970DE3/U3S3

User Manual

Version 1.0
Published March 2012

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

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

ASRock Website: http://www.asrock.com

Contents

1. Introduction

Thank you for purchasing ASRock ***970DE3/U3S3*** 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 ***970DE3/U3S3*** Motherboard
(ATX Form Factor: 12.0-in x 7.5-in, 30.5 cm x 19.1 cm)
ASRock ***970DE3/U3S3*** Quick Installation Guide
ASRock ***970DE3/U3S3*** Support CD
2 x Serial ATA (SATA) Data Cables (Optional)
1 x I/O Panel Shield

ASRock Reminds You...

To get better performance in Windows® 7 / 7 64-bit / Vista™ / Vista™ 64 bit, it is recommended to set the BIOS option in Storage Configuration to AHCI mode. For the BIOS setup, please refer to the "User Manual" in our support CD for details.

1.2 Specifications

Platform	- ATX Form Factor: 12.0-in x 7.5-in, 30.5 cm x 19.1 cm - All Solid Capacitor design
CPU	- Support for Socket AM3+ processors - Support for Socket AM3 processors: AMD Phenom™ II X6 / X4 / X3 / X2 (except 920 / 940) / Athlon II X4 / X3 / X2 / Sempron processors - Supports 8-Core CPU - Digi Power Design - Supports CPU up to 140W - Supports AMD OverDrive™ with ACC feature (Advanced Clock Calibration) - Supports AMD's Cool 'n' Quiet™ Technology - FSB 2600 MHz (5.2 GT/s) - Supports Untied Overclocking Technology (see **CAUTION 1**) - Supports Hyper-Transport 3.0 (HT 3.0) Technology
Chipset	- Northbridge: AMD 770 - Southbridge: AMD SB710
Memory	- Dual Channel DDR3 Memory Technology (see **CAUTION 2**) - 4 x DDR3 DIMM slots - Support DDR3 1866(OC)/1600(OC)/1333/1066/800 non-ECC, un-buffered memory (see **CAUTION 3**) - Max. capacity of system memory: 32GB (see **CAUTION 4**)
Expansion Slot	- 1 x PCI Express 2.0 x16 slot (PCIE3 @ x16 mode) - 3 x PCI Express 2.0 x1 slots - 2 x PCI slots
Audio	- 5.1 CH HD Audio (Realtek ALC662 Audio Codec) - Supports THX TruStudio™
LAN	- PCIE x1 Gigabit LAN 10/100/1000 Mb/s - Realtek RTL8111E - Supports Wake-On-LAN - Supports LAN Cable Detection - Supports Energy Efficient Ethernet 802.3az - Supports PXE
Rear Panel I/O	I/O Panel - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 4 x Ready-to-Use USB 2.0 Ports - 2 x Ready-to-Use USB 3.0 Ports

	- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jack: Line in / Front Speaker / Microphone
SATA3	- 2 x SATA3 6.0 Gb/s connectors by ASMedia ASM1061, support NCQ, AHCI and “Hot Plug” functions
USB 3.0	- 2 x USB 3.0 ports by ASMedia ASM1042, support USB 1.0/2.0/3.0 up to 5Gb/s
Connector	- 6 x SATA2 3.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10 and JBOD), NCQ, AHCI and “Hot Plug” functions - 2 x SATA3 6.0Gb/s connectors - 1 x ATA133 IDE connector (supports 2 x IDE devices) - 1 x Floppy connector - 1 x IR header - 1 x HDMI_SPDIF header - 1 x Power LED header - CPU/Chassis/Power FAN connector - 24 pin ATX power connector - 8 pin 12V power connector - CD in header - Front panel audio connector - 3 x USB 2.0 headers (support 6 USB 2.0 ports)
BIOS Feature	- 8Mb AMI Legal BIOS - Supports “Plug and Play” - ACPI 1.1 Compliance Wake Up Events - Supports jumperfree - SMBIOS 2.3.1 Support - CPU, VCCM, NB Voltage Multi-adjustment
Support CD	- Drivers, Utilities, AntiVirus Software (Trial Version), AMD OverDrive™ Utility, CyberLink MediaEspresso 6.5 Trial, ASRock MAGIX Multimedia Suite - OEM
Unique Feature	- ASRock OC Tuner (see **CAUTION 5**) - ASRock Intelligent Energy Saver (see **CAUTION 6**) - ASRock Instant Boot - ASRock Instant Flash (see **CAUTION 7**) - ASRock OC DNA (see **CAUTION 8**) - ASRock APP Charger (see **CAUTION 9**) - ASRock SmartView (see **CAUTION 10**) - ASRock XFast USB (see **CAUTION 11**) - ASRock XFast LAN (see **CAUTION 12**) - ASRock XFast RAM (see **CAUTION 13**)

	- Hybrid Booster: - CPU Frequency Stepless Control (see **CAUTION 14**) - ASRock U-COP (see **CAUTION 15**) - Boot Failure Guard (B.F.G.)
Hardware Monitor	- CPU Temperature Sensing - Chassis Temperature Sensing - CPU/Chassis/Power Fan Tachometer - CPU Quiet Fan - CPU/Chassis/Power Fan Multi-Speed Control - Voltage Monitoring: +12V, +5V, +3.3V, Vcore
OS	- Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP Media Center / XP 64-bit compliant
Certifications	- FCC, CE, WHQL - ErP/EuP Ready (ErP/EuP ready power supply is required) (see **CAUTION 16**)

* 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.

