



# *A770CrossFire*

## User Manual

Version 1.0

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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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"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 **A770CrossFire** 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>  
If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.  
[www.asrock.com/support/index.asp](http://www.asrock.com/support/index.asp)

### 1.1 Package Contents

- 1 x ASRock **A770CrossFire** Motherboard  
(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)
- 1 x ASRock **A770CrossFire** Quick Installation Guide
- 2 x ASRock **A770CrossFire** Support CD
- 1 x Ultra ATA 66/100/133 IDE Ribbon Cable (80-conductor)
- 1 x 3.5-in Floppy Drive Ribbon Cable
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 1 x Serial ATA (SATA) HDD Power Cable (Optional)
- 1 x HDMI\_SPDIF Cable (Optional)
- 1 x ASRock SPDIF I/O Shield
- 1 x ASRock SLI/XFire Switch Card

## 1.2 Specifications

<b>Platform</b>	<ul style="list-style-type: none"><li>- ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm</li><li>- All Solid Capacitor design (100% Japan-made high-quality Conductive Polymer Capacitors)</li></ul>
<b>CPU</b>	<ul style="list-style-type: none"><li>- Support for Socket AM2+ / AM2 processors: AMD Phenom™ FX / Phenom / Athlon 64 FX / Athlon 64 X2 Dual-Core / Athlon X2 Dual-Core / Athlon 64 / Sempron processor</li><li>- Supports CPU up to 140W</li><li>- AMD LIVE!™ Ready</li><li>- Supports AMD's Cool 'n' Quiet™ Technology</li><li>- FSB 2600 MHz (5.2 GT/s)</li><li>- Supports Untied Overclocking Technology (see <b>CAUTION 1</b>)</li><li>- Supports Hyper-Transport 3.0 (HT 3.0) Technology</li></ul>
<b>Chipset</b>	<ul style="list-style-type: none"><li>- Northbridge: AMD 770</li><li>- Southbridge: AMD SB700</li></ul>
<b>Memory</b>	<ul style="list-style-type: none"><li>- Dual Channel DDR2 Memory Technology (see <b>CAUTION 2</b>)</li><li>- 4 x DDR2 DIMM slots</li><li>- Support DDR2 1066/800/667/533 non-ECC, un-buffered memory (see <b>CAUTION 3</b>)</li><li>- Max. capacity of system memory: 8GB (see <b>CAUTION 4</b>)</li></ul>
<b>Expansion Slot</b>	<ul style="list-style-type: none"><li>- 2 x PCI Express 2.0 x16 slots (green @ x16 mode, blue @ x8 mode)</li><li>- 1 x PCI Express 2.0 x1 slot</li><li>- 3 x PCI slots</li><li>- Supports ATI™ CrossFireX™ (see <b>CAUTION 5</b>)</li></ul>
<b>Audio</b>	<ul style="list-style-type: none"><li>- 7.1 CH Windows® Vista™ Premium Level HD Audio (ALC888 Audio Codec)</li></ul>
<b>LAN</b>	<ul style="list-style-type: none"><li>- PCIe x1 Gigabit LAN 10/100/1000 Mb/s</li><li>- Realtek RTL8111C</li><li>- Supports Wake-On-LAN</li></ul>
<b>Rear Panel I/O</b>	<p>ASRock SPDIF I/O</p> <ul style="list-style-type: none"><li>- 1 x PS/2 Mouse Port</li><li>- 1 x PS/2 Keyboard Port</li><li>- 1 x Coaxial SPDIF Out Port</li><li>- 1 x Optical SPDIF Out Port</li><li>- 6 x Ready-to-Use USB 2.0 Ports</li><li>- 1 x eSATAII Port</li><li>- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)</li><li>- HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/Line in/Front Speaker/Microphone (see <b>CAUTION 6</b>)</li></ul>

<b>Connector</b>	<ul style="list-style-type: none"> <li>- 6 x Serial ATAII 3.0Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 0+1, RAID 10 and JBOD), NCQ, AHCI and "Hot Plug" functions (see <b>CAUTION 7</b>)</li> <li>- 1 x eSATAII 3.0Gb/s connector (shared with 1 SATAII connector) (see <b>CAUTION 8</b>)</li> <li>- 1 x ATA133 IDE connector (supports 2 x IDE devices)</li> <li>- 1 x Floppy connector</li> <li>- 1 x DeskExpress Hot Plug Detection header</li> <li>- 1 x COM port header</li> <li>- 1 x HDMI_SPDIF header</li> <li>- CPU/Chassis FAN connector</li> <li>- 24 pin ATX power connector</li> <li>- 8 pin 12V power connector</li> <li>- SLI/XFIRE 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 9</b>)</li> <li>- 1 x WiFi/E header (see <b>CAUTION 10</b>)</li> </ul>
<b>BIOS Feature</b>	<ul style="list-style-type: none"> <li>- 8Mb 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> <li>- CPU, DRAM, NB Voltage Multi-adjustment</li> </ul>
<b>Support CD</b>	- Drivers, Utilities, AntiVirus Software (Trial Version)
<b>Unique Feature</b>	<ul style="list-style-type: none"> <li>- ASRock OC Tuner (see <b>CAUTION 11</b>)</li> <li>- Intelligent Energy Saver (see <b>CAUTION 12</b>)</li> <li>- Hybrid Booster: <ul style="list-style-type: none"> <li>- CPU Frequency Stepless Control (see <b>CAUTION 13</b>)</li> <li>- ASRock U-COP (see <b>CAUTION 14</b>)</li> <li>- Boot Failure Guard (B.F.G.)</li> <li>- ASRock AM2 Boost: ASRock Patented Technology to boost memory performance up to 12.5% (see <b>CAUTION 15</b>)</li> </ul> </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>	- Microsoft® Windows® XP / XP Media Center / XP 64-bit / Vista™ / Vista™ 64-bit compliant
<b>Certifications</b>	- FCC, CE, Microsoft® WHQL Certified

\* For detailed product information, please visit our website: <http://www.asrock.com>

#### **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. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 44 for details.
2. 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 15 for proper installation.
3. Whether 1066MHz memory speed is supported depends on the AM2+ CPU you adopt. If you want to adopt DDR2 1066 memory module on this motherboard, please refer to the memory support list on our website for the compatible memory modules.  
ASRock website <http://www.asrock.com>
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. This motherboard supports ATI™ CrossFire™ technology. If you want to use CrossFire™ function, please follow the instructions on page 20 to reverse the direction of ASRock SLI/XFire Switch Card in advance.
6. 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.
7. Before installing SATAII hard disk to SATAII connector, please read the "SATAII Hard Disk Setup Guide" on page 35 to adjust your SATAII hard disk drive to SATAII mode. You can also connect SATA hard disk to SATAII connector directly.
8. This motherboard supports eSATAII interface, the external SATAII specification. Please read "eSATAII Interface Introduction" on page 32 for details about eSATAII and eSATAII installation procedures.
9. Power Management for USB 2.0 works fine under Microsoft® Windows® Vista™ 64-bit / Vista™ / XP 64-bit / XP SP1 or SP2.



- 
10. WiFi/E header supports WiFi+AP function with ASRock WiFi-802.11g or WiFi-802.11n module, an easy-to-use wireless local area network (WLAN) adapter. It allows you to create a wireless environment and enjoy the convenience of wireless network connectivity. Please visit our website for the availability of ASRock WiFi-802.11g or WiFi-802.11n module. ASRock website <http://www.asrock.com>
  11. It is a user-friendly ASRock overclocking tool which allows you to surveil your system by hardware monitor function and overclock your hardware devices to get the best system performance under Windows® environment. Please visit our website for the operation procedures of ASRock OC Tuner. ASRock website: <http://www.asrock.com>
  12. Featuring an advanced proprietary hardware and software design, Intelligent Energy Saver is a revolutionary technology that delivers unparalleled power savings. The voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle. In other words, it is able to provide exceptional power saving and improve power efficiency without sacrificing computing performance. To use Intelligent Energy Saver function, please enable Cool 'n' Quiet option in the BIOS setup in advance. Please visit our website for the operation procedures of Intelligent Energy Saver.  
ASRock website: <http://www.asrock.com>
  13. 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.
  14. 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.
  15. 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.

