



N68-GS4/USB3 FX R2.0
N68-GS4 FX R2.0

User Manual

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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>

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1. Introduction

Thank you for purchasing ASRock **N68-GS4/USB3 FX R2.0 / N68-GS4 FX R2.0** 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 **N68-GS4/USB3 FX R2.0 / N68-GS4 FX R2.0** Motherboard
(Micro ATX Form Factor)

ASRock **N68-GS4/USB3 FX R2.0 / N68-GS4 FX R2.0X** Quick Installation Guide

ASRock **N68-GS4/USB3 FX R2.0 / N68-GS4 FX R2.0** Support CD

2 x Serial ATA (SATA) Data Cables (Optional)

1 x I/O Panel Shield

1.2 Specifications

Platform	- Micro ATX Form Factor - Solid Capacitor design
CPU	- Support for Socket AM3+ processors - Support for AM3 processors: AMD Phenom™ II X6 / X4 / X3 / X2 (except 920 / 940) / Athlon II X4 / X3 / X2 / Sempron processors (see CAUTION 1) - Supports 8-Core CPU - 4 + 1 Power Phase design - Supports UCC feature (Unlock CPU Core) (see CAUTION 2) - Supports AMD's Cool 'n' Quiet™ Technology - FSB 1000 MHz (2.0 GT/s) - Supports Untied Overclocking Technology - Supports Hyper-Transport Technology
Chipset	- NVIDIA® GeForce 7025 / nForce 630a
Memory	- Dual Channel DDR3 Memory Technology - 2 x DDR3 DIMM Slots - Support DDR3 1866/1600/1333/1066 non-ECC, un-buffered memory (see CAUTION 3) - Max. capacity of system memory: 16GB (see CAUTION 4)
Expansion Slot	- 1 x PCI Express x16 Slot - 1 x PCI Express x1 Slot - 1 x PCI Slot
Graphics	- Integrated NVIDIA® GeForce 7025 graphics - DX9.0 VGA, Pixel Shader 3.0 - Max. shared memory 256MB - Supports D-Sub with max. resolution up to 1920x1440 @ 60Hz
Audio	- 7.1 CH HDAudio (Realtek ALC887 Audio Codec) * To configure 7.1 CH HDAudio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver. - Supports Surge Protection (ASRock Full Spike Protection) - ELNAudio Caps
LAN	- Gigabit LAN 10/100/1000 Mb/s - Giga PHY Realtek RTL8211E - Supports Wake-On-LAN - Supports Lightning/ESD Protection (ASRock Full Spike Protection) - Supports Energy Efficient Ethernet 802.3az

	- Supports PXE
Rear Panel I/O	N68-GS4/USB3 FX R2.0: - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 1 x D-Sub Port - 2 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection)) - 2 x USB 3.0 Ports (Etron EJ188H) (PCIE GEN1) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jacks: Line in / Front Speaker / Microphone
Rear Panel I/O	N68-GS4 FX R2.0: - 1 x PS/2 Mouse Port - 1 x PS/2 Keyboard Port - 1 x Serial Port: COM1 - 1 x D-Sub Port - 4 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) - HD Audio Jacks: Line in / Front Speaker / Microphone
Storage	- 4 x SATA2 3.0 Gb/s Connectors, support RAID (RAID 0, RAID 1, RAID 0+1, RAID 5 and JBOD), NCQ and Hot Plug
Connector	- 1 x Print Port Header - 1 x Chassis Intrusion Header - 1 x CPU Fan Connector (4-pin) - 1 x Chassis Fan Connector (3-pin) - 1 x 24 pin ATX Power Connector - 1 x 8 pin 12V Power Connector - 1 x Front Panel Audio Connector - 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection (ASRock Full Spike Protection)) - 1 x USB 3.0 Header by Etron EJ188H (PCIE GEN1) (Supports 2 USB 3.0 ports) (Supports ESD Protection (ASRock Full Spike Protection)) (for N68-GS4/USB3 FX R2.0 only)
BIOS Feature	- AMI Legal BIOS - Supports "Plug and Play" - ACPI 1.1 Compliant wake up events - Supports jumperfree - SMBIOS 2.3.1 support - CPU, VCCM, NB Voltage multi-adjustment

