



# 4CoreDual-SATA2

## User Manual

Version 1.1

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- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

### **CALIFORNIA, USA ONLY**

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see [www.dtsc.ca.gov/hazardouswaste/perchlorate](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)"

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# 1. Introduction

Thank you for purchasing ASRock **4CoreDual-SATA2** motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, chapter 1 and 2 contain introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contain the configuration guide to BIOS setup and information of the Support CD.



Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock website without further notice. You may find the latest VGA cards and CPU support lists on ASRock website as well. ASRock website <http://www.asrock.com>

## 1.1 Package Contents

ASRock **4CoreDual-SATA2** Motherboard

(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)

ASRock **4CoreDual-SATA2** Quick Installation Guide

ASRock **4CoreDual-SATA2** Support CD

One 80-conductor Ultra ATA 66/100/133 IDE Ribbon Cable

One Ribbon Cable for a 3.5-in Floppy Drive

One Serial ATA (SATA) Cable (Optional)

One Serial ATA (SATA) HDD Power Cable (Optional)

One HDMI\_SPDIF Cable (Optional)

One HD 8CH I/O Panel Shield

## 1.2 Specifications

<b>Platform</b>	- ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm
<b>CPU</b>	- LGA 775 for Intel® Core™ 2 Extreme / Core™ 2 Duo / Pentium® XE / Pentium® D / Pentium® Dual Core / Pentium® 4 / Celeron® / Celeron® D, supporting Quad Core Kentsfield processors (see <b>CAUTION 1</b> ) - FSB 1066/800/533 MHz - Supports Hyper-Threading Technology (see <b>CAUTION 2</b> ) - Supports Untied Overclocking Technology (see <b>CAUTION 3</b> ) - Supports EM64T CPU
<b>Chipset</b>	- Northbridge: VIA® PT880 Pro/PT880 Ultra - Southbridge: VIA® VT8237S
<b>Memory</b>	- Dual Channel DDR/DDR II Memory Technology (see <b>CAUTION 4</b> ) - 2 x DDR II DIMM slots - Support DDR II 667/533 - Max. capacity: 2GB - 2 x DDR DIMM slots - Support DDR 400/333/266 - Max. capacity: 2GB
<b>Hybrid Booster</b>	- CPU Frequency Stepless Control (see <b>CAUTION 5</b> ) - ASRock U-COP (see <b>CAUTION 6</b> ) - Boot Failure Guard (B.F.G.)
<b>Expansion Slot</b>	- 4 x PCI slots - 1 x PCI Express Graphics slot (see <b>CAUTION 7</b> ) - 1 x AGP 8X slot (see <b>CAUTION 8</b> )
<b>Audio</b>	- 7.1 CH Windows® Vista™ Premium Level HD Audio (ALC888 Audio Codec)
<b>LAN</b>	- VIA® PHY VT6103 - Speed: 10/100 Ethernet - Supports Wake-On-LAN
<b>Rear Panel I/O</b>	HD 8CH I/O - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 1 x Parallel Port (ECP/EPP Support) - 4 x Ready-to-Use USB 2.0 Ports - 1 x RJ-45 Port - Audio Jack: Side Speaker/Rear Speaker/Central Bass/Line in/Front Speaker/Microphone (see <b>CAUTION 9</b> )

<b>Connector</b>	<ul style="list-style-type: none"> <li>- 2 x Serial ATAII 3.0Gb/s connectors, support RAID (RAID 0, RAID 1, and JBOD) and “Hot Plug” functions (see <b>CAUTION 10</b>)</li> <li>- 2 x ATA133 IDE connectors (support 4 x IDE devices)</li> <li>- 1 x Floppy connector</li> <li>- 1 x IR header</li> <li>- 1 x Game header</li> <li>- 1 x HDMI_SPDIF header</li> <li>- CPU/Chassis FAN connector</li> <li>- 20 pin ATX power connector</li> <li>- 4 pin 12V power connector</li> <li>- CD in header</li> <li>- Front panel audio connector</li> <li>- 2 x USB 2.0 headers (support 4 USB 2.0 ports) (see <b>CAUTION 11</b>)</li> </ul>
<b>BIOS Feature</b>	<ul style="list-style-type: none"> <li>- 4Mb AMI BIOS</li> <li>- AMI Legal BIOS</li> <li>- Supports “Plug and Play”</li> <li>- ACPI 1.1 Compliance Wake Up Events</li> <li>- Supports jumperfree</li> <li>- SMBIOS 2.3.1 Support</li> </ul>
<b>Support CD</b>	<ul style="list-style-type: none"> <li>- Drivers, Utilities, AntiVirus Software (Trial Version)</li> </ul>
<b>Hardware Monitor</b>	<ul style="list-style-type: none"> <li>- CPU Temperature Sensing</li> <li>- Chassis Temperature Sensing</li> <li>- CPU Fan Tachometer</li> <li>- Chassis Fan Tachometer</li> <li>- CPU Quiet Fan</li> <li>- Voltage Monitoring: +12V, +5V, +3.3V, Vcore</li> </ul>
<b>OS</b>	<ul style="list-style-type: none"> <li>- Microsoft® Windows® 2000/XP/XP 64-bit/Vista™/ Vista™ 64-bit compliant (see <b>CAUTION 12</b>)</li> </ul>
<b>Certifications</b>	<ul style="list-style-type: none"> <li>- FCC, CE, WHQL</li> </ul>

**WARNING**

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using the third-party overclocking tools. Overclocking may affect your system stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.

## **CAUTION!**

1. When you adopt Quad Core CPU on this motherboard, FSB frequency may be reduced 5%.
2. About the setting of "Hyper Threading Technology", please check page 37.
3. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 33 for details.
4. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 17 for proper installation.
5. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU.
6. While CPU overheat is detected, the system will automatically shutdown. Before you resume the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
7. For the information of the compatible PCI Express VGA cards, please refer to the "Supported PCI Express VGA Card List for PCI Express Graphics Slot" on page 10. For the proper installation of PCI Express VGA card, please refer to the installation guide on page 19.
8. Do NOT use a 3.3V AGP card on the AGP slot of this motherboard! It may cause permanent damage!
9. For microphone input, this motherboard supports both stereo and mono modes. For audio output, this motherboard supports 2-channel, 4-channel, 6-channel, and 8-channel modes. Please check the table on page 12 for proper connection.
10. Before installing SATAII hard disk to SATAII connector, please read the "SATAII Hard Disk Setup Guide" on page 27 to adjust your SATAII hard disk drive to SATAII mode. You can also connect SATA hard disk to SATAII connector directly.
11. Power Management for USB 2.0 works fine under Microsoft® Windows® Vista™ 64-bit / Vista™ / XP 64-bit / XP SP1 or SP2 / 2000 SP4.
12. Microsoft® Windows® Vista™ / Vista™ 64-bit driver keeps on updating now. As long as we have the latest driver, we will update it to our website in the future. Please visit our website for Microsoft® Windows® Vista™ / Vista™ 64-bit driver and related information.  
ASRock website <http://www.asrock.com>



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### 1.3 Minimum Hardware Requirement Table for Windows® Vista™ Premium 2007 and Basic OS

This motherboard can support all features in Windows® Vista™ Premium 2007. Please follow below table for minimum hardware requirement.

CPU	Celeron D 326
Memory	1GB system memory
VGA	DX9.0 with WDDM Driver
	with 128bit VGA memory (Premium)
	with 64bit VGA memory (Basic)

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## 1.4 Supported PCI Express VGA Card List for PCI Express Graphics Slot

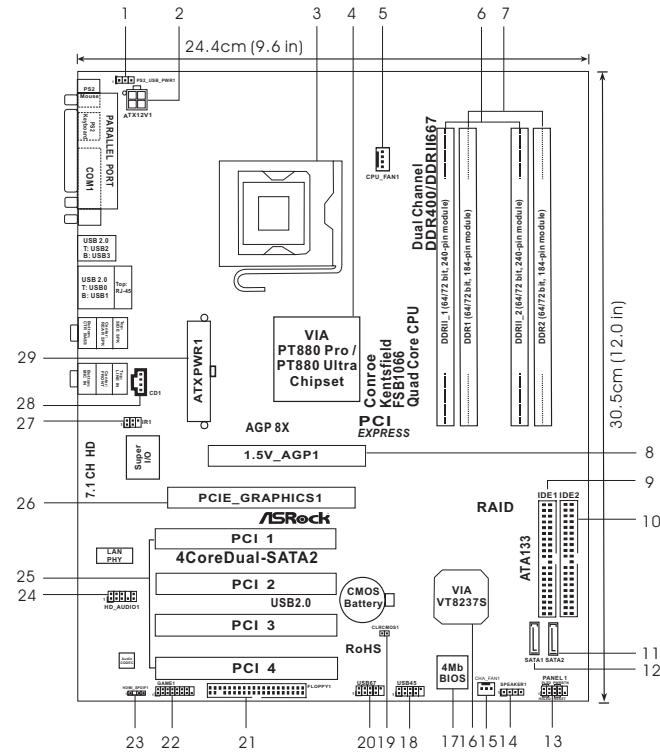
(for Windows® 2000/XP/XP 64-bit/Vista™/Vista™ 64-bit)