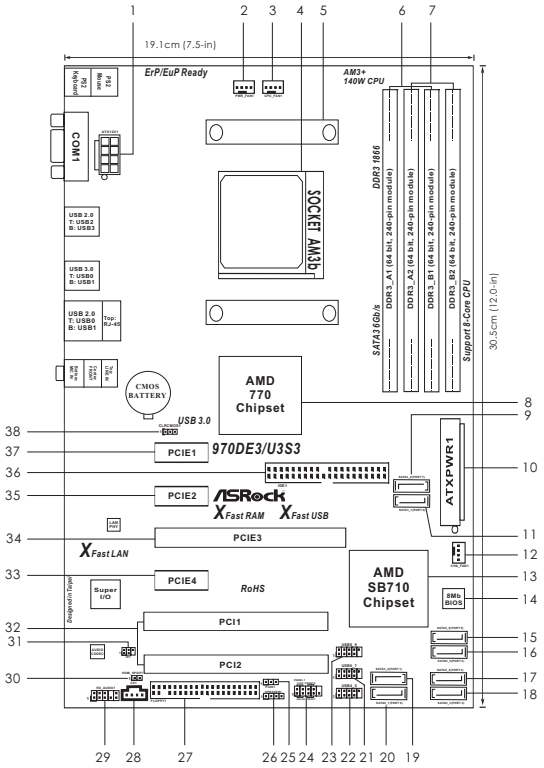
CAUTION!

1. This motherboard supports Untied Overclocking Technology. Please read "Untied Overclocking Technology" on page 31 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 1866/1600MHz memory speed is supported depends on the AM3/AM3+ CPU you adopt. If you want to adopt DDR3 1866/1600 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® 64-bit OS with 64-bit CPU, there is no such limitation.
5. 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
6. 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
7. 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.

8. 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.
9. 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
10. ASRock 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 ASRock SmartView utility that helps you keep in touch with friends on-the-go. To use ASRock 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
11. ASRock XFast USB can boost USB storage device performance. The performance may depend on the property of the device.
12. 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.
13. ASRock XFast RAM fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

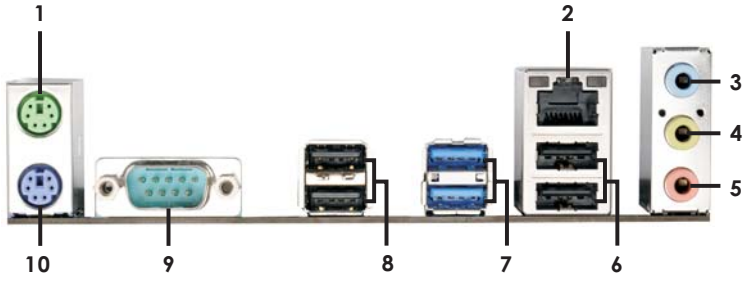
14. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU.
15. While CPU overheat is detected, the system will automatically shutdown. Before 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.
16. 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	ATX 12V Power Connector (ATX12V1)	19	SATA2 Connector (SATA2_2 (PORT 1), Black)
2	Power Fan Connector (PWR_FAN1)	20	SATA2 Connector (SATA2_1 (PORT 1), Black)
3	CPU Fan Connector (CPU_FAN1)	21	USB 2.0 Header (USB6_7, Black)
4	AM3+ CPU Socket	22	USB 2.0 Header (USB4_5, Black)
5	CPU Heatsink Retention Module	23	USB 2.0 Header (USB8_9, Black)
6	2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1; Black)	24	System Panel Header (PANEL1, Black)
		25	Power LED Header (PLED1)
7	2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A2, DDR3_B2; Black)	26	Chassis Speaker Header (SPEAKER 1, Black)
		27	Floppy Connector (FLOPPY1)
8	Northbridge Controller	28	Internal Audio Connector: CD1 (Black)
9	SATA3 Connector (SATA3_2 (PORT 7), Gray)	29	Front Panel Audio Header (HD_AUDIO1, Black)
10	ATX Power Connector (ATXPWR1)	30	HDMI_SPDIF Header (HDMI_SPDIF1, Black)
11	SATA3 Connector (SATA3_1 (PORT 6), Gray)	31	Infrared Module Header (IR1)
12	Chassis Fan Connector (CHA_FAN1)	32	PCI Slots (PCI1-2)
13	Southbridge Controller	33	PCI Express 2.0 x1 Slot (PCIE4; Black)
14	SPI Flash Memory (8Mb)	34	PCI Express 2.0 x16 Slot (PCIE3; Black)
15	SATA2 Connector (SATA2_6 (PORT 5), Black)	35	PCI Express 2.0 x1 Slot (PCIE2; Black)
16	SATA2 Connector (SATA2_5 (PORT 4), Black)	36	IDE1 Connector (IDE1, Black)
17	SATA2 Connector (SATA2_4 (PORT 3), Black)	37	PCI Express 2.0 x1 Slot (PCIE1; Black)
18	SATA2 Connector (SATA2_3 (PORT 2), Black)	38	Clear CMOS Jumper (CLRCMOS1)

1.4 I/O Panel

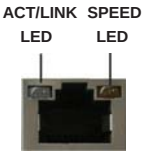


1	PS/2 Mouse Port (Green)	6	USB 2.0 Ports (USB01)
* 2	LAN RJ-45 Port	7	USB 3.0 Port (USB01)
3	Line In (Light Blue)	8	USB 2.0 Ports (USB23)
** 4	Front Speaker (Lime)	9	Serial Port: COM1
5	Microphone (Pink)	10	PS/2 Keyboard Port (Purple)

* 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		SPEED LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection



LAN Port

** To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. Please refer to below steps for the software setting of Multi-Streaming.