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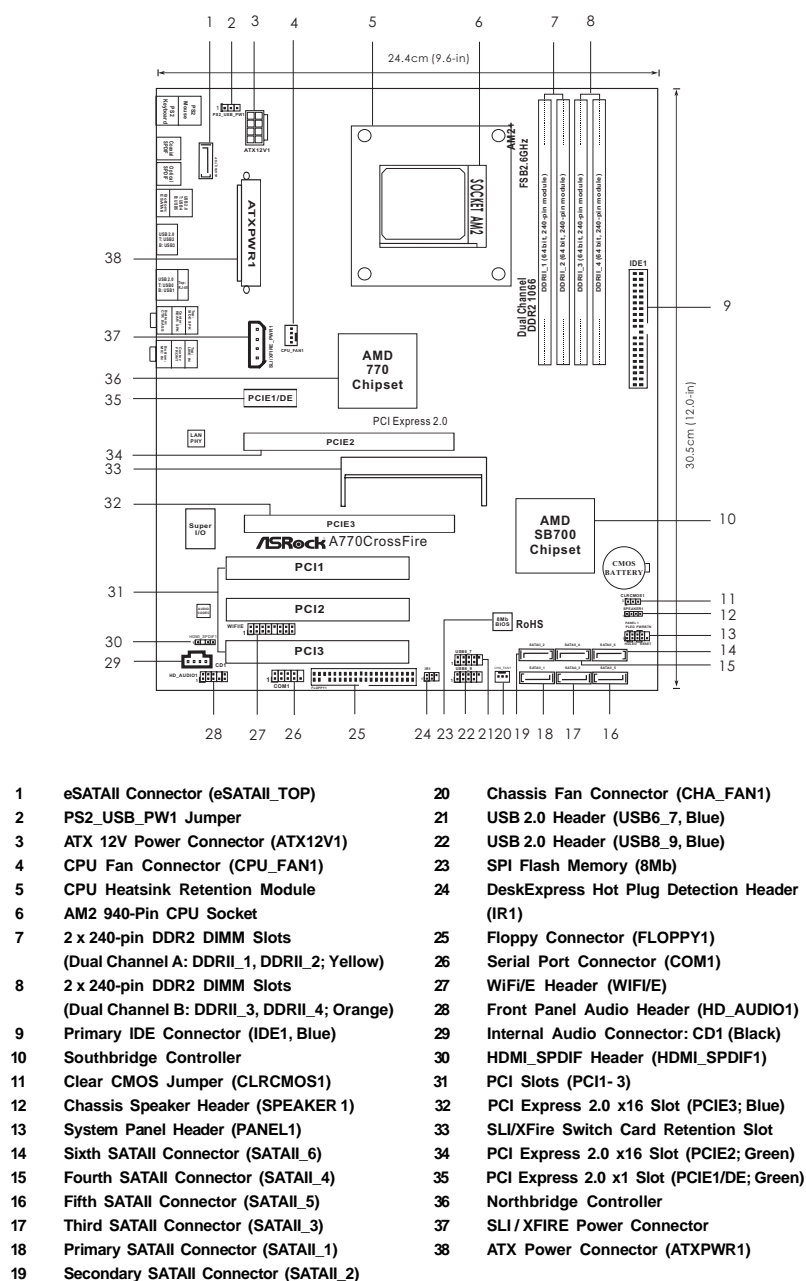
### 1.3 Minimum Hardware Requirement Table for Windows® Vista™ Premium 2008 and Basic Logo

For system integrators and users who purchase this motherboard and plan to submit Windows® Vista™ Premium 2008 and Basic logo, please follow below table for minimum hardware requirement.

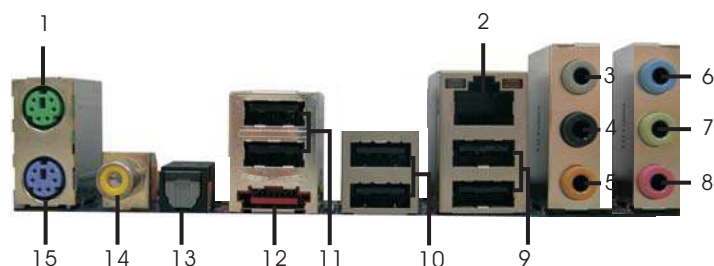
CPU	Sempron 2800+
Memory	1GB system memory (Premium)
	512MB system memory (Basic)
VGA	DX10 with WDDM Driver
	with 128bit VGA memory (Premium)
	with 64bit VGA memory (Basic)

\* After June 1, 2008, all Windows® Vista™ systems are required to meet above minimum hardware requirements in order to qualify for Windows® Vista™ Premium 2008 logo.

## 1.4 Motherboard Layout




## 1.5 ASRock SPDIF I/O



- |                           |                                |
|---------------------------|--------------------------------|
| 1 PS/2 Mouse Port (Green) | 9 USB 2.0 Ports (USB01)        |
| * 2 LAN RJ-45 Port        | 10 USB 2.0 Ports (USB23)       |
| 3 Side Speaker (Gray)     | 11 USB 2.0 Ports (USB89)       |
| 4 Rear Speaker (Black)    | 12 eSATAII Port                |
| 5 Central / Bass (Orange) | 13 Optical SPDIF Out Port      |
| 6 Line In (Light Blue)    | 14 Coaxial SPDIF Out Port      |
| ** 7 Front Speaker (Lime) | 15 PS/2 Keyboard Port (Purple) |
| 8 Microphone (Pink)       |                                |

\* There are two LED next to the LAN port. Please refer to the table below for the LAN port LED indications.


### LAN Port LED Indications

SPEED LED		Activity/Link LED		<div>SPEED LED    ACT/LINK LED</div> 
Status	Description	Status	Description	
Off	10Mbps connection	Off	No link	LAN Port
Orange	100Mbps connection	Orange	Linked	
Green	1Gbps connection	Blinking	Data Activity	

\*\* 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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## 2. Installation

This is an ATX form factor (12.0-in x 9.6-in, 30.5 cm x 24.4 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.

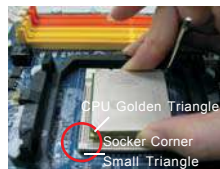


The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

- 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 Small  
Triangle



**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 11, No. 4). For proper installation, please kindly refer to the instruction manuals of the CPU fan and the heatsink.

## 2.3 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR2 (Double Data Rate 2) 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) DDR2 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR2 DIMM pair in **Dual Channel A** (DDRII\_1 and DDRII\_2; Yellow slots; see p.11 No.7) or **identical** DDR2 DIMM pair in **Dual Channel B** (DDRII\_3 and DDRII\_4; Orange slots; see p.11 No.8), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR2 DIMMs for dual channel configuration, and please install **identical** DDR2 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** DDR2 DIMMs in all four slots.



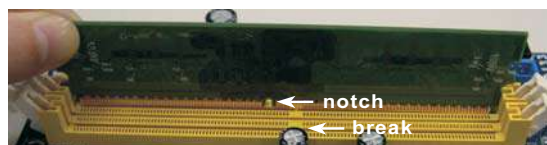
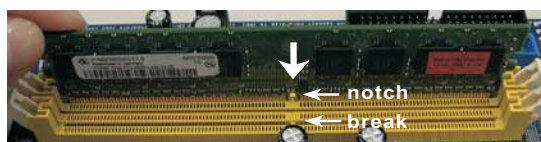
1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of yellow slots (DDRII\_1 and DDRII\_2), or in the set of orange slots (DDRII\_3 and DDRII\_4).
2. If only one memory module or three memory modules are installed in the DDR2 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 DDR2 slot; otherwise, this motherboard and DIMM may be damaged.
5. If you adopt DDR2 1066 memory modules on this motherboard, it is recommended to install them on DDRII\_3 and DDRII\_4 slots.

## 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 and PCI Express Slots)

There are 3 PCI slots and 3 PCI Express slots on this motherboard.

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





### PCIe Slots:

PCIe1/DE (PCIe x1 slot; Green) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card and ASRock PCIe\_DE card.

PCIe2 (PCIe x16 slot; Green) is used for PCI Express x16 lane width graphics cards, or used to install PCI Express graphics cards to support CrossFire™ function.

PCIe3 (PCIe x16 slot; Blue) is used for PCI Express x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc., or used to install PCI Express graphics cards to support CrossFire™ function.