Hardware Monitor	- CPU temperature sensing - Chassis temperature sensing - CPU Fan Tachometer - Chassis Fan Tachometer - CPU Quiet Fan - CASE OPEN detection - Voltage monitoring: +12V, +5V, +3.3V, Vcore
OS	- Microsoft® Windows® 10 32-bit / 10 64-bit / 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit / Vista™ 32-bit / Vista™ 64-bit / XP 32-bit / XP 64-bit (see CAUTION 5)
Certifications	- FCC, CE, WHQL - ErP/EuP ready (ErP/EuP ready power supply is required)

* 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 CPU up to 95W. Please refer to our website for CPU support list. ASRock website <http://www.asrock.com>
2. ASRock UCC (Unlock CPU Core) feature simplifies AMD CPU activation. As long as a simple switch of the BIOS option "ASRock UCC", you can unlock the extra CPU core to enjoy an instant performance boost. When UCC feature is enabled, the dual-core or triple-core CPU will boost to the quad-core CPU, and some CPU, including quad-core CPU, can also increase L3 cache size up to 6MB, which means you can enjoy the upgrade CPU performance with a better price. Please be noted that UCC feature is supported with AM3/AM3+ CPU only, and in addition, not every AM3/AM3+ CPU can support this function because some CPU's hidden core may be malfunctioned.
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® 10 / 8.1 / 8 / 7 / Vista™ / XP. For Windows® OS with 64-bit CPU, there is no such limitation.
5. This motherboard does not support RAID mode under Windows® 10 32-bit / 10 64-bit / 8.1 32-bit / 8.1 64-bit. This motherboard does not support RAID mode with HDDs of 3TB and above.

- 10

The diagram illustrates the physical layout of the ASUS N68-GS4 FX motherboard. Key components and their locations are as follows:

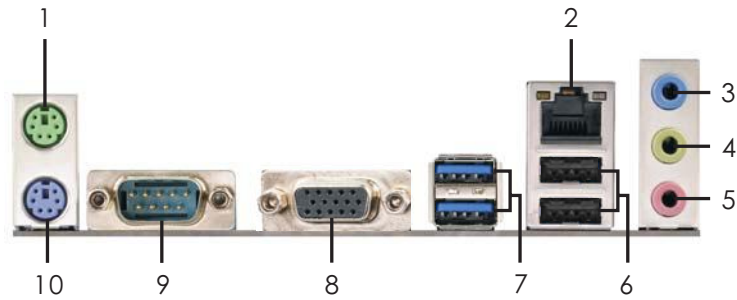
- Top Edge:** PS/2 Keyboard and Mouse ports, COM1 header, VGA1 port, and USB 2.0 ports (USB1, USB2).
- Left Edge:** USB 2.0 ports (USB3, USB4), Top: RJ-45 port, BIOS ROM, and LAN port.
- Bottom Edge:** CMOS BATTERY, AUDIO CONNECTOR, and various expansion slots (PCI1, PCI2, PCI1).
- Center:** NVIDIA GeForce 7025 / nForce 630a GPU, ASRock logo, and various headers (FAN, RESET, SPEAKER, USB1_1, USB1_2, USB1_3, USB1_4).
- Right Edge:** ATXPWR1 power connector, SATA 2 and SATA 3 ports, and a Super I/O chip.

The layout is numbered 1 through 17, corresponding to the component list on the left.

- 11

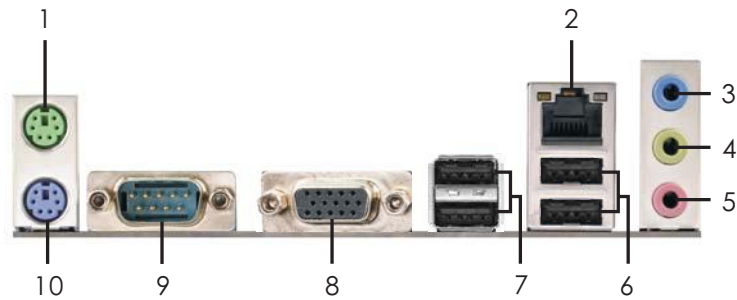
1.4 I/O Panel

N68-GS4/USB3 FX R2.0:



- | | |
|---------------------------|--------------------------------|
| 1 PS/2 Mouse Port (Green) | 6 USB 2.0 Ports (USB34) |
| 2 RJ-45 Port* | 7 USB 3.0 Ports (USB3_34) |
| 3 Line In (Light Blue)** | 8 D-Sub Port |
| 4 Front Speaker (Lime)** | 9 COM Port |
| 5 Microphone (Pink)** | 10 PS/2 Keyboard Port (Purple) |

N68-GS4 FX R2.0:



- | | |
|---------------------------|--------------------------------|
| 1 PS/2 Mouse Port (Green) | 6 USB 2.0 Ports (USB34) |
| 2 RJ-45 Port* | 7 USB 2.0 Ports (USB12) |
| 3 Line In (Light Blue)** | 8 D-Sub Port |
| 4 Front Speaker (Lime)** | 9 COM Port |
| 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.

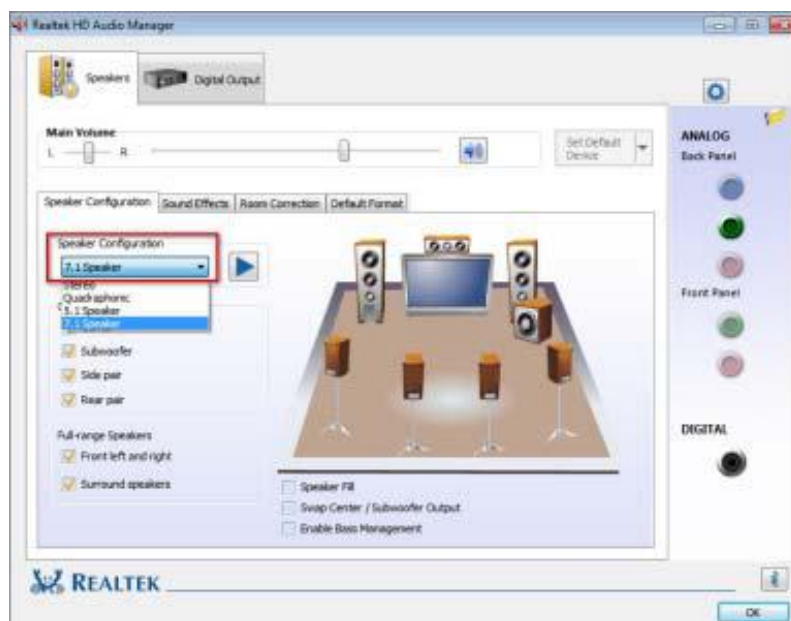
Activity/Link LED		SPEED LED	
Status	Description	Status	Description
Off	No Activity	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
		Green	1Gbps connection



LAN Port

** To configure 7.1 CH HD Audio, it is required to use an HD front panel audio module and enable the multi-channel audio feature through the audio driver.

Please set Speaker Configuration to "7.1 Speaker" in the Realtek HD Audio Manager.



Function of the Audio Ports in 7.1-channel Configuration

Port	Function
Light Blue (Rear panel)	Rear Speaker Out
Lime (Rear panel)	Front Speaker Out
Pink (Rear panel)	Central /Subwoofer Speaker Out
Lime (Front panel)	Side Speaker Out

2. Installation

This is a Micro ATX form factor 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.

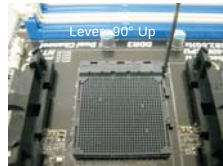
2.1 CPU Installation

- 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.

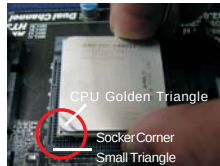


The CPU fits only in one correct orientation. DO NOT force the CPU into the socket to avoid bending of the pins.

- 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 10 or 11, No. 1). 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 two 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install two **identical** (the same brand, speed, size and chip-type) memory modules in the DDR3 DIMM slots to activate Dual Channel Memory Technology. Otherwise, it will operate at single channel mode.



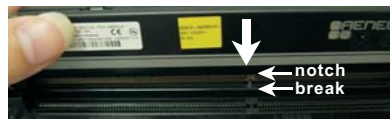
1. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
2. If you install only one memory module or two non-identical memory modules, it is unable to activate the Dual Channel Memory Technology.

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 is 1 PCI slot and 2 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 (PCIe x1 slot) is used for PCI Express cards with x1 lane width cards.

