



# *AM2NF3-VSTA*

## User Manual

Version 1.2

Published December 2006

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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.

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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 **AM2NF3-VSTA** 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

- 1 x ASRock **AM2NF3-VSTA** Motherboard  
(ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm)
- 1 x ASRock **AM2NF3-VSTA** Quick Installation Guide
- 1 x ASRock **AM2NF3-VSTA** Support CD
- 1 x Ultra ATA 66/100/133 IDE Ribbon Cable (80-conductor)
- 1 x 3.5-in Floppy Drive Ribbon Cable
- 1 x Serial ATA (SATA) Data Cable (Optional)
- 1 x Serial ATA (SATA) HDD Power Cable (Optional)
- 1 x ASRock 8CH I/O Shield

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## 1.2 Specifications

<b>Platform</b>	- ATX Form Factor: 12.0-in x 8.0-in, 30.5 cm x 20.3 cm
<b>CPU</b>	- Socket AM2 for AMD Athlon™ 64FX / 64X2 / 64 and Sempron Processors - Supports AMD's Cool 'n' Quiet™ Technology (see <b>CAUTION 1</b> ) - Supports Untied Overclocking Technology (see <b>CAUTION 2</b> ) - Supports Hyper-Transport Technology
<b>Chipset</b>	- NVIDIA® nForce3 250
<b>Memory</b>	- Dual Channel DDRII Memory Technology (see <b>CAUTION 3</b> ) - 4 x DDRII DIMM slots - Support DDRII800/667/533 - Max. capacity: 16GB (see <b>CAUTION 4</b> )
<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.) - ASRock AM2 Boost: ASRock Patented Technology to boost memory performance up to 12.5% (see <b>CAUTION 7</b> )
<b>Expansion Slot</b>	- 5 x PCI slots - 1 x AGP 8X slot (see <b>CAUTION 8</b> )
<b>Audio</b>	- C-Media CM6501 7.1 channel audio compliant with UAA architecture
<b>LAN</b>	- Realtek PHY RTL8201CL - Speed: 10/100 Ethernet - Supports Wake-On-LAN
<b>Rear Panel I/O</b>	ASRock 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 ATA 1.5Gb/s connectors, support RAID (RAID 0, RAID 1, JBOD) and "Hot Plug" functions</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>- 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; 2 of them are shared with USB23 ports on the I/O panel) (see <b>CAUTION 10</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>	- Drivers, Utilities, AntiVirus Software (Trial Version)
<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>	- Microsoft® Windows® 2000/XP/XP 64-bit/Vista™ / Vista™ 64-bit compliant (see <b>CAUTION 11</b> )
<b>Certifications</b>	- FCC, CE, Microsoft® WHQL Certificated

**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. For power-saving's sake, it is strongly recommended to enable AMD's Cool 'n' Quiet™ technology under Windows system. See APPENDIX on page 42 to enable AMD's Cool 'n' Quiet™ technology.
2. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 24 for details.
3. 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 14 for proper installation.
4. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® XP and Windows® Vista™. For Windows® XP 64-bit and Windows® Vista™ 64-bit with 64-bit CPU, there is no such limitation.
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. This motherboard supports ASRock AM2 Boost overclocking technology. If you enable this function in the BIOS setup, the memory performance will improve up to 12.5%, but the effect still depends on the AM2 CPU you adopt. Enabling this function will overclock the chipset/CPU reference clock. However, we can not guarantee the system stability for all CPU/DRAM configurations. If your system is unstable after AM2 Boost function is enabled, it may not be applicative to your system. You may choose to disable this function for keeping the stability of your system.
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 11 for proper connection.
10. Power Management for USB 2.0 works fine under Microsoft® Windows® Vista™ 64-bit / Vista™ / XP 64-bit / XP SP1 or SP2 / 2000 SP4.
11. 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>



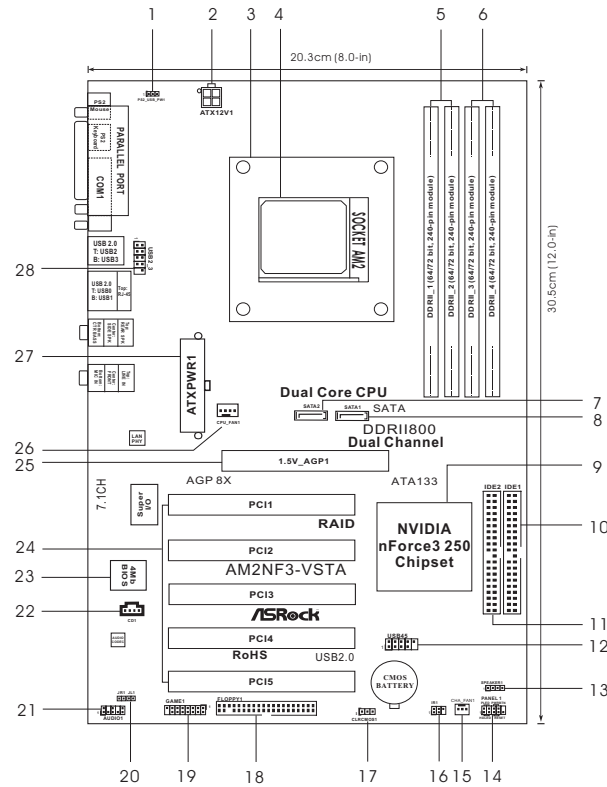
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### 1.3 Minimum Hardware Requirement Table for Windows® Vista™ Premium and Basic Logo

For system integrators and users who purchase this motherboard and plan to submit Windows® Vista™ Premium and Basic logo, please follow the below table for minimum hardware requirement.