### PCIe2 / PCIe3 / SLI/XFire Switch Card Retention Slot Configurations

	PCIe2 Slot (Green)	PCIe3 Slot (Blue)	SLI/XFire Switch Card Retention Slot
<b>Single Graphics Card</b> 	PCIe x16	PCIe x1	 (Default)
<b>Dual Graphics Cards in CrossFire™ Mode</b> 	PCIe x8	PCIe x8	



1. If you plan to install only one PCI Express VGA card on this motherboard, please install it on PCIe2 slot (Green). In this mode, you do not need to adjust the default setting of ASRock SLI/XFire Switch Card, and please do not remove or lose ASRock SLI/XFire Switch Card when it is still in working condition.
2. For the information of the compatible CrossFire™ Mode PCI Express VGA cards and CrossFire™ setup procedures, please refer to "CrossFire™ Operation Guide" on page 19.
3. If you want to use ASRock DeskExpress function on this motherboard, please install ASRock PCIE\_DE card on PCIE1/DE slot.

### 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 CrossFire™ Operation Guide

This motherboard supports CrossFire™ feature. CrossFire™ technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFire™ enables the highest possible level of performance and image quality in any 3D application. Currently CrossFire™ feature is supported with Windows® XP with Service Pack 2 and Vista™ OS. Please check AMD website for ATI™ CrossFire™ driver updates.



### What graphics cards work with CrossFire™?

A complete CrossFire™ system requires a CrossFire™ Ready motherboard, a CrossFire™ Edition graphics card and a compatible standard Radeon (CrossFire™ Ready) graphics card from the same series, or two CrossFire™ Ready cards. This applies to cards from ATI™ or any of its partners. Please refer to below table for CrossFire™ VGA card support list according to the OS you install.

#### For Windows® XP

Vendor	Chipset	Model	Driver
ATI	Radeon HD 3870 X2	POWERCOLOR AX3870X2 1GBD3-H	Catalyst 8.2
	Radeon HD 3870	POWERCOLOR AX3870 512MD4-H	Catalyst 8.2
	Radeon HD 3850	GIGABYTE GV-RX385256H-B	Catalyst 8.2
	Radeon HD 3650	POWERCOLOR AX3650 512MD3-XP	Catalyst 8.2
	Radeon HD 3450	POWERCOLOR AX3450 256MD2-S	Catalyst 8.2
	Radeon HD2900XT	MSI RX2900XT-VT2D512E	Catalyst 7.11
	Radeon HD 2600XT	Gigabyte GV-RX26T256HP-B	Catalyst 7.9
	Radeon HD 2600PRO	MSI RX2600PRO-T2D256EZ	Catalyst 7.9
	RadeonX1950XTX	GeCube RX1950XTX	Catalyst 7.11
	Radeon X1950PRO	Gecube Radeon X1950Pro 256MB	Catalyst 7.11

#### For Windows® Vista

Vendor	Chipset	Model	Driver
ATI	Radeon HD 3870 X2	POWERCOLOR AX3870X2 1GBD3-H	Catalyst 8.2
	Radeon HD 3870	POWERCOLOR AX3870 512MD4-H	Catalyst 8.2
	Radeon HD 3850	GIGABYTE GV-RX385256H-B	Catalyst 8.2
	Radeon HD 3650	POWERCOLOR AX3650 512MD3-XP	Catalyst 8.2
	Radeon HD 3450	POWERCOLOR AX3450 256MD2-S	Catalyst 8.2
	Radeon HD2900XT	MSI RX2900XT-VT2D512E	Catalyst 7.11
	Radeon HD 2600XT	Gigabyte GV-RX26T256HP-B	Catalyst 7.9
	Radeon HD 2600PRO	MSI RX2600PRO-T2D256EZ	Catalyst 7.9
	RadeonX1950XTX	GeCube RX1950XTX	Catalyst 7.11
	Radeon X1950PRO	Gecube Radeon X1950Pro 256MB	Catalyst 7.11
	Radeon X1600PRO	MSI RX1600PRO-TD256E	Catalyst 7.3
	Radeon X1300 PRO	MSI RX1300PRO-TD256E	Catalyst 7.3



1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFire™. All three CrossFire™ components, a CrossFire™ Ready graphics card, a CrossFire™ Ready motherboard and a CrossFire™ Edition co-processor graphics card, must be installed correctly to benefit from the CrossFire™ multi-GPU platform.
2. If you pair a 12-pipe CrossFire™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFire™ mode.

### Enjoy the benefit of CrossFire™



Different CrossFire™ cards may require different methods to enable CrossFire™ feature. In below procedures, we use Radeon 2600XT as the example graphics card. For other CrossFire™ cards that ATI™ has released or will release in the future, please refer to ATI™ graphics card manuals for detailed installation guide.

- Step 1. Connect to the system power supply. Please connect a hard disk power connector to SLI/XFIRE Power connector on this motherboard.



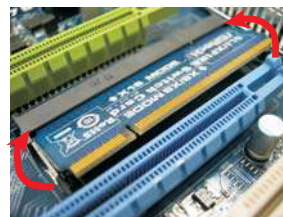
It is recommended to use 500-Watt power supply or greater to perform the benefit of CrossFire™ feature.



- Step 2. There is one ASRock SLI/XFire Switch Card factory-mounted on this motherboard. This card served as a switch between the default mode (x16) and CrossFire mode (x8 / x8). ASRock SLI/XFire Switch Card is factory-mounted with its default mode (x16) side toward the retention slot base.



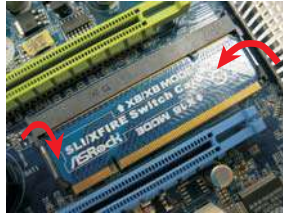
- Step 3. To change it to CrossFire Mode, you need to reverse the direction of ASRock SLI/XFire Switch Card. Please simultaneously pull open both the retention arms that hold the card in position. The card itself will spring away from the retention slot. Take it out gently by holding its edges, and keep away from touching the connectors (Golden Fingers).



- Step 4. Reverse the card direction so as to have the "X8 / X8 MODE" wording side toward the retention slot base. Insert the card into the bottom of the base.



- Step 5. Push the card down into the retention slot till both the retention arms firmly hold the card into position. Also, keep away from touching the connectors (Golden Fingers).



- Step 6. Install one Radeon graphics card to PCIE2 slot. For the proper installation procedures, please refer to section "Expansion Slots".



- Step 7. Install the other Radeon graphics card to PCIE3 slot. For the proper installation procedures, please refer to section "Expansion Slots".



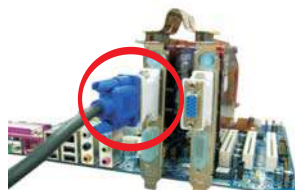
- Step 8. Connect two Radeon graphics cards by installing two CrossFire™ Bridge on CrossFire™ Bridge Interconnects on the top of Radeon graphics cards. (CrossFire™ Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)



CrossFire™ Bridge



- Step 9. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)



- Step 10. Power on your computer and boot into OS.

- Step 11. Remove the ATI™ driver if you have any VGA driver installed in your system.



The Catalyst Uninstaller is an optional download. We recommend using this utility to uninstall any previously installed Catalyst drivers prior to installation. Please check AMD website for ATI™ driver updates.

- Step 12. Install the required drivers to your system.

**For Windows® XP OS:**

- A. ATI™ recommends Windows® XP Service Pack 2 or higher to be installed (If you have Windows® XP Service Pack 2 or higher installed in your system, there is no need to download it again):

<http://www.microsoft.com/windowsxp/sp2/default.msp>

- B. You must have Microsoft .NET Framework installed prior to downloading and installing the CATALYST Control Center. Please check Microsoft website for details.

**For Windows® Vista™ OS:**

Install the CATALYST Control Center. Please check AMD website for details.

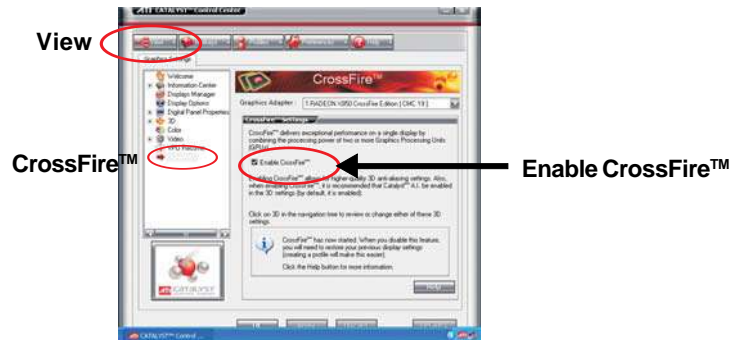
- Step 13. Restart your computer.