For Windows® XP:

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” or “4CH” and then you are allowed to select “Realtek HDA Primary output” to use Rear Speaker and Front Speaker, or select “Realtek HDA Audio 2nd output” to use front panel audio. Then reboot your system.

For Windows® 7 / Vista™:

After restarting your computer, please double-click “Realtek HD Audio Manager” on the system tray. Set “Speaker Configuration” to “Quadraphonic” or “Stereo”. Click “Device advanced settings”, choose “Make front and rear output devices playbacks two different audio streams simultaneously”, and click “ok”. Then reboot your system.

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

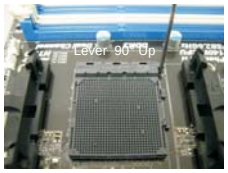
Step 1. Unlock the socket by lifting the lever up to a 90° angle.

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.

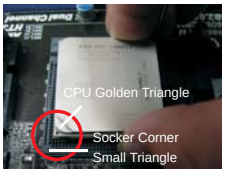
Step 3. Carefully insert the CPU into the socket until it fits in place.

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 12, No. 3). 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. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel** (DDR3_A1 and DDR3_B1; Black slots; see p.12 No.6) or **identical** DDR3 DIMM pair in **Dual Channel** (DDR3_A2 and DDR3_B2; Black slots; see p.12 No.7), 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 (Black Slot)	DDR3_A2 (Black Slot)	DDR3_B1 (Black Slot)	DDR3_B2 (Black 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. Please install the memory module into the slots DDR3_A2 and DDR3_B2 for the first priority.
2. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them either in the set of slots DDR3_A1 and DDR3_B1, or in the set of slots DDR3_A2 and DDR3_B2.
3. 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.
4. 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 .
5. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
6. If you adopt DDR3 1866/1600 memory modules on this motherboard, it is recommended to install them on DDR3_A2 and DDR3_B2 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 2 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 / PCIE2 / PCIE4 (PCIE x1 slot; Black) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card and SATA2 card.

PCIE3 (PCIE x16 slot; Black) is used for PCI Express 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.

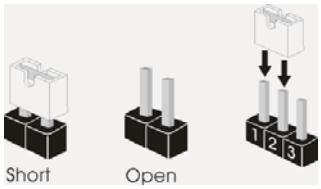
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

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.



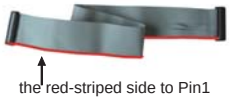
Jumper	Setting	Description
Clear CMOS Jumper (CLRCMOS1) (see p.12, No. 38)	1_2 Default; 2_3 Clear CMOS	

Note: CLRCMOS1 allows you to clear the data in CMOS. 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. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

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!

FDD connector
(33-pin FLOPPY1)
(see p.12 No. 27)



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

Primary IDE connector (Black)
(39-pin IDE1, see p.12 No. 36)

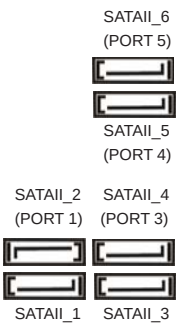
connect the blue end to the motherboard

connect the black end to the IDE devices

80-conductor ATA 66/100/133 cable

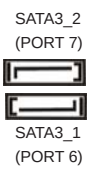
Note: Please refer to the instruction of your IDE device vendor for the details.

Serial ATA2 Connectors
(SATAII_1 (PORT 0): see p.12, No. 20)
(SATAII_2 (PORT 1): see p.12, No. 19)
(SATAII_3 (PORT 2): see p.12, No. 18)
(SATAII_4 (PORT 3): see p.12, No. 17)
(SATAII_5 (PORT 4): see p.12, No. 16)
(SATAII_6 (PORT 5): see p.12, No. 15)



These six Serial ATA2 (SATA2) connectors support SATA data cables for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

Serial ATA3 Connectors
(SATA3_1 (PORT 6): see p.12, No. 11)
(SATA3_2 (PORT 7): see p.12, No. 9)

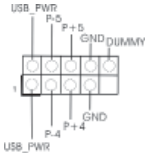


These two Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate.

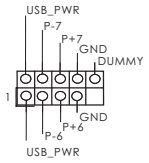
Serial ATA (SATA) Data Cable
(Optional)

Either end of the SATA data cable can be connected to the SATA / SATA2 / SATA3 hard disk or the SATA3 connector on this motherboard.

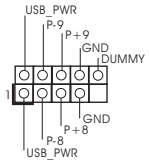
USB 2.0 Headers
(9-pin USB4_5)
(see p.12 No. 22)



(9-pin USB6_7)
(see p.12 No. 21)

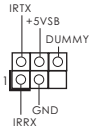


(9-pin USB8_9)
(see p.12 No. 23)



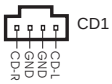
Besides four default USB 2.0 ports on the I/O panel, there are three USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

Infrared Module Header
(5-pin IR1)
(see p.12 No. 31)



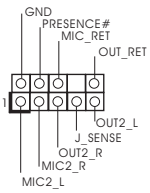
This header supports an optional wireless transmitting and receiving infrared module.

Internal Audio Connectors
(4-pin CD1)
(CD1: see p.12 No. 28)



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

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.12 No. 29)



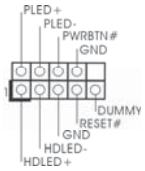
This is an interface for the front panel audio cable that allows convenient connection and control of audio devices.