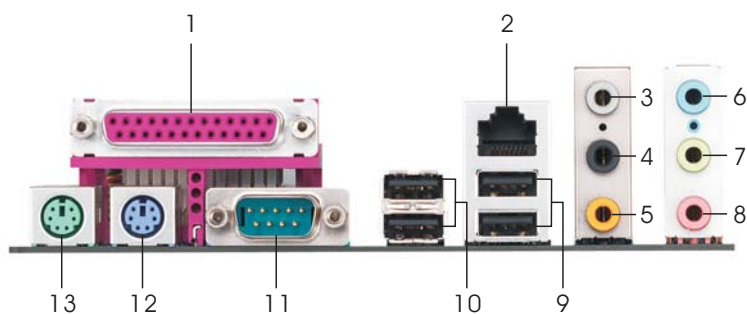
CPU	Sempron 2800+
Memory	512MB Single Channel
VGA	DX9.0 with WDDM Driver
	with 128bit VGA memory (Premium)
	with 64bit VGA memory (Basic)

## 1.4 Motherboard Layout



- |    |  |    |                                       |
|----|--|----|---------------------------------------|
| 1  | PS2_USB_PW1 Jumper   | 14 | System Panel Header (PANEL1)          |
| 2  | ATX 12V Power Connector (ATX12V1)  | 15 | Chassis Fan Connector (CHA_FAN1)      |
| 3  | CPU Heatsink Retention Module  | 16 | Infrared Module Header (IR1)          |
| 4  | AM2 940-Pin CPU Socket   | 17 | Clear CMOS Jumper (CLR_CMOS1)         |
| 5  | 2 x 240-pin DDRII DIMM Slots<br>(Dual Channel A: DDRII_1, DDRII_2; Yellow) | 18 | Floppy Connector (FLOPPY1)            |
| 6  | 2 x 240-pin DDRII DIMM Slots<br>(Dual Channel B: DDRII_3, DDRII_4; Orange) | 19 | Game Port Header (GAME1)              |
| 7  | Secondary Serial ATA Connector (SATA2, Black)                              | 20 | JR1 / JL1 Jumper                      |
| 8  | Primary Serial ATA Connector (SATA1, Black)                                | 21 | Front Panel Audio Header (AUDIO1)     |
| 9  | NVIDIA nForce3 250 Single Chip   | 22 | Internal Audio Connector: CD1 (Black) |
| 10 | Primary IDE Connector (IDE1, Blue)   | 23 | Flash Memory                          |
| 11 | Secondary IDE Connector (IDE2, Black)                                      | 24 | 5 x PCI Slots (PCI1-5)                |
| 12 | USB 2.0 Header (USB45, Blue)   | 25 | AGP Slot (1.5V_AGP1)                  |
| 13 | Chassis Speaker Header (SPEAKER 1)   | 26 | CPU Fan Connector (CPU_FAN1)          |
|    |  | 27 | ATX Power Connector (ATXPWR1)         |
|    |  | 28 | Shared USB 2.0 Header (USB2_3, Blue)  |

## 1.5 ASRock 8CH I/O



- |                           |                                |
|---------------------------|--------------------------------|
| 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	√	--	--	--
4	√	--	--	√
6	√	--	√	√
8	√	√	√	√

---

## 2. Installation

**AM2NF3-VSTA** is an ATX form factor (12.0-in x 8.0-in, 30.5 cm x 20.3 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

### Pre-installation Precautions

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



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.

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 anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

---

## 2.1 CPU Installation

- Step 1. Unlock the socket by lifting the lever up to a 90° angle.
- Step 2. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle.
- Step 3. Carefully insert the CPU into the socket until it fits in place.

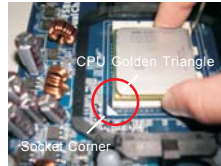


The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

- Step 4. When the CPU is in place, press it firmly on the socket while you push down the socket lever to secure the CPU. The lever clicks on the side tab to indicate that it is locked.



**STEP 1:**  
Lift Up The Socket Lever



**STEP 2 / STEP 3:**  
Match The CPU Golden Triangle  
To The Socket Corner



**STEP 4:**  
Push Down And Lock  
The Socket Lever

## 2.2 Installation of CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure 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 10, No. 26). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink.

