# M3N78D FX

# User Manual

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This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

**CALIFORNIA, USA ONLY**
The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.
"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

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# 1. Introduction

Thank you for purchasing ASRock ***M3N78D FX*** 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

## 1.1 Package Contents

ASRock ***M3N78D FX*** Motherboard
(ATX Form Factor: 12.0-in x 7.5-in, 30.5 cm x 19.1 cm)
ASRock ***M3N78D FX*** Quick Installation Guide
ASRock ***M3N78D FX*** Support CD
Two Serial ATA (SATA) Data Cables (Optional)
One I/O Panel Shield

## 1.2 Specifications

| | |
|---|---|
| **Platform** | - ATX Form Factor: 12.0-in x 7.5-in, 30.5 cm x 19.1 cm<br>- Solid Capacitor for CPU power |
| **CPU** | - Support for Socket AM3+ processors<br>- Support for Socket AM3 processors: AMD Phenom™ II X6 / X4 / X3 / X2 (except 920 / 940) / Athlon II X4 / X3 / X2 / Sempron processors<br>- Supports 8-Core CPU<br>- Supports CPU up to 140W<br>- AMD LIVE!™ Ready<br>- Supports AMD's Cool 'n' Quiet™ Technology<br>- FSB 2600 MHz (5.2 GT/s)<br>- Supports Untied Overclocking Technology (see **CAUTION 1**)<br>- Supports Hyper-Transport 3.0 (HT 3.0) Technology |
| **Chipset** | - NVIDIA® nForce 720D |
| **Memory** | - Dual Channel DDR3 Memory Technology (see **CAUTION 2**)<br>- 4 x DDR3 DIMM slots<br>- Support DDR3 1800(OC)/1600(OC)/1333/1066/800 non-ECC, un-buffered memory (see **CAUTION 3**)<br>- Max. capacity of system memory: 16GB (see **CAUTION 4**) |
| **Expansion Slot** | - 1 x PCI Express 2.0 x16 slot (blue @ x16 mode)<br>- 3 x PCI Express x1 slots<br>- 3 x PCI slots |
| **Audio** | - 7.1 CH HD Audio (VIA® VT1718S Audio Codec) |
| **LAN** | - Gigabit LAN 10/100/1000 Mb/s<br>- Giga PHY Realtek RTL8211CL<br>- Supports Wake-On-LAN<br>- Supports PXE |
| **Rear Panel I/O** | I/O Panel<br>- 1 x PS/2 Mouse Port<br>- 1 x PS/2 Keyboard Port<br>- 1 x Coaxial SPDIF Out Port<br>- 1 x Optical SPDIF Out Port<br>- 4 x Ready-to-Use USB 2.0 Ports<br>- 2 x Powered eSATA2/USB Connectors<br>- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)<br>- HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/ Line in/Front Speaker/Microphone (see **CAUTION 5**) |

| | |
|---|---|
| **Connector** | - 4 x SATA2 3.0Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD), NCQ, AHCI and "Hot Plug" functions (see **CAUTION 6**)<br>- 1 x ATA133 IDE connector (supports 2 x IDE devices)<br>- 1 x Floppy connector<br>- 1 x COM port header<br>- 1 x HDMI_SPDIF header<br>- 1 x Chassis Intrusion header<br>- 1 x Power LED header<br>- CPU/Chassis/Power FAN connector<br>- 24 pin ATX power connector<br>- 8 pin 12V power connector<br>- CD in header<br>- Front panel audio connector<br>- 3 x USB 2.0 headers (support 6 USB 2.0 ports) |
| **BIOS Feature** | - 8Mb AMI BIOS<br>- AMI Legal BIOS<br>- Supports "Plug and Play"<br>- ACPI 1.1 Compliance Wake Up Events<br>- Supports jumperfree<br>- SMBIOS 2.3.1 Support<br>- VCCM, NB Voltage Multi-adjustment<br>- Supports NVIDIA® NVCC (NVIDIA® Clock Calibration) |
| **Support CD** | - Drivers, Utilities, AntiVirus Software (Trial Version), CyberLink MediaEspresso 6.5 Trial, ASRock Software Suite (CyberLink DVD Suite - OEM and Trial; Creative Sound Blaster X-Fi MB - Trial; ASRock MAGIX Multimedia Suite - OEM) |
| **Unique Feature** | - ASRock OC Tuner (see **CAUTION 7**)<br>- ASRock Intelligent Energy Saver (see **CAUTION 8**)<br>- ASRock Instant Boot<br>- ASRock Instant Flash (see **CAUTION 9**)<br>- ASRock OC DNA (see **CAUTION 10**)<br>- ASRock APP Charger (see **CAUTION 11**)<br>- ASRock SmartView (see **CAUTION 12**)<br>- ASRock XFast USB (see **CAUTION 13**)<br>- ASRock XFast LAN (see **CAUTION 14**)<br>- Hybrid Booster:<br>- CPU Frequency Stepless Control (see **CAUTION 15**)<br>- ASRock U-COP (see **CAUTION 16**)<br>- Boot Failure Guard (B.F.G.) |

| | |
|---|---|
| **Hardware Monitor** | - CPU Temperature Sensing<br>- Chassis Temperature Sensing<br>- CPU/Chassis/Power Fan Tachometer<br>- CPU Quiet Fan<br>- CASE OPEN detection<br>- Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore |
| **OS** | - Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP Media Center / XP 64-bit compliant |
| **Certifications** | - FCC, CE, WHQL<br>- ErP/EuP Ready (ErP/EuP ready power supply is required) (see **CAUTION 17**) |

* 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.