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. To activate the front mic.
      For Windows® XP / XP 64-bit OS:
      Select "Mixer". Select "Recorder". Then click "FrontMic".
      For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:
      Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

System Panel Header

(9-pin PANEL1)

(see p.12 No. 24)



This header accommodates several system front panel functions.

Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

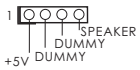
PWRBTN (Power Switch):
Connect to the power switch on the chassis front panel. You may configure the way to turn off your system using the power switch.
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.
PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the sys-tem is in S1 sleep state. The LED is off when the system is in S3/S4 sleep state or powered off (S5).
HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.12 No. 26)



Please connect the chassis speaker to this header.

Power LED Header

(3-pin PLED1)

(see p.12 No. 25)

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).

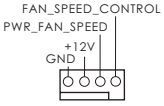
Chassis and Power Fan Connectors

(4-pin CHA_FAN1)

(see p.12 No. 12)

(4-pin PWR_FAN1)

(see p.12 No. 2)

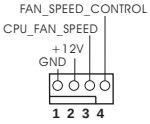


Please connect the fan cables to the fan connectors and match the black wire to the ground pin.

CPU Fan Connectors

(4-pin CPU_FAN1)

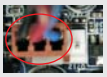
(see p.12 No. 3)



Please connect the CPU fan cable to the 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

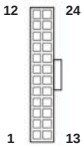


3-Pin Fan Installation

ATX Power Connector

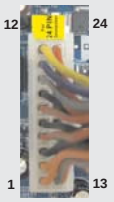
(24-pin ATXPWR1)

(see p.12 No. 10)



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.12 No. 1)

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

HDMI_SPDIF Header

(2-pin HDMI_SPDIF1)

(see p.12 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.

2.7 Serial ATA2 (SATA2) / Serial ATA3 (SATA3) Hard Disks Installation

This motherboard adopts AMD SB710 chipset that supports Serial ATA2 (SATA2) hard disks and RAID (RAID 0, RAID 1, RAID 10 and JBOD) functions. It also adopts ASMedia ASM1061 chipset that supports Serial ATA3 (SATA3) hard disks. You may install SATA2 / SATA3 hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA2 / SATA3 hard disks.

STEP 1: Install the SATA2 / SATA3 hard disks into the drive bays of your chassis.
STEP 2: Connect the SATA power cable to the SATA2 / SATA3 hard disk.
STEP 3: Connect one end of the SATA data cable to the motherboard's SATA2 / SATA3 connector.
STEP 4: Connect the other end of the SATA data cable to the SATA2 / SATA3 hard disk.

Please be noted that SATA3 connectors do not support RAID function. If you want to use RAID function, please use SATA2 connectors.

2.8 Hot Plug and Hot Swap Functions for SATA2 / SATA3 HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA2 / SATA3 in RAID / AHCI mode. AMD SB710 and ASMedia ASM1061 chipsets provide hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

NOTE

What is Hot Plug Function?

If the SATA2 / SATA3 HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA2 / SATA3 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 SATA2 / SATA3 HDD.

What is Hot Swap Function?

If SATA2 HDDs are built as RAID 1 then it is called "Hot Swap" for the action to insert and remove the SATA2 HDDs while the system is still power-on and in working condition.

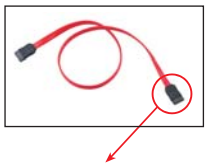
2.9 SATA / SATAII HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA / SATAII HDD in RAID / AHCI mode. Please read below operation guide of 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

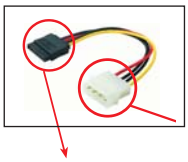
B. SATA power cable with SATA 15-pin power connector interface

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.

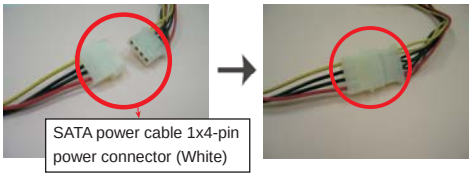
Points of attention, before you process the Hot Plug:

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.

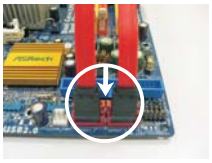
How to Hot Plug a SATA / SATAII HDD:

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.



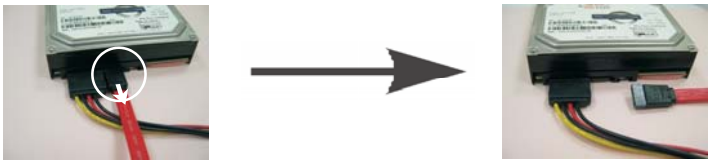
Step *3* Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII HDD.

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

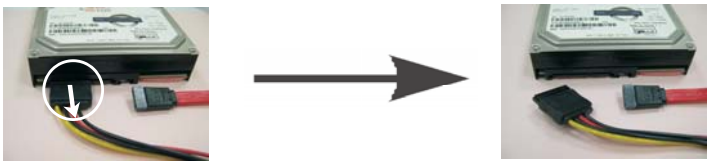
How to Hot Unplug a SATA / SATAII HDD:

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.



2.10 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.

2.11 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 a RAID disk composed of 2 or more SATA / SATA2 HDDs with RAID functions, please follow below procedures according to the OS you install.

2.11.1 Installing Windows® XP / XP 64-bit With RAID Functions

If you want to install Windows® XP / XP 64-bit on a RAID disk composed of 2 or more SATA / SATA2 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 / SATA2 Driver Diskette.