Graphics Chip Vendor	Model Name	Chip Name
NVIDIA	ASUS Extreme N6800GT	GeForce 6800GT
	ASUS EN7600GT/2DHT	GeForce 7600GT
	ASUS Extreme N7800GTX/2DHTV	GeForce 7800 GTX
	ALBATRON PC6600GT	GeForce 6600GT
	Gigabyte GV-NX71G512P8	GeForce 7100GS
	GIGABYTE GF-8500GT	GeForce 8600 GTS
	LEADTEK PX6500 TDH	GeForce 6500
	LEADTEK PX7300GS TDH	GeForce 7300 GS
	LEADTEK PX7300LE-TDH	GeForce 7300 LE
	LEADTEK PX7900GS TDH	GeForce 7900GS
	MSI PCX 5750-TD128E	GeForce PCX5750
	MSI NX8600GTS	GeForce 8600 GTS
	MSI NX8800GTS/320M	GeForce 8800 GTS
	ATI	ASUS EAX1900XT/2DHTV
GECUBE Radeon X850XT 256M		RADEON X850XT
MSI RX1300PRO-TD256E		RADEON X1300Pro
MSI RX1600PRO-TD256E		RADEON X1600Pro
MSI RX1600XT-T2D256EZ		RADEON X1600XT

For the latest updates of the supported PCI Express VGA card list for PCI Express Graphics slot, please visit ASRock website for details.

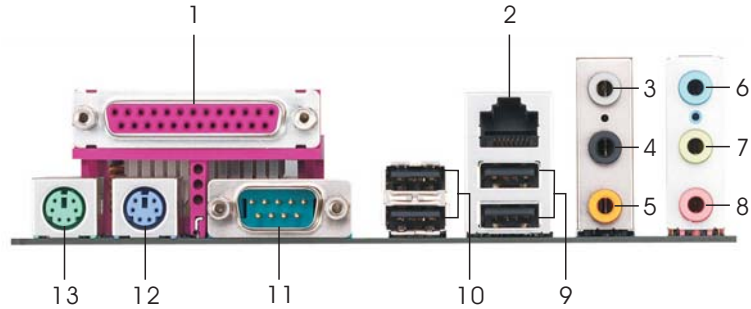
ASRock website: <http://www.asrock.com/support/index.htm>

## 1.5 Motherboard Layout



- |  |  |
|--|--|
| 1 PS2_USB_PWR1 Jumper  | 15 Chassis Fan Connector (CHA_FAN1)      |
| 2 ATX 12V Connector (ATX12V1)  | 16 South Bridge Controller               |
| 3 775-Pin CPU Socket   | 17 Flash Memory                          |
| 4 North Bridge Controller  | 18 USB 2.0 Header (USB45, Blue)          |
| 5 CPU Fan Connector (CPU_FAN1)   | 19 Clear CMOS Jumper (CLRCMOS1)          |
| 6 2 x 240-pin DDRII DIMM Slots<br>(Dual Channel A: DDR1_1, DDR1_2; Yellow) | 20 USB 2.0 Header (USB67, Blue)          |
| 7 2 x 184-pin DDR DIMM Slots<br>(Dual Channel B: DDR1, DDR2; Blue)         | 21 Floppy Connector (FLOPPY1)            |
| 8 AGP Slot (1.5V_AGP1)   | 22 Game Connector (GAME1)                |
| 9 Primary IDE Connector (IDE1, Blue)                                       | 23 HDMI_SPDIF Header (HDMI_SPDIF1)       |
| 10 Secondary IDE Connector (IDE2, Black)                                   | 24 Front Panel Audio Header (HD_AUDIO1)  |
| 11 Secondary Serial ATAII Connector (SATA2)                                | 25 4 x PCI Slots (PCI1- 4)               |
| 12 Primary Serial ATAII Connector (SATA1)                                  | 26 PCI Express Graphics Slot             |
| 13 System Panel Header (PANEL1)  | 27 Infrared Module Header (IR1)          |
| 14 Chassis Speaker Header (SPEAKER 1)                                      | 28 Internal Audio Connector: CD1 (Black) |
|  | 29 ATX Power Connector (ATXPWR1)         |

## 1.6 HD 8CH I/O Panel




- |                           |                                |
|---------------------------|--------------------------------|
| 1 Parallel Port           | 8 Microphone (Pink)            |
| 2 RJ-45 Port              | 9 USB 2.0 Ports (USB01)        |
| 3 Side Speaker (Gray)     | 10 USB 2.0 Ports (USB23)       |
| 4 Rear Speaker (Black)    | 11 Serial Port: COM1           |
| 5 Central / Bass (Orange) | 12 PS/2 Keyboard Port (Purple) |
| 6 Line In (Light Blue)    | 13 PS/2 Mouse Port (Green)     |
| *7 Front Speaker (Lime)   |                                |

\* If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.

**TABLE for Audio Output Connection**

Audio Output Channels	Front Speaker (No. 7)	Rear Speaker (No. 4)	Central / Bass (No. 5)	Side Speaker (No. 3)
2	V	--	--	--
4	V	V	--	--
6	V	V	V	--
8	V	V	V	V

\* To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find "Mixer" tool on your system. Please select "Mixer Toolbox" , click "Enable playback multi-streaming", and click "ok". Choose "2CH", "4CH", "6CH", or "8CH" and then you are allowed to select "Realtek HDA Primary output" to use Rear Speaker, Central/Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use front panel audio.

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## Chapter 2 Installation

**4CoreDual-SATA2** is an ATX form factor (12.0" x 9.6", 30.5 x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.



Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

### 2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.



Do not over-tighten the screws! Doing so may damage the motherboard.

### 2.2 Pre-installation Precautions

Take note of the following precautions before you install motherboard components or change any motherboard settings.

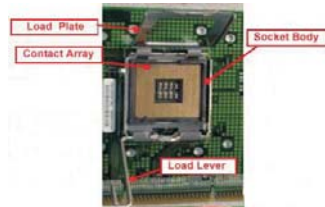
1. Unplug the power cord from the wall socket before touching any component.
2. To avoid damaging the motherboard components due to static electricity, NEVER place your motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that comes with the component.



Before you install or remove any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.

## 2.3 775-LAND CPU Installation

For the installation of Intel 775-LAND CPU, please follow the steps below.



775-Pin Socket Overview



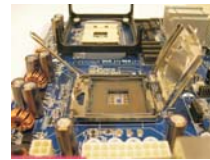
Before you insert the 775-LAND CPU into the socket, please check if the CPU surface is unclean or if there is any bent pin on the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

Step 1. Open the socket:

Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab.



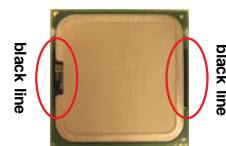
Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees.



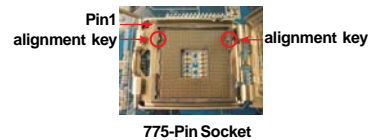
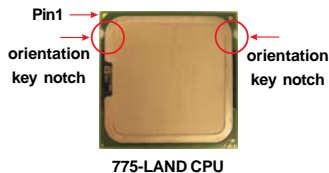
Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

Step 2. Insert the 775-LAND CPU:

Step 2-1. Hold the CPU by the edges where are marked with black lines.



Step 2-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.





For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 2-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 2-4. Verify that the CPU is within the socket and properly mated to the orient keys.



Step 3. Remove PnP Cap (Pick and Place Cap):

Use your left hand index finger and thumb to support the load plate edge, engage PnP cap with right hand thumb and peel the cap from the socket while pressing on center of PnP cap to assist in removal.



1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

Step 4. Close the socket:

Step 4-1. Rotate the load plate onto the IHS.

Step 4-2. While pressing down lightly on load plate, engage the load lever.

Step 4-3. Secure load lever with load plate tab under retention tab of load lever.



## 2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 775-Pin socket that supports Intel 775-LAND CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 775-LAND CPU to dissipate heat. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU\_FAN connector (CPU\_FAN1, see page 11, No. 5).



For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.

Below is an example to illustrate the installation of the heatsink for 775-LAND CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.



Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU\_FAN1, see page 11, No. 5).



Step 3. Align fasteners with the motherboard throughholes.

Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.



If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.



