# Fatal1ty P67 Professional Series

## User Manual

Version 1.0
Published November 2010

Who knew that at age 19, I would be a World Champion PC gamer. When I was 13, I actually played competitive billiards in professional tournaments and won four or five games off guys who played at the highest level. I actually thought of making a career of it, but at that young age situations change rapidly. Because I've been blessed with great hand-eye coordination and a grasp of mathematics (an important element in video gaming) I gravitated to that activity.

GOING PRO

I started professional gaming in 1999 when I entered the CPL (Cyberathlete Professional League) tournament in Dallas and won $4,000 for coming in third place. Emerging as one of the top players in the United States, a company interested in sponsoring me flew me to Sweden to compete against the top 12 players in the world. I won 18 straight games, lost none, and took first place, becoming the number one ranked Quake III player in the world in the process. Two months later I followed that success by traveling to Dallas and defending my title as the world's best Quake III player, winning the $40,000 grand prize. From there I entered competitions all over the world, including Singapore, Korea, Germany, Australia, Holland and Brazil in addition to Los Angeles, New York and St. Louis.

WINNING STREAK

I was excited to showcase my true gaming skills when defending my title as CPL Champion of the year at the CPL Winter 2001 because I would be competing in a totally different first person shooter (fps) game, Alien vs. Predator II. I won that competition and walked away with a new car. The next year I won the same title playing Unreal Tournament 2003, becoming the only three-time CPL champion of the year. And I did it playing a different game each year, something no one else has ever done and a feat of which I am extremely proud.

At QuakeCon 2002, I faced off against my rival ZeRo4 in one of the most highly anticipated matches of the year, winning in a 14 to (-1) killer victory. Competing at Quakecon 2004, I became the World's 1st Doom3 Champion by defeating Daler in a series of very challenging matches and earning $25,000 for the victory.

Since then Fatal1ty has traveled the globe to compete against the best in the world, winning prizes and acclaim, including the 2005 CPL World Tour Championship in New York City for a $150,000 first place triumph. In August 2007, Johnathan was awarded the first ever Lifetime Achievement Award in the four year history of the eSports-Award for "showing exceptional sportsmanship, taking part in shaping eSports into what it is today and for being the prime representative of this young sport. He has become the figurehead for eSports worldwide".

LIVIN' LARGE

Since my first big tournament wins, I have been a "Professional Cyberathlete", traveling the world and livin' large with lots of International media coverage on outlets such as MTV, ESPN and a 60 Minutes segment on CBS to name only a few. It's unreal - it's crazy. I'm living a dream by playing video games for a living. I've always been athletic and took sports like hockey and football very seriously, working out and training hard. This discipline helps me become a better gamer and my drive to be the best has opened the doors necessary to become a professional.

A DREAM

Now, another dream is being realized – building the ultimate gaming computer, made up of the best parts under my own brand. Quality hardware makes a huge difference in competitions…a couple more frames per second and everything gets really nice. It's all about getting the computer processing faster and allowing more fluid movement around the maps.

My vision for Fatal1ty hardware is to allow gamers to focus on the game without worrying about their equipment, something I've preached since I began competing. I don't want to worry about my equipment. I want to be there – over and done with - so I can focus on the game. I want it to be the fastest and most stable computer equipment on the face of the planet, so quality is what Fatal1ty Brand products represent.

Johnathan "Fatal1ty" Wendel

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## 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 us. We assumes no responsibility for any errors or omissions that may appear in this manual.
With respect to the contents of this manual, We do 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 we, 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 we have 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"


Fatal1ty website: www.fatal1ty.com

# Contents

# Chapter 1: Introduction

Thank you for purchasing ***Fatal1ty P67 Professional Series*** motherboard, a reliable motherboard produced under our consistently stringent quality control. It delivers excellent performance with robust design conforming to our 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 our website without further notice.
If you require technical support related to this motherboard, please visit our website for specific information about the model you are using.

## 1.1 Package Contents

***Fatal1ty P67 Professional Series*** Motherboard
(ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm)
***Fatal1ty P67 Professional Series*** Quick Installation Guide
***Fatal1ty P67 Professional Series*** Support CD
1 x 80-conductor Ultra ATA 66/100/133 IDE Ribbon Cable
1 x Ribbon Cable for a 3.5-in Floppy Drive
6 x Serial ATA (SATA) Data Cables (Optional)
2 x Serial ATA (SATA) HDD Power Cables (Optional)
1 x I/O Panel Shield
1 x Front USB 3.0 Panel
4 x HDD Screws
6 x Chassis Screws
1 x Rear USB 3.0 Bracket
1 x SLI_Bridge_2S Card