- Step 14. Install the VGA card drivers to your system, and restart your computer. Then you will find “ATI Catalyst Control Center” on your Windows® taskbar.



ATI Catalyst Control Center

Step 15. Double-click "ATI Catalyst Control Center". Click "View", and select "Advanced View". Click "CrossFire™", and then set the option "Enable CrossFire™" to "Yes".



Although you have selected the option "Enable CrossFire™", the CrossFire™ function may not work actually. Your computer will automatically reboot. After restarting your computer, please confirm whether the option "Enable CrossFire™" in "ATI Catalyst Control Center" is selected or not; if not, please select it again, and then you are able to enjoy the benefit of CrossFire™ feature.

Step 16. You can freely enjoy the benefit of CrossFire™ feature.

- \* CrossFire™ appearing here is a registered trademark of ATI™ Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe.
- \* For further information of ATI™ CrossFire™ technology, please check AMD website for updates and details.

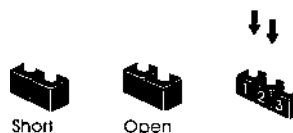
## 2.6 Surround Display Feature



This motherboard supports Surround Display upgrade. With the external add-on PCI Express VGA cards, 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

## 2.7 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.11, No. 2)		 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 Jumper (CLR CMOS1) (see p.11, No. 11)		
--	---	---

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.



## 2.8 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)

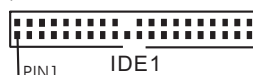
(see p.11 No. 25)



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)



connect the blue end  
to the motherboard



connect the black end  
to the IDE devices

80-conductor ATA 66/100/133 cable

Note: Please refer to the instruction of your IDE device vendor for the details.

### Serial ATAII Connectors

(SATAII\_1:

see p.11, No. 18)

(SATAII\_2:

see p.11, No. 19)

(SATAII\_3:

see p.11, No. 17)

(SATAII\_4:

see p.11, No. 15)

(SATAII\_5:

see p.11, No. 16)

(SATAII\_6:

see p.11, No. 14)



SATAII\_2



SATAII\_4



SATAII\_6



SATAII\_1



SATAII\_3



SATAII\_5

These six 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.



SATAII\_6 connector can be used for internal storage device or be connected to eSATAII connector to support eSATAII device. Please read "eSATAII Interface Introduction" on page 32 for details about eSATAII and eSATAII installation procedures.

### eSATAII Connector

(eSATAII\_TOP: see p.11, No. 1)



This eSATAII connector supports SATA data cable for external SATAII function. The current eSATAII 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 this motherboard. You can also use the SATA data cable to connect SATAII\_6 connector and eSATAII connector.

### Serial ATA (SATA)

#### Power Cable

(Optional)

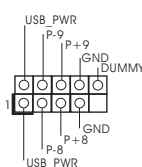


Please connect the black end of SATA power cable to the power connector on each drive. Then connect the white end of SATA power cable to the power connector of the power supply.

### USB 2.0 Headers

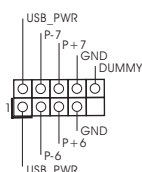
(9-pin USB8\_9)

(see p.11 No. 22)



(9-pin USB6\_7)

(see p.11 No. 21)

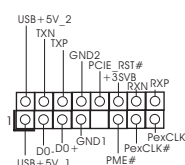


Besides six default USB 2.0 ports on the I/O panel, there are two USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

### WiFi/E Header

(15-pin WIFI/E)

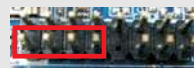
(see p.11 No. 27)



This header supports WiFi+AP function with ASRock WiFi-802.11g or WiFi-802.11n module, an easy-to-use wireless local area network (WLAN) adapter. It allows you to create a wireless environment and enjoy the convenience of wireless network connectivity.

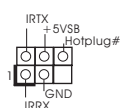


If you don't plan to use WiFi+AP function on this motherboard, this header can be used as a 4-Pin USB 2.0 header to support one USB 2.0 port. To connect the 4-Pin USB device cable to this header, please refer to this picture for proper installation.



#### DeskExpress Hot Plug Detection Header

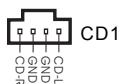
(5-pin IR1)  
(see p.11 No. 24)



This header supports the Hot Plug detection function for ASRock DeskExpress.

#### Internal Audio Connectors

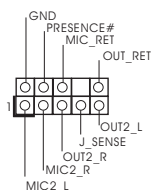
(4-pin CD1)  
(CD1: see p.11 No. 29)



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. 28)



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:
  - A. Connect Mic\_IN (MIC) to MIC2\_L.
  - B. Connect Audio\_R (RIN) to OUT2\_R and Audio\_L (LIN) to OUT2\_L.
  - C. Connect Ground (GND) to Ground (GND).
  - D. MIC\_RET and OUT\_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
  - E. Enter BIOS Setup Utility. Enter Advanced Settings, and then select Chipset Configuration. Set the Front Panel Control option from [Auto] to [Enabled].
  - F. Enter Windows system. Click the icon on the lower right hand taskbar to enter Realtek HD Audio Manager.  
For Windows® 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".

G. To activate the front mic.

For Windows® XP / XP 64-bit OS:

Please select "Front Mic" as default record device.

If you want to hear your voice through front mic, please deselect "Mute" icon in "Front Mic" of "Playback" portion.

For Windows® Vista™ / Vista™ 64-bit OS:

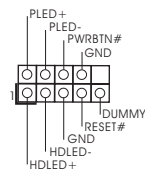
Go to the "Front Mic" Tab in the Realtek Control panel.

Click "Set Default Device" to make the Front Mic as the default record device.

#### System Panel Header

(9-pin PANEL1)

(see p.11 No. 13)

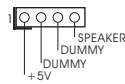


This header accommodates several system front panel functions.

#### Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.11 No. 12)

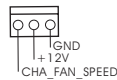


Please connect the chassis speaker to this header.

#### Chassis Fan Connector

(3-pin CHA\_FAN1)

(see p.11 No. 20)



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.11 No. 4)



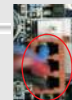
Please connect the CPU fan cable to this connector and match the black wire to the ground pin.



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

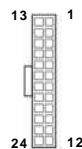
3-Pin Fan Installation



#### ATX Power Connector

(24-pin ATXPWR1)

(see p.11 No. 38)

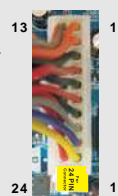


Please connect an ATX power supply to this connector.



Though this motherboard provides 24-pin ATX power connector, it can still work if you adopt a traditional 20-pin ATX power supply. To use the 20-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 13.

20-Pin ATX Power Supply Installation



#### ATX 12V Power Connector

(8-pin ATX12V1)  
(see p.11 No. 3)

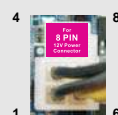


Please connect an ATX 12V power supply to this connector.



Though this motherboard provides 8-pin ATX 12V power connector, it can still work if you adopt a traditional 4-pin ATX 12V power supply. To use the 4-pin ATX power supply, please plug your power supply along with Pin 1 and Pin 5.

4-Pin ATX 12V Power Supply Installation



#### SLI/XFIRE Power Connector

(4-pin SLI/XFIRE\_PWR1)  
(see p.11 No. 37)

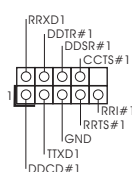


SLI/XFIRE\_POWER1

It is not necessary to use this connector, but please connect it with a hard disk power connector when two graphics cards are plugged to this motherboard at the same time.

#### Serial port Header

(9-pin COM1)  
(see p.11 No.26)



This COM1 header supports a serial port module.

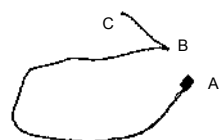
#### HDMI\_SPDIF Header

(3-pin HDMI\_SPDIF1)  
(see p.11 No. 30)



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)



## 2.9 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 17.

**Step 2.** Connect the black end (A) of HDMI\_SPDIF cable to the HDMI\_SPDIF header (HDMI\_SPDIF1, yellow, see page 11, No. 30) 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 29. 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.

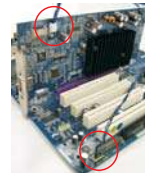
**Step 3.** Connect the white end (B or C) of HDMI\_SPDIF cable to the HDMI\_SPDIF connector of HDMI VGA card. (There are two white ends (2-pin and 3-pin) on HDMI\_SPDIF cable. Please choose the appropriate white end according to the HDMI\_SPDIF connector of the HDMI VGA card you install.