---

## 2.5 Installation of Memory Modules (DIMM)

**4CoreDual-SATA2** motherboard provides two 184-pin DDR (Double Data Rate) DIMM slots and two 240-pin DDRII DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR / DDRII DIMM pair in the slots of the same color. In other words, you have to install **identical** DDRII DIMM pair in **Dual Channel A** (DDRII\_1 and DDRII\_2; Yellow slots; see p.11 No.6) or **identical** DDR DIMM pair in **Dual Channel B** (DDR1 and DDR2; Blue slots; see p. 11 No.7), so that Dual Channel Memory Technology can be activated. You may refer to the Dual Channel Memory Configuration Table below.

**Dual Channel Memory Configurations**

	DDRII_1 (Yellow Slot)	DDR1 (Blue Slot)	DDRII_2 (Yellow Slot)	DDR2 (Blue Slot)
(1)	Populated	-	Populated	-
(2)	-	Populated	-	Populated



1. It is not allowed to install a DDR memory module into DDRII slot or a DDRII memory module into DDR slot; otherwise, this motherboard and DIMM may be damaged.
2. It is not allowed to install both DDR and DDRII memory modules to this motherboard at the same time; otherwise, this motherboard and DIMM may be damaged.

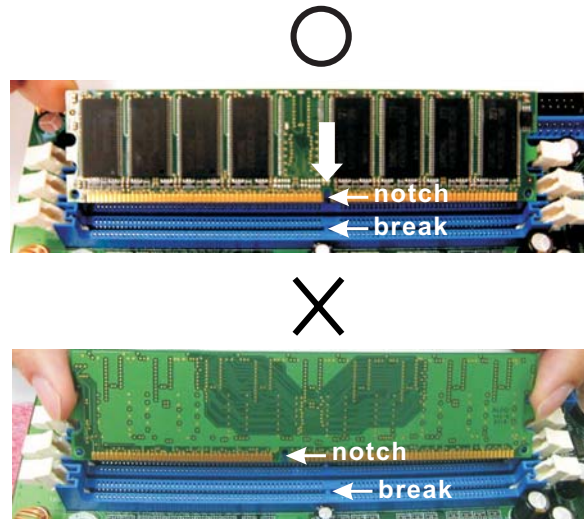
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## Installing a DIMM



Please make sure to disconnect power supply before adding or removing DIMMs or the system components.

- Step 1. Unlock a DIMM slot by pressing the retaining clips outward.
- Step 2. Align a DIMM on the slot such that the notch on the DIMM matches the break on the slot.



The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

- Step 3. Firmly insert the DIMM into the slot until the retaining clips at both ends fully snap back in place and the DIMM is properly seated.

---

## 2.6 Expansion Slots (PCI, AGP, and PCI Express Graphics Slots)

There are 4 PCI slots, 1 AGP slot, and 1 PCI Express Graphics slot on **4CoreDual-SATA2** motherboard.

**PCI slots:** PCI slots are used to install expansion cards that have the 32-bit PCI interface.

**AGP slot:** The AGP slot is used to install a graphics card. The ASRock AGP slot has a special design of clasp that can securely fasten the inserted graphics card. AGP slot is used to install AGP expansion cards.



Please do NOT use a 3.3V AGP card on the AGP slot of this motherboard! It may cause permanent damage! For the voltage information of your AGP card, please check with the AGP card vendors.

### PCI Express Graphics slot:

PCI Express Graphics slot is used to install PCI Express expansion cards. For the information of the compatible PCI Express VGA cards, please refer to the "Supported PCI Express VGA Card List for PCI Express Graphics Slot" on page 10.

### Installing an expansion card

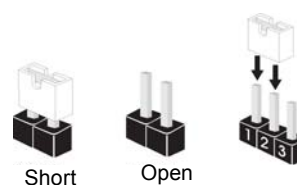
- Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.
- Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).
- Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 5. Fasten the card to the chassis with screws.
- Step 6. Replace the system cover.

## 2.7 Surround Display Feature

Thanks to ASRock patented PCI Express Graphics Technology, this motherboard supports Surround Display upgrade. With the external add-on AGP VGA card and PCI Express VGA card, you can easily enjoy the benefits of Surround Display feature. For the detailed instruction, please refer to the document at the following path in the Support CD: ..\ Surround Display Information

## 2.8 Jumpers Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on pins, the jumper is "Short". If no jumper cap is placed on pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when jumper cap is placed on these 2 pins.



Jumper	Setting	
PS2_USB_PWR1 (see p.11, No. 1)	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1_2</p> <p>+5V</p> </div> <div style="text-align: center;"> <p>2_3</p> <p>+5VSB</p> </div> </div>	Short pin2, pin3 to enable +5VSB (standby) for PS/2 or USB wake up events.

Note: To select +5VSB, it requires 2 Amp and higher standby current provided by power supply.

Clear CMOS (CLRCMOS1, 2-pin jumper) (see p.11, No. 19)	<p>2-pin jumper</p>
--	---------------------

Note: CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short 2 pins on CLRCMOS1 for 5 seconds.

## 2.9 Onboard Headers and Connectors



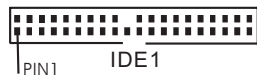
Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage of the motherboard!

FDD Connector  
(33-pin FLOPPY1)  
(see p.11, No. 21)



Note: Make sure the red-striped side of the cable is plugged into Pin1 side of the connector.

Primary IDE Connector (Blue)  
(39-pin IDE1, see p.11, No. 9)



Secondary IDE Connector (Black)  
(39-pin IDE2, see p.11, No. 10)



connect the blue end to the motherboard



connect the black end to the IDE devices

80-conductor ATA 66/100/133 cable

Note: If you use only one IDE device on this motherboard, please set the IDE device as "Master". Please refer to the instruction of your IDE device vendor for the details. Besides, to optimize compatibility and performance, please connect your hard disk drive to the primary IDE connector (IDE1, blue) and CD-ROM to the secondary IDE connector (IDE2, black).

Serial ATAII Connectors

(SATA1: see p.11, No. 12)  
(SATA2: see p.11, No. 11)



These two Serial ATAII (SATAII) connectors support SATAII or SATA hard disk for internal storage devices. The current SATAII interface allows up to 3.0 Gb/s data transfer rate.

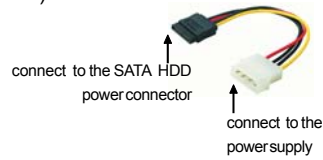
Serial ATA (SATA)  
Data Cable  
(Optional)



Either end of the SATA data cable can be connected to the SATA / SATAII hard disk or the SATAII connector on the motherboard.

**Serial ATA (SATA)  
Power Cable**

(Optional)

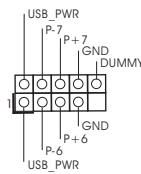


Please connect the black end of SATA power cable to the power connector on the drive. Then connect the white end of SATA power cable to the power connector of the power supply.

**USB 2.0 Headers**

(9-pin USB67)

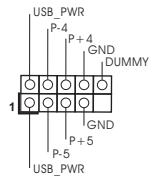
(see p.11 No. 20)



Besides four default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

(9-pin USB45)

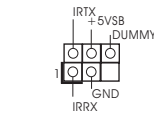
(see p.11 No. 18)



**Infrared Module Header**

(5-pin IR1)

(see p.11, No. 27)

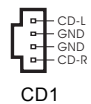


This header supports an optional wireless transmitting and receiving infrared module.

**Internal Audio Connector**

(4-pin CD1)

(CD1: see p.11, No. 28)

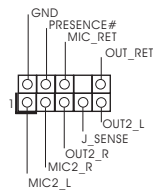


This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

**Front Panel Audio Header**

(9-pin HD\_AUDIO1)

(see p.11, No. 24)





This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.



1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.

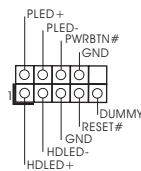
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
- Connect Mic\_IN (MIC) to MIC2\_L.
  - Connect Audio\_R (RIN) to OUT2\_R and Audio\_L (LIN) to OUT2\_L.
  - Connect Ground (GND) to Ground (GND).
  - MIC\_RET and OUT\_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
  - Enter BIOS Setup Utility. Enter Advanced Settings, and then select Chipset Configuration. Set the Front Panel Control option from [Auto] to [Enabled].
  - Enter Windows system. Click the icon on the lower right hand taskbar to enter Realtek HD Audio Manager.
 

For Windows® 2000 / XP / XP 64-bit OS:  
Click "Audio I/O", select "Connector Settings"  , choose "Disable front panel jack detection", and save the change by clicking "OK".

For Windows® Vista™ / Vista™ 64-bit OS:  
Click the right-top "Folder" icon  , choose "Disable front panel jack detection", and save the change by clicking "OK".