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

## 1.2 Specifications

| | |
|---|---|
| **Platform** | - ATX Form Factor: 12.0-in x 9.6-in, 30.5 cm x 24.4 cm<br>- All Solid Capacitor design (100% Japan-made high-quality Conductive Polymer Capacitors) |
| **CPU** | - Supports 2nd Generation Intel® Core™ i7 / i5 / i3 in LGA1155 Package<br>- Advanced V16 + 2 Power Phase Design<br>- Supports Intel® Turbo Boost 2.0 Technology<br>- Supports K-Series unlocked CPU<br>- Supports Hyper-Threading Technology (see **CAUTION 1**) |
| **Chipset** | - Intel® P67 |
| **Memory** | - Dual Channel DDR3 Memory Technology (see **CAUTION 2**)<br>- 4 x DDR3 DIMM slots<br>- Supports DDR3 2133(OC)/1866(OC)/1600/1333/1066 non-ECC, un-buffered memory (see **CAUTION 3**)<br>- Max. capacity of system memory: 32GB (see **CAUTION 4**)<br>- Supports Intel® Extreme Memory Profile (XMP) |
| **Expansion Slot** | - 3 x PCI Express 2.0 x16 slots (PCIE2/PCIE4: single at x16 or dual at x8/x8 mode; PCIE5: x4 mode)<br>- 2 x PCI Express 2.0 x1 slots<br>- 2 x PCI slots<br>- Supports ATI™ Quad CrossFireX™, 3-Way CrossFireX™ and CrossFireX™<br>- Supports NVIDIA® Quad SLI™ and SLI™ |
| **Audio** | - 7.1 CH HD Audio with Content Protection (Realtek ALC892 Audio Codec)<br>- Premium Blu-ray audio support<br>- Supports THX TruStudio Pro™ |
| **LAN** | - 2 x PCIE x1 Gigabit LAN 10/100/1000 Mb/s<br>- Realtek RTL8111E<br>- Supports Wake-On-LAN<br>- Supports LAN Cable Detection<br>- Supports Energy Efficient Ethernet 802.3az<br>- Supports Dual LAN with Teaming function |
| **Rear Panel I/O** | I/O Panel<br>- 1 x PS/2 Mouse Port<br>- 1 x PS/2 Keyboard Port<br>- 1 x Coaxial SPDIF Out Port<br>- 1 x Optical SPDIF Out Port<br>- 3 x Ready-to-Use USB 2.0 Ports |

| | |
|---|---|
| | - 1 x Fatal1ty Mouse Port (USB 2.0)<br>- 1 x eSATA3 Connector<br>- 4 x Ready-to-Use USB 3.0 Ports<br>- 2 x RJ-45 LAN Ports with LED (ACT/LINK LED and SPEED LED)<br>- 1 x IEEE 1394 Port<br>- 1 x Clear CMOS Switch with LED<br>- HD Audio Jack: Side Speaker/Rear Speaker/Central/Bass/ Line in/Front Speaker/Microphone (see **CAUTION 5**) |
| **SATA3** | - 2 x SATA3 6.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and "Hot Plug" functions<br>- 4 x SATA3 6.0 Gb/s connectors by Marvell SE9120, support NCQ, AHCI and "Hot Plug" functions (SATA3_M4 connector is shared with eSATA3 port) |
| **USB3.0** | - 4 x Rear USB 3.0 ports by Etron EJ168A, support USB 1.0/ 2.0/3.0 up to 5Gb/s<br>- 1 x Front USB 3.0 header (supports 2 USB 3.0 ports) by Etron EJ168A, supports USB 1.0/2.0/3.0 up to 5Gb/s |
| **Connector** | - 4 x SATA2 3.0 Gb/s connectors, support RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage), NCQ, AHCI and Hot Plug functions<br>- 6 x SATA3 6.0Gb/s connectors<br>- 1 x ATA133 IDE connector (supports 2 x IDE devices)<br>- 1 x Floppy connector<br>- 1 x IR header<br>- 1 x COM port header<br>- 1 x HDMI_SPDIF header<br>- 1 x IEEE 1394 header<br>- 1 x Power LED header<br>- CPU/Chassis/Power FAN connector<br>- 24 pin ATX power connector<br>- 8 pin 12V power connector<br>- CD in header<br>- Front panel audio connector<br>- 4 x USB 2.0 headers (support 8 USB 2.0 ports)<br>- 1 x USB 3.0 header (supports 2 USB 3.0 ports)<br>- 1 x Dr. Debug (7-Segment Debug LED) |
| **Smart Switch** | - 1 x Clear CMOS Switch with LED<br>- 1 x Power Switch with LED<br>- 1 x Reset Switch with LED |
| **BIOS Feature** | - 64Mb AMI BIOS |

| | |
|---|---|
| | - AMI UEFI Legal BIOS with GUI support<br>- Supports “Plug and Play”<br>- ACPI 1.1 Compliance Wake Up Events<br>- Supports jumperfree<br>- SMBIOS 2.3.1 Support<br>- DRAM, PCH, CPU PLL, VTT, VCCSA Voltage Multi-adjustment |
| **Support CD** | - Drivers, Utilities, AntiVirus Software (Trial Version), Software Suite (CyberLink DVD Suite - OEM and Trial) |
| **Unique Feature** | - F-Stream (see **CAUTION 6**)<br>- Instant Boot<br>- Instant Flash (see **CAUTION 7**)<br>- AIWI (see **CAUTION 8**)<br>- APP Charger (see **CAUTION 9**)<br>- SmartView (see **CAUTION 10**)<br>- Hybrid Booster:<br>- CPU Frequency Stepless Control (see **CAUTION 11**)<br>- U-COP (see **CAUTION 12**)<br>- Boot Failure Guard (B.F.G.)<br>- Combo Cooler Option (C.C.O.) (see **CAUTION 13**)<br>- Good Night LED |
| **Hardware Monitor** | - CPU Temperature Sensing<br>- Chassis Temperature Sensing<br>- CPU/Chassis/Power Fan Tachometer<br>- CPU/Chassis Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU or MB Temperature)<br>- CPU/Chassis Fan Multi-Speed Control<br>- Voltage Monitoring: +12V, +5V, +3.3V, CPU Vcore |
| **OS** | - Microsoft® Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit compliant |
| **Certifications** | - FCC, CE, WHQL<br>- ErP/EuP Ready (ErP/EuP ready power supply is required) (see **CAUTION 14**) |

