Copyright Notice:
No part of this manual may be reproduced, transcribed, transmitted, or translated in any language, in any form or by any means, except duplication of documentation by the purchaser for backup purpose, without written consent of ASRock Inc. Products and corporate names appearing in this manual may or may not be registered trademarks or copyrights of their respective companies, and are used only for identification or explanation and to the owners' benefit, without intent to infringe.

Disclaimer:
Specifications and information contained in this manual are furnished for informational use only and subject to change without notice, and should not be constructed as a commitment by ASRock. ASRock assumes no responsibility for any errors or omissions that may appear in this manual.
With respect to the contents of this manual, ASRock does not provide warranty of any kind, either expressed or implied, including but not limited to the implied warranties or conditions of merchantability or fitness for a particular purpose.
In no event shall ASRock, its directors, officers, employees, or agents be liable for any indirect, special, incidental, or consequential damages (including damages for loss of profits, loss of business, loss of data, interruption of business and the like), even if ASRock has been advised of the possibility of such damages arising from any defect or error in the manual or product.

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

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

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

1. **Introduction** ................................................................. 5  
   1.1 Package Contents ......................................................... 5  
   1.2 Specifications ............................................................. 6  
   1.3 Motherboard Layout ................................................... 10  
   1.4 I/O Panel ................................................................. 12  

2. **Installation** ................................................................. 14  
   Pre-installation Precautions ........................................... 14  
   2.1 CPU Installation ......................................................... 15  
   2.2 Installation of CPU Fan and Heatsink ......................... 15  
   2.3 Installation of Memory Modules (DIMM) ...................... 16  
   2.4 Expansion Slots (PCI and PCI Express Slots) ............. 17  
   2.5 Jumpers Setup ........................................................ 18  
   2.6 Onboard Headers and Connectors ............................. 19  

3. **BIOS SETUP UTILITY** ................................................... 22  
   3.1 Introduction ............................................................ 22  
      3.1.1 BIOS Menu Bar .................................................. 22  
      3.1.2 Navigation Keys ................................................ 23  
   3.2 Main Screen ............................................................ 23  
   3.3 OC Tweaker Screen ................................................. 25  
   3.4 Advanced Screen ..................................................... 29  
      3.4.1 CPU Configuration ............................................. 30  
      3.4.2 Chipset Configuration ....................................... 31  
      3.4.3 ACPI Configuration .......................................... 32  
      3.4.4 Storage Configuration ...................................... 33  
      3.4.5 PCI PnP Configuration ...................................... 34  
      3.4.6 Super IO Configuration ..................................... 35  
      3.4.7 USB Configuration ......................................... 36  
   3.5 Hardware Health Event Monitoring Screen ................ 37  
   3.6 Boot Screen .......................................................... 38  
      3.6.1 Boot Settings Configuration .............................. 38  
   3.7 Security Screen ....................................................... 39  
   3.8 Exit Screen ............................................................ 40
## 4. Software Support

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Install Operating System</td>
<td>41</td>
</tr>
<tr>
<td>Support CD Information</td>
<td>41</td>
</tr>
<tr>
<td>Running Support CD</td>
<td>41</td>
</tr>
<tr>
<td>Drivers Menu</td>
<td>41</td>
</tr>
<tr>
<td>Utilities Menu</td>
<td>41</td>
</tr>
<tr>
<td>Contact Information</td>
<td>41</td>
</tr>
</tbody>
</table>
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 R2.0X 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 HD Audio (Realtek ALC887 Audio Codec)  
|                  | * 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.  
|                  | - Supports Surge Protection (ASRock Full Spike Protection)  
|                  | - ELNA Audio 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  