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.

## 2.10 eSATAII Interface Introduction

### ***What is eSATAII?***

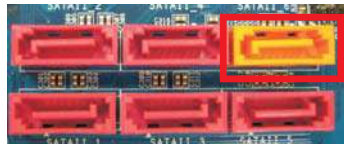
This motherboard supports eSATAII interface, the external SATAII specification. eSATAII allows you to enjoy the SATAII function provided by the I/O of your computer, offering the high speed data transfer rate up to 3.0Gb/s, and the convenient mobility like USB. eSATAII is equipped with Hot Plug capability that enables you to exchange drives easily. For example, with eSATAII interface, you may simply plug your eSATAII hard disk to the eSATAII ports instead of opening your chassis to exchange your SATAII hard disk. Currently, on the market, the data transfer rate of USB 2.0 is up to 480Mb/s, and for IEEE 1394 is up to 400Mb/s. However, eSATAII provides the data transfer rate up to 3000Mb/s, which is much higher than USB 2.0 and IEEE 1394, and still keeps the convenience of Hot Plug feature. Therefore, on the basis of the advantageous transfer speed and the facilitating mobile capability, in the near future, eSATAII will replace USB 2.0 and IEEE 1394 to be a trend for external interface.

#### **NOTE:**

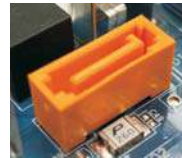
1. If you set "SATA Operation Mode" option in BIOS setup to AHCI or RAID mode, Hot Plug function is supported with eSATAII devices. Therefore, you can insert or remove your eSATAII devices to the eSATAII ports while the system is power-on and in working condition.
2. If you set "SATA Operation Mode" option in BIOS setup to non-RAID mode, Hot Plug function is not supported with eSATAII devices. If you still want to use eSATAII function in non-RAID mode, please insert or remove your eSATAII devices to the eSATAII ports only when the system is power-off.
3. If you want to use the eSATAII HDD as an OS disk, please set "SATA Operation Mode" option in BIOS setup to non-RAID mode. If you want to use the eSATAII HDD as a removable data disk, please set "SATA Operation Mode" option in BIOS setup to RAID mode. If you want to add the eSATAII HDD as a RAID disk, please set "SATA Operation Mode" option in BIOS setup to RAID mode.
4. Please do not configure your eSATAII HDD as a RAID disk; otherwise, it may affect the Hot Plug function that eSATAII HDD should have.
5. Please refer to page 40 to 43 for detailed information of RAID mode, non-RAID mode and AHCI mode.



### How to install eSATAII?

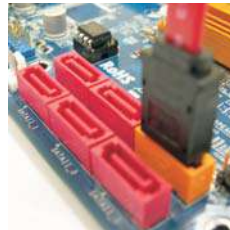


SATAII\_6



eSATAII\_TOP

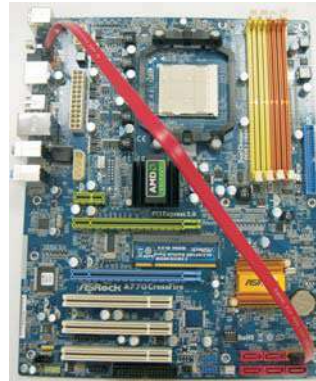
1. In order to enable the eSATAII port of the I/O shield, you need to connect the orange SATAII connector (SATAII\_6; see p.11 No.14) and the eSATAII connector (eSATAII\_TOP; see p.11 No.1) with a SATA data cable first.



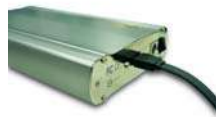
Connect the SATA data cable to the orange SATAII connector (SATAII\_6)



Connect the SATA data cable to the eSATAII connector (eSATAII\_TOP)



2. Use the eSATAII device cable to connect eSATAII device and the eSATAII port of the I/O shield according to the eSATAII connector that you connect the SATA data cable.



Connect one end of the eSATAII device cable to eSATAII device

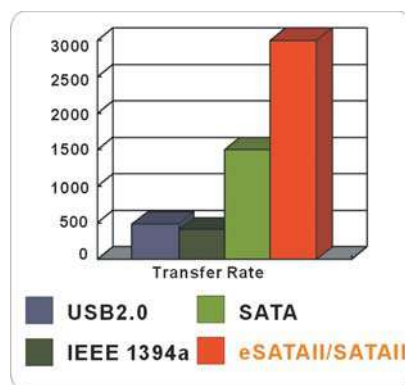


Connect the other end of the eSATAII device cable to eSATAII port of the I/O shield

---

***Comparison between eSATAII and other devices***

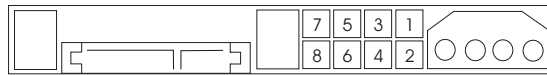
IEEE 1394	400Mb/s
USB 2.0	480Mb/s
SATA	1.5Gb/s (1500Mb/s)
eSATAII/SATAII	3.0Gb/s (3000Mb/s)



## 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.

---

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

This motherboard adopts AMD SB700 south bridge chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID (RAID 0, RAID 1, RAID 0+1, RAID 10 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.



1. If you plan to use RAID 0 or RAID 1 function, you need to install at least 2 SATA / SATAII hard disks. If you plan to use RAID 0+1 or RAID 10 function, you need to install 4 SATA / SATAII hard disks.
2. It is recommended to build RAID on internal SATAII ports. In other words, if SATAII\_6 is used for eSATAII port, please build RAID on other SATAII ports.

---

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

This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII / eSATAII Devices in RAID / AHCI mode. AMD SB700 south bridge chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort. AHCI also provides usability enhancements such as Hot Plug.



### 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 RAID 1 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.

eSATAII is equipped with Hot Plug capability that enables you to exchange drives easily. For example, with eSATAII interface, you may simply plug your eSATAII devices to the eSATAII ports instead of opening your chassis to exchange your SATAII hard disk.

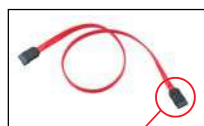
## 2.14 SATA / SATAII HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA / SATAII HDD in RAID / AHCI mode. 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:

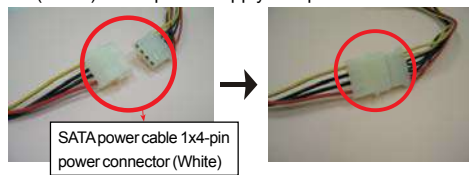
1. Below operation procedure is designed only for our motherboard, which supports SATA / SATAII HDD Hot Plug.
  - \* The SATA / SATAII Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII Hot Plug support information of our motherboard is indicated in the 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.

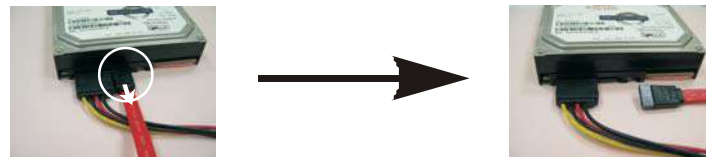


### How to Hot Unplug a SATA / SATAII HDD:

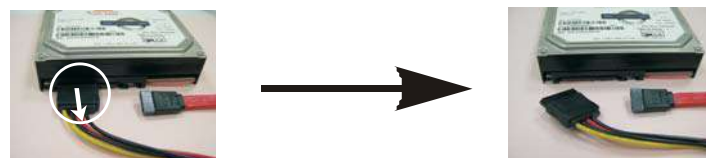
Points of attention, before you process the Hot Unplug:

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® XP / XP 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit on a RAID disk composed of 2 or more SATA / SATAII HDDs with RAID functions, please follow below procedures according to the OS you install.

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

If you want to install Windows® XP or Windows® XP 64-bit on a RAID disk composed of 2 or more 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.  
(There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® XP / XP 64-bit.)
- 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 [Y/N]?", 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 part of the document in the following path in the Support CD:

.. \ RAID Installation Guide



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

After step 1, 2, 3, you can start to install 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 AMD RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install. (Select “AMD AHCI Compatible RAID Controller-x86 platform” for Windows® XP, or “AMD AHCI Compatible RAID Controller-x64 platform” for Windows® XP 64-bit.)