**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. About the setting of “Hyper Threading Technology”, please check page 70.
2. This motherboard supports Dual Channel Memory Technology. Before you implement Dual Channel Memory Technology, make sure to read the installation guide of memory modules on page 23 for proper installation.
3. DDR3 frequency options may depend on the processor. Only K-Series CPU can support DDR3 overclock to 2133 and 1866.
4. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 7 / Vista™ / XP. For Windows® OS with 64-bit CPU, there is no such limitation.
5. For microphone input, this motherboard supports both stereo and mono modes. For audio output, this motherboard supports 2-channel, 4-channel, 6-channel, and 8-channel modes. Please check the table on page 17 for proper connection.
6. F-Stream is an all-in-one tool to fine-tune different system functions in a user-friendly interface, which currently includes Hardware Monitor, Fan Control, Overclocking, OC DNA, Mouse Polling and IES. In the Hardware Monitor mode, F-Stream shows the major readings of your system. In Fan Control mode, F-Stream shows the fan speed and temperature for you to adjust. In Overclocking Control mode, F-Stream allows you to overclock the CPU frequency for optimal system performance. In OC DNA mode, you can save your OC settings as a profile and share them with your friends. Your friends can then load the OC profile in to their own system to get the same OC settings. In Mouse Polling mode, F-Stream allows you to adjust the mouse polling rate of the Fatal1ty Mouse port to add a professional level mouse configuration. In IES (Intelligent Energy Saver) mode, the voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle without sacrificing computing performance.
7. Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update system BIOS without entering operating systems first like MS-DOS or Windows®. With this utility, you can press <F6> key during the POST or press <F2> key to BIOS setup menu to access Instant Flash. Just launch this tool and save the new BIOS file to your USB flash drive, floppy disk or hard drive, then you can update your BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

8. To experience intuitive motion controlled games is no longer only available at Wii. AIWI utility introduces a new way of PC gaming operation. AIWI is the world's first utility to turn your iPhone/iPod touch as a game joystick to control your PC games. All you have to do is just to install the AIWI utility either from our official website or our software support CD to your motherboard, and also download the free AIWI Lite from App store to your iPhone/iPod touch. Connecting your PC and apple devices via Bluetooth or WiFi networks, then you can start experiencing the exciting motion controlled games. Also, please do not forget to pay attention to our official website regularly, we will continuously provide you the most up-do-date supported games!
9. If you desire a faster, less restricted way of charging your Apple devices, such as iPhone/iPod/iPad Touch, we have prepared a wonderful solution for you - APP Charger. Simply installing the APP Charger driver, it makes your iPhone charged much quickly from your computer and up to 40% faster than before. APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5). With APP Charger driver installed, you can easily enjoy the marvelous charging experience than ever.
10. SmartView, a new function of internet browser, is the smart start page for IE that combines your most visited web sites, your history, your Facebook friends and your real-time newsfeed into an enhanced view for a more personal Internet experience. Our motherboards are exclusively equipped with the SmartView utility that helps you keep in touch with friends on-the-go. To use SmartView feature, please make sure your OS version is Windows® 7 / 7 64 bit / Vista™ / Vista™ 64 bit, and your browser version is IE8.
11. Although this motherboard offers stepless control, it is not recommended to perform over-clocking. Frequencies other than the recommended CPU bus frequencies may cause the instability of the system or damage the CPU.
12. When it is detected that the CPU is overheating, the system will automatically shutdown. Before you re-start the system, please check if the CPU fan on the motherboard functions properly and unplug the power cord, then plug it back again. To improve heat dissipation, remember to spray thermal grease between the CPU and the heatsink when you install the PC system.
13. Combo Cooler Option (C.C.O.) provides the flexible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. Please be noticed that not all the 775 and 1156 CPU Fan can be used.

14. EuP, stands for Energy Using Product, was a provision regulated by European Union to define the power consumption for the completed system. According to EuP, the total AC power of the completed system shall be under 1.00W in off mode condition. To meet EuP standard, an EuP ready motherboard and an EuP ready power supply are required. According to Intel's suggestion, the EuP ready power supply must meet the standard of 5v standby power efficiency is higher than 50% under 100 mA current consumption. For EuP ready power supply selection, we recommend you checking with the power supply manufacturer for more details.