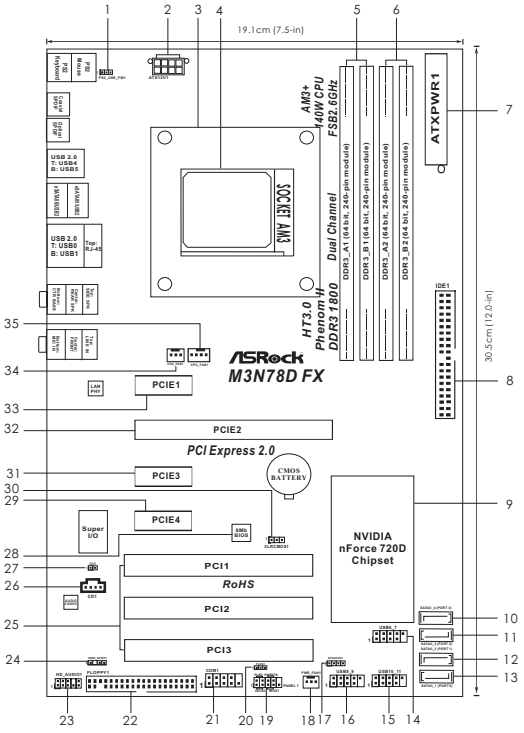
## *CAUTION!*

1. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 34 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 16 for proper installation.
3. Whether 1800/1600MHz memory speed is supported depends on the AM3/AM3+ CPU you adopt. If you want to adopt DDR3 1800/1600 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® 7 / Vista™ / XP. For Windows® OS with 64-bit CPU, there is no such limitation.
5. 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.
6. Before installing SATAII hard disk to SATAII connector, please read the "SATAII Hard Disk Setup Guide" on page 26 to adjust your SATAII hard disk drive to SATAII mode. You can also connect SATA hard disk to SATAII connector directly.

7. 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
8. 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
9. ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press <F6> key during the POST or press <F2> key to BIOS setup menu to access ASRock Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.
10. The software name itself – OC DNA literally tells you what it is capable of. OC DNA, an exclusive utility developed by ASRock, provides a convenient way for the user to record the OC settings and share with others. It helps you to save your overclocking record under the operating system and simplifies the complicated recording process of overclocking settings. With OC DNA, you can save your OC settings as a profile and share with your friends! Your friends then can load the OC profile to their own system to get the same OC settings as yours! Please be noticed that the OC profile can only be shared and worked on the same motherboard.
11. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPod/iPad Touch, ASRock has prepared a wonderful solution for you - ASRock APP Charger. Simply installing the APP Charger driver, it makes your iPhone charged much quickly from your computer and up to 40% faster than before. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience than ever.
ASRock website: http://www.asrock.com/Feature/AppCharger/index.asp

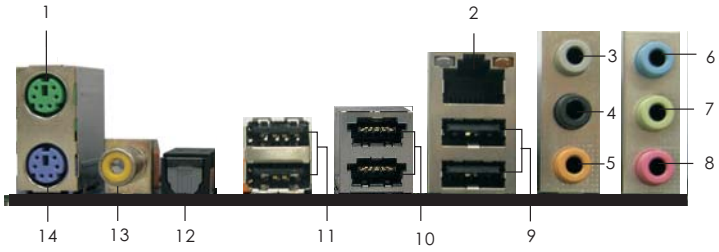
12. SmartView, a new function of internet browser, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience. ASRock motherboards are exclusively equipped with the SmartView utility that helps you keep in touch with friends on-the-go. To use SmartView feature, please make sure your OS version is Windows® 7 / 7 64 bit / Vista™ / Vista™ 64 bit, and your browser version is IE8.
    ASRock website: http://www.asrock.com/Feature/SmartView/index.asp
13. ASRock XFast USB can boost USB storage device performance. The performance may depend on the property of the device.
14. ASRock XFast LAN provides a faster internet access, which includes below benefits. LAN Application Prioritization: You can configure your application priority ideally and/or add new programs. Lower Latency in Game: After setting online game priority higher, it can lower the latency in game. Traffic Shaping: You can watch Youtube HD video and download files simultaneously. Real-Time Analysis of Your Data: With the status window, you can easily recognize which data streams you are currently transferring.
15. 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.
16. 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.
17. EuP, stands for Energy Using Product, was a provision regulated by European Union to define the power consumption for the completed system. According to EuP, the total AC power of the completed system shall be under 1.00W in off mode condition. To meet EuP standard, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v standby power efficiency is higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you checking with the power supply manufacturer for more details.

## 1.3 Motherboard Layout




| | | | |
|---|---|---|---|
| 1 | PS2_USB_PW1 Jumper | 19 | System Panel Header (PANEL1, Orange) |
| 2 | ATX 12V Power Connector (ATX12V1) | 20 | Power LED Header (PLED1) |
| 3 | CPU Heatsink Retention Module | 21 | Serial Port Connector (COM1) |
| 4 | AM3 CPU Socket | 22 | Floppy Connector (FLOPPY1) |
| 5 | 2 x 240-pin DDR3 DIMM Slots (Dual Channel A: DDR3_A1, DDR3_B1; Blue) | 23 | Front Panel Audio Header (HD_AUDIO1, Lime) |
| 6 | 2 x 240-pin DDR3 DIMM Slots (Dual Channel B: DDR3_A2, DDR3_B2; White) | 24 | HDMI_SPDIF Header (HDMI_SPDIF1, Yellow) |
| 7 | ATX Power Connector (ATXPWR1) | 25 | PCI Slots (PCI1- 3) |
| 8 | Primary IDE Connector (IDE1, Blue) | 26 | Internal Audio Connector: CD1 (Black) |
| 9 | NVIDIA nForce 720D Chipset | 27 | Chassis Intrusion Header (CI1) |
| 10 | SATAII Connector (SATAII_4 (PORT 3), Red) | 28 | SPI BIOS Chip |
| 11 | SATAII Connector (SATAII_3 (PORT 2), Red) | 29 | PCI Express x1 Slot (PCIE4, White) |
| 12 | SATAII Connector (SATAII_2 (PORT 1), Red) | 30 | Clear CMOS Jumper (CLRCMOS1) |
| 13 | SATAII Connector (SATAII_1 (PORT 0), Red) | 31 | PCI Express x1 Slot (PCIE3, White) |
| 14 | USB 2.0 Header (USB6_7, Blue) | 32 | PCI Express x16 Slot (PCIE2, Blue) |
| 15 | USB 2.0 Header (USB10_11, Blue) | 33 | PCI Express x1 Slot (PCIE1, White) |
| 16 | USB 2.0 Header (USB8_9, Blue) | 34 | Chassis Fan Connector (CHA_FAN1) |
| 17 | Chassis Speaker Header (SPEAKER 1, Purple) | 35 | CPU Fan Connector (CPU_FAN1) |
| 18 | Power Fan Connector (PWR_FAN1) | | |

## 1.4 I/O Panel




| | | | |
|---|---|---|---|
| 1 | PS/2 Mouse Port (Green) | 8 | Microphone (Pink) |
| * 2 | LAN RJ-45 Port (LAN1) | 9 | USB 2.0 Ports (USB01) |
| 3 | Side Speaker (Gray) | *** 10 | Powered eSATA2/USB Connector |
| 4 | Rear Speaker (Black) | 11 | USB 2.0 Ports (USB45) |
| 5 | Central / Bass (Orange) | 12 | Optical SPDIF Out Port |
| 6 | Line In (Light Blue) | 13 | Coaxial SPDIF Out Port |
| ** 7 | Front Speaker (Lime) | 14 | PS/2 Keyboard Port (Purple) |

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

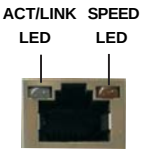
**LAN Port LED Indications**

**Activity/Link LED**

| Status | Description |
|---|---|
| Off | No Activity |
| Blinking | Data Activity |

**SPEED LED**

| Status | Description |
|---|---|
| Off | 10Mbps connection |
| Orange | 100Mbps connection |
| Green | 1Gbps connection |




**LAN Port**

** 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 “VIA HD Audio Deck” tool on your system. Please follow below instructions according to the OS you install.