## 2.3 Installation of Memory Modules (DIMM)

**AM2NF3-VSTA** motherboard provides four 240-pin DDRII (Double Data Rate II) 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) 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.10 No.5) or **identical** DDRII DIMM pair in **Dual Channel B** (DDRII\_3 and DDRII\_4; Orange slots; see p.10 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDRII DIMMs for dual channel configuration, and please install **identical** DDRII DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

**Dual Channel Memory Configurations**

	DDRII_1 (Yellow Slot)	DDRII_2 (Yellow Slot)	DDRII_3 (Orange Slot)	DDRII_4 (Orange Slot)
(1)	Populated	Populated	-	-
(2)	-	-	Populated	Populated
(3)*	Populated	Populated	Populated	Populated

\* For the configuration (3), please install **identical** DDRII DIMMs in all four slots.



1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of yellow slots (DDRII\_1 and DDRII\_2), or in the set of orange slots (DDRII\_3 and DDRII\_4).
2. If only one memory module or three memory modules are installed in the DDRII DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDRII\_1 and DDRII\_3, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR memory module into DDRII slot; otherwise, this motherboard and DIMM may be damaged.

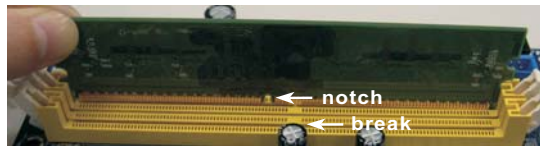
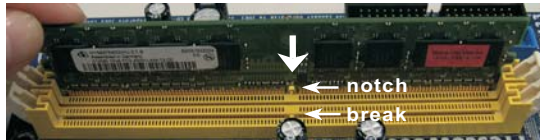
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## Installing a DIMM



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.

---

## 2.4 Expansion Slots (PCI Slots and AGP Slot)

There are 5 PCI slots and 1 AGP slot on **AM2NF3-VSTA** 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.



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.

### 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.



## 2.5 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_PW1 (see p.10, No. 1)		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.

JR1 JL1 Jumper (see p.10, No. 20)	
--------------------------------------	--

Note: If the jumpers JL1 and JR1 are short, both the front panel and the rear panel audio connectors can work.

Clear CMOS Jumper (CLRCMOS1) (see p.10, No. 17)	
---	--

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 pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action.

## 2.6 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!

### Floppy Connector

(33-pin FLOPPY1)  
(see p.10 No. 18)



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.10 No. 10)



### Secondary IDE Connector (Black)

(39-pin IDE2, see p.10 No. 11)



connect the blue end  
to the motherboard



connect the black end  
to the IDE devices

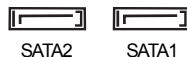
80-conductor ATA 66/100/133 cable

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 ATA Connectors

(SATA1: see p.10 No. 8)

(SATA2: see p.10 No. 7)



These two Serial ATA (SATA) connectors support SATA data cables for internal storage devices. The current SATA interface allows up to 1.5 Gb/s data transfer rate.

### Serial ATA (SATA)

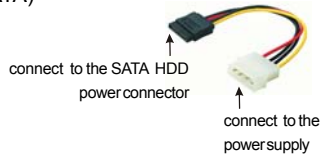
Data Cable

(Optional)



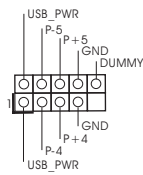
Either end of the SATA data cable can be connected to the SATA hard disk or the SATA connector on the motherboard.

**Serial ATA (SATA)  
Power Cable**  
(Optional)



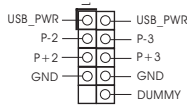
Please connect the black end of SATA power cable to the power connector on each drive. Then connect the white end of SATA power cable to the power connector of the power supply.

**USB 2.0 Header**  
(9-pin USB45)  
(see p.10 No. 12)



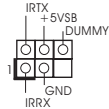
Besides four default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports. The shared USB 2.0 header (USB2\_3) is shared with USB ports 23 on the I/O panel.

**Shared USB 2.0 Header**  
(9-pin USB2\_3)  
(see p.10 No. 28)



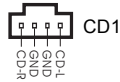
When using the front panel USB ports by attaching the front panel USB cable to USB2\_3 header, the USB ports 23 on the I/O panel will not be able to function.

**Infrared Module Header**  
(5-pin IR1)  
(see p.10 No. 16)



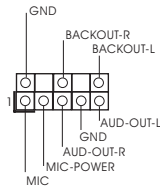
This header supports an optional wireless transmitting and receiving infrared module.

**Internal Audio Connectors**  
(4-pin CD1)  
(CD1: see p.10 No. 22)



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.

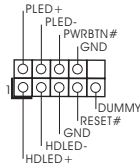
**Front Panel Audio Header**  
(8-pin AUDIO1)  
(see p.10 No. 21)



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

### System Panel Header

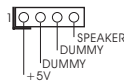
(9-pin PANEL1)  
(see p.10 No. 14)



This header accommodates several system front panel functions.