## 1.3 Two SLI™ Graphics Card Support List

(for Windows® XP / XP 64-bit / Vista™ / Vista™ 64-bit / 7 / 7 64-bit)

| Chipset Vendor | Model Name | Chipset Name | Driver |
|---|---|---|---|
| NVIDIA | ASUS EN9800GT TDP/HTDP/512M | GeForce 9800GT | 257.21 |
| | Chaintech GES96GT-A1512P | GeForce 9600 GT | 257.21 |
| | Gigabyte GV-NX88T256H | GeForce 8800 GT | 257.21 |
| | GIGABYTE GV- N295-18I-B | GeForce GTX295 | 257.21 |
| | GIGABYTE GV-N26-896H-B | GeForce GTX 260 | 257.21 |
| | LEADTEK PX9800 GTX+ | GeForce 9800GTX+ | 257.21 |
| | LEADTEK PX9800GTX | GeForce 9800GTX | 257.21 |
| | LEADTEK PX8800 GTX TDH | GeForce 8800 GTX | 257.21 |
| | LEADTEK GTX275/896M-DDR3 | GeForce GTX275 | 257.21 |
| | MSI NX8600GT-T2D256E | GeForce 8600 GT | 257.21 |
| | MSI N465GTX-M2D1G-B | GeForce GTX465 | 257.21 |
| | MSI N250GTS-2D512-OC | GeForce GTS 250 | 257.21 |
| | SPARKLE SF-PX98GX221024D3-NHM | GeForce 9800GTX2 | 257.21 |

* For the latest updates of the supported PCI Express VGA card list for SLI™ Mode, please visit our website for details.

## 1.4 Two CrossFireX™ Graphics Card Support List

(for Windows® XP / XP 64-bit / Vista™ / Vista™ 64-bit / 7 / 7 64-bit)

| Chipset Vendor | Model Name | Chipset Name | Driver |
|---|---|---|---|
| ATI | ASUS EAH5850/G/2DIS/1GD5/A | Radeon HD 5850 | Catalyst 10.9 |
| | ASUS EAH5750/2DIS/1GD5/A | Radeon HD 5750 | Catalyst 10.9 |
| | ASUS EAH4350 SILENT/DI/ 512M D2/A | Radeon HD 4350 | Catalyst 10.9 |
| | MSI R5770-PM2D1G | Radeon HD 5770 | Catalyst 10.9 |
| | MSI R5570-MD1G/1G-DDR3 | Radeon HD 5570 | Catalyst 10.9 |
| | Powercolor HD5670-HDMI/1G-DDR5 | Radeon HD 5670 | Catalyst 10.9 |
| | Powercolor AX5450-512MK3-SH/512M-DDR3 | Radeon HD 5450 | Catalyst 10.9 |
| | Powercolor HD4890-HDMI/1G-DDR5 | Radeon HD 4890 | Catalyst 10.9 |
| | Powercolor HD4830-HDMI/512M-DDR3 | Radeon HD 4830 | Catalyst 10.9 |
| | Powercolor AX4670 512MD3-P | Radeon HD 4670 | Catalyst 10.9 |
| | Powercolor HD4550-HDMI/ 512M-DDR3 | Radeon HD 4550 | Catalyst 10.9 |
| | Powercolor AX3870 512MD4-H | Radeon HD 3870 | Catalyst 10.9 |
| | Powercolor AX3650 512MMD3-XP | Radeon HD 3650 | Catalyst 10.9 |

* For the latest updates of the supported PCI Express VGA card list for CrossFireX™ Mode, please visit our website for details.

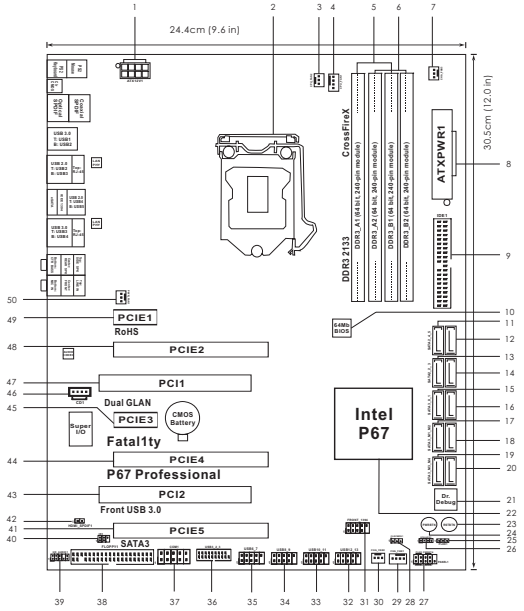
## 1.5 Three CrossFireX™ Graphics Card Support List

(for Windows® Vista™ / Vista™ 64-bit / 7 / 7 64-bit)

| Chipset Vendor | Model Name | Chipset Name | Driver |
|---|---|---|---|
| ATI | ASUS EAH5850/G/2DIS/1GD5/A | Radeon HD 5850 | Catalyst 10.9 |
| | MSI R5770-PM2D1G | Radeon HD 5770 | Catalyst 10.9 |
| | Powercolor AX4670 512MD3-P | Radeon HD 4670 | Catalyst 10.9 |
| | Powercolor AX3870 512MD4-H | Radeon HD 3870 | Catalyst 10.9 |

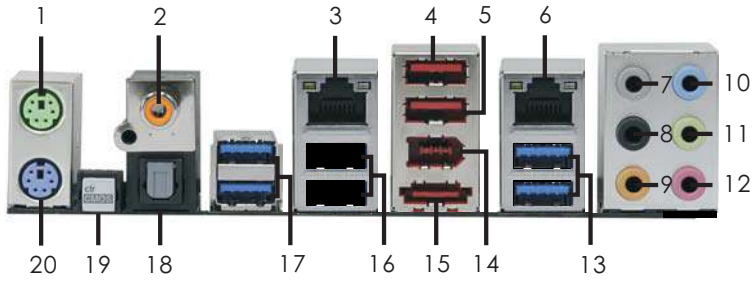
* For the latest updates of the supported PCI Express VGA card list for CrossFireX™ Mode, please visit our website for details.

