.1 A	2.5 A	-5%	+5%	50 mVp-p

## Over-Voltage Protection (OVP)

Output Voltage	Maximum Voltage
+3.3V	4.6V
+5V	7V
+12V	15.6V



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