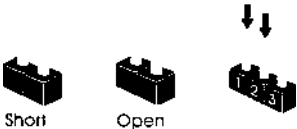
PCIe2 (PCIe x16 slot) is used for PCI Express cards with x16 lane width graphics cards.

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 bracket facing the slot that you intend to use. Keep the screws for later use.
- Step 3. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
- Step 4. Fasten the card to the chassis with screws.

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	
Clear CMOS Jumper (CLRCMOS1) (see p.10 or 11, No. 9)	1_2 	2_3 
	Default	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.



If you clear the CMOS, the case open may be detected. Please adjust the BIOS option "Clear Status" to clear the record of previous chassis intrusion status.

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!

Serial ATA2 Connectors

(SATAII_1 (PORT 0.0):

see p.10 or 11, No. 6)

(SATAII_2 (PORT 0.1):

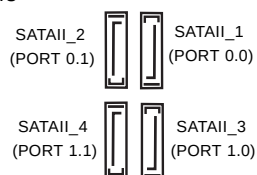
see p.10 or 11, No. 5)

(SATAII_3 (PORT 1.0):

see p.10 or 11, No. 7)

(SATAII_4 (PORT 1.1):

see p.10 or 11, No. 8)



These four Serial ATA2 (SATA2)

connectors support SATA2 or SATA hard disk for internal storage devices. The current SATA2 interface allows up to 3.0 Gb/s data transfer rate.

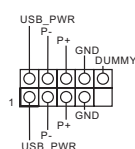
USB 2.0 Headers

(9-pin USB5_6)

(see p.10 or 11 No. 13)

(9-pin USB7_8)

(see p.10 or 11 No. 12)



There are two USB 2.0 headers

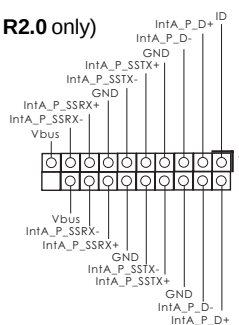
on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

USB 3.0 Header

(for N68-GS4/USB3 FX R2.0 only)

(19-pin USB3_1_2)

(see p.10 No. 18)



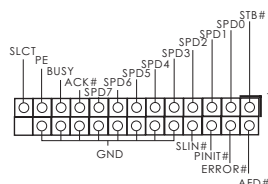
There is one USB 3.0 header

on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

Print Port Header

(25-pin LPT1)

(see p.10 or 11 No. 14)

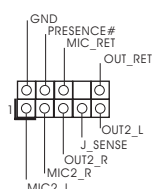


This is an interface for print port cable that allows convenient connection of printer devices.

Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.10 or 11, No. 17)



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

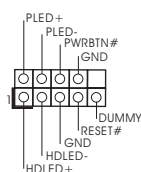


1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
 - 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.10 or 11 No. 15)

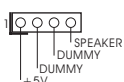


This header accommodates several system front panel functions.

Chassis Speaker Header

(4-pin SPEAKER 1)

(see p.10 or 11 No. 16)

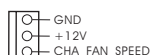


Please connect the chassis speaker to this header.

Chassis Fan Connector

(3-pin CHA_FAN1)

(see p.10 or 11 No. 10)

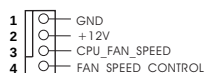


Please connect a chassis fan cable to this connector and match the black wire to the ground pin.

CPU Fan Connector

(4-pin CPU_FAN1)

(see p.10 or 11 No. 1)



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.

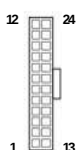
Pin 1-3 Connected

3-Pin Fan Installation



ATX Power Connector

(24-pin ATXPWR1)
(see p.10 or 11 No. 4)

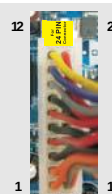


Please connect an ATX power supply to this connector.



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.10 or 11 No. 2)

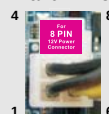


Please note that it is necessary to connect a power supply with ATX 12V plug to this connector. Failing to do so will cause power up failure.



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



Chassis Intrusion Header

(2-pin CI1)
(see p.10 or 11 No. 11)



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.