## 1.6 Motherboard Layout




| | | | |
|---|---|---|---|
| 1 | ATX 12V Power Connector (ATX12V1) | 27 | System Panel Header (PANEL1, Black) |
| 2 | 1155-Pin CPU Socket | 28 | Clear CMOS Jumper (CLRCMOS1) |
| 3 | CPU Fan Connector (CPU_FAN2) | 29 | Chassis Fan Connector (CHA_FAN1) |
| 4 | CPU Fan Connector (CPU_FAN1) | 30 | Chassis Fan Connector (CHA_FAN2) |
| 5 | 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A1, DDR3_B1, Red) | 31 | Front Panel IEEE 1394 Header (FRONT_1394, Red) |
| 6 | 2 x 240-pin DDR3 DIMM Slots (Dual Channel: DDR3_A2, DDR3_B2, Black) | 32 | USB 2.0 Header (USB12_13, Black) |
| 7 | Chassis Fan Connector (CHA_FAN3) | 33 | USB 2.0 Header (USB10_11, Black) |
| 8 | ATX Power Connector (ATXPWR1) | 34 | USB 2.0 Header (USB8_9, Black) |
| 9 | Primary IDE Connector (IDE1, Black) | 35 | USB 2.0 Header (USB6_7, Black) |
| 10 | 64Mb SPI Flash | 36 | USB 3.0 Header (USB3_2_3, Black) |
| 11 | SATA2 Connector (SATA2_5, Black) | 37 | COM Port Header (COM1) |
| 12 | SATA2 Connector (SATA2_4, Black) | 38 | Floppy Connector (FLOPPY1) |
| 13 | SATA2 Connector (SATA2_3, Black) | 39 | Front Panel Audio Header (HD_AUDIO1, Black) |
| 14 | SATA2 Connector (SATA2_2, Black) | 40 | Infrared Module Header (IR1) |
| 15 | SATA3 Connector (SATA3_1, Red) | 41 | PCI Express 2.0 x16 Slot (PCIE5, Red) |
| 16 | SATA3 Connector (SATA3_0, Red) | 42 | HDMI_SPDIF Header (HDMI_SPDIF1, Black) |
| 17 | SATA3 Connector (SATA3_M2, Red) | 43 | PCI Slot (PCI2) |
| 18 | SATA3 Connector (SATA3_M1, Red) | 44 | PCI Express 2.0 x16 Slot (PCIE4, Red) |
| 19 | SATA3 Connector (SATA3_M4, Red) | 45 | PCI Express 2.0 x1 Slot (PCIE3, Black) |
| 20 | SATA3 Connector (SATA3_M3, Red) | 46 | Internal Audio Connector: CD1 (Black) |
| 21 | Dr. Debug | 47 | PCI Slot (PCI1) |
| 22 | Intel P67 Chipset | 48 | PCI Express 2.0 x16 Slot (PCIE2, Red) |
| 23 | Reset Switch (RSTBTN) | 49 | PCI Express 2.0 x1 Slot (PCIE1, Black) |
| 24 | Power Switch (PWRBTN) | 50 | Power Fan Connector (PWR_FAN1) |
| 25 | Power LED Header (PLED1) | | |
| 26 | Chassis Speaker Header (SPEAKER 1, Black) | | |

## 1.7 I/O Panel




| | | | |
|---|---|---|---|
| 1 | PS/2 Mouse Port (Green) | * 11 | Front Speaker (Lime) |
| 2 | Coaxial SPDIF Out Port | 12 | Microphone (Pink) |
| * 3 | LAN RJ-45 Port | 13 | USB 3.0 Ports (USB34) |
| 4 | Fatal1ty Mouse Port (USB4) | 14 | IEEE 1394 Port (IEEE 1394) |
| 5 | USB 2.0 Port (USB5) | 15 | eSATA3 Connector |
| * 6 | LAN RJ-45 Port | 16 | USB 2.0 Ports (USB23) |
| 7 | Side Speaker (Gray) | * 17 | USB 3.0 Ports (USB12) |
| 8 | Rear Speaker (Black) | 18 | Optical SPDIF Out Port |
| 9 | Central / Bass (Orange) | 19 | Clear CMOS Switch (CLRCBTN) |
| 10 | Line In (Light Blue) | 20 | PS/2 Keyboard Port (Purple) |

* If you want to install USB 3.0 device on this motherboard, we recommend to use USB 3.0 ports (USB12) as the first priority to get better performance.

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

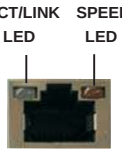
**LAN Port LED Indications**

**Activity/Link LED**

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

**SPEED LED**

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




**LAN Port**

***** If you use 2-channel speaker, please connect the speaker's plug into "Front Speaker Jack". See the table below for connection details in accordance with the type of speaker you use.

**TABLE for Audio Output Connection**

| Audio Output Channels | Front Speaker (No. 11) | Rear Speaker (No. 8) | Central / Bass (No. 9) | Side Speaker (No. 7) |
|---|---|---|---|---|
| 2 | V | -- | -- | -- |
| 4 | V | V | -- | -- |
| 6 | V | V | V | -- |
| 8 | V | V | V | V |

To enable Multi-Streaming function, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find “Mixer” tool on your system. Please select “Mixer ToolBox”  , click “Enable playback multi-streaming”, and click “ok”. Choose “2CH”, “4CH”, “6CH”, or “8CH” and then you are allowed to select “Realtek HDA Primary output” to use Rear Speaker, Central/Bass, and Front Speaker, or select “Realtek HDA Audio 2nd output” to use front panel audio.