**NOTE.** If you install Windows® XP / Windows® XP 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up “SATA Operation Mode” to [RAID] first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD:

..\RAID Installation Guide

### **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 a RAID disk composed of 2 or more 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 part of the document in the following path in the Support CD:

..\RAID Installation Guide

#### **STEP 3: Install Windows® Vista™ / 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 AMD RAID drivers. AMD RAID drivers are in the following path in our Support CD:

(There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® Vista™ / Vista™ 64-bit.)

..\I386 (For Windows® Vista™ OS)

..\AMD64 (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.

NOTE1. If you install Windows® Vista™ / Windows® Vista™ 64-bit on IDE HDDs and want to manage (create, convert, delete, or rebuild) RAID functions on SATA / SATAII HDDs, you still need to set up “SATA Operation Mode” to [RAID] in BIOS first. Then, please set the RAID configuration by using the Windows RAID installation guide in the following path in the Support CD:

.. \RAID Installation Guide

NOTE2. Currently, if you install Windows® Vista™ / Windows® Vista™ 64-bit on IDE HDDs and there are no SATA / SATAII device used, please set up “SATA Operation Mode” to [non-RAID] in BIOS.

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

If you want to install Windows® XP, Windows® XP 64-bit, Windows® Vista™ or Windows® Vista™ 64-bit OS on your SATA / SATAII HDDs and eSATAII devices without RAID functions, please follow below procedures according to the OS you install.

### **2.17.1 Installing Windows® XP / XP 64-bit Without RAID Functions**

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

#### **Using SATA / SATAII HDDs and eSATAII devices with NCQ and Hot Plug functions**

##### **STEP 1: Set Up BIOS.**

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

##### **STEP 2: Make a SATA / SATAII driver diskette.**

Make a SATA / SATAII driver diskette by following section 2.16.1 step 2 on page 40.

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

After step 1, 2, you can start to install Windows® XP / Windows® XP 64-bit OS on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA / SATAII driver diskette containing the AMD AHCI driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the OS you install. (Select “AMD AHCI Compatible RAID Controller-x86 platform” for Windows® XP, or “AMD AHCI Compatible RAID Controller-x64 platform” for Windows® XP 64-bit.)

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### Using SATA / SATAII HDDs and eSATAII devices without NCQ and Hot Plug functions

#### 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® XP / Windows® XP 64-bit OS on your system.

### 2.17.2 Installing Windows® Vista™ / Vista™ 64-bit Without RAID Functions

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

### Using SATA / SATAII HDDs and eSATAII devices with NCQ and Hot Plug functions

#### STEP 1: Set Up BIOS.

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

#### STEP 2: Make a SATA / SATAII driver diskette.

Make a SATA / SATAII driver diskette by following section 2.16.1 step 2 on page 40.

#### STEP 3: Install Windows® Vista™ / 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 AMD AHCI drivers. AMD AHCI drivers are in the following path in our Support CD:

(There are two ASRock Support CD in the motherboard gift box pack, please choose the one for Windows® Vista™ / Vista™ 64-bit.)

.. \ I386 (For Windows® Vista™ OS)

.. \ AMD64 (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.

### Using SATA / SATAII HDDs and eSATAII devices without NCQ and Hot Plug functions

#### 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® Vista™ / Vista™ 64-bit OS on your system.

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## 2.18 Untied Overclocking Technology

This motherboard supports Untied Overclocking Technology, which means during overclocking, FSB enjoys better margin due to fixed PCI / PCIE buses. Before you enable Untied Overclocking function, please enter "Overclock Mode" option of BIOS setup to set the selection from [Auto] to [CPU, PCIE, Async.]. Therefore, CPU FSB is untied during overclocking, but PCI / PCIE buses are in the fixed mode so that FSB can operate under a more stable overclocking environment.



Please refer to the warning on page 8 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 SPI 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:

<b>Main</b>	To set up the system time/date information
<b>Advanced</b>	To set up the advanced BIOS features
<b>H/W Monitor</b>	To display current hardware status
<b>Boot</b>	To set up the default system device to locate and load the Operating System
<b>Security</b>	To set up the security features
<b>Exit</b>	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
System Overview		
System Time [17:00:09]		Use [Enter], [TAB] or [SHIFT-TAB] to select a field.
System Date [Tue 06/24/2008]		
BIOS Version : A770CrossFire P1.0		Use [+] or [-] to configure system Time.
Processor Type : AMD Phenom(tm) 9600 Quad-Core Processor (64bit)		
Processor Speed : 2300MHz		
Microcode Update : 100F22/1000065		
L1 Cache Size : 512KB		
L2 Cache Size : 2048KB		-- Select Screen
L3 Cache Size : 2048KB		↑↓ Select Item
Total Memory : 2048MB		+/- Change Field
Dual-Channel Memory Mode		Tab Select Field
DDR1H1 : 1024MB/400MHz (DDR2 800)		F1 General Help
DDR1H2 : 1024MB/400MHz (DDR2 800)		F9 Load Defaults
DDR1H3 : None		F10 Save and Exit
DDR1H4 : None		ESC Exit
v02.54(C) Copyright 1985-2003, American Megatrends, Inc.		

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

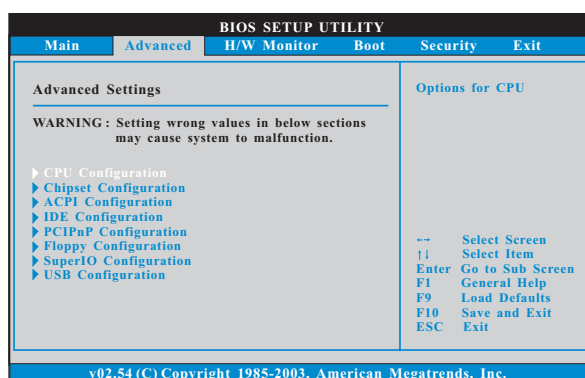
Use this item to specify the system time.

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

Use this item to specify the system date.

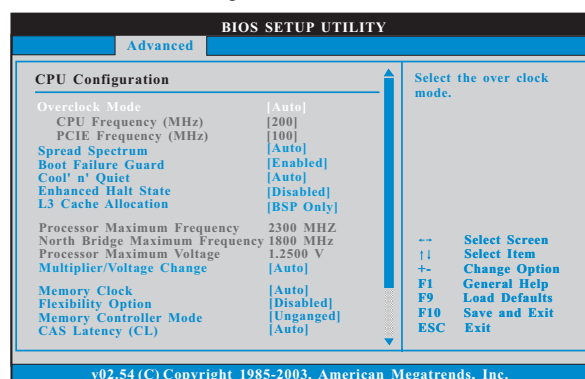
### 3.3 Advanced Screen

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



##### AM2 Boost

This option appears only when you adopt AM2 CPU. 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 15 on page 9 for details.

##### Overclock Mode

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

---

**CPU Frequency (MHz)**

Use this option to adjust CPU frequency.

**PCIe Frequency (MHz)**

Use this option to adjust PCIe frequency.

**Spread Spectrum**

This item should always be [Auto] for better system stability.

**Boot Failure Guard**

Enable or disable the feature of Boot Failure Guard.

**Cool 'n' Quiet**

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® Vista™ and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.

**Secure Virtual Machine**

This option appears only when you adopt AM2 CPU. When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

**Enhance Halt State**

This option appears only when you adopt Phenom CPU. All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches.

**L3 Cache Allocation**

This option appears only when you adopt Phenom CPU. The default value is [BSP Only]. Configuration options: [BSP Only] and [All Cores].

**Processor Maximum Frequency**

It will display Processor Maximum Frequency for reference.

**North Bridge Maximum Frequency**

This option appears only when you adopt Phenom CPU. It will display North Bridge Maximum Frequency for reference.

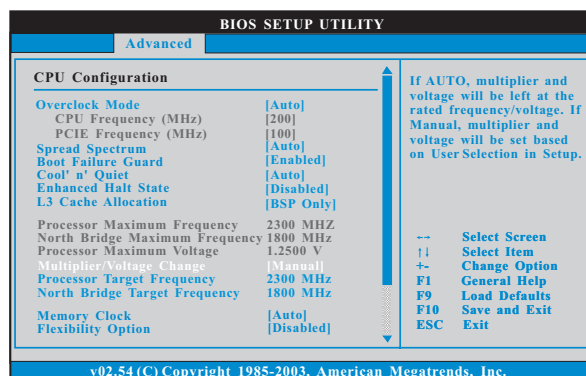
**Processor Maximum Voltage**

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 Frequency and Processor Voltage. However, it is recommended to keep the default value for system stability.