### Chassis Speaker Header

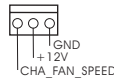
(4-pin SPEAKER 1)  
(see p.10 No. 13)



Please connect the chassis speaker to this header.

### Chassis Fan Connector

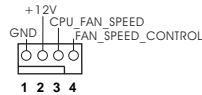
(3-pin CHA\_FAN1)  
(see p.10 No. 15)



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

### CPU Fan Connector

(4-pin CPU\_FAN1)  
(see p.10 No. 26)

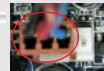


Please connect the CPU fan cable to this connector and match the black wire to the ground pin.



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

### ATX Power Connector

(20-pin ATXPWR1)  
(see p.10 No. 27)



Please connect an ATX power supply to this connector.

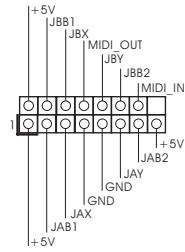
### ATX 12V Power Connector

(4-pin ATX12V1)  
(see p.10 No. 2)



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

**Game Port Header**  
(15-pin GAME1)  
(see p.10 No. 19)



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

---

## 2.7 Serial ATA (SATA) Hard Disks Installation

This motherboard adopts NVIDIA® nForce3 250 chipset that supports Serial ATA (SATA) hard disks and RAID functions. You may install SATA hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA hard disks.

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

## 2.8 Hot Plug and Hot Swap Functions for SATA HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA Devices.



### NOTE

#### What is Hot Plug Function?

If the SATA HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA 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 HDD.

#### What is Hot Swap Function?

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

## 2.9 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.

For users who install Windows® XP 64-bit OS and plan to install drivers to your system from the support CD, since the SATA driver provided by the chipset vendor has not submitted Windows® Logo yet, we provide you with the following driver installation choices:

1. "All in 1 Logo Driver( W/O HotPlug & RAID)": You may choose this item to install all-in-1 logo driver which does not support Hot Plug and RAID functions, but it has passed Microsoft® logo certification.
2. "All in 1 Non-Logo Driver( W/ HotPlug & RAID)": You may choose this item to

install all-in-1 non-logo driver which supports Hot Plug and RAID functions, but it has not passed Microsoft® logo certification yet. Please choose the driver which meets your requirement most from the above-mentioned items during driver installation process.

For users who install Windows® Vista™ / Vista™ 64-bit OS, since 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>

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



The installation procedures for Windows® Vista™ / Vista™ 64-bit are subject to change. Please visit our website for the updates of Windows® Vista™ / Vista™ 64-bit driver and related information in the future.

If you just want to install Windows® 2000, Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit on your SATA HDDs without RAID functions, you don't have to make a SATA driver diskette. Besides, there is no need for you to change the BIOS setting. You can start to install Windows® 2000, Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit on your system directly.

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



Since the chipset vendor does not provide Windows® Vista™ / Vista™ 64-bit RAID driver, RAID function is not available on this motherboard under Windows® Vista™ / Vista™ 64-bit OS. RAID function is only available under Windows® 2000, XP or XP 64-bit OS.

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



Before installing Windows® 2000 to your system, your Windows® 2000 optical disk is supposed to include SP4. If there is no SP4 included in your disk, please visit below website for proper procedures of making a SP4 disk: [http://www.microsoft.com/Windows2000/downloads/servicepacks/sp4/spdeploy.htm#the\\_integrated\\_installation\\_fm4y](http://www.microsoft.com/Windows2000/downloads/servicepacks/sp4/spdeploy.htm#the_integrated_installation_fm4y)

### STEP 1: Make a SATA 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 drivers into the floppy diskette.

**STEP 2: Set Up BIOS.**

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

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

Before you start to configure the RAID function, you need to check the installation guide in the Support CD for proper configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path:

.. \Information\Manual\RAID Installation Guide

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

After step1, 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 driver diskette containing the NVIDIA® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

NOTE. 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 HDDs, you still need to set up "SATA Operation Mode" to [RAID] in BIOS first. Then, please set the RAID configuration by using "RAID Utility for Windows Guide" in Windows® environment. Please refer to the document in the Support CD, "Guide to nVidia RAID Utility for Windows", which is located in the folder at the following path:  
.. \Information\Manual\RAID Utility for Windows Guide

## 2.12 Untied Overclocking Technology

This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed AGP / PCI buses. Before you enable Untied Overclocking function, please enter "Overclock Mode" option of BIOS setup to set the selection from [Auto] to [CPU, AGP, Async.]. Therefore, CPU FSB is untied during overclocking, but AGP / PCI buses are 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.



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## 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.