# Chapter 2: Installation_

This is an ATX form factor (12.0" x 9.6", 30.5 x 24.4 cm) motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.

## 2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over-tighten the screws! Doing so may damage the motherboard.

## 2.2 Pre-installation Precautions

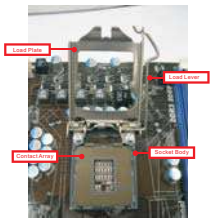
Take note of the following precautions before you install motherboard components or change any motherboard settings.

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 antistatic pad or in the bag that comes with the component.

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.

## 2.3 CPU Installation

For the installation of Intel 1155-Pin CPU, please follow the steps below.



1155-Pin Socket Overview

Before you insert the 1155-Pin CPU into the socket, please check if the CPU surface is unclean or if there is any bent pin on the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.

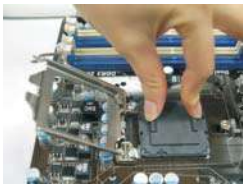
Step 1. Open the socket:

Step 1-1. Disengaging the lever by depressing down and out on the hook to clear retention tab.

Step 1-2. Rotate the load lever to fully open position at approximately 135 degrees.

Step 1-3. Rotate the load plate to fully open position at approximately 100 degrees.

Step 2. Remove PnP Cap (Pick and Place Cap).

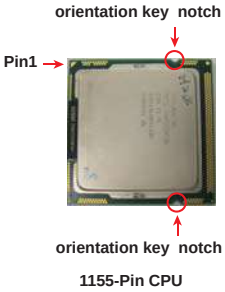


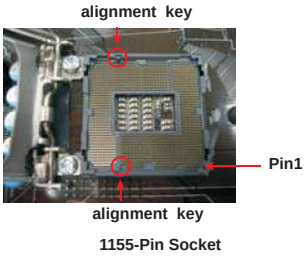
1. It is recommended to use the cap tab to handle and avoid kicking off the PnP cap.
2. This cap must be placed if returning the motherboard for after service.

Step 3. Insert the 1155-Pin CPU:

Step 3-1. Hold the CPU by the edge where is marked with black line.


Step 3-2. Orient the CPU with IHS (Integrated Heat Sink) up. Locate Pin1 and the two orientation key notches.




For proper inserting, please ensure to match the two orientation key notches of the CPU with the two alignment keys of the socket.

Step 3-3. Carefully place the CPU into the socket by using a purely vertical motion.

Step 3-4. Verify that the CPU is within the socket and properly mated to the orient keys.

Step 4. Close the socket:

Step 4-1. Rotate the load plate onto the IHS.

Step 4-2. While pressing down lightly on load plate, engage the load lever.

## 2.4 Installation of CPU Fan and Heatsink

This motherboard is equipped with 1155-Pin socket that supports Intel 1155-Pin CPU. Please adopt the type of heatsink and cooling fan compliant with Intel 1155-Pin CPU to dissipate heat. Before you installed the heatsink, you need to spray thermal interface material between the CPU and the heatsink to improve heat dissipation. Ensure 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 16, No. 4).

**For proper installation, please kindly refer to the instruction manuals of your CPU fan and heatsink.**

Below is an example to illustrate the installation of the heatsink for 1155-Pin CPU.

Step 1. Apply thermal interface material onto center of IHS on the socket surface.


Step 2. Place the heatsink onto the socket. Ensure fan cables are oriented on side closest to the CPU fan connector on the motherboard (CPU_FAN1, see page 16, No. 4).

Step 3. Align fasteners with the motherboard through-holes.


Step 4. Rotate the fastener clockwise, then press down on fastener caps with thumb to install and lock. Repeat with remaining fasteners.


If you press down the fasteners without rotating them clockwise, the heatsink cannot be secured on the motherboard.

Step 5. Connect fan header with the CPU fan connector on the motherboard.

Step 6. Secure excess cable with tie-wrap to ensure cable does not interfere with fan operation or contact other components.

Please be noticed that this motherboard supports Combo Cooler Option (C.C.O.), which provides the flexible option to adopt three different CPU cooler types, Socket LGA 775, LGA 1155 and LGA 1156. The white throughholes are for Socket LGA 1155/1156 CPU fan.

## 2.5 Installation of Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology. For dual channel configuration, you always need to install **identical** (the same brand, speed, size and chip-type) DDR3 DIMM pair in the slots of the same color. In other words, you have to install **identical** DDR3 DIMM pair in **Dual Channel A** (DDR3_A1 and DDR3_B1; Red slots; see p.16 No.5) or **identical** DDR3 DIMM pair in **Dual Channel B** (DDR3_A2 and DDR3_B2; Black slots; see p.16 No.6), so that Dual Channel Memory Technology can be activated. This motherboard also allows you to install four DDR3 DIMMs for dual channel configuration, and please install **identical** DDR3 DIMMs in all four slots. You may refer to the Dual Channel Memory Configuration Table below.