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

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

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

D. Then you will see these messages,

Please insert a diskette into the floppy drive.
WARNING! Formatting the floppy diskette will lose ALL data in it!
Start to format and copy files [YN]?
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 / SATA2 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 / XP 64-bit OS on your system.

After step 1, 2, 3, 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 SSATA / SATA2 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.

2.11.2 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 a RAID disk composed of 2 or more SATA / SATA2 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: 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.

2.12 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 OS on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow below procedures according to the OS you install.

2.12.1 Installing Windows® XP / XP 64-bit Without RAID Functions

If you want to install Windows® XP / XP 64-bit on your SATA / SATA2 / SATA3 HDDs without RAID functions, please follow below steps.

Using SATA / SATA2 / SATA3 HDDs with NCQ and Hot Plug functions (AHCI mode)

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → Storage Configuration.
B. Set the "SATA Operation Mode" option to [AHCI] for SATA2 ports.
Set the "Onboard SATA3 Operation Mode" option to [AHCI] for SATA3 ports.

STEP 2: 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 AHCI driver. When prompted, insert the SATA / SATA2 / SATA3 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.

Using SATA / SATA2 / SATA3 HDDs without NCQ and Hot Plug functions (IDE mode)

STEP 1: Set up BIOS.

A. Enter BIOS SETUP UTILITY → Advanced screen → Storage Configuration.
B. Set the "SATA Operation Mode" option to [IDE] for SATA2 ports.
Set the "Onboard SATA3 Operation Mode" option to [IDE] for SATA3 ports.

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

2.12.2 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 / SATA2 / SATA3 HDDs without RAID functions, please follow below steps.

Using SATA / SATA2 / SATA3 HDDs with NCQ and Hot Plug functions (AHCI mode)

STEP 1: Set up BIOS.

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

B. Set the "SATA Operation Mode" option to [AHCI] for SATA2 ports.
Set the "Onboard SATA3 Operation Mode" option to [AHCI] for SATA3 ports.

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

Using SATA / SATA2 / SATA3 HDDs without NCQ and Hot Plug functions (IDE mode)

STEP 1: Set up BIOS.

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

B. Set the "SATA Operation Mode" option to [IDE] for SATA2 ports.
Set the "Onboard SATA3 Operation Mode" option to [IDE] for SATA3 ports.

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

2.13 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 [Manual]. 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.

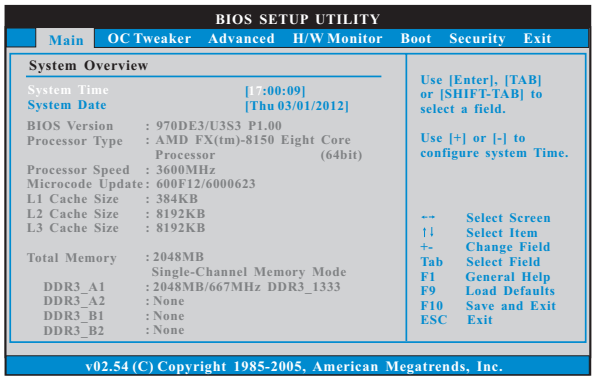
3.1.2 Navigation Keys

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]

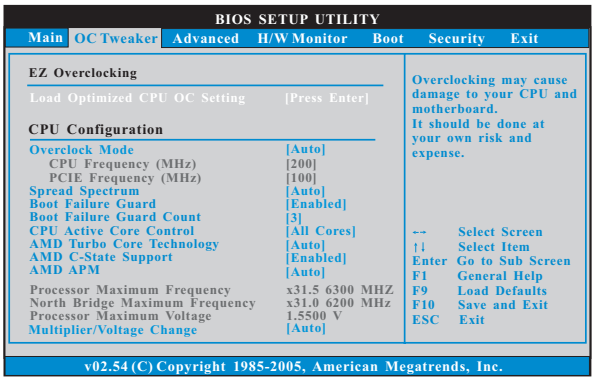
Use this item to specify the system time.

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 optimized CPU overclocking setting. Please note that overclocing 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. Configuration options: [Auto] and [Manual]. The default value is [Auto].

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

Use this item to configure Boot Failure Guard Count.

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].

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

AMD C-State Support

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

Processor Maximum Frequency

It will display Processor Maximum Frequency for reference.

North Bridge Maximum Frequency

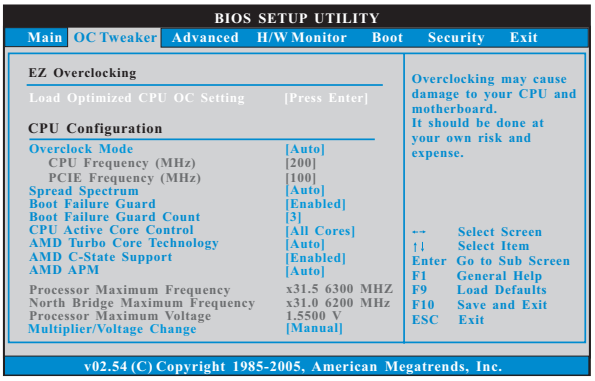
It will display North Bridge Maximum Frequency for reference.

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.

CPU Voltage

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

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

CPU NB Voltage

It allows you to adjust the value of CPU NB voltage. However, 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. The default value is [Auto].

HT Bus Width

This feature allows you selecting Hyper-Transport bus width. The default value is [Auto].