**For Windows® XP / XP 64-bit OS:**
Please click “VIA HD Audio Deck” icon. Click “Jack” and then click “Configuration”. In “Configuration” screen, please check the item “Independent Headphone”.

**For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:**
Please click “VIA HD Audio Deck” icon. Click “Advanced Options” on the right side on the bottom. In “Advanced Options” screen, please check the item “Independent Headphone”.

*** Due to chipset limitation, the powered eSATA2 function can work in RAID / AHCI mode only.

If you want to install Windows® XP / XP 64-bit in RAID / AHCI mode, please make a SATA driver diskette first. You may refer to our user manual in the support CD or the quick installation guide for the detail steps of making a SATA driver diskette.

If you want to install Windows® 7 / 7 64-bit / Vista™ 64-bit / Vista™ in RAID / AHCI mode, please install the OS directly, and you can enjoy the benefit of powered eSATA2 function.

# 2. Installation

This is an ATX form factor (12.0-in x 7.5-in, 30.5 cm x 19.1 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.

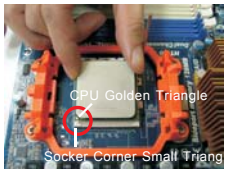
Step 2. Position the CPU directly above the socket such that the CPU corner with the golden triangle matches the socket corner with a small triangle.

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. 35). 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 DDR3 (Double Data Rate 3) 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) DDR3 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel A** (DDR3_A1 and DDR3_B1; Blue slots; see p.11 No.5) or **identical** DDR3 DIMM pair in **Dual Channel B** (DDR3_A2 and DDR3_B2; White slots; see p.11 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install **identical** DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

**Dual Channel Memory Configurations**

| | DDR3_A1 (Blue Slot) | DDR3_B1 (Blue Slot) | DDR3_A2 (White Slot) | DDR3_B2 (White Slot) |
|---|---|---|---|---|
| (1) | Populated | Populated | - | - |
| (2) | - | - | Populated | Populated |
| (3)* | Populated | Populated | Populated | Populated |

* For the configuration (3), please install identical DDR3 DIMMs in all four slots.

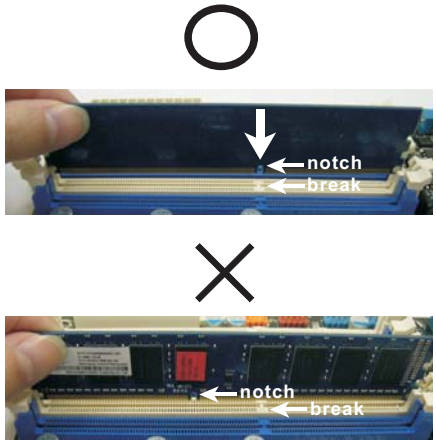
1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of blue slots (DDR3_A1 and DDR3_B1), or in the set of white slots (DDR3_A2 and DDR3_B2).
2. If only one memory module or three memory modules are installed in the DDR3 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 DDR3_A1 and DDR3_A2, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.

## 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 4 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 / PCIE3 / PCIE4 (PCIE x1 slot; White) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc.

PCIE2 (PCIE x16 slot; Blue) is used for PCI Express cards with x16 lane width graphics cards.

### Installing an expansion card

Step 1. Before installing the expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before you start the installation.

Step 2. Remove the system unit cover (if your motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that you intend to use. Keep the screws for later use.

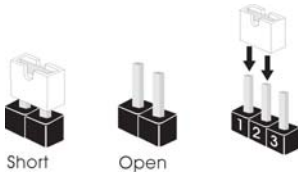
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

## 2.5 Jumpers Setup

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




| Jumper | Setting | |
|---|---|---|
| PS2_USB_PW1 (see p.11, No. 1) | 1_2 +5V / 2_3 +5VSB | 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 (CLRCMOS1) (see p.11, No. 30) | 1_2 Default / 2_3 Clear CMOS | |

Note: CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action.

## 2.6 Onboard Headers and Connectors

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

•

Floppy Connector
(33-pin FLOPPY1)
(see p.11, No. 22)

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. 8)

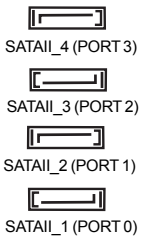
connect the blue end to the motherboard

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 ATA II Connectors
(SATAII_1 (PORT 0): see p.11, No. 13)
(SATAII_2 (PORT 1): see p.11, No. 12)
(SATAII_3 (PORT 2): see p.11, No. 11)
(SATAII_4 (PORT 3): see p.11, No. 10)




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

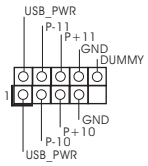
Serial ATA (SATA) Data Cable
(Optional)

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

### USB 2.0 Headers

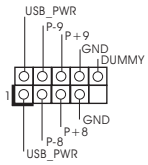
(9-pin USB10_11)

(see p.11 No. 15)



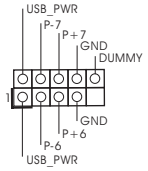

(9-pin USB8_9)

(see p.11 No. 16)




(9-pin USB6_7)

(see p.11 No. 14)




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

### Chassis Intrusion Header

(2-pin CI1)

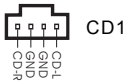
(see p.11 No. 27)

This motherboard supports CASE OPEN detection feature that detects if the chassis cover has been removed. This feature requires a chassis with chassis intrusion detection design.

### Internal Audio Connectors

(4-pin CD1)

(CD1: see p.11, No. 26)

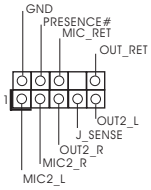



This connector allows you to receive stereo audio input from sound sources such as a CD-ROM, DVD-ROM, TV tuner card, or MPEG card.

### Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.11, No. 23)




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

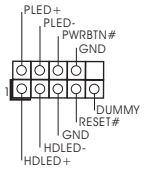
1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:

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.

**System Panel Header**

(9-pin PANEL1)

(see p.11, No. 19)

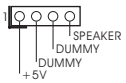



This header accommodates several system front panel functions.

**Chassis Speaker Header**

(4-pin SPEAKER 1)

(see p.11, No. 17)




Please connect the chassis speaker to this header.

**Power LED Header**

(3-pin PLED1)

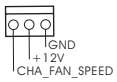
(see p.11 No. 20)

Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1 state. The LED is off in S3/S4 state or S5 state (power off).

**Chassis and NB Fan Connectors**

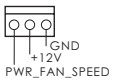
(3-pin CHA_FAN1)

(see p.11 No. 34)




(3-pin PWR_FAN1)

(see p.11 No. 18)

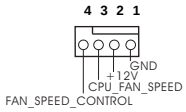



Please connect the fan cables to the fan connectors and match the black wire to the ground pin.

**CPU Fan Connector**

(4-pin CPU_FAN1)

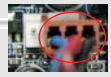
(see p.11, No. 35)




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.

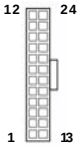
**Pin 1-3 Connected**



3-Pin Fan Installation

## ATX Power Connector

(24-pin ATXPWR1)
(see p.11, No. 7)




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. 2)

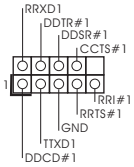
Please note that it is necessary to connect a power supply with ATX 12V plug to this connector. Failing to do so will cause power up failure.

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

## Serial port Header

(9-pin COM1)
(see p.11, No.21)




This COM1 header supports a serial port module.

HDMI_SPDIF Header

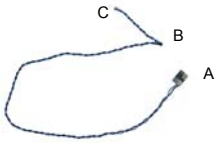
(3-pin HDMI_SPDIF1)

(see p.11 No. 24)

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

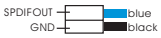
(Optional)



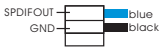

Please connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header on the motherboard. Then connect the white end (B or C) of HDMI_SPDIF cable to the HDMI_SPDIF connector of HDMI VGA card.

A. black end

B. white end (2-pin)




C. white end (3-pin)



## 2.7 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 18.

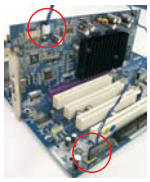
Step 2. Connect the black end (A) of HDMI_SPDIF cable to the HDMI_SPDIF header (HDMI_SPDIF1, yellow, see page 11, No. 24) on the motherboard.

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

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

white end (2-pin) (B)

white end (3-pin) (C)



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

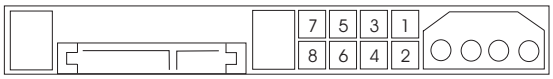
Step 4. Connect the HDMI output connector on HDMI VGA card to HDMI device, such as HDTV. Please refer to the user manual of HDTV and HDMI VGA card vendor for detailed connection procedures.

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

## 2.8 SATAII Hard Disk Setup Guide

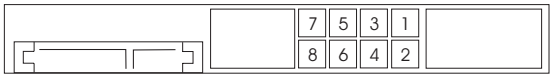
Before installing SATAII hard disk to your computer, please carefully read below SATAII hard disk setup guide. Some default setting of SATAII hard disks may not be at SATAII mode, which operate with the best performance. In order to enable SATAII function, please follow the below instruction with different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

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

This motherboard adopts NVIDIA® nForce 720D chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID 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.

If you plan to use RAID 0, RAID 1 or JBOD function, you need to install at least 2 SATA / SATAII hard disks. If you plan to use RAID 5 function, you need to install 3 SATA / SATAII hard disks. If you plan to use RAID 0+1 function, you need to install 4 SATA / SATAII hard disks.

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

This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII in RAID / AHCI mode. NVIDIA® nForce 720D 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 RAID1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.

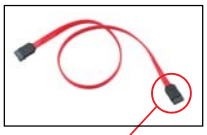
## 2.11 SATA / SATAII HDD Hot Plug Feature and Operation Guide

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

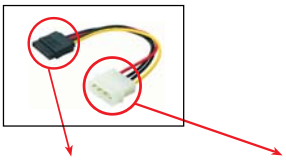
B. SATA power cable with SATA 15-pin power connector interface

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.

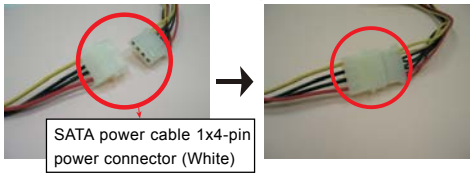
### Points of attention, before you process the Hot Plug:

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
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
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.

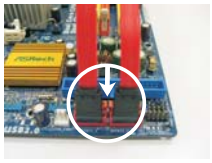
## How to Hot Plug a SATA / SATAII HDD:

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.



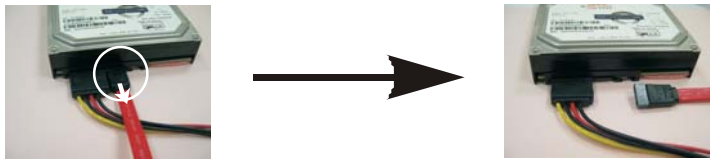
**Step 3** Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII HDD.

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

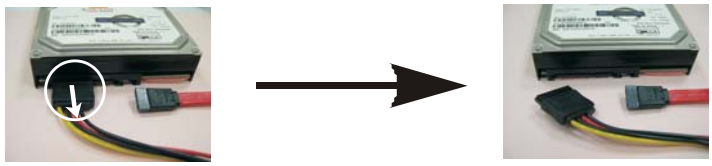
## How to Hot Unplug a SATA / SATAII HDD:

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.



## 2.12 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.

## 2.13 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below procedures according to the OS you install.

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

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

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

**STEP 1: Set Up BIOS.**

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

B. Set the "SATA Operation Mode" option to [AHCI].

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

A. Insert the ASRock Support CD into your optical drive to boot your system.

B. During POST at the beginning of system boot-up, press <F11> key, and then a window for boot devices selection appears. Please select CD-ROM as the boot device.