**Dual Channel Memory Configurations**

| | DDR3_A1 (Red Slot) | DDR3_A2 (Black Slot) | DDR3_B1 (Red Slot) | DDR3_B2 (Black Slot) |
|---|---|---|---|---|
| (1) | Populated | - | Populated | - |
| (2) | - | Populated | - | Populated |
| (3)* | Populated | Populated | Populated | Populated |

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

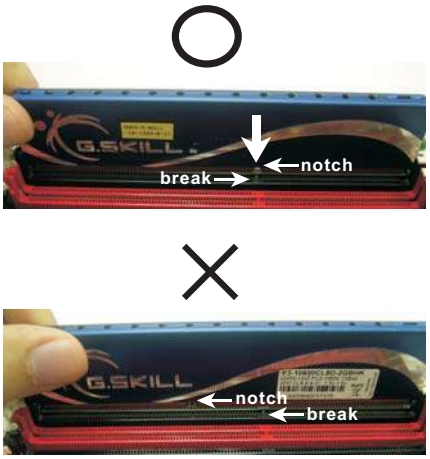
1. If you want to install two memory modules, for optimal compatibility and reliability, it is recommended to install them in the slots of the same color. In other words, install them either in the set of red slots (DDR3_A1 and DDR3_B1), or in the set of black slots (DDR3_A2 and DDR3_B2).
2. If only one memory module or three memory modules are installed in the DDR3 DIMM slots on this motherboard, it is unable to activate the Dual Channel Memory Technology.
3. If a pair of memory modules is NOT installed in the same Dual Channel, for example, installing a pair of memory modules in DDR3_A1 and DDR3_A2, it is unable to activate the Dual Channel Memory Technology .
4. It is not allowed to install a DDR or DDR2 memory module into DDR3 slot; otherwise, this motherboard and DIMM may be damaged.
5. Some DDR3 1GB double-sided DIMMs with 16 chips may not work on this motherboard. It is not recommended to install them on this motherboard.

## 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.

## 2.6 Expansion Slots (PCI and PCI Express Slots)

There are 2 PCI slots and 5 PCI Express slots on this motherboard.

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

**PCIE slots:**

PCIE1 / PCIE3 (PCIE x1 slot; Black) is used for PCI Express cards with x1 lane width cards, such as Gigabit LAN card, SATA2 card, etc.
PCIE2 / PCIE4 (PCIE x16 slot; Red) is used for PCI Express x16 lane width graphics cards, or used to install PCI Express graphics cards to support CrossFireX™ or SLI™ function.
PCIE5 (PCIE x16 slot; Red) is used for PCI Express x4 lane width graphics cards, or used to install PCI Express graphics cards to support 3-Way CrossFireX™ function.

1. In single VGA card mode, it is recommended to install a PCI Express x16 graphics card on PCIE2 slot.
2. In CrossFireX™ mode or SLI™ mode, please install PCI Express x16 graphics cards on PCIE2 and PCIE4 slots. Therefore, both these two slots will work at x8 bandwidth.
3. In 3-Way CrossFireX™ mode, please install PCI Express x16 graphics cards on PCIE2, PCIE4 and PCIE5 slots. Therefore, PCIE2 and PCIE4 slots will work at x8 bandwidth while PCIE5 slot will work at x4 bandwidth.
4. Please connect a chassis fan to motherboard chassis fan connector (CHA_FAN1, CHA_FAN2 or CHA_FAN3) when using multiple graphics cards for better thermal environment.
5. Please be noted that the system will power on/off twice if you first time install or remove PCI Express x1 card on PCIE3 slot.

### Installing an expansion card

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

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

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

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

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

Step 6. Replace the system cover.

## 2.7 SLI™ and Quad SLI™ Operation Guide

This motherboard supports NVIDIA® SLI™ and Quad SLI™ (Scalable Link Interface) technology that allows you to install up to three identical PCI Express x16 graphics cards. Currently, NVIDIA® SLI™ technology supports Windows® XP / XP 64-bit / Vista™ / Vista™ 64-bit / 7 / 7 64-bit OS. NVIDIA® Quad SLI™ technology support Windows® Vista™ / Vista™ 64-bit / 7 / 7 64-bit OS only. Please follow the installation procedures in this section.

**Requirements**

1. For SLI™ technology, you should have two identical SLI™-ready graphics cards that are NVIDIA® certified. For Quad SLI™ technology, you should have two identical Quad SLI™-ready graphics cards that are NVIDIA® certified.
2. Make sure that your graphics card driver supports NVIDIA® SLI™ technology. Download the driver from NVIDIA® website (www.nvidia.com).
3. Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. It is recommended to use NVIDIA® certified PSU. Please refer to NVIDIA® website for details.

### 2.7.1 Graphics Card Setup

#### 2.7.1.1 Installing Two SLI™-Ready Graphics Cards

Step 1. Install the identical SLI™-ready graphics cards that are NVIDIA® certified because different types of graphics cards will not work together properly. (Even the GPU chips version shall be the same.) Insert one graphics card into PCIE2 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.

Step2. If required, connect the auxiliary power source to the PCI Express graphics cards.

Step3. Align and insert SLI_Bridge_2S Card to the goldfingers on each graphics card. Make sure SLI_Bridge_2S Card is firmly in place.

Step4. Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE2 slot.