### Processor Frequency

This option appears only when you adopt AM2 CPU. 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 option appears only when you adopt AM2 CPU. 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.

### Processor Target Frequency

This option appears only when you adopt Phenom CPU. 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.

### North Bridge Target Frequency

This option appears only when you adopt Phenom CPU. 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.

### CPU Frequency Multiplier

This option appears only when you adopt Phenom CPU. However, for safety and system stability, it is not recommended to adjust the value of this item.

### CPU Frequency Divider

This option appears only when you adopt Phenom CPU. However, for safety and system stability, it is not recommended to adjust the value of this item.

### **CPU Voltage**

This option appears only when you adopt Phenom CPU. It allows you to adjust the value of CPU voltage. However, for safety and system stability, it is not recommended to adjust the value of this item.

### **NB Frequency Multiplier**

This option appears only when you adopt Phenom CPU. However, for safety and system stability, it is not recommended to adjust the value of this item.

### **NB Voltage**

This option appears only when you adopt Phenom CPU. It allows you to adjust the value of NB voltage. 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 (DDR2 400)], [266 MHz (DDR2 533)], [333 MHz (DDR2 667)] and [400MHz (DDR2 800)]. If you adopt Phenom CPU, there is one more option: [533MHz (DDR2 1066)]

### **Flexibility Option**

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

### **Memory Controller Mode**

This option appears only when you adopt Phenom CPU. It allows you to adjust the memory controller mode. Configuration options: [Unganged] and [Ganged]. The default value is [Unganged].

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

Use this item to adjust the means of memory accessing. Configuration options: [Auto], [3CLK], [4CLK], [5CLK], [6CLK] and [7CLK]. The default value is [Auto].

### **TRCD**

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

### **TRP**

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

### **TRTP**

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

### **TRAS**

Use this to adjust TRAS values. Configuration options: [Auto], [5CLK] to [18CLK]. The default value is [Auto].

### **TRRD**

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

#### **TRC**

Use this to adjust TRC values. Configuration options: [11CLK] to [26CLK].  
The default value is [Auto].

#### **TWR**

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

#### **TWTR**

Use this to adjust TWTR values. Configuration options: [Auto], [1CLK], [2CLK] and [3CLK]. The default value is [Auto].

#### **TRWTTD**

This option appears only when you adopt AM2 CPU. Use this to adjust TRWTTD values. Configuration options: [Auto], [2CLK], [3CLK], [4CLK], [5CLK], [6CLK], [7CLK], [8CLK] and [9CLK]. The default value is [Auto].

#### **TWRRD**

This option appears only when you adopt AM2 CPU. Use this to adjust TWRRD values. Configuration options: [Auto], [0CLK], [1CLK], [2CLK] and [3CLK].  
The default value is [Auto].

#### **TWRWR**

This option appears only when you adopt AM2 CPU. Use this to adjust TWRWR values. Configuration options: [Auto], [1CLK], [2CLK] and [3CLK]. The default value is [Auto].

#### **TRDRD**

This option appears only when you adopt AM2 CPU. Use this to adjust TRWTTD values. Configuration options: [Auto], [2CLK], [3CLK], [4CLK] and [5CLK].  
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].

#### **Addr/Cmd Fine Delay**

Use this to adjust values for Addr/Cmd Fine Delay feature. Configuration options: [Auto], [No Delay], [1/64CLK] to [31/64CLK]. The default value is [Auto].

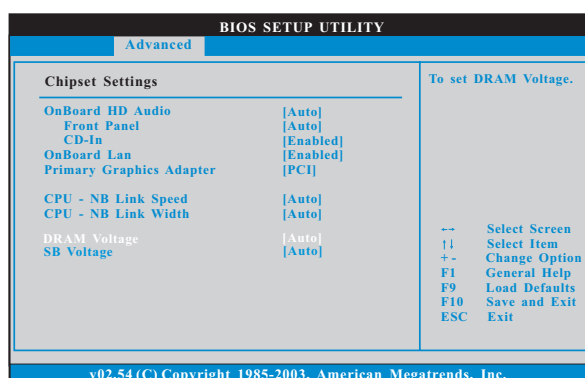
#### **CS/ODT Fine Delay**

Use this to adjust values for CS/ODT Fine Delay feature. Configuration options: [Auto], [No Delay], [1/64CLK] to [31/64CLK]. The default value is [Auto].

#### **Bank Interleaving**

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

### 3.3.2 Chipset Configuration



#### OnBoard HD Audio

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

#### Front Panel

Select [Auto], [Enabled] or [Disabled] for the onboard HDAudio 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.

#### OnBoard Lan

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

#### 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 [PCI Express].

#### CPU - NB Link Speed

This feature allows you selecting CPU to NB link frequency. Configuration options: [Auto], [200 MHz], [400 MHz], [600 MHz], [800 MHz] and [1000 MHz]. If you adopt Phenom CPU, the configuration options are: [Auto], [200 MHz], [400 MHz], [600 MHz], [800 MHz], [1000 MHz], [1800 MHz], [2000 MHz], [2200 MHz], [2400 MHz] and [2600 MHz]. The configuration options depend on the CPU you adopt.

#### CPU - NB Link Width

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

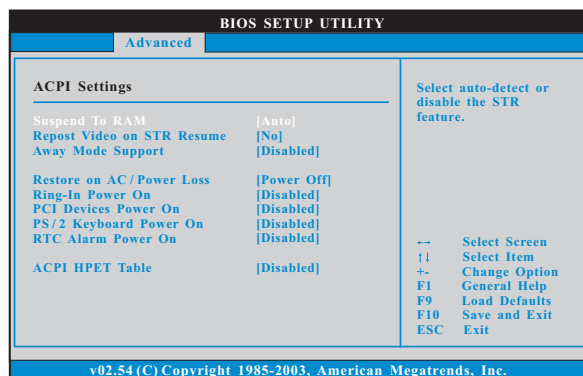
### DRAM Voltage

Use this to select DRAM voltage. Configuration options: [Auto], [1.80V], [1.85V], [1.90V], [1.95V], [2.00V], [2.05V], [2.15V], [2.20V], [2.30V], [2.35V], [2.40V], [2.45V], [2.55V], [2.60V], [2.65V] and [2.70V]. The default value is [Auto].

### SB Voltage

Use this to select SB voltage. Configuration options: [Auto], [1.30V], [1.35V], [1.40V] and [1.45V]. 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.)

### Away Mode Support

Use this item to enable or disable Away Mode support under Windows® XP Media Center OS. The default value is [Disabled].

### 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.

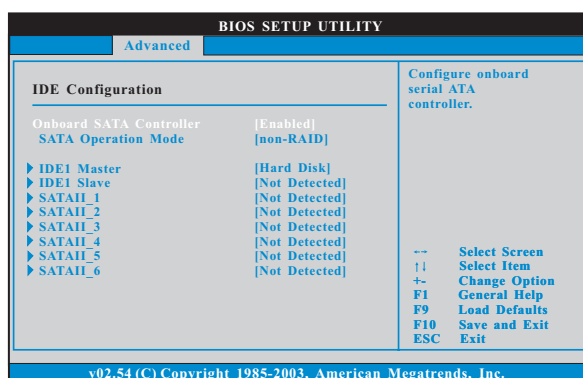
#### RTC Alarm Power On

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

#### ACPI HPET Table

Use this item to enable or disable ACPI HPET Table. 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 SATA Controller

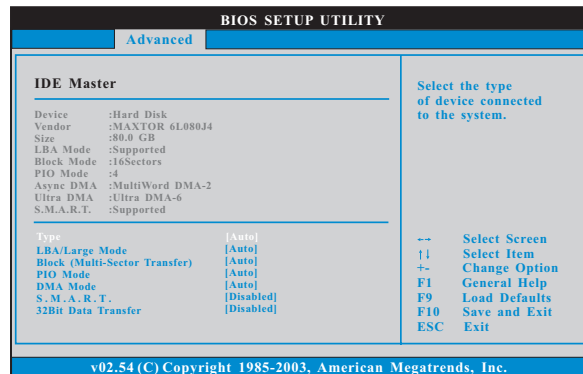
Use this item to enable or disable the "OnBoard SATA Controller" feature.

#### 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 / SATAII HDDs, please select [RAID]. Configuration options: [AHCI], [RAID] and [non-RAID].