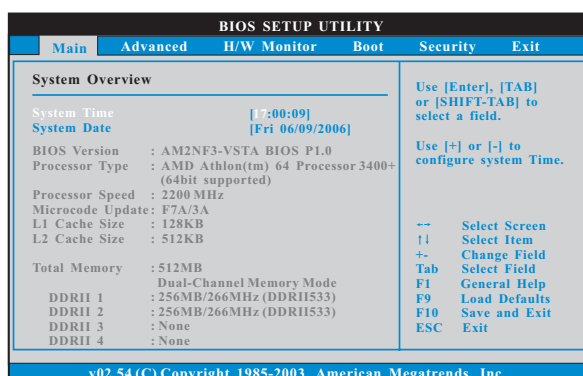
### 3.1.2 Navigation Keys

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.



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

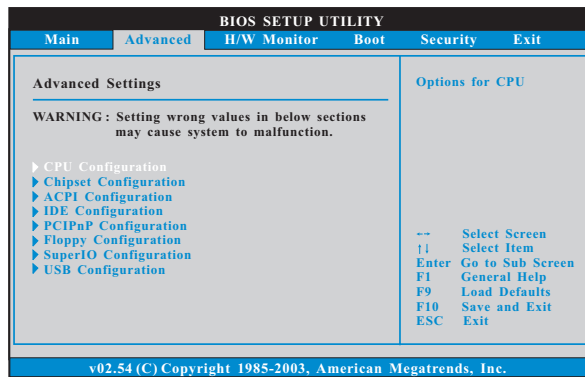
Use this item to specify the system time.

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

Use this item to specify the system date.

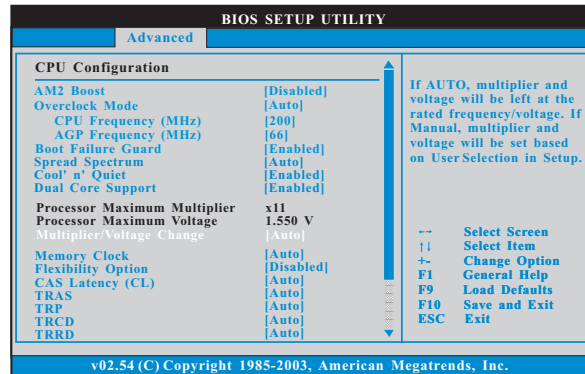
### 3.3 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Chipset Configuration, ACPI Configuration, IDE Configuration, PCI/PnP 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



##### AM2 Boost

If you set this option to [Enabled], you will enable ASRock AM2 Boost function, which will improve the memory performance. The default value is [Disabled]. Please refer to caution 7 on page 8 for details.

##### Overclock Mode

Use this to select Overclock Mode. The default value is [Auto]. Configuration options: [Auto], [CPU, AGP, Sync.] and [CPU, AGP, Async.].

##### CPU Frequency (MHz)

Use this option to adjust CPU frequency. The default value is [200].

### AGP Frequency (MHz)

Use this option to adjust AGP frequency. The default value is [66].

### Boot Failure Guard

Enable or disable the feature of Boot Failure Guard.

### Spread Spectrum

This feature will be set to [Auto] as default.

### Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology.

### Dual Core Support

This item will show if you use Dual Core CPU. Configuration options: [Enabled], [Disabled]. The default value is [Enabled].

### Processor Maximum Multiplier

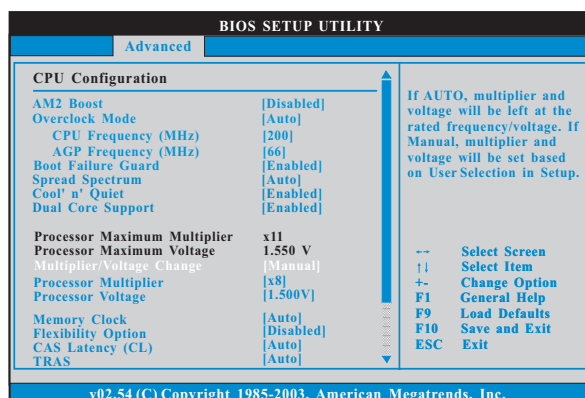
It will display Processor Maximum Multiplier for reference.

### Processor Maximum Voltage

It will display Processor Maximum Voltage for reference.

### Multiplier/Voltage Change

This item is set to [Auto] by default. If it is set to [Manual], you may adjust the value of Processor Multiplier and Processor Voltage. However, it is recommended to keep the default value for system stability.



### Processor Multiplier

This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard. However, for system stability, it is not recommended to adjust the value of this item.

### Processor Voltage

This item will show when "Multiplier/Voltage Change" is set to [Manual]; otherwise, it will be hidden. The range of the value depends on the CPU you adopt on this motherboard. However, for safety and system stability, it is not recommended to adjust the value of this item.

---

### **Memory Clock**

This item can be set by the code using [Auto]. You can set one of the standard values as listed: [200 MHz (DDRII 400)], [266 MHz (DDRII 533)], [333 MHz (DDRII 667)], and [400MHz (DDRII 800)].

### **Flexibility Option**

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

### **CAS Latency (CL)**

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [2.0], [3.0], and [2.5]. The default value is [Auto].