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 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

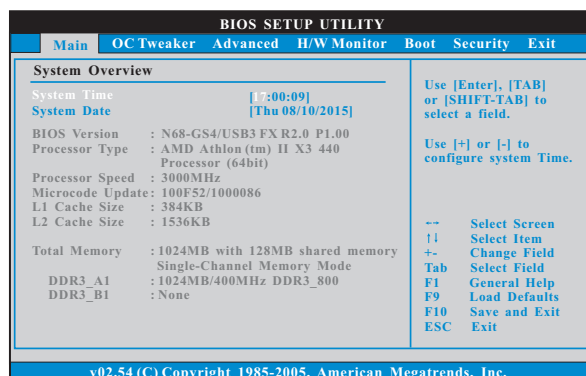
Please check the following table for the function description of each navigation key.

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.

N68-GS4/USB3 FX R2.0:



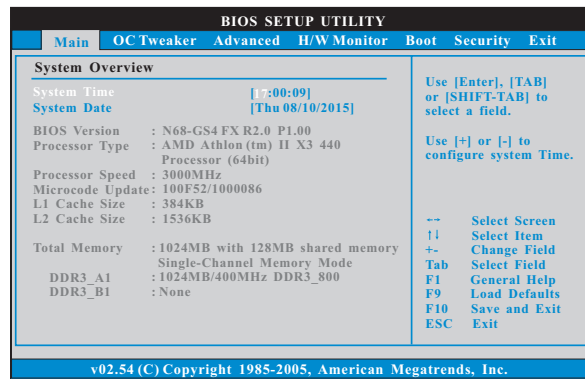
System Time [Hour:Minute:Second]

Use this item to specify the system time.

System Date [Day Month/Date/Year]

Use this item to specify the system date.

N68-GS4 FX R2.0:



System Time [Hour:Minute:Second]

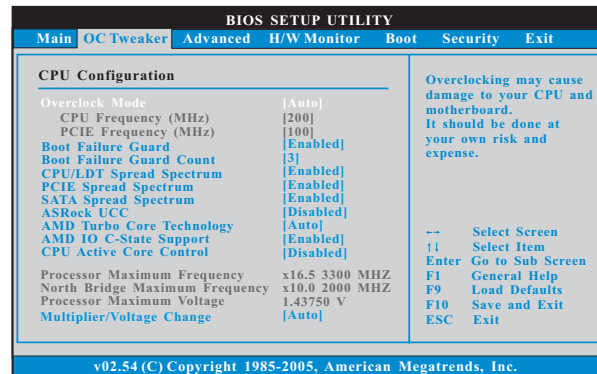
Use this item to specify the system time.

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.



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.

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.

CPU/LDT Spread Spectrum

This feature will be set to [Enabled] as default. Configuration options: [Disabled] and [Enabled].

PCIE Spread Spectrum

This feature will be set to [Enabled] as default. Configuration options: [Disabled] and [Enabled].

SATA Spread Spectrum

This feature will be set to [Enabled] as default. Configuration options: [Disabled] and [Enabled].

ASRock UCC

ASRock UCC (Unlock CPU Core) feature simplifies AMD CPU activation. As long as a simple switch of the BIOS option "ASRock UCC", you can unlock the extra CPU core to enjoy an instant performance boost. When UCC feature is enabled, the dual-core or triple-core CPU will boost to the quad-core CPU, and

some CPU, including quad-core CPU, can also increase L3 cache size up to 6MB, which means you can enjoy the upgrade CPU performance with a better price. Please be noted that UCC feature is supported with AM3/AM3+ CPU only, and in addition, not every AM3/AM3+ CPU can support this function because some CPU's hidden core may be malfunctioned.

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 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 [Disabled].

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.

BIOS SETUP UTILITY			
Main	OC Tweaker	Advanced	H/W Monitor Boot Security Exit
CPU Configuration			
Overclock Mode	[Auto]		
CPU Frequency (MHz)	[200]		
PCIE Frequency (MHz)	[100]		
Boot Failure Guard	[Enabled]		
Boot Failure Guard Count	[3]		
CPU/LDT Spread Spectrum	[Enabled]		
PCIE Spread Spectrum	[Enabled]		
SATA Spread Spectrum	[Enabled]		
ASRock UCC	[Disabled]		
AMD Turbo Core Technology	[Auto]		
AMD IO C-State Support	[Enabled]		
CPU Active Core Control	[Disabled]		
Processor Maximum Frequency	x16.5 3300 MHZ		
North Bridge Maximum Frequency	x10.0 2000 MHZ		
Processor Maximum Voltage	1.43750 V		
Multiplier/Voltage Change	[Manual]		
		--	Select Screen
		↑↓	Select Item
		Enter	Go to Sub Screen
		F1	General Help
		F9	Load Defaults
		F10	Save and Exit
		ESC	Exit
v02.54 (C) Copyright 1985-2005, American Megatrends, Inc.			