C. When you see the message on the screen, "Generate Serial ATA driver diskette [YN]?", press <Y>.

D. Then you will see these messages,

**Please choose:**

**1. Generate AHCI Driver diskette for WindowsXP**

**2. Generate RAID Driver diskette for WindowsXP**

**3. Generate AHCI Driver diskette for WindowsXP64**

**4. Generate RAID Driver diskette for WindowsXP64**

**5. Exit**

**Reboot system now**

**Press any key to continue**

Please insert a floppy diskette into the floppy drive. Select your required item on the list according to the mode you choose and the OS you install. Then press any key.

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

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

You can start to install Windows® XP / XP 64-bit 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 NVIDIA® AHCI driver. After reading the floppy disk, the drivers will be presented. Select the driver to install according to the OS you install. The drivers are as below:

***A. NVIDIA nForce Storage Controller (required) Windows XP***
***B. NVIDIA nForce Storage Controller (required) Windows XP64***

Please select A for Windows® XP in AHCI mode. Please select B for Windows® XP 64-bit in AHCI mode.

**Using SATA / SATAII HDDs without NCQ and Hot Plug functions**

**STEP 1: Set Up BIOS.**

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

B. Set the "SATA Operation Mode" option to [IDE].

**STEP 2: Install Windows® XP / XP 64-bit OS on your system.**

### 2.13.2 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit Without RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA / SATAII HDDs without RAID functions, please follow below steps.

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

**STEP 1: Set Up BIOS.**

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

B. Set the "SATA Operation Mode" option to [AHCI].

**STEP 2: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.**

Insert the Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® 7 / 7 64-bit / Vista™ / 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 NVIDIA® AHCI drivers. NVIDIA® AHCI drivers are in the following path in our Support CD:

**.. \ I386** (For Windows® Vista™ OS)
**.. \ AMD64** (For Windows® Vista™ 64-bit OS)
After that, please insert Windows® Vista™ / Vista™ 64-bit optical disk into the optical drive again to continue the installation.

**Using SATA / SATAII HDDs without NCQ and Hot Plug functions**

**STEP 1: Set Up BIOS.**
A. Enter BIOS SETUP UTILITY→ Advanced screen → Storage Configuration.
B. Set the "SATA Operation Mode" option to [IDE].
**STEP 2: Install Windows® Vista™ / Vista™ 64-bit OS on your system.**

## 2.14 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit With RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit on your SATA / SATAII HDDs with RAID functions, please follow below procedures according to the OS you install.

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

If you want to install Windows® XP / XP 64-bit on your SATA / SATAII HDDs with RAID functions, please follow below steps.
**STEP 1: Set Up BIOS.**
A. Enter BIOS SETUP UTILITY→ Advanced screen → Storage Configuration.
B. Set the "SATA Operation Mode" option to [RAID].
**STEP 2: Make a SATA / SATAII driver diskette.**
Please make a SATA / SATAII driver diskette by following section 2.13.1 step 2 on page 30.
**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 / XP 64-bit OS on your system.**
You can start to install Windows® XP / 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 NVIDIA® RAID driver. After reading the floppy disk, the drivers will be presented. Select the drivers to install. The drivers are as below:

***A. NVIDIA RAID Driver (required)***
***B. NVIDIA nForce Storage Controller (required)***

Please select A and B for Windows® XP / XP 64-bit in RAID mode. (There are two RAID drivers needed for RAID mode, you have to select them separately. Please specify the first RAID driver and then specify again for the second one.)

NOTE. If you install Windows® XP / 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] in BIOS first. Then, please set the RAID configuration by using the Windows RAID installation guide part of the document in the following path in the Support CD:
**.. \ RAID Installation Guide**

### 2.14.2 Installing Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit With RAID Functions

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA / SATAII HDDs with RAID functions, please follow below steps.

**STEP 1: Set Up BIOS.**

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

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

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

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

**.. \ RAID Installation Guide**

**STEP 3: Install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your system.**

Insert the Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit optical disk into the optical drive to boot your system, and follow the instruction to install Windows® 7 / 7 64-bit / Vista™ / 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 NVIDIA® RAID drivers. NVIDIA® RAID drivers are in the following path in our Support CD:

**.. \ I386** (For Windows® Vista™ OS)

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

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

NOTE. If you install Windows® 7 / 7 64-bit / Vista™ / 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**

## 2.15 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.

# 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> or <Del> during the Power-On-Self-Test (POST) to enter the BIOS SETUP UTILITY, otherwise, POST will continue with its test routines.

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

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

### 3.1.1 BIOS Menu Bar

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

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

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

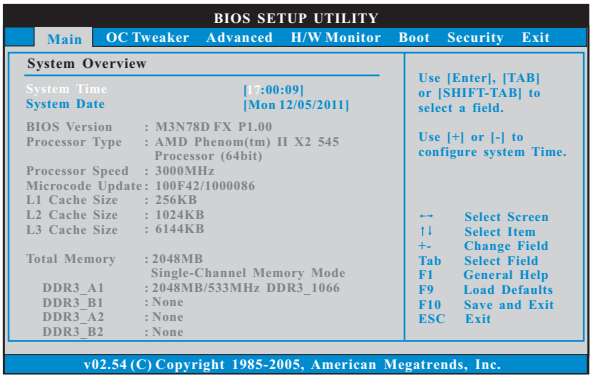
### 3.1.2 Navigation Keys

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

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

## 3.2 Main Screen

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




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

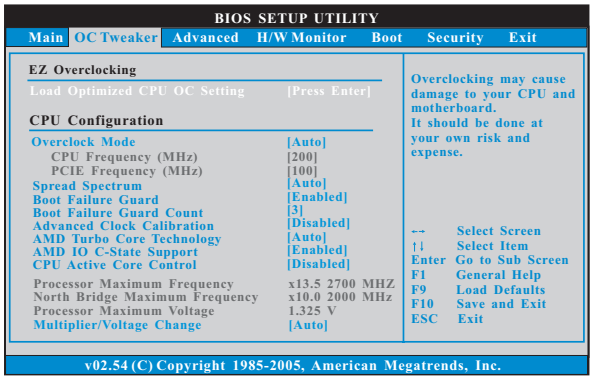
Use this item to specify the system time.

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

Use this item to specify the system date.

## 3.3 OC Tweaker Screen

In the OC Tweaker screen, you can set up overclocking features.




**EZ Overclocking**

**Load Optimized CPU OC Setting**

You can use this option to load the optiomized CPU overclocking setting. Please note that overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense.

**CPU Configuration**

**Overclock Mode**

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

**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.

**Boot Failure Guard Count**

Enable or disable the feature of Boot Failure Guard Count.