### **TRAS**

Use this to adjust TRAS values. Configuration options: [Auto], [5CLK], [6CLK], [7CLK], [8CLK], [9CLK], [10CLK], [11CLK], [12CLK], [13CLK], [14CLK], and [15CLK]. The default value is [Auto].

### **TRP**

Use this to adjust TRP values. Configuration options: [Auto], [2CLK], [3CLK], [4CLK], [5CLK], and [6CLK]. The default value is [Auto].

### **TRCD**

Use this to adjust TRCD values. Configuration options: [Auto], [2CLK], [3CLK], [4CLK], [5CLK], and [6CLK]. The default value is [Auto].

### **TRRD**

Use this to adjust TRRD values. The default value is [Auto].

### **TRC**

Use this to adjust TRC values. The default value is [Auto].

### **MA Timing**

Use this to adjust values for MA timing. Configuration options: [Auto], [2T], [1T]. The default value is [Auto].

### **Burst Length**

Burst length can be set to 8, 4 or 2 beats. 64 Bit Dq must use the 4 beats.

### **Bank Interleaving**

Interleaving allows memory accesses to be spread out over banks on the same node, or across nodes, decreasing access contention.

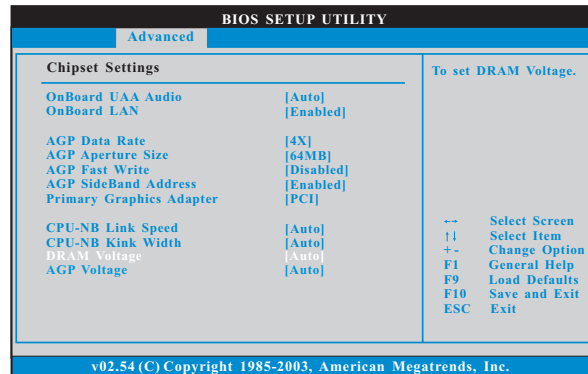
### **Memory Hole**

Use this item to enable or disable memory hole. The Default value is [Disabled].

### **DDRII Initialization Mode**

Configuration options: [Auto] and [Compatible]. The default value is [Auto].

### 3.3.2 Chipset Configuration



#### OnBoard LAN

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

#### OnBoard UAA Audio

Select [Auto], [Enabled] or [Disabled] for the onboard UAA Audio feature. If you select [Auto], the onboard UAA Audio will be disabled when PCI Sound Card is plugged.

#### AGP Data Rate

Use this item to adjust the AGP Data Rate. Configuration options: [8X], [4X]. The default value is [8X].

#### 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. Configuration options: [32MB], [64MB], [128MB], [256MB], and [512MB].

#### AGP Fast Write

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

#### AGP SideBand Address

This allows you to enable or disable the feature of AGP SideBand Address. Configuration options: [Enabled], and [Disabled].

#### Primary Graphics Adapter

This item will switch the PCI Bus scanning order while searching for video card. It allows you to select the type of Primary VGA in case of multiple video controllers. The default value of this feature is [PCI]. Configuration options: [PCI] and [AGP].

#### CPU - NB Link Speed

This feature allows you selecting CPU to NB link frequency. Configuration options: [Auto], [200 MHz], [400 MHz], [600 MHz], and [800 MHz].

### CPU - NB Link Width

This feature allows you selecting CPU to NB link width. Configuration options: [Auto], [8 bit], and [16 bit].

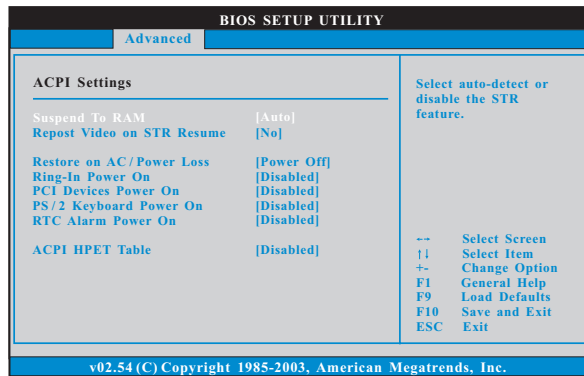
### DRAM Voltage

Use this to select DRAM voltage. Configuration options: [Auto], [Ultra High], [High], and [Normal]. The default value is [Auto].

### AGP Voltage

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

## 3.3.3 ACPI Configuration



### Suspend to RAM

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it. If you set this item to [Disabled], the function "Repost Video on STR Resume" will be hidden.

### Repost Video on STR Resume

This feature allows you to repost video on STR resume. (STR refers to suspend to RAM.)