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 200 MHz] to [x5 1000 MHz].

HT Bus Width

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

Memory Configuration

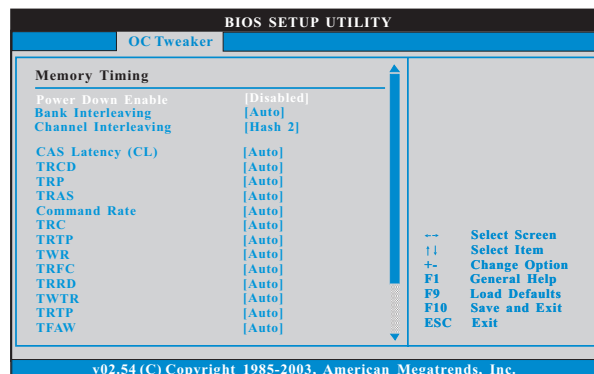
Memory Clock

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

This allows you to enable Channel Memory Interleaving. 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].

Chipset Settings

Chipset Voltage

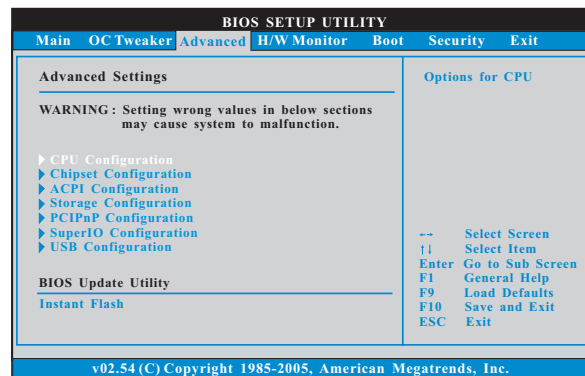
Use this to select chipset voltage. The default value is [Auto].

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, PCIPnP Configuration, SuperIO Configuration, and USB Configuration.

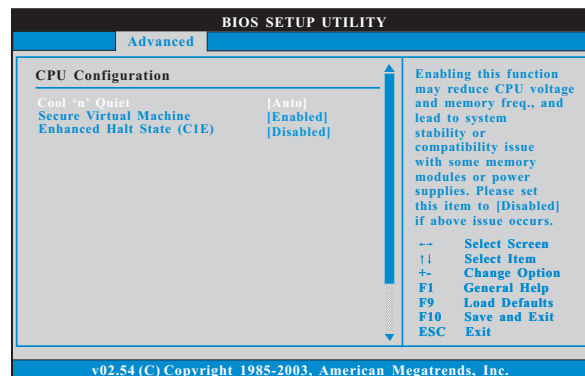


Setting wrong values in this section may cause the system to malfunction.

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 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 [Auto]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® 10 / 8.1 / 8 / 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.

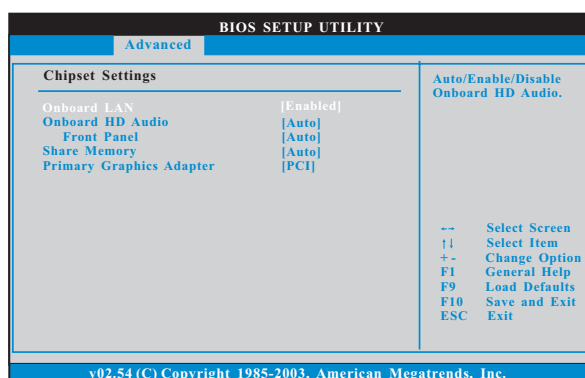
Secure Virtual Machine

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.

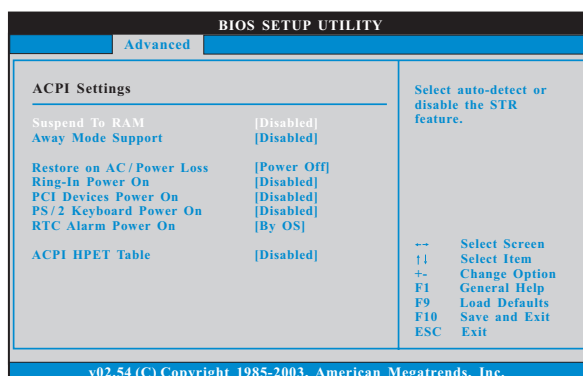
Share Memory

This allows you to set share memory feature. The default value is [Auto]. Configuration options: [Auto], [32MB], [64MB], [128MB] and [256MB].