**Advanced Clock Calibration**

This allows you to adjust Advanced Clock Calibration feature. The default value is [Disabled]. Configuration options: [Disabled], [Auto], [All Cores] and [Per Core]. If you select [All Cores], you will see the option “Value (All Cores)”. Configuration options: [+12%] to [-12%]. If you select [Per Core], you will see the options “Value (Core 0)”, “Value (Core 1)”, “Value (Core 2)” and “Value (Core 3)”. Configuration options: [+12%] to [-12%].

**AMD Turbo Core Technology**

This item appears only when the processor you adopt supports this feature. Use this to select enable or disable AMD Turbo Core Technology. Confi guration options: [Auto] and [Disabled]. The default value is [Auto].

**AMD IO C-State Support**

This allows you to enable or disable AMD IO C-State Support. The default value is [Enabled].

**CPU Active Core Control**

This allows you to adjust CPU Active Core Control feature. The configuration options depend on the CPU core you adopt. The default value is [All Cores].

**Processor Maximum Frequency**

It will display Processor Maximum Frequency for reference.

**North Bridge Maximum Frequency**

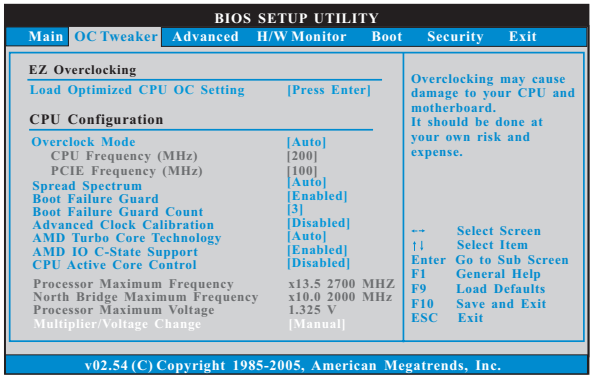
It will display North Bridge Maximum Frequency for reference.

**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.




**CPU Frequency Multiplier**

For safety and system stability, it is not recommended to adjust the value of this item.

**Processor Voltage**

It allows you to adjust the value of processor voltage. However, for safety and system stability, it is not recommended to adjust the value of this item.

**NB Frequency Multiplier**

For safety and system stability, it is not recommended to adjust the value of this item.

**HT Bus Speed**

This feature allows you selecting Hyper-Transport bus speed. Configuration options: [Auto], [x1 200MHz] to [x8 1600MHz].

**HT Bus Width**

This feature allows you selecting Hyper-Transport bus width. Configuraion options: [Auto], [8 Bit] and [16 Bit].

**Memory Configuration**

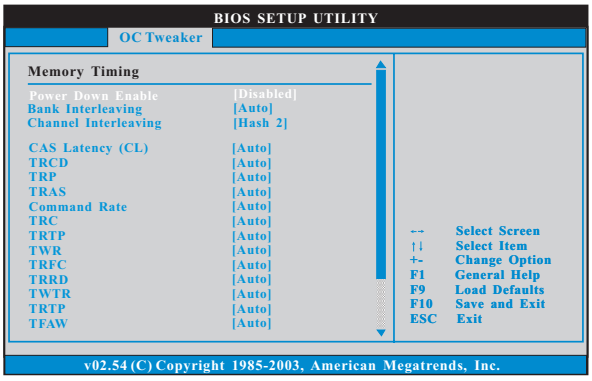
**Memory Clock**

This item can be set by the code using [Auto]. You can set one of the standard values as listed: [400MHz DDR3_800], [533MHz DDR3_1066], [667MHz DDR3_1333] and [800MHz DDR3_1600].

**DRAM Voltage**

Use this to select DRAM voltage. The default value is [Auto].

**Memory Timing**




**Power Down Enable**

Use this item to enable or disable DDR power down mode.

**Bank Interleaving**

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

**Channel Interleaving**

It allows you to enable Channel Memory Interleaving. Configuration options: [Disabled], [Address bits 6], [Address bits 12], [HASH 1] and [HASH 2]. The default value is [HASH 2].

**CAS Latency (CL)**

Use this item to adjust the means of memory accessing. The default value is [Auto].

**TRCD**

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

**TRP**

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

**TRAS**

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

**Command Rate**

Use this item to change Command Rate Auto/Manual setting. Min: 1N. Max: 2N. The default is [Auto].

**TRC**

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

**TRTP**

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

**TWR**

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

**TRFC**

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

**TRRD**

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

**TWTR**

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

**TRTP**

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

**TFAW**

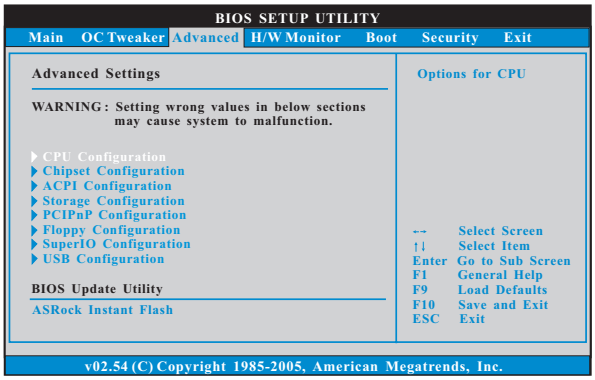
Use this to adjust TFAW values. The default value is [Auto].

**Would you like to save current setting user defaults?**

In this option, you are allowed to load and save three user defaults according to your own requirements.

## 3.4 Advanced Screen

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

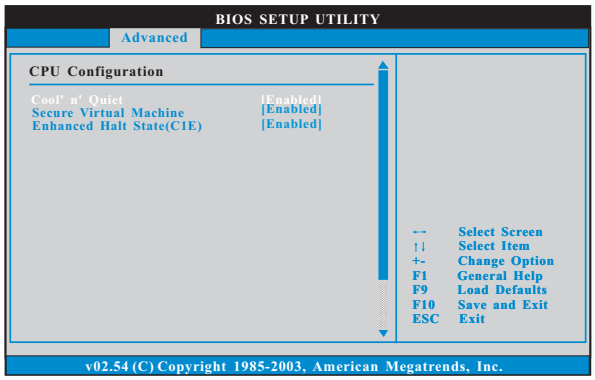



Setting wrong values in this section may cause the system to malfunction.

**ASRock Instant Flash**

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. If you execute ASRock Instant Flash utility, the utility will show the BIOS files and their respective information. Select the proper BIOS file to update your BIOS, and reboot your system after BIOS update process completes.