### 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.

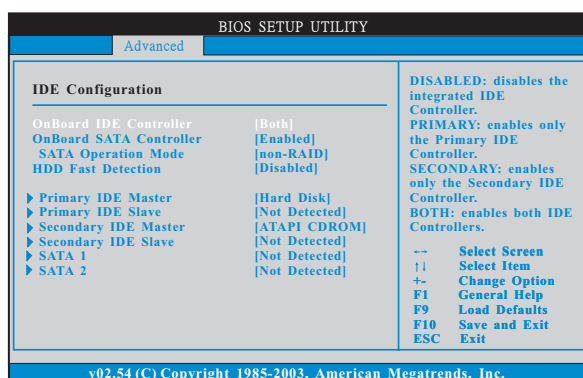
### RTC Alarm Power On

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

### ACPI HPET Table

Set this item to enable to include High Precision Event Timers support. The default value is [Disabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certification.

## 3.3.4 IDE Configuration



### OnBoard IDE Controller

You may enable either the primary IDE channel or the secondary IDE channel. Or you may enable both the primary and the secondary IDE channels by selecting [Both]. Set to [Disabled] will disable the both. Configuration options: [Disabled], [Primary], [Secondary], [Both].

### OnBoard SATA Controller

Use this item to enable or disable the “OnBoard SATA Controller” feature.

### 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].

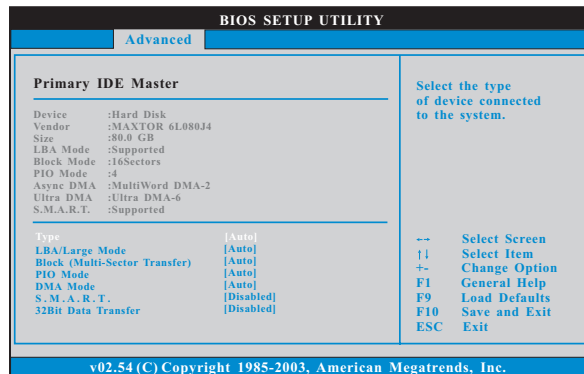
### HDD Fast Detection

Configuratin optins: [Enabled] and [Disabled]. The default value is [Disabled].

### 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.





## 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.

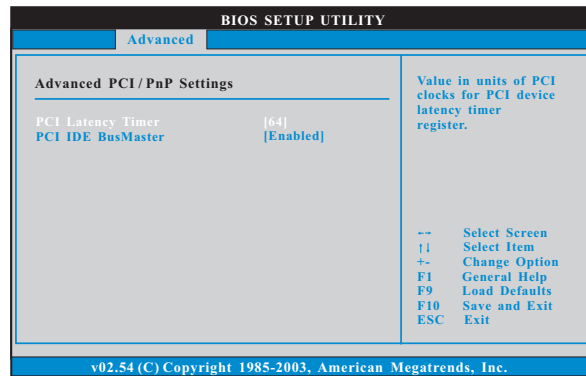
### S.M.A.R.T.

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].

### 32Bit Data Transfer

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

## 3.3.5 PCIPnP Configuration



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

### PCI Latency Timer

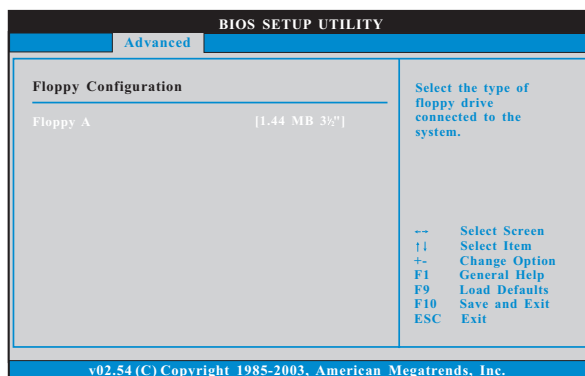
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

### PCI IDE BusMaster

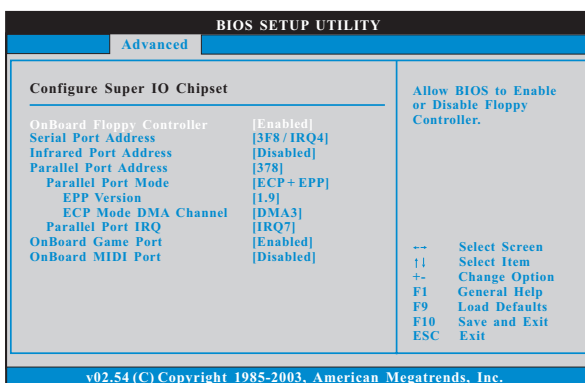
Use this item to enable or disable the PCI IDE BusMaster feature.

### 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].

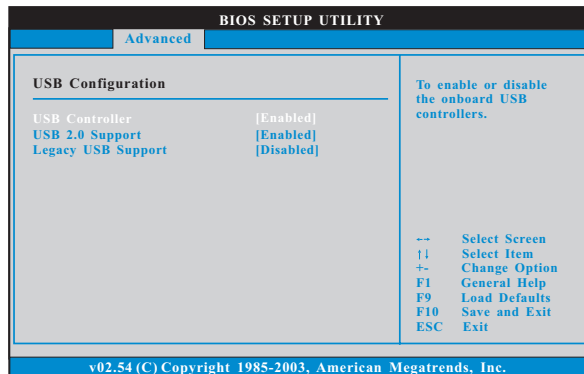
### OnBoard Game Port

Use this item to enable the Game Port or disable it.