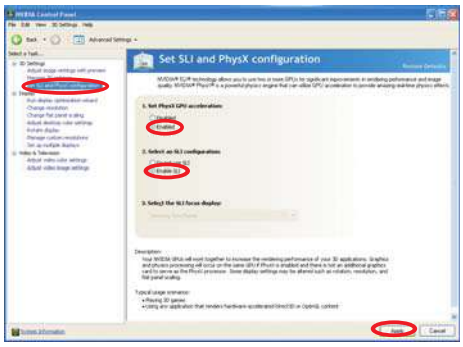
## 2.7.2 Driver Installation and Setup

Install the graphics card drivers to your system. After that, you can enable the Multi-Graphics Processing Unit (GPU) feature in the NVIDIA® nView system tray utility. Please follow the below procedures to enable the multi-GPU feature.

**For Windows® XP / XP 64-bit OS:**
**(For SLI™ mode only)**

A. Double-click **NVIDIA Settings icon** on your Windows® taskbar.

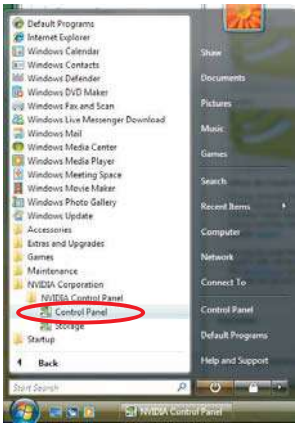

B. From the pop-up menu, select **Set SLI and PhysX configuration**. In **Set PhysX GPU acceleration** item, please select **Enabled**. In **Select an SLI configuration** item, please select **Enable SLI**. And click **Apply**.



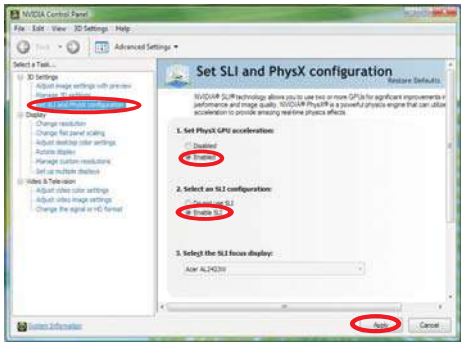

C. Reboot your system.
D. You can freely enjoy the benefit of SLI™ feature.

**For Windows® Vista™ / Vista™ 64-bit / 7 / 7 64-bit OS:**
**(For SLI™ and Quad SLI™ mode)**

A. Click the **Start** icon on your Windows taskbar.
B. From the pop-up menu, select **All Programs**, and then click **NVIDIA Corporation**.
C. Select **NVIDIA Control Panel** tab.
D. Select **Control Panel** tab.




E. From the pop-up menu, select **Set SLI and PhysX configuration**. In **Set PhysX GPU acceleration** item, please select **Enabled**. In **Select an SLI configuration** item, please select **Enable SLI**. And click **Apply**.




F. Reboot your system.
G. You can freely enjoy the benefit of SLI™ or Quad SLI™ feature.

* SLI™ appearing here is a registered trademark of NVIDIA® Technologies Inc., and is used only for identification or explanation and to the owners' benefit, without intent to infringe.

## 2.8 CrossFireX™, 3-Way CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™, 3-way CrossFireX™ and Quad CrossFireX™ feature. CrossFireX™ technology offers the most advantageous means available of combining multiple high performance Graphics Processing Units (GPU) in a single PC. Combining a range of different operating modes with intelligent software design and an innovative interconnect mechanism, CrossFireX™ enables the highest possible level of performance and image quality in any 3D application. Currently CrossFireX™ feature is supported with Windows® XP with Service Pack 2 / Vista™ / 7 OS. 3-way CrossFireX™ and Quad CrossFireX™ feature are supported with Windows® Vista™ / 7 OS only. Please check AMD website for ATI™ CrossFireX™ driver updates.

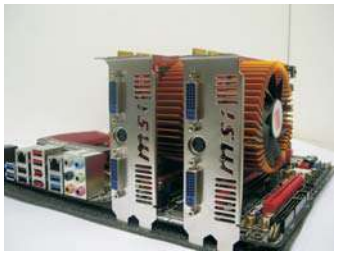
1. If a customer incorrectly configures their system they will not see the performance benefits of CrossFireX™. All three CrossFireX™ components, a CrossFireX™ Ready graphics card, a CrossFireX™ Ready motherboard and a CrossFireX™ Edition co-processor graphics card, must be installed correctly to benefit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

### 2.8.1 Graphics Card Setup

#### 2.8.1.1 Installing Two CrossFireX™-Ready Graphics Cards

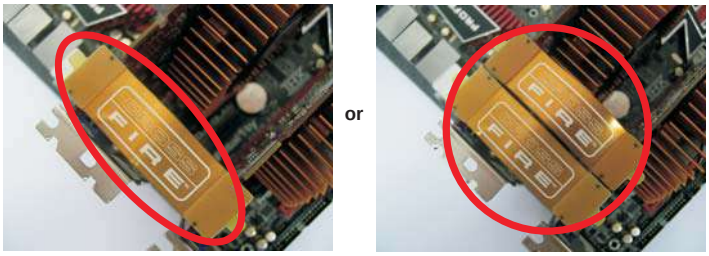
Different CrossFireX™ cards may require different methods to enable CrossFireX™ feature. In below procedures, we use Radeon