## 3.4.1 CPU Configuration




**Cool 'n' Quiet**

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Enabled]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® 7 / 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.

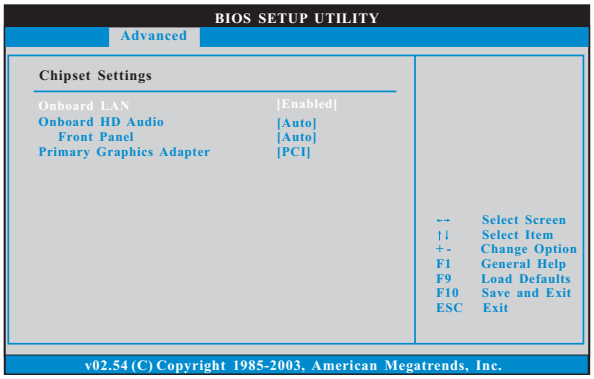
**Secure Virtual Machine**

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 (C1E)**

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.

### 3.4.2 Chipset Configuration




**Onboard LAN**

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

**Onboard HD Audio**

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

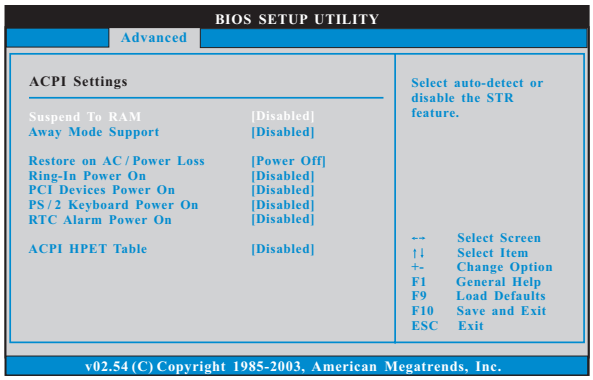
**Front Panel**

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

**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].

### 3.4.3 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.

**Check Ready Bit**

Use this item to enable or disable the feature Check Ready Bit.

**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.

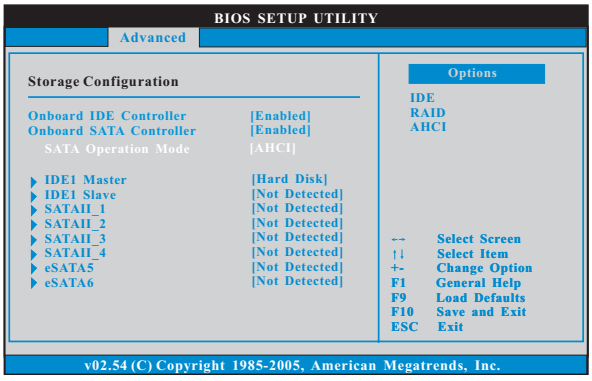
**RTC Alarm Power On**

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.

## 3.4.4 Storage Configuration




**Onboard IDE Controller**

Use this item to enable or disable the “Onboard IDE Controller” feature.

**Onboard SATA Controller**

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

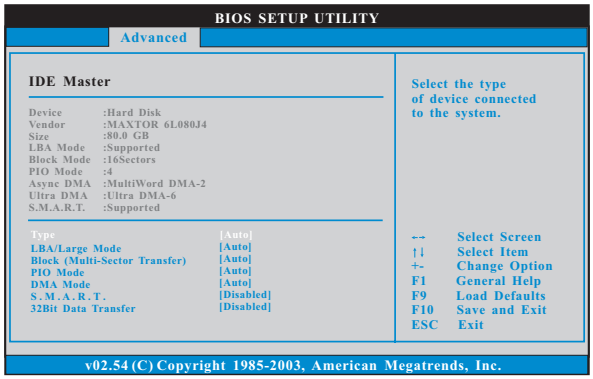
**SATA Operation Mode**

Use this item to adjust SATA Operation Mode. The default value of this option is [AHCI]. If you want to operate RAID function on SATA / SATAII HDDs, please select [RAID]. Configuration options: [IDE], [RAID] and [AHCI].

* If you select [RAID] mode, SATA / SATAII HDDs can not be accessed until you finish configuring RAID functions in NVIDIA BIOS / Windows RAID Utility.
* If you install OS on SATA / SATAII HDDs, please do not change the setting of this item after OS installation.

**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.

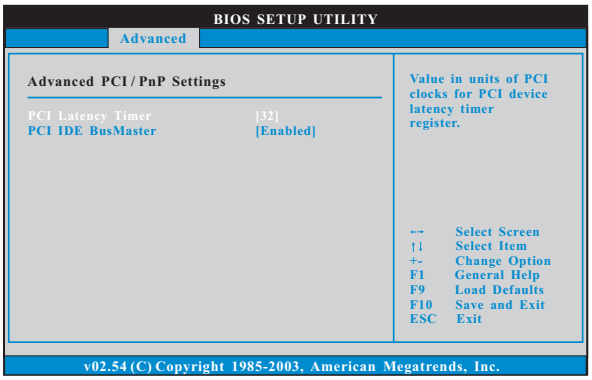
**S.M.A.R.T.**

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.

## 3.4.5 PCIPnP Configuration




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

**PCI Latency Timer**

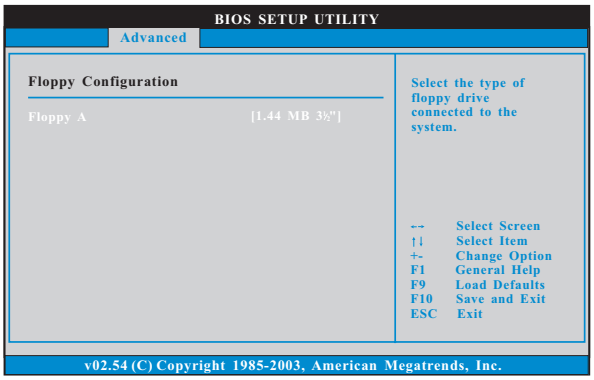
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards' specifications require other settings.