### 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 the I/O devices of legacy OS (DOS) such as mouse, keyboard, USB flash... 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>					
CPU Temperature	:	37°C / 98°F			
M/B Temperature	:	31°C / 87°F			
CPU Fan Speed	:	2833 RPM			
Chassis Fan Speed	:	N/A			
Vcore	:	1.532 V			
+ 3.30V	:	3.129 V			
+ 5.00V	:	4.877 V			
+ 12.00V	:	11.741 V			
CPU Quiet Fan	:	[Disabled]			
			←→	Select Screen	
			F1	Select Item	
			F1	General Help	
			F9	Load Defaults	
			F10	Save and Exit	
			ESC	Exit	

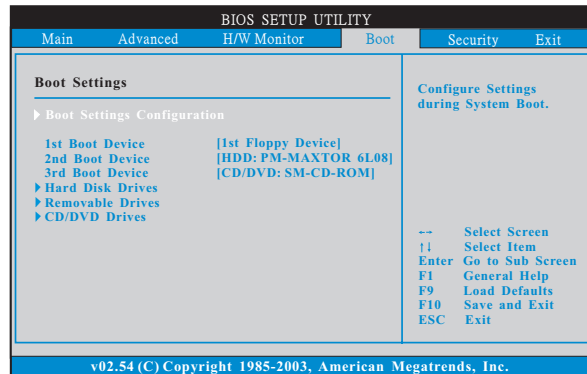
v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.

#### CPU Quiet Fan

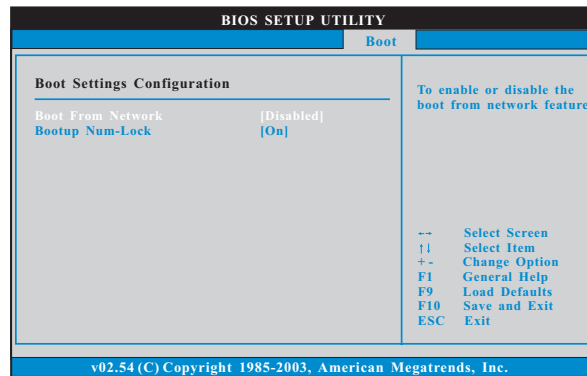
This item allows you to identify the temperature of CPU fan. Configuration options: [Disabled] and [Enabled]. The default value is [Disabled]. You are allowed to enable this function only when you install 4-pin CPU fan.

### 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 Network

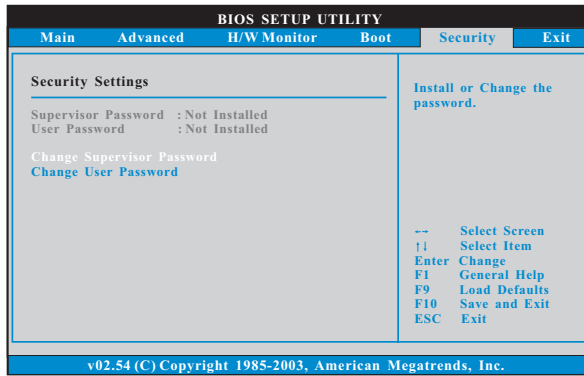
Use this item to enable or disable the Boot From Network feature.

##### Boot Up Num-Lock

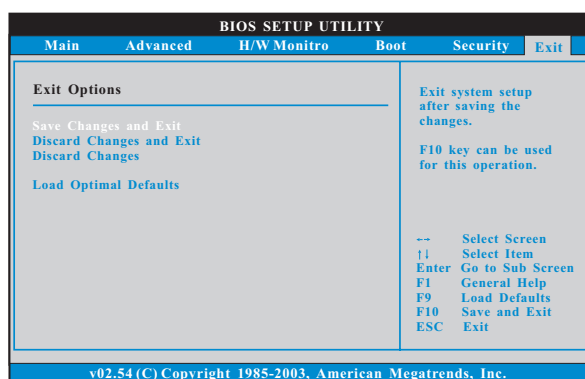
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

### 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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## **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 the 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.

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## **APPENDIX:**

### **AMD's Cool 'n' Quiet™ Technology**

For power-saving sake, it is strongly recommended to enable AMD's Cool 'n' Quiet™ technology under Windows® system. When using this feature, please make sure to install "AMD Processor Driver" from the "Support CD" first.

If you are using Windows® 2000/XP operating system, please follow the instruction below to enable AMD's Cool 'n' Quiet™ technology:

1. From the Windows® 2000/XP operating system, click the Start button. Select Settings, then Control Panel.
2. Switch to Classic View. (for Windows® XP only)
3. Double-click the Display icon in the Control Panel then select the Screen Saver tab.
4. Click the "Power..." button. The following dialog box appears.
5. From the Power schemes combo list box, select **Minimal Power Management**.
6. Click OK to implement settings.