#### System Panel Header

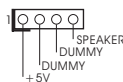
(9-pin PANEL1)  
(see p.11, No. 13)



This header accommodates several system front panel functions.

#### Chassis Speaker Header

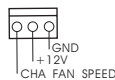
(4-pin SPEAKER 1)  
(see p.11, No. 14)



Please connect the chassis speaker to this header.

#### Chassis Fan Connector

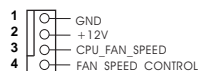
(3-pin CHA\_FAN1)  
(see p.11, No. 15)



Please connect the chassis fan cable to this connector and match the black wire to the ground pin.

#### CPU Fan Connector

(4-pin CPU\_FAN1)  
(see p.11, No. 5)



Please connect the CPU fan cable to this connector and match the black wire to the ground pin.

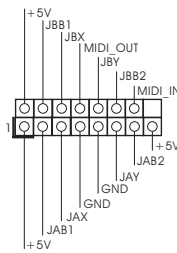


Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

**Pin 1-3 Connected** ←  
3-Pin Fan Installation



**Game Connector**  
(15-pin GAME1)  
(see p.11, No. 22)



Connect a Game cable to this connector if the Game port bracket is installed.

**ATX Power Connector**  
(20-pin ATXPWR1)  
(see p.11, No. 29)



Please connect an ATX power supply to this connector.

**ATX 12V Connector**  
(4-pin ATX12V1)  
(see p.11, No. 2)



Please note that it is necessary to connect a power supply with ATX 12V plug to this connector so that it can provides sufficient power. Failing to do so will cause the failure to power up.

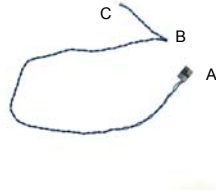
**HDMI\_SPDIF Header**  
(3-pin HDMI\_SPDIF1)  
(see p.11 No. 23)



HDMI\_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/projector/LCD devices. Please connect the HDMI\_SPDIF connector of HDMI VGA card to this header.



HDMI\_SPDIF Cable  
(Optional)

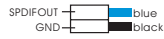


Please connect the black end (A) of HDMI\_SPDIF cable to the HDMI\_SPDIF header on the motherboard. Then connect the white end (B or C) of HDMI\_SPDIF cable to the HDMI\_SPDIF connector of HDMI VGA card.

A. black end



B. white end (2-pin)



C. white end (3-pin)



## 2.10 HDMI\_SPDIF Header Connection Guide

HDMI (High-Definition Multi-media Interface) is an all-digital audio/video specification, which provides an interface between any compatible digital audio/video source, such as a set-top box, DVD player, A/V receiver and a compatible digital audio or video monitor, such as a digital television (DTV). A complete HDMI system requires a HDMI VGA card and a HDMI ready motherboard with a HDMI\_SPDIF header. This motherboard is equipped with a HDMI\_SPDIF header, which provides SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/projector/LCD devices. To use HDMI function on this motherboard, please carefully follow the below steps.

Step 1. Install the HDMI VGA card to the PCI Express Graphics slot on this motherboard. For the proper installation of HDMI VGA card, please refer to the installation guide on page 19.

Step 2. Connect the black end (A) of HDMI\_SPDIF cable to the HDMI\_SPDIF header (HDMI\_SPDIF1, yellow, see page 11, No. 23) on the motherboard.



Make sure to correctly connect the HDMI\_SPDIF cable to the motherboard and the HDMI VGA card according to the same pin definition. For the pin definition of HDMI\_SPDIF header and HDMI\_SPDIF cable connectors, please refer to page 24. For the pin definition of HDMI\_SPDIF connectors on HDMI VGA card, please refer to the user manual of HDMI VGA card vendor. Incorrect connection may cause permanent damage to this motherboard and the HDMI VGA card.

Step 3. Connect the white end (B or C) of HDMI\_SPDIF cable to the HDMI\_SPDIF connector of HDMI VGA card. (There are two white ends (2-pin and 3-pin) on HDMI\_SPDIF cable. Please choose the appropriate white end according to the HDMI\_SPDIF connector of the HDMI VGA card you install.



white end  
(2-pin) (B)



white end  
(3-pin) (C)



Please do not connect the white end of HDMI\_SPDIF cable to the wrong connector of HDMI VGA card or other VGA card. Otherwise, the motherboard and the VGA card may be damaged. For example, this picture shows the wrong example of connecting HDMI\_SPDIF cable to the fan connector of PCI Express VGA card. Please refer to the VGA card user manual for connector usage in advance.



Step 4. Connect the HDMI output connector on HDMI VGA card to HDMI device, such as HDTV. Please refer to the user manual of HDTV and HDMI VGA card vendor for detailed connection procedures.

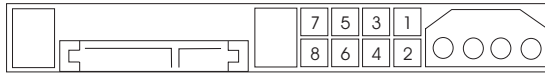


Step 5. Install HDMI VGA card driver to your system.

## 2.11 SATAII Hard Disk Setup Guide

Before installing SATAII hard disk to your computer, please carefully read below SATAII hard disk setup guide. Some default setting of SATAII hard disks may not be at SATAII mode, which operate with the best performance. In order to enable SATAII function, please follow the below instruction with different vendors to correctly adjust your SATAII hard disk to SATAII mode in advance; otherwise, your SATAII hard disk may fail to run at SATAII mode.

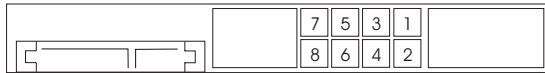
### Western Digital



If pin 5 and pin 6 are shorted, SATA 1.5Gb/s will be enabled.

On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 5 and pin 6.

### SAMSUNG



If pin 3 and pin 4 are shorted, SATA 1.5Gb/s will be enabled.

On the other hand, if you want to enable SATAII 3.0Gb/s, please remove the jumpers from pin 3 and pin 4.

### HITACHI

Please use the Feature Tool, a DOS-bootable tool, for changing various ATA features. Please visit HITACHI's website for details:

<http://www.hitachigst.com/hdd/support/download.htm>



The above examples are just for your reference. For different SATAII hard disk products of different vendors, the jumper pin setting methods may not be the same. Please visit the vendors' website for the updates.

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## 2.12 Serial ATA (SATA) / Serial ATAII (SATAII) Hard Disks Installation

This motherboard adopts VIA® VT8237S southbridge chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID (RAID 0, RAID 1, and JBOD) functions. You may install SATA / SATAII hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA / SATAII hard disks.

- STEP 1: Install the SATA / SATAII hard disks into the drive bays of your chassis.  
STEP 2: Connect the SATA power cable to the SATA / SATAII hard disk.  
STEP 3: Connect one end of the SATA data cable to the motherboard's SATAII connector.  
STEP 4: Connect the other end of the SATA data cable to the SATA / SATAII hard disk.

## 2.13 Hot Plug and Hot Swap Functions for SATA / SATAII HDDs

**4CoreDual-SATA2** motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII Devices.



### NOTE

#### What is Hot Plug Function?

If the SATA / SATAII HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.

However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA / SATAII HDD.

#### What is Hot Swap Function?

If SATA / SATAII HDDs are built as RAID1 then it is called "Hot Swap" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.

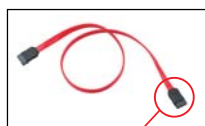
## 2.14 SATA / SATAII HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA / SATAII HDD. Please read below operation guide of SATA / SATAII HDD Hot Plug feature carefully. Before you process the SATA / SATAII HDD Hot Plug, please check below cable accessories from the motherboard gift box pack.

A. 7-pin SATA data cable

B. SATA power cable with SATA 15-pin power connector interface

A. SATA data cable (Red)



SATA 7-pin connector

B. SATA power cable



The SATA 15-pin power connector (Black) connect to SATA / SATAII HDD

1x4-pin conventional power connector (White) connect to power supply

### Caution

1. Without SATA 15-pin power connector interface, the SATA / SATAII Hot Plug cannot be processed.
2. Even some SATA / SATAII HDDs provide both SATA 15-pin power connector and IDE 1x4-pin conventional power connector interfaces, the IDE 1x4-pin conventional power connector interface is definitely not able to support Hot Plug and will cause the HDD damage and data loss.

### Points of attention, before you process the Hot Plug:

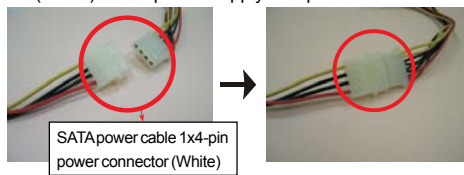
1. Below operation procedure is designed only for our motherboard, which supports SATA / SATAII HDD Hot Plug.
  - \* The SATA / SATAII Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII Hot Plug support information of our motherboard is indicated in the product spec on our website:  
[www.asrock.com](http://www.asrock.com)
2. Make sure your SATA / SATAII HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATAII HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation.
3. Please make sure the SATA / SATAII driver is installed into system properly. The latest SATA / SATAII driver is available on our support website:  
[www.asrock.com](http://www.asrock.com)
4. Make sure to use the SATA power cable & data cable, which are from our motherboard package.
5. Please follow below instructions step by step to reduce the risk of HDD crash or data loss.