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], [Onboard] 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.

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.

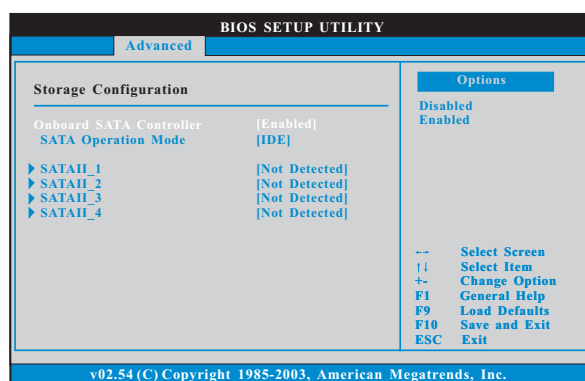
RTC Alarm Power On

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® certification.

3.4.4 Storage Configuration



Onboard SATA Controller

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

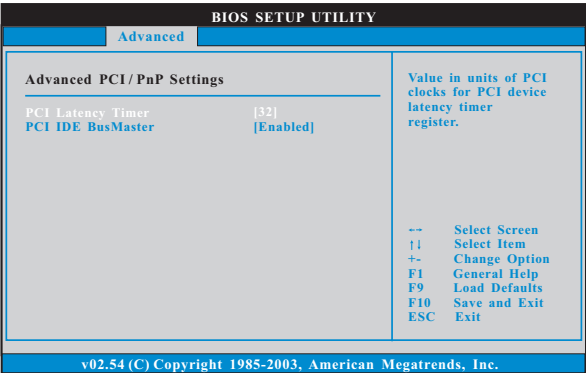
SATA Operation Mode

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

* 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.

3.4.5 PCIPnP Configuration



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

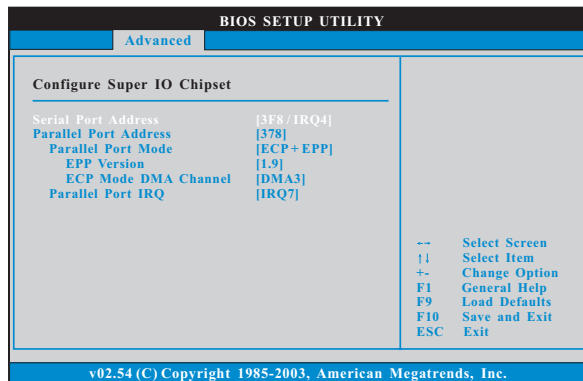
PCI Latency Timer

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 Super IO Configuration



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].

Parallel Port Address

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

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

Parallel Port Mode

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

EPP Version

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

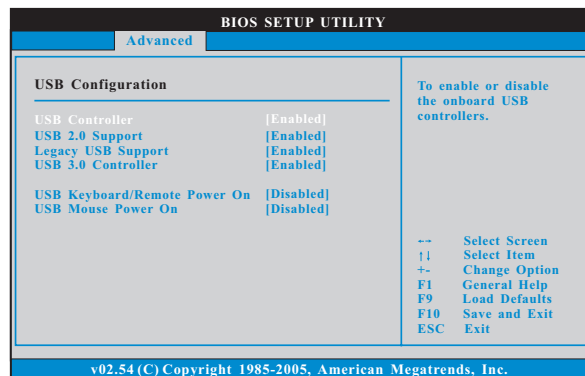
ECP Mode DMA Channel

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

Parallel Port IRQ

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

3.4.7 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.

USB 3.0 Controller (for N68-GS4/USB3 FX R2.0 only)

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 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.