#### IDE Device Configuration

You may set the IDE configuration for the device that you specify. We will use the "IDE1 Master" as the example in the following instruction, which can be applied to the configurations of "IDE1 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.

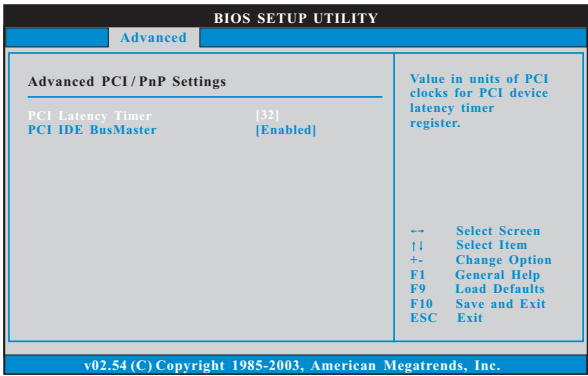
**S.M.A.R.T.**

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.

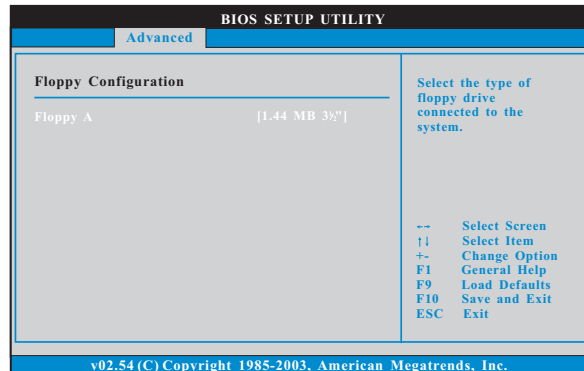
**PCI IDE BusMaster**

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

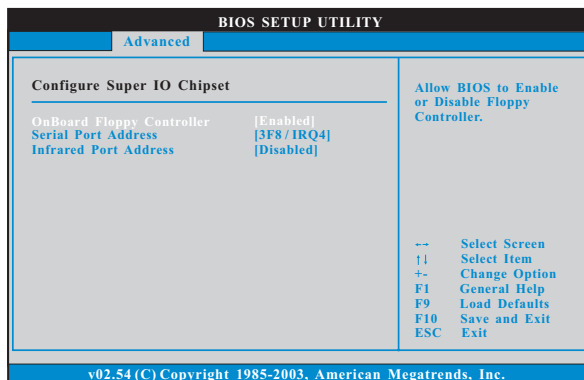


### 3.3.6 Floppy Configuration

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.

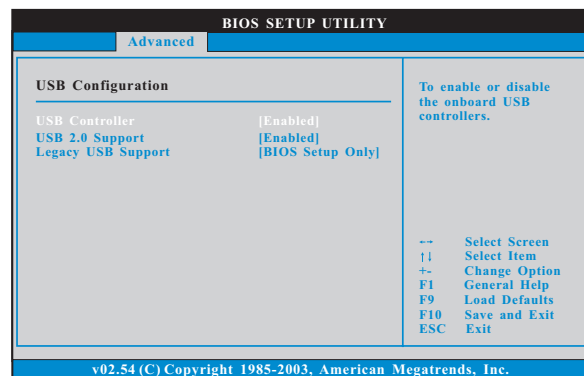
Configuration options: [Disabled], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

#### 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]. If you plan to use ASRock DeskExpress on this motherboard, please keep this item on [Disabled] option.

### 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 option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [BIOS Setup Only]. The default value is [BIOS Setup Only]. Please refer to below descriptions for the details of these four options:

[Enabled] - Enables support for legacy USB.

[Auto] - Enables legacy support if USB devices are connected.

[Disabled] - USB devices are not allowed to use under legacy OS and BIOS setup when [Disabled] is selected. If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS.

[BIOS Setup Only] - USB devices are allowed to use only under BIOS setup and Windows / Linux OS.

### 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	
Hardware Health Event Monitoring	
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	
↑↓ 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. 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 items “Target CPU Temperature” and “Target Fan Speed” appear to allow you adjusting them. The default value is [Disabled]. You are allowed to enable this function only when you install 4-pin CPU fan.

#### Target CPU Temperature

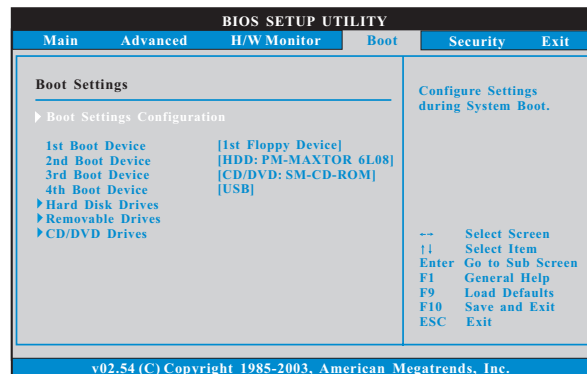
The target temperature will be between 45° C/113° F and 65° C/149° F.  
The default value is [50° C/122° F].

#### Target Fan Speed

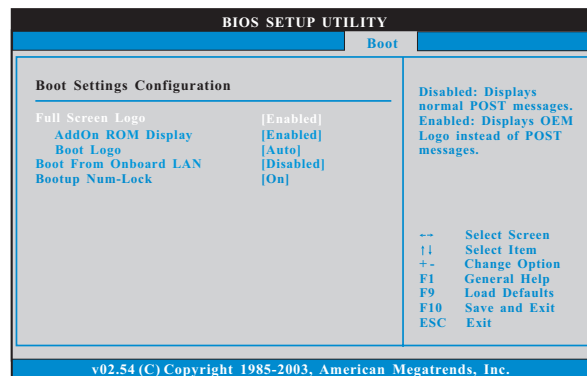
Use this option to set the target fan speed. You can freely adjust the target fan speed according to the target CPU temperature that you choose. Configuration options: [Level 1], [Level 2], [Level 3], [Level 4], [Level 5], [Level 6] [Level 7], [Level 8] and [Level 9].

### 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



##### Full Screen Logo

Use this item to enable or disable OEM Logo. The default value is [Enabled].

##### AddOn ROM Display

Use this option to adjust AddOn ROM Display. If you enable the option "Full Screen Logo" but you want to see the AddOn ROM information when the system boots, please select [Enabled]. Configuration options: [Enabled] and [Disabled]. The default value is [Enabled].

### Boot Logo

Use this option to select logo in POST screen. This option only appears when you enable the option "Full Screen Logo". Configuration options: [Auto], [PCI-E2.0 Revolution], [Scenery] and [ASRock]. The default value is [Auto]. Currently, the option [Auto] is set to Aircraft.

### Boot From Onboard LAN

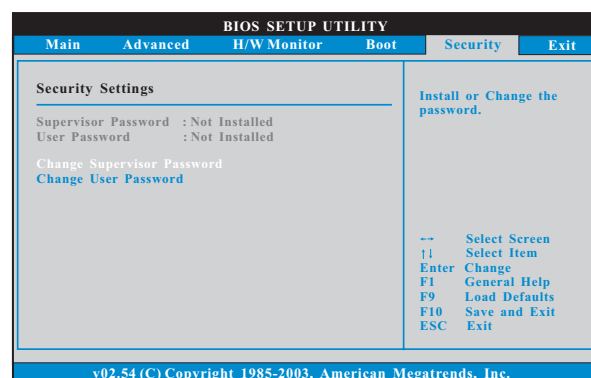
Use this item to enable or disable the Boot From Onboard LAN feature.

### Boot Up Num-Lock

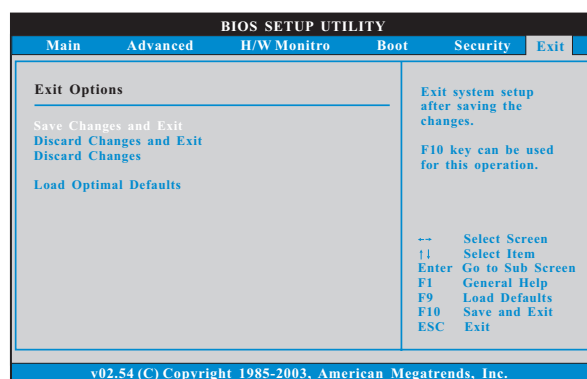
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

## 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.

---

## **4. Software Support**

### **4.1 Install Operating System**

This motherboard supports various Microsoft® Windows® operating systems: XP / XP Media Center / 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.