### How to Hot Plug a SATA / SATAII HDD:

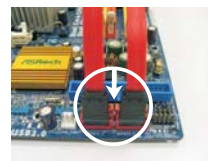
Points of attention, before you process the Hot Plug:

Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA / SATAII HDD damage and data loss.

**Step 1** Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable.



**Step 2** Connect SATA data cable to the motherboard's SATAII connector.



**Step 3** Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII HDD.



**Step 4** Connect SATA data cable to the SATA / SATAII HDD.

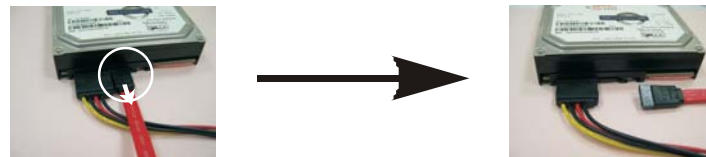


### How to Hot Unplug a SATA / SATAII HDD:

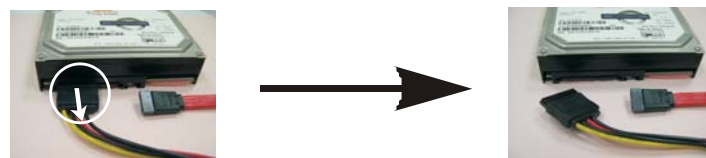
Points of attention, before you process the Hot Unplug:

Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA / SATAII HDD damage and data loss.

**Step 1** Unplug SATA data cable from SATA / SATAII HDD side.



**Step 2** Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII HDD side.



---

## 2.15 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

## 2.16 Installing Windows® 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® 2000, Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit OS on your SATA / SATAII HDDs with RAID functions, please follow below procedures according to the OS you install.



The current version of RAID driver does not support Hot Swap function under RAID 1. If you create RAID 1 on your SATA / SATAII HDDs, please do not insert or remove your SATA / SATAII HDDs while the system is power on and in working condition. As soon as the RAID driver with Hot Swap function under RAID 1 is ready, we will upload it to our website. Please visit our website for RAID driver update in the near future. ASRock website: <http://www.asrock.com>

### 2.16.1 Installing Windows® 2000 / XP / XP 64-bit With RAID Functions

If you want to install Windows® 2000, Windows® XP or Windows® XP 64-bit on your SATA / SATAII HDDs with RAID functions, please follow below steps.

#### STEP 1: Set Up BIOS.

- A. Enter BIOS SETUP UTILITY → Advanced screen → IDE Configuration.
- B. Set the "SATA Operation Mode" option to [RAID].

#### STEP 2: Make a SATA / SATAII Driver Diskette.

- A. Insert the ASRock Support CD into your optical drive to boot your system.
- B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device.
- C. When you see the message on the screen, "Generate Serial ATA driver diskette [YN]?", press <Y>.
- D. Then you will see these messages,

**Please insert a blank  
formatted diskette into floppy  
drive A:  
press any key to start**

Please insert a floppy diskette into the floppy drive, and press any key.

---

E. The system will start to format the floppy diskette and copy SATA / SATAII drivers into the floppy diskette.

**STEP 3: Use “RAID Installation Guide” to set RAID configuration.**

Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide of the document in the following path in the Support CD: .. \ RAID Installation Guide

**STEP 4: Install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system.**

After step 1, 2, 3, you can start to install Windows® 2000 / Windows® XP / Windows® XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII driver diskette containing the VIA® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install.



1. If you install Windows® 2000 / Windows® XP / Windows® XP 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, please set the RAID configuration by using the Windows RAID installation guide part of the document in the following path in the Support CD: .. \ RAID Installation Guide
2. If you want to use “VIA RAID Tool” in Windows® environment, please install SATA / SATAII drivers from the Support CD again so that “VIA RAID Tool” will be installed to your system as well.

## 2.16.2 Installing Windows® Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® Vista™ or Windows® Vista™ 64-bit on your SATA / SATAII HDDs with RAID functions, please follow below steps.

**STEP 1: Set Up BIOS.**

- A. Enter BIOS SETUP UTILITY → Advanced screen → IDE Configuration.
- B. Set the “SATA Operation Mode” option to [RAID].

**STEP 2: Use “RAID Installation Guide” to set RAID configuration.**

Before you start to configure RAID function, you need to check the RAID installation guide in the Support CD for proper configuration. Please refer to the BIOS RAID installation guide of the document in the following path in the Support CD: .. \ RAID Installation Guide

**STEP 3: Install Windows® Vista™ / Windows® Vista™ 64-bit OS on your system.**

Insert the Windows® Vista™ / Windows® Vista™ 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® Vista™ / Windows® Vista™ 64-bit OS on your system. When you see “Where do you want to install Windows?” page, please insert the ASRock Support CD into your optical drive,



and click the "Load Driver" button on the left on the bottom to load the VIA® RAID drivers. VIA® RAID drivers are in the following path in our Support CD:

..\I386\NT5 (For Windows® Vista™ OS)

..\AMD64\2003x64 (For Windows® Vista™ 64-bit OS)

After that, please insert Windows® Vista™ / Windows® Vista™ 64-bit optical disk into the optical drive again to continue the installation.



1. If you install Windows® Vista™ / Vista™ 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, please set the RAID configuration by using the Windows RAID installation guide part of the document in the following path in the Support CD:

..\RAID Installation Guide

2. If you want to use "VIA RAID Tool" in Windows® environment, please install SATA / SATAII drivers from the Support CD again so that "VIA RAID Tool" will be installed to your system as well.

## 2.17 Installing Windows® 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions

If you want to install Windows® 2000, Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit OS on your SATA / SATAII HDDs without RAID functions, please follow below steps.

### STEP 1: Set Up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → IDE Configuration.

B. Set the "SATA Operation Mode" option to [non-RAID].

### STEP 2: Install Windows® 2000 / Windows® XP / Windows® XP 64-bit / Windows® Vista™ / Windows® Vista™ 64-bit OS on your system.

After step 1, you can start to install Windows® 2000 / Windows® XP / Windows® XP 64-bit / Windows® Vista™ / Windows® Vista™ 64-bit OS on your system.

## 2.18 Untied Overclocking Technology

This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed AGP / PCI / PCIE bus. You may set "CPU Host Frequency" option of BIOS setup to [Auto], which will show you the actual CPU host frequency in the following item. Therefore, CPU FSB is untied during overclocking, but AGP / PCI / PCIE bus is in the fixed mode so that FSB can operate under a more stable overclocking environment.



Please refer to the warning on page 7 for the possible overclocking risk before you apply Untied Overclocking Technology.

---

## 3. BIOS SETUP UTILITY

### 3.1 Introduction

This section explains how to use the BIOS SETUP UTILITY to configure your system. The Flash Memory on the motherboard stores the BIOS SETUP UTILITY. You may run the BIOS SETUP UTILITY when you start up the computer. Please press <F2> during the Power-On-Self-Test (POST) to enter the BIOS SETUP UTILITY, otherwise, POST will continue with its test routines.

If you wish to enter the BIOS SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.