Memory Configuration

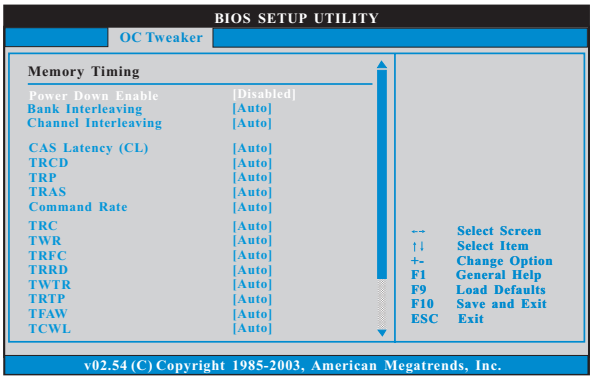
Memory Clock

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 Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assigns appropriate frequency automatically.

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], [Auto]. The default value is [Auto].

CAS Latency (CL)

Use this item to change CAS Latency (CL) Auto/Manual setting. The default is [Auto].

TRCD

Use this item to change TRCD Auto/Manual setting. The default is [Auto].

TRP

Use this item to change TRP Auto/Manual setting. The default is [Auto].

TRAS

Use this item to change TRAS Auto/Manual setting. The default is [Auto].

Command Rate

Use this item to change Command Rate Auto/Manual setting. The default is [Auto].

TRC

Use this item to change TRC Auto/Manual setting. The default is [Auto].

TWR

Use this item to change TWR Auto/Manual setting. The default is [Auto].

TRFC

Use this item to change TRFC Auto/Manual setting. The default is [Auto].

TRRD

Use this item to change TRRD Auto/Manual setting. The default is [Auto].

TWTR

Use this item to change TWTR Auto/Manual setting. The default is [Auto].

TRTP

Use this item to change TRTP Auto/Manual setting. The default is [Auto].

TFAW

Use this item to change TFAW Auto/Manual setting. The default is [Auto].

TCWL

Use this item to change TCWL Auto/Manual setting. The default is [Auto].

Chipset Settings

NB Voltage

Use this to select NB Voltage. The default value is [Auto].

SB Voltage

Use this to select SB Voltage. The default value is [Auto].

+1.8V Power Voltage

Use this to select +1.8V Power Voltage. The default value is [Auto].

+1.4V Voltage

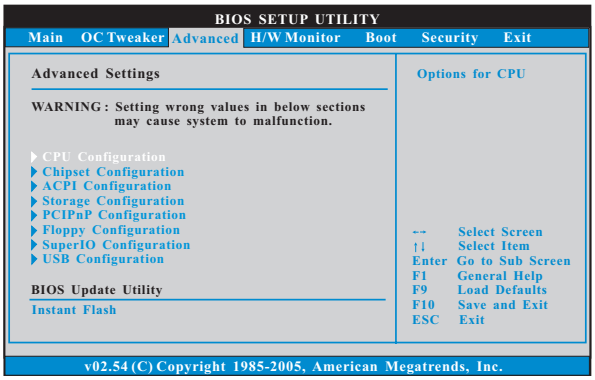
Use this to select +1.4V Voltage. The default value is [Auto].

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, PCPPnP Configuration, Floppy Configuration, Super IO Configuration and USB Configuration.

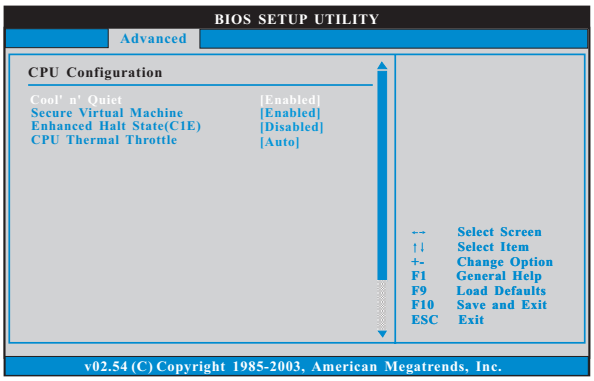


Setting wrong values in this section may cause the system to malfunction.

Instant Flash

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 Instant Flash utility, the utility will show the BIOS files and their respective information. Select the proper UEFI 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: [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].

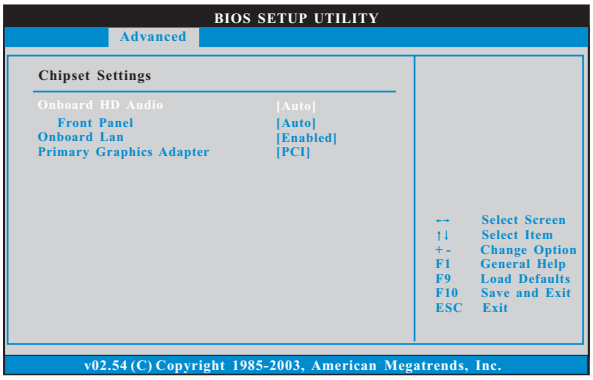
Enhance Halt State (C1E)

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.

CPU Thermal Throttle

Use this item to enable CPU internal thermal control mechanism to keep the CPU from overheated. The default value is [Auto].

3.4.2 Chipset Configuration



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.