---

* 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.
<table>
<thead>
<tr>
<th>Rear Panel I/O</th>
<th>N68-GS4/USB3 FX R2.0:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>- 1 x PS/2 Mouse Port</td>
</tr>
<tr>
<td></td>
<td>- 1 x PS/2 Keyboard Port</td>
</tr>
<tr>
<td></td>
<td>- 1 x Serial Port: COM1</td>
</tr>
<tr>
<td></td>
<td>- 1 x D-Sub Port</td>
</tr>
<tr>
<td></td>
<td>- 2 x USB 2.0 Ports (Supports ESD Protection (ASRock Full Spike Protection))</td>
</tr>
<tr>
<td></td>
<td>- 2 x USB 3.0 Ports (Etron EJ188H) (PCIE GEN1) (Supports ESD Protection (ASRock Full Spike Protection))</td>
</tr>
<tr>
<td></td>
<td>- 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)</td>
</tr>
<tr>
<td></td>
<td>- HD Audio Jacks: Line in / Front Speaker / Microphone</td>
</tr>
</tbody>
</table>

| 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) |

<table>
<thead>
<tr>
<th>BIOS Feature</th>
<th>AMI Legal BIOS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Supports &quot;Plug and Play&quot;</td>
</tr>
<tr>
<td></td>
<td>ACPI 1.1 Compliant wake up events</td>
</tr>
<tr>
<td></td>
<td>Supports jumperfree</td>
</tr>
<tr>
<td></td>
<td>SMBIOS 2.3.1 support</td>
</tr>
<tr>
<td></td>
<td>CPU, VCCM, NB Voltage multi-adjustment</td>
</tr>
<tr>
<td>Hardware Monitor</td>
<td>- CPU temperature sensing</td>
</tr>
<tr>
<td>----------------------------------</td>
<td>---------------------------</td>
</tr>
<tr>
<td></td>
<td>- Chassis temperature sensing</td>
</tr>
<tr>
<td></td>
<td>- CPU Fan Tachometer</td>
</tr>
<tr>
<td></td>
<td>- Chassis Fan Tachometer</td>
</tr>
<tr>
<td></td>
<td>- CPU Quiet Fan</td>
</tr>
<tr>
<td></td>
<td>- CASE OPEN detection</td>
</tr>
<tr>
<td></td>
<td>- Voltage monitoring: +12V, +5V, +3.3V, Vcore</td>
</tr>
<tr>
<td>Certifications</td>
<td>- FCC, CE, WHQL</td>
</tr>
<tr>
<td></td>
<td>- ErP/EuP ready (ErP/EuP ready power supply is required)</td>
</tr>
</tbody>
</table>

* For detailed product information, please visit our website: [http://www.asrock.com](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 140W. 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.
### 1.3 Motherboard Layout

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

1. CPU Fan Connector (CPU_FAN1)
2. ATX 12V Power Connector (ATX12V1)
3. 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1)
4. ATX Power Connector (ATXPWR1)
5. SATA2 Connector (SATAII_2 (PORT 0.1))
6. SATA2 Connector (SATAII_1 (PORT 0.0))
7. SATA2 Connector (SATAII_3 (PORT 1.0))
8. SATA2 Connector (SATAII_4 (PORT 1.1))
9. Clear CMOS Jumper (CLRCMOS1)
10. Chassis Fan Connector (CHA_FAN1)
11. Chassis Intrusion Header (CI1)
12. USB 2.0 Header (USB7_8)
13. USB 2.0 Header (USB5_6)
14. Print Port Header (LPT1)
15. System Panel Header (PANEL1)
16. Chassis Speaker Header (SPEAKER1)
17. Front Panel Audio Header (HD_AUDIO1)
18. USB 3.0 Header (USB3_1_2)
N68-GS4 FX R2.0:

1 CPU Fan Connector (CPU_FAN1)
2 ATX 12V Power Connector (ATX12V1)
3 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1)
4 ATX Power Connector (ATXPWR1)
5 SATA2 Connector (SATAII_2 (PORT 0.1))
6 SATA2 Connector (SATAII_1 (PORT 0.0))
7 SATA2 Connector (SATAII_3 (PORT 1.0))
8 SATA2 Connector (SATAII_4 (PORT 1.1))
9 Clear CMOS Jumper (CLRCMOS1)
10 Chassis Fan Connector (CHA_FAN1)
11 Chassis Intrusion Header (CI1)
12 USB 2.0 Header (USB7_8)
13 USB 2.0 Header (USB5_6)
14 Print Port Header (LPT1)
15 System Panel Header (PANEL1)
16 Chassis Speaker Header (SPEAKER1)
17 Front Panel Audio Header (HD_AUDIO1)
1.4 I/O Panel

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

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

**N68-GS4 FX R2.0:**

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

<table>
<thead>
<tr>
<th>Activity/Link LED</th>
<th>SPEED LED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Status</td>
<td>Description</td>
</tr>
<tr>
<td>Off</td>
<td>No Activity</td>
</tr>
<tr>
<td>Blinking</td>
<td>Data Activity</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

** 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

<table>
<thead>
<tr>
<th>Port</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light Blue (Rear panel)</td>
<td>Rear Speaker Out</td>
</tr>
<tr>
<td>Lime (Rear panel)</td>
<td>Front Speaker Out</td>
</tr>
<tr>
<td>Pink (Rear panel)</td>
<td>Central/Subwoofer Speaker Out</td>
</tr>
<tr>
<td>Lime (Front panel)</td>
<td>Side Speaker Out</td>
</tr>
</tbody>
</table>
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.

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

<table>
<thead>
<tr>
<th>Jumper</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clear CMOS Jumper (CLRCMOS1)</td>
<td>![Diagram]</td>
</tr>
<tr>
<td>(see p.10 or 11, No. 9)</td>
<td>![Diagram]</td>
</tr>
</tbody>
</table>

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

- **USB2_5_6**
  - (9-pin USB5_6)
  - (see p.10 or 11 No. 13)
- **USB2_7_8**
  - (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

- **USB3_1_2**
  - (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

- **LPT1**
  - (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.
ATX Power Connector

Please connect an ATX power supply to this connector.

(24-pin ATX12V1)
(see p.10 or 11 No. 4)

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

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.

(8-pin ATX12V1)
(see p.10 or 11 No. 2)

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

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.

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

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

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

---

25
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.

---

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 across 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.

---

**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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Options</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cool 'n' Quiet</td>
<td>[Auto, Enabled, Disabled]</td>
<td>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 [Disabled] if above issue occurs.</td>
</tr>
<tr>
<td>Secure Virtual Machine</td>
<td>[Enabled, Disabled]</td>
<td>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].</td>
</tr>
<tr>
<td>Enhanced Halt State (C1E)</td>
<td></td>
<td>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.</td>
</tr>
</tbody>
</table>

### 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].

<table>
<thead>
<tr>
<th>Chipset Settings</th>
<th>Auto/Enable/Disable Onboard HD Audio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onboard LAN</td>
<td>[Auto]</td>
</tr>
<tr>
<td>Front Panel</td>
<td>[Auto]</td>
</tr>
<tr>
<td>Share Memory</td>
<td>[Auto]</td>
</tr>
<tr>
<td>Primary Graphics Adapter</td>
<td>[PCI]</td>
</tr>
</tbody>
</table>

---

**Select Screen**
- [F1] General Help
- [F9] Load Defaults
- [F10] Save and Exit
- [ESC] Exit

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

---

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Port Address</td>
<td>[Disabled], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3]</td>
</tr>
<tr>
<td>Parallel Port Address</td>
<td>[Disabled], [378], [278]</td>
</tr>
<tr>
<td>Parallel Port Mode</td>
<td>[Normal], [Bi-Directional], [ECP+EPP]</td>
</tr>
<tr>
<td>EPP Version</td>
<td>[1.9], [1.7]</td>
</tr>
<tr>
<td>ECP Mode DMA Channel</td>
<td>[DMA0], [DMA1], [DMA3]</td>
</tr>
</tbody>
</table>
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.

### 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.