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

#### 3.1.1 BIOS Menu Bar

The top of the screen has a menu bar with the following selections:

- Main** To set up the system time/date information
- Advanced** To set up the advanced BIOS features
- H/W Monitor** To display current hardware status
- Boot** To set up the default system device to locate and load the Operating System
- Security** To set up the security features
- Exit** To exit the current screen or the BIOS SETUP UTILITY

Use <←> key or <→> key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

### 3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Enter>	To bring up the selected screen
<F1>	To display the General Help Screen
<F9>	To load optimal default values for all the settings
<F10>	To save changes and exit the BIOS SETUP UTILITY
<ESC>	To jump to the Exit Screen or exit the current screen

### 3.2 Main Screen

When you enter the BIOS SETUP UTILITY, the Main screen will appear and display the system overview

BIOS SETUP UTILITY	
Main	Advanced H/W Monitor Boot Security Exit
<b>System Overview</b>	Use [Enter], [TAB] or [SHIFT-TAB] to select a field.
System Time [17:00:09]	Use [+] or [-] to configure system Time.
System Date [Thu 05/10/2007]	
BIOS Version : 4CoreDual-SATA2 BIOS P1.00	-- Select Screen
Processor Type : Intel(R) CPU 3.60 GHz (64bit)	Select Item
Processor Speed : 3600 MHz	+ Change Field
Microcode Update : F43/4	Tab Select Field
Cache Size : 1024KB	F1 General Help
Total Memory : 512MB	F9 Load Defaults
Dual-Channel Memory Mode	F10 Save and Exit
DDR11 : None	ESC Exit
DDR1 : 256MB/166MHz (DDR333)	
DDR112 : None	
DDR2 : 256MB/166MHz (DDR333)	

#### System Time [Hour:Minute:Second]

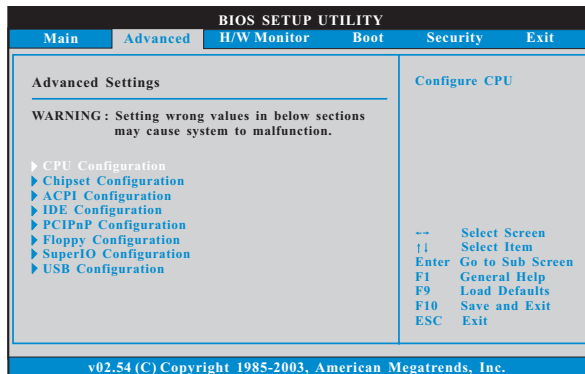
Use this item to specify the system time.

#### System Date [Day Month/Date/Year]

Use this item to specify the system date.

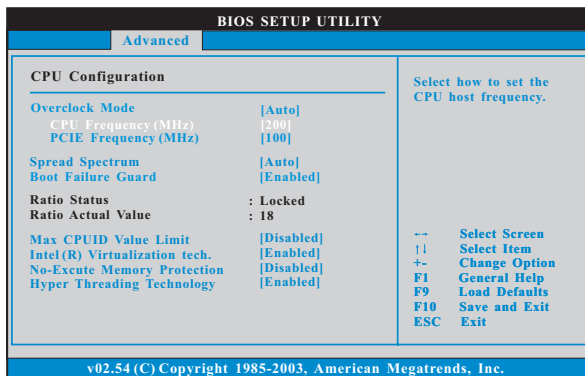
### 3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, ACPI Configuration, IDE Configuration, PCIPnP Configuration, Floppy Configuration, SuperIO Configuration, and USB Configuration.



Setting wrong values in this section may cause the system to malfunction.

#### 3.3.1 CPU Configuration



##### Overclock Mode

When [Auto] is selected, BIOS auto detects the present CPU host frequency of this motherboard. The actual CPU host frequency and PCIE frequency will show in the following items. When [CPU, PCIE, Sync.] is selected, you can set the CPU Frequency (MHz) and PCI Frequency item. When [CPU, PCIE, Async.] is selected, you can set the CPU Frequency (MHz), PCIE Frequency (MHz) and PCI Frequency item.

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**Spread Spectrum**

Select [Auto] for the spread spectrum feature.

**Boot Failure Guard**

Enable or disable the feature of Boot Failure Guard.

**Ratio Status**

This is a read-only item, which displays whether the ratio status of this motherboard is "Locked" or "Unlocked". If it shows "Unlocked", you will find an item **Ratio Setting** appears to allow you changing the ratio value of this motherboard. If it shows "Locked", then the item **Ratio Setting** will be hidden. If you use the ratio value to time the CPU frequency, it will be equal to the core speed of the installed processor.

**Ratio Actual Value**

This is a read-only item, which displays the ratio actual value of this motherboard.

**Max CPUID Value Limit**

For Prescott CPU only, some OSes (ex. NT4.0) cannot handle the function with disable. This should be enabled in order to boot legacy OSes that cannot support CPUs with extended CPUID functions.

**Intel (R) Virtualization tech.**

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel (R) Virtualization Technology.

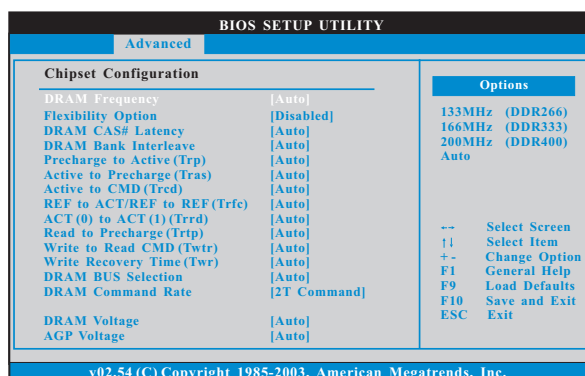
**No-Execute Memory Protection**

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with "No Execute (NX) Memory Protection" can prevent data pages from being used by malicious software to execute code. This option will be hidden if the current CPU does not support No-Execute Memory Protection.

**Hyper Threading Technology**

To enable this feature, it requires a computer system with an Intel Pentium®4 processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® XP. Set to [Enabled] if using Microsoft® Windows® XP, or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

### 3.3.2 Chipset Configuration



#### DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically. You may also select other value as operating frequency: [133MHz (DDR 266)], [166MHz (DDR 333)], [200MHz (DDR 400)] for DDR; [266MHz (DDR II 533)], [333MHz (DDR II 667)] for DDR II.

#### Flexibility Option

The default value of this option is [Disabled]. It will allow better tolerance for memory compatibility when it is set to [Enabled].

#### DRAM CAS# Latency

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [2.5], [2], and [3] for DDR; [Auto], [3], [4], [5] for DDR II.

#### DRAM Bank Interleave

Use this option to select DRAM Bank Interleave. Configuration options: [Auto], [Disabled], [2-Way], [4-Way], and [8-Way]. The default value is set to [Auto] to set the timing by dram SPD.

#### Precharge to Active (Trp)

Use this option to select Precharge to Active (Trp). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

#### Active to Precharge (Tras)

Use this option to select Active to Precharge (Tras). Configuration options: [Auto], [5T], [6T], [7T], [8T], [9T], [10T], [11T], [12T], [13T], [14T], [15T], [16T], [17T], [18T], [19T] and [20T]. The default value is set to [Auto] to set the timing by dram SPD.

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**Active to CMD (Trcd)**

Use this option to select Active to CMD (Trcd). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

**REF to ACT / REF to REF (Trfc)**

Use this option to select REF to ACT / REF to REF (Trfc). Configuration options: [Auto], [8T] to [71T]. The default value is set to [Auto] to set the timing by dram SPD.

**ACT(0) to ACT (1) (Trrd)**

Use this option to select ACT(0) to ACT (1) (Trrd). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

**Read to Precharge (Trtp)**

Use this option to select Read to Precharge (Trtp). Configuration options: [Auto], [2T], [3T]. The default value is set to [Auto] to set the timing by dram SPD.

**Write to Read CMD (Twtr)**

Use this option to select Write to Read CMD (Twtr). Configuration options: [Auto], [1T], [2T] for DDRI; [Auto], [2T], [3T] for DDRII. The default value is set to [Auto] to set the timing by dram SPD.

**Write Recovery Time (Twr)**

Use this option to select Write Recovery Time (Twr). Configuration options: [Auto], [2T], [3T], [4T], and [5T]. The default value is set to [Auto] to set the timing by dram SPD.

**DRAM Bus Selection**

The default value is [Auto], which will automatically select the proper access mode for the system. You may select between [Single Channel] and [Dual Channel] if you have properly set the dual channel memory configuration.

**DRAM Command Rate**

Use this to select among [2T Command] and [1T Command] for DRAM Command Rate. The default value is [2T Command].

**DRAM Voltage**

Use this to select among [Auto], [High], [Normal] and [Low] for DRAM Voltage. The default value is [Auto].

**AGP Voltage**

Use this to select among [Auto], [Normal] and [High] for AGP Voltage. The default value is [Auto].

**Primary Graphics Adapter**

This allows you to select [PCI], [AGP], or [PCI Express Gfx.] as the primary graphics adapter. The default value is [PCI].

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**AGP Mode**

The default value of this feature is set to [Auto]. If you install an 8X-AGP card on this motherboard, you may select [Auto], [8X] or [4X] as the AGP mode. If the installed AGP card is a 4X-AGP card, then you may set the AGP mode as [Auto], [4X], [2X], or [1X].

**AGP Fast Write**

This allows you to enable or disable the feature of AGP fast write protocol support.

**AGP Aperture Size**

It refers to a section of the PCI memory address range used for graphics memory. It is recommended to leave this field at the default value unless the installed AGP card's specifications requires other sizes.

**AGP Straggered Delay**

Use this option to select AGP straggered delay. Configuration options: [Auto], [None], [Delay 1ns]. The default value is [Auto].

**AGP GADSTB Output Delay**

Use this option to select AGP GASSTB output delay. Configuration options: [Auto], [None], [Delay 150 psec], [Delay 300 psec], and [Delay 450 psec]. The default value is [Auto].