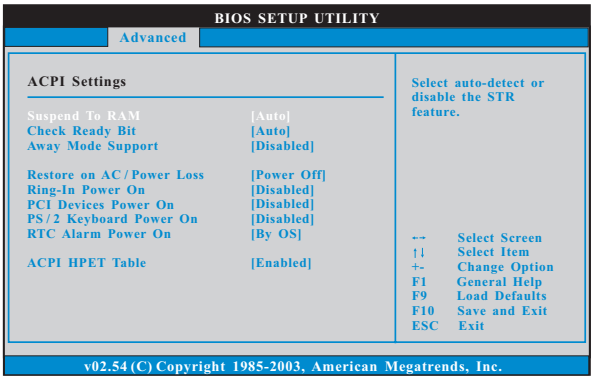
Onboard Lan

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].

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.

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.

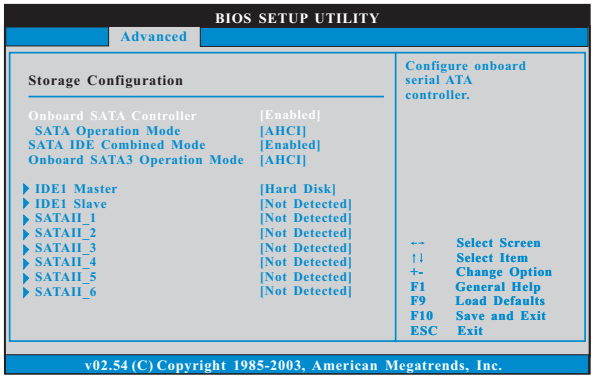
RTC Alarm Power On

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 [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certification.

3.4.4 Storage Configuration



Onboard SATA Controller

This item is for SATA2 ports. Use this item to enable or disable the "Onboard SATA Controller" feature.

SATA Operation Mode

This item is for SATA2 ports. Use this item to adjust Onboard SATA Operation Mode. The default value of this option is [AHCI]. Configuration options: [AHCI], [IDE] and [RAID].

If you set this item to RAID mode, it is suggested to install SATA ODD driver on SATAII_5 (PORT 4) and SATAII_6 (PORT 5) ports.

SATA IDE Combined Mode

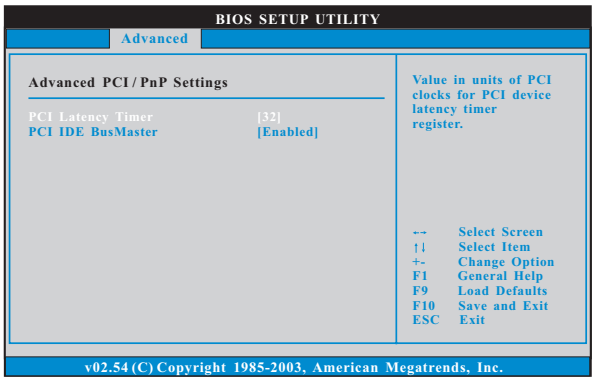
This item is for SATAII_5 (PORT 4) and SATAII_6 (PORT 5) ports. Use this item to enable or disable SATA IDE combined mode. The default value is [Enabled].

If you want to build RAID on SATAII_5 (PORT 4) and SATAII_6 (PORT 5 ports, please disable this item.

Onboard SATA3 Operation Mode

This item is for SATA3 ports. Use this item to adjust Onboard SATA3 Operation Mode. The default value of this option is [AHCI]. Configuration options: [IDE], [AHCI] and [Disabled].

3.4.5 PCIPnP Configuration



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

PCI Latency Timer

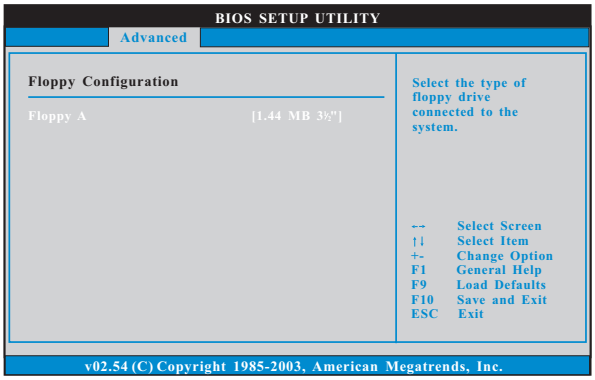
The default value is 32. It is recommended to keep the default value unless the installed PCI expansion cards?specifications require other settings.

PCI IDE BusMaster

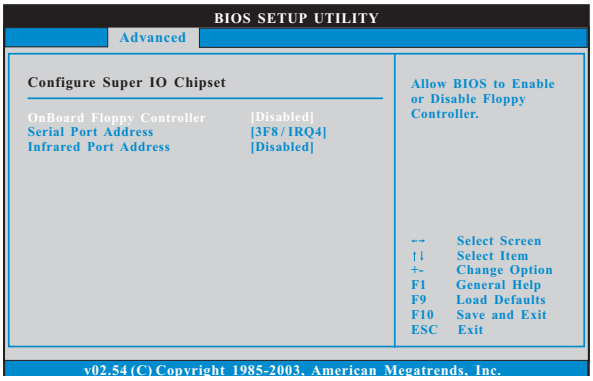
Use this item to enable or disable the PCI IDE BusMaster feature.

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

Use this item to enable or disable the onboard serial port.

Serial Port Address

Use this item to set the address for the onboard serial port. Configuration options: [3F8h / IRQ4] and [3E8h / IRQ4].