BIOS SETUP UTILITY	
Main	OC Tweaker Advanced H/W Monitor Boot Security Exit
Hardware Health Event Monitoring	
CPU Temperature	: 37°C / 98°F
M/B Temperature	: 27°C / 80°F
CPU Fan Speed	: 4722 RPM
Chassis Fan Speed	: N/A
Vcore	: 1.216V
+ 3.30V	: 3.248V
+ 5.00V	: 5.136V
+ 12.00V	: 12.091V
► CPU Fan Setting	
Case Open Feature	[Disabled]
v02.54 (C) Copyright 1985-2003, American Megatrends, Inc.	

Enable/Disable CPU Quiet Fan Function.

←→ Select Screen
↑↓ Select Item
F1 General Help
F9 Load Defaults
F10 Save and Exit
ESC Exit

CPU Fan Setting

CPU Quiet Fan

This item allows you to control the CPU fan speed and fan noise. 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. The default value is [Fast]. Configuration options: [Fast], [Middle] and [Slow].

Case Open Feature

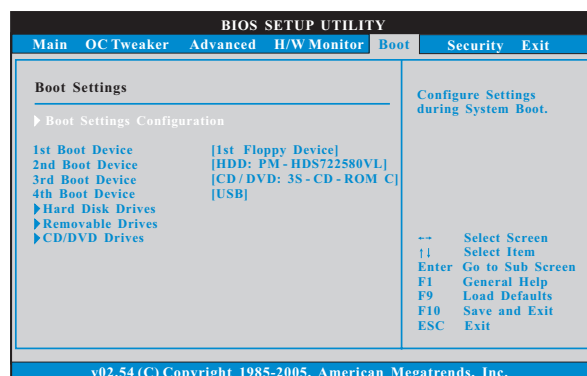
This allows you to enable or disable case open detection feature. The default is value [Disabled].

Clear Status

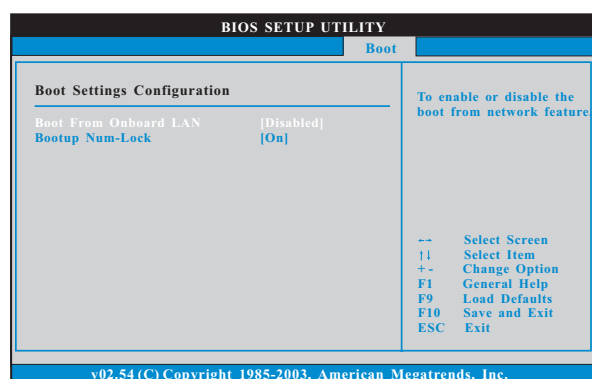
This option appears only when the case open has been detected. Use this option to keep or clear the record of previous chassis intrusion status.

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



Boot From Onboard LAN

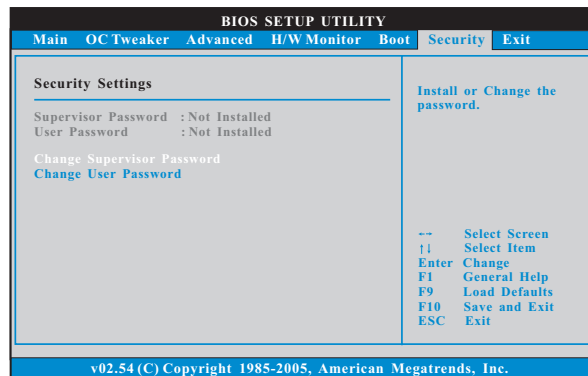
Use this item to enable or disable the Boot From Onboard LAN feature.

Boot Up Num-Lock

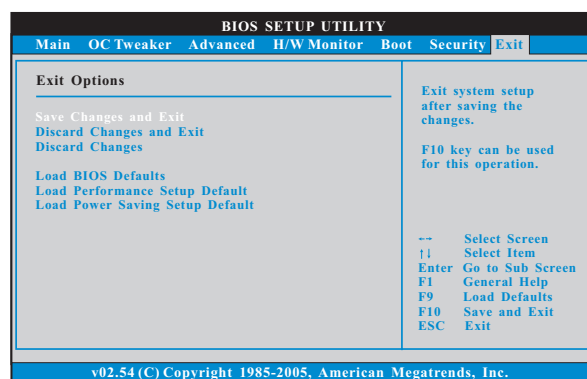
If this item is set to [On], it will automatically activate the Numeric Lock function after boot-up.

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: 10 32-bit / 10 64-bit / 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit / Vista™ 32-bit / Vista™ 64-bit / XP 32-bit / 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 "ASRSETUP.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.