**V-Link Speed**

This allows you to set the North Bridge and South Bridge V-Link Speed of VIA chipset. configuration options: [Normal], [Fast]. The default value is [Normal].

**V-Link Auto-Disconnect**

This allows you to enable or disable V-Link Auto-Disconnect function. The default value is [Enabled].

**PCI Delay Transaction**

Enable PCI Delay Transaction feature will free the PCI Bus when the CPU is accessing 8-bit ISA cards. Disable this feature when using ISA cards that are not PCI 2.1 compliant.

**IDE Drive Strength**

This allows you to set the drive strength of the onboard IDE controller. Configuration options: [Lowset], [Low], [Normal], and [Highest]. The default value is [Low].

**PCIE Downstream Pipeline**

This allows you to enable or disable the feature of PCIE Downstream Pipeline. The default value is [Auto].

**OnBoard LAN**

This allows you to enable or disable the onboard LAN feature.

**OnBoard HD Audio**

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio feature. If



you select [Auto], the onboard HD Audio will be disabled when PCI Sound Card is plugged.

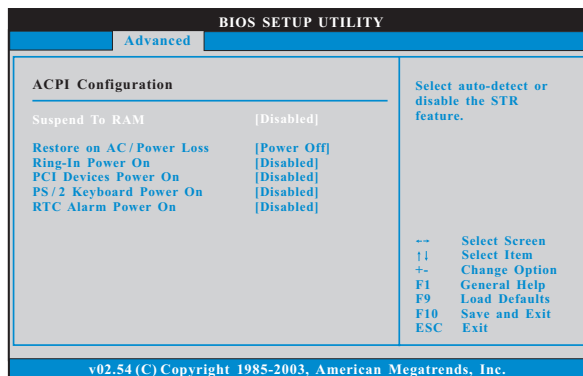
#### Front Panel Control

Select [Auto], [Enabled] or [Disabled] for the onboard HD Audio Front Panel.

#### CD-In

Use this item to enable or disable CD-In of OnBoard HD Audio. If you plan to use this motherboard to submit Windows® Vista™ logo test, please disable this option.

### 3.3.3 ACPI Configuration



#### Suspend to RAM

This field allows you to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the system supports it.

#### Restore on AC/Power Loss

This allows you to set the power state after an unexpected AC/Power loss. If [Power Off] is selected, the AC/Power remains off when the power recovers. If [Power On] is selected, the AC/Power resumes and the system starts to boot up when the power recovers.

#### Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

#### PCI Devices Power On

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

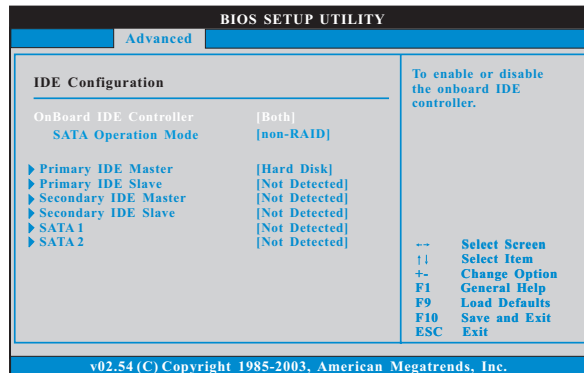
#### PS/2 Keyboard Power On

Use this item to enable or disable PS/2 keyboard to turn on the system from the power-soft-off mode.

### RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

### 3.3.4 IDE Configuration



#### OnBoard IDE Controller

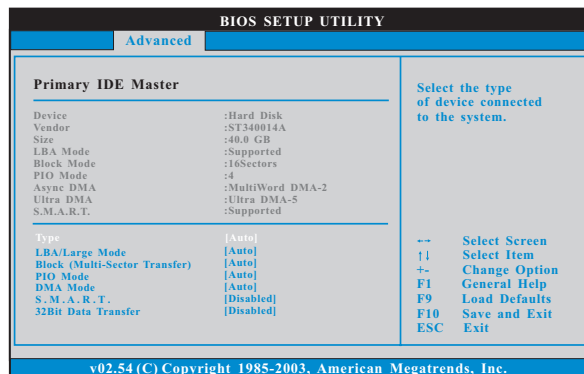
Use this item to enable or disable the onboard IDE controller.

#### SATA Operation Mode

Use this item to adjust SATA Operation Mode. The default value of this option is [non-RAID]. If you want to operate RAID function on SATA HDDs, please select [RAID].

#### IDE Device Configuration

You may set the IDE configuration for the device that you specify. We will use the "Primary IDE Master" as the example in the following instruction, which can be applied to the configurations of "Primary IDE Slave", "Secondary IDE Master", and "Secondary IDE Slave" as well.



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## TYPE

Use this item to configure the type of the IDE device that you specify.  
Configuration options: [Not Installed], [Auto], [CD/DVD], and [ARMD].

**[Not Installed]:** Select [Not Installed] to disable the use of IDE device.

**[Auto]:** Select [Auto] to automatically detect the hard disk drive.



After selecting the hard disk information into BIOS, use a disk utility, such as FDISK, to partition and format the new IDE hard disk drives. This is necessary so that you can write or read data from the hard disk. Make sure to set the partition of the Primary IDE hard disk drives to active.

**[CD/DVD]:** This is used for IDE CD/DVD drives.

**[ARMD]:** This is used for IDE ARMD (ATAPI Removable Media Device), such as MO.

## LBA/Large Mode

Use this item to select the LBA/Large mode for a hard disk > 512 MB under DOS and Windows; for Netware and UNIX user, select [Disabled] to disable the LBA/Large mode.

## Block (Multi-Sector Transfer)

The default value of this item is [Auto]. If this feature is enabled, it will enhance hard disk performance by reading or writing more data during each transfer.

## PIO Mode

Use this item to set the PIO mode to enhance hard disk performance by optimizing the hard disk timing.

## DMA Mode

DMA capability allows the improved transfer-speed and data-integrity for compatible IDE devices.

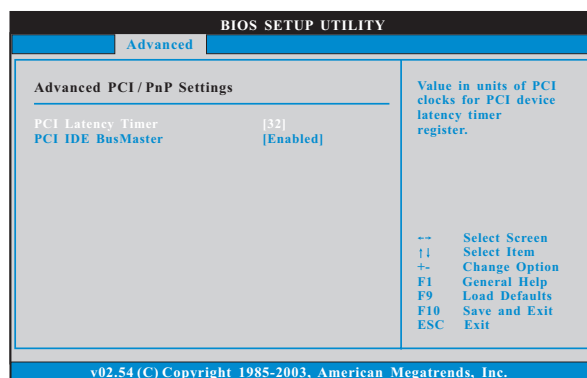
## S.M.A.R.T.

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

## 32-Bit Data Transfer

Use this item to enable 32-bit access to maximize the IDE hard disk data transfer rate.

### 3.3.5 PCIPnP Configuration



#### PCI Latency Timer

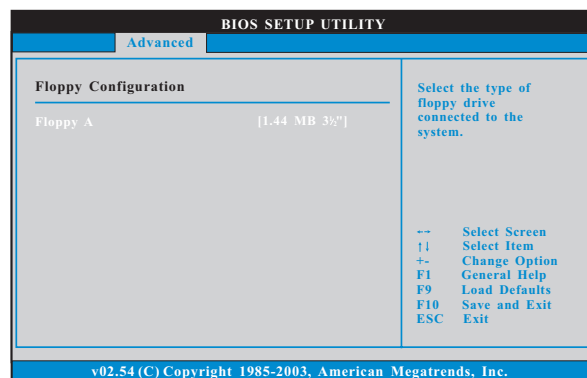
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

#### PCI IDE BusMaster

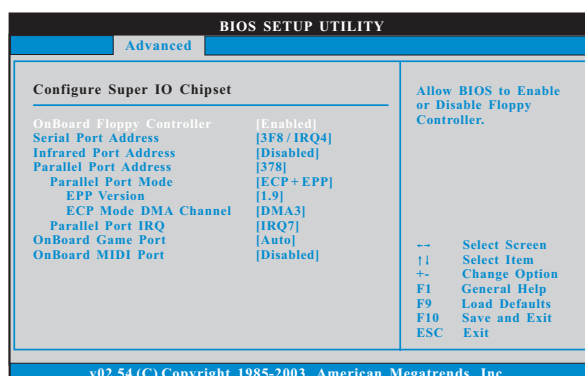
Use this item to enable or disable the PCI IDE BusMaster feature.

### 3.3.6 Floppy Configuration

In this section, you may configure the type of your floppy drive.



### 3.3.7 Super IO Configuration



#### OnBoard Floppy Controller

Use this item to enable or disable floppy drive controller.