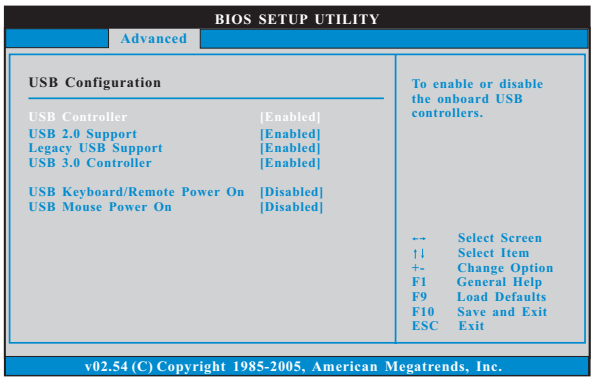
Infrared Port

Use this item to enable or disable the onboard infrared port.

Infrared Port Address

Use this item to set the address for the onboard infrared port.Configuration options: [2F8h / IRQ3] and [2E8h / 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 option to enable or disable support for USB 2.0 devices. The default value is [Enabled].

Legacy USB Support

Use this option to select legacy support for USB devices. There are four confi guration 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 3.0 Controller

Use this item to enable or disable the use of USB 3.0 controller.

USB Keyboard/Remote Power On

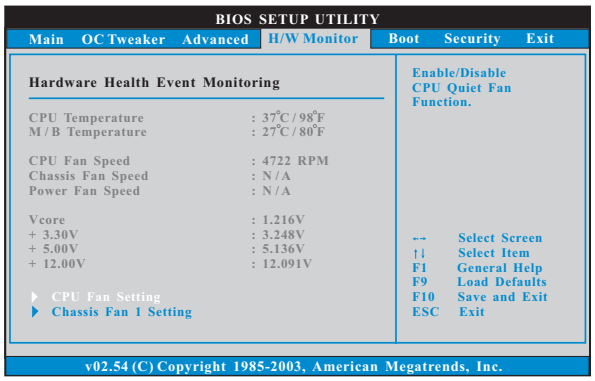
Use this item to enable or disable the system to wake from S5 using USB Keyboard/Remote.

USB Mouse Power On

Use this item to enable or disable the system to wake from S5 using USB Mouse.

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 Fan Setting

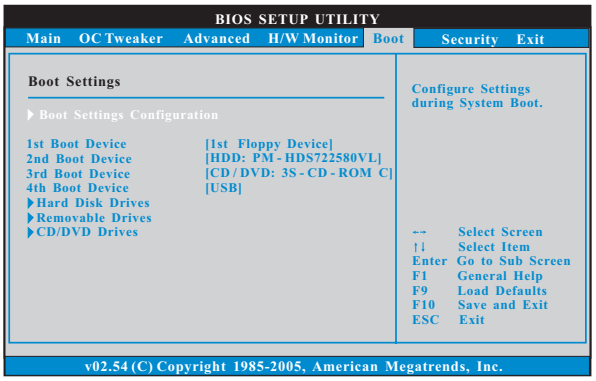
This allows you to set the CPU fan speed. Confi guration options: [Full On] and [Automatic Mode]. The default is value [Full On].

Chassis Fan 1 Setting

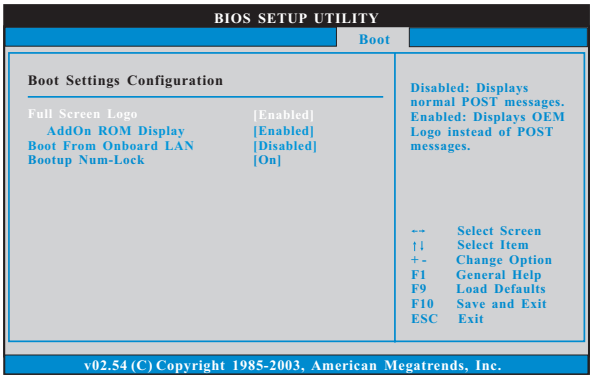
This allows you to set the chassis fan 1 speed. Confi guration options: [Full On], [Manual Mode] and [Automatic Mode]. The default is value [Full On].

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 From Onboard LAN

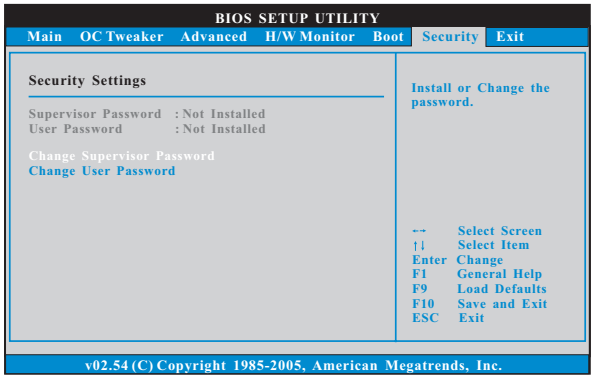
Use this item to enable or disable the Boot From Onboard LAN feature.

Bootup Num-Lock

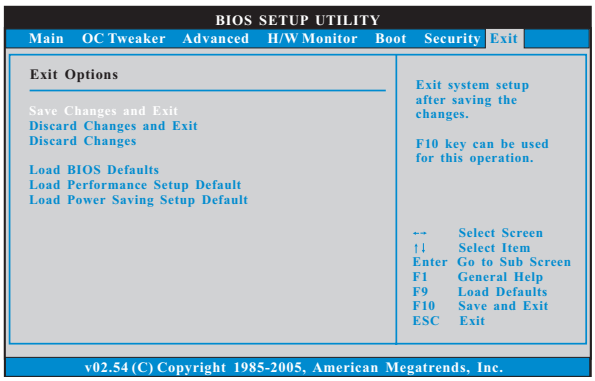
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

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.