**PCI IDE BusMaster**

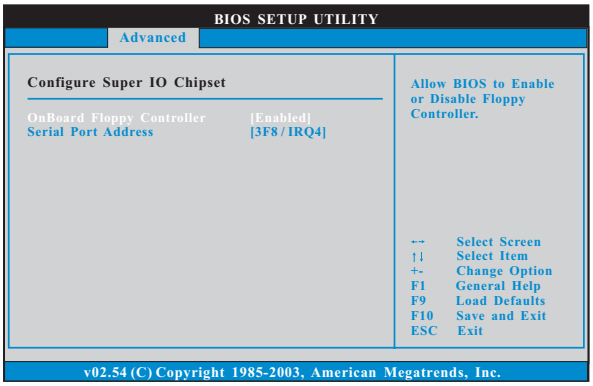
Use this item to enable or disable the PCI IDE BusMaster feature.

## 3.4.6 Floppy Configuration

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




## 3.4.7 Super IO Configuration



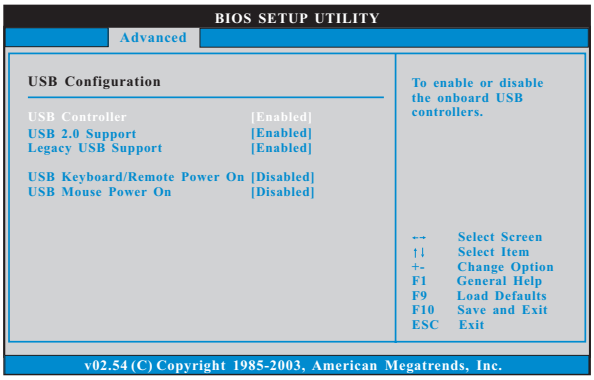

**OnBoard Floppy Controller**

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].

## 3.4.8 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 [Enabled]. 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.

**USB Keyboard/Remote Power On**

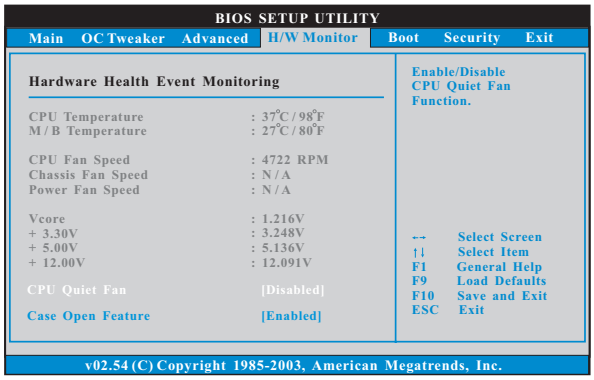
Use this item to enable or disable USB Keyboard/Remote Power On on the system.

**USB Mouse Power On**

Use this item to enable or disable USB Mouse Power On on the system.

## 3.5 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.




**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].

**Case Open Feature**

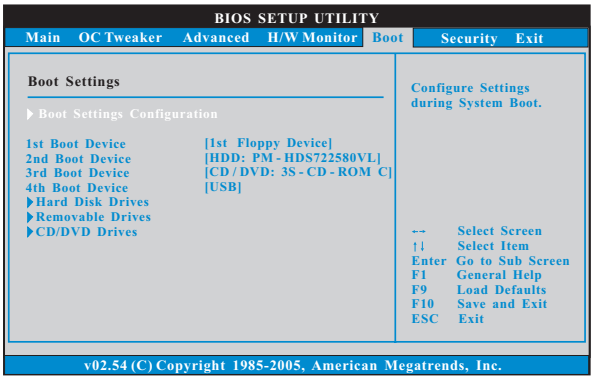
This allows you to enable or disable case open detection feature. The default is value [Enabled].

**Clear Status**

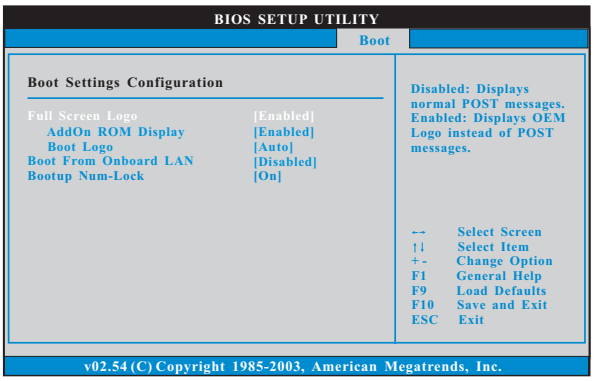
This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

## 3.6 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.




### 3.6.1 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], [PCIE2.0 Revolution], [Scenery] and [ASRock]. The default value is [Auto]. Currently, the option [Auto] is set to Aircraft.

**Boot From Onboard LAN**

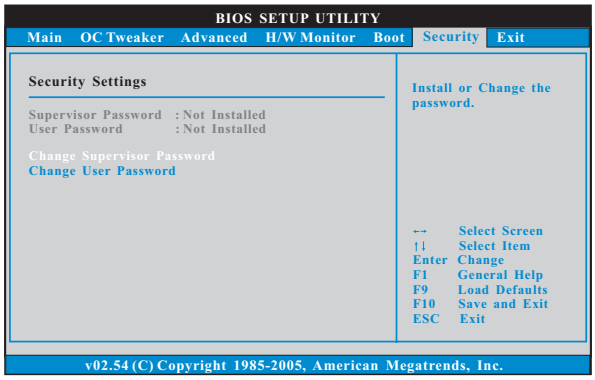
Use this item to enable or disable the Boot From Onboard LAN feature.

**Boot Up Num-Lock**

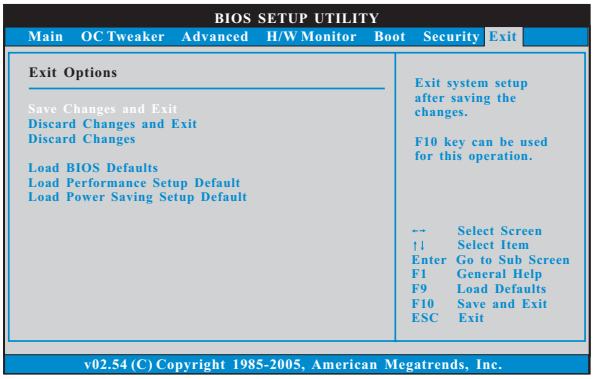
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

## 3.7 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.



## 3.8 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 BIOS Defaults**

Load BIOS default values for all the setup questions. F9 key can be used for this operation.

**Load Performance Setup Default**

This performance setup default may not be compatible with all system configurations. If system boot failure occurs after loading, please resume optimal default settings. F5 key can be used for this operation.

**Load Power Saving Setup Default**

Load power saving setup default. F6 key can be used for this operation.

# 4. Software Support

## 4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP Media Center / XP 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.