#### Serial Port Address

Use this item to set the address for the onboard serial port or disable it.

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

#### Infrared Port Address

Use this item to set the address for the onboard infrared port or disable it.

Configuration options: [Disabled], [2F8 / IRQ3], and [2E8 / IRQ3].

#### Parallel Port Address

Use this item to set the address for the onboard parallel port or disable it.

Configuration options: [Disabled], [378], and [278].

#### Parallel Port Mode

Use this item to set the operation mode of the parallel port. The default value is [ECP+EPP]. If this option is set to [ECP+EPP], it will show the EPP version in the following item, "EPP Version". Configuration options: [Normal], [Bi-Directional], and [ECP+EPP].

#### EPP Version

Use this item to set the EPP version. Configuration options: [1.9] and [1.7].

#### ECP Mode DMA Channel

Use this item to set the ECP mode DMA channel. Configuration options: [DMA0], [DMA1], and [DMA3].

#### Parallel Port IRQ

Use this item to set the IRQ for the parallel port. Configuration options: [IRQ5] and [IRQ7].

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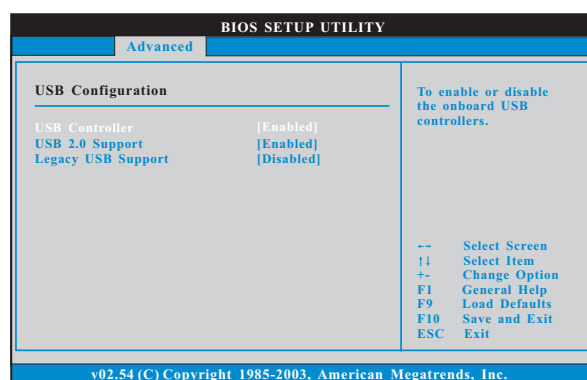
### OnBoard Game Port

Use this item to enable the Game Port or disable it. The default value is [Auto].

### OnBoard MIDI Port

Use this item to select the address for the MIDI Port or disable it. Configuration options: [Disabled], [300], and [330].

## 3.3.8 USB Configuration



### USB Controller

Use this item to enable or disable the use of USB controller.

### USB 2.0 Support

Use this item to enable or disable the USB 2.0 support.

### Legacy USB Support

Use this item to enable or disable the support to emulate legacy I/O devices such as mouse, keyboard,... etc. Or you may select [Auto] so that the system will start to auto-detect; if there is no USB device connected, "Auto" option will disable the legacy USB support.

### 3.4 Hardware Health Event Monitoring Screen

In this section, it allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.

BIOS SETUP UTILITY					
Main	Advanced	H/W Monitor	Boot	Security	Exit
<b>Hardware Health Event Monitoring</b>			Target Fan Speed		
CPU Temperature	:	37°C / 98°F	Fast		
M / B Temperature	:	31°C / 87°F	Middle		
CPU Fan Speed	:	3400 RPM	Slow		
Chassis Fan Speed	:	N/A			
Vcore	:	1.629V	--> Select Screen		
+ 3.30V	:	3.306V	F1 Select Item		
+ 5.00V	:	5.067V	F1 General Help		
+ 12.00V	:	11.890V	F9 Load Defaults		
CPU Quiet Fan	:	[Enabled]	F10 Save and Exit		
Target CPU Temperature (°C)	:	[50]	ESC Exit		

v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.

#### CPU Quiet Fan

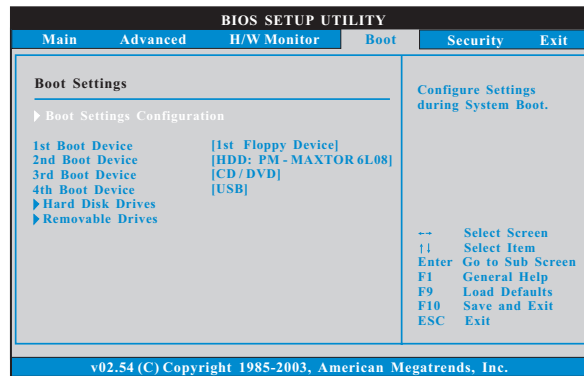
This item allows you to identify the temperature of CPU fan. If you set this option as [Disabled], the CPU fan will operate in full speed. If you set this option as [Enabled], you will find the item "Target CPU Temperature (°C)" appear to allow you adjusting it. The default value is [Disabled]. You are allowed to enable this function only when you install 4-pin CPU fan.

#### Target CPU Temperature (°C)

The target temperature will be between 45 °C and 65 °C. The default value is [50].

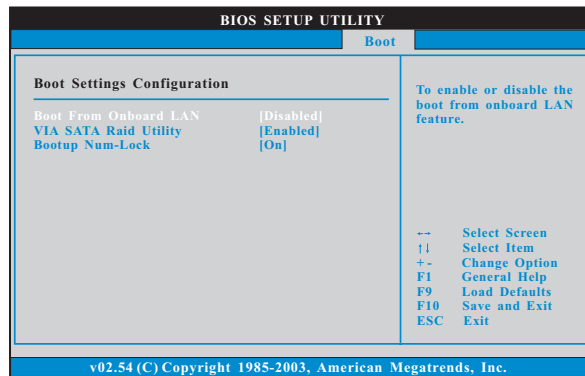
### 3.5 Boot Screen

In this section, it will display the available devices on your system for you to configure the boot settings and the boot priority.





### 3.5.1 Boot Settings Configuration



#### Boot From Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

#### VIA SATA Raid Utility

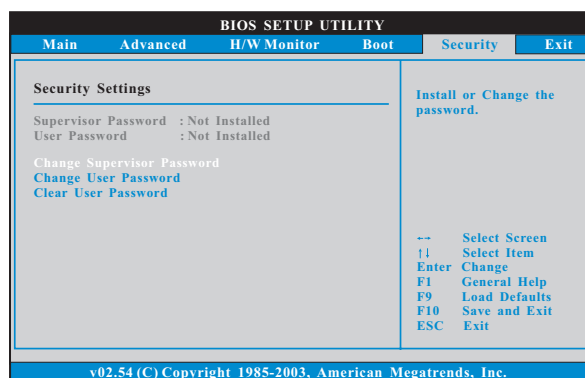
Use this to enable or disable VIA® VT8237S SATA Raid BIOS Utility during POST. This item will be hidden if "SATA Operation Mode" is set to [non-RAID] in IDE Configuration menu.

#### Boot Up Num-Lock

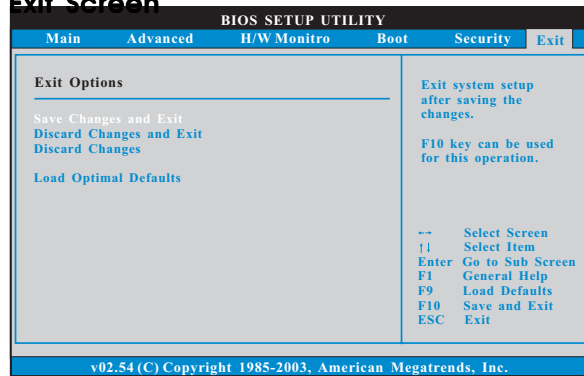
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

### 3.6 Security Screen

In this section, you may set or change the supervisor/user password for the system. For the user password, you may also clear it.



### 3.7 Exit Screen



#### Save Changes and Exit

When you select this option, it will pop-out the following message, "Save configuration changes and exit setup?" Select [OK] to save the changes and exit the BIOS SETUP UTILITY.

#### Discard Changes and Exit

When you select this option, it will pop-out the following message, "Discard changes and exit setup?" Select [OK] to exit the BIOS SETUP UTILITY without saving any changes.

#### Discard Changes

When you select this option, it will pop-out the following message, "Discard changes?" Select [OK] to discard all changes.

#### Load Optimal Defaults

When you select this option, it will pop-out the following message, "Load optimal defaults?" Select [OK] to load the default values for all the setup configurations.

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## **Chapter 4 Software Support**

### **4.1 Install Operating System**

This motherboard supports various Microsoft® Windows® operating systems: 2000 / XP / XP 64-bit / Vista™ / Vista™ 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

### **4.2 Support CD Information**

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

#### **4.2.1 Running The Support CD**

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASSETUP.EXE" from the BIN folder in the Support CD to display the menus.

#### **4.2.2 Drivers Menu**

The Drivers Menu shows the available devices drivers if the system detects installed devices. Please install the necessary drivers to activate the devices.

#### **4.2.3 Utilities Menu**

The Utilities Menu shows the applications software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.

#### **4.2.4 Contact Information**

If you need to contact ASRock or want to know more about ASRock, welcome to visit ASRock's website at <http://www.asrock.com>; or you may contact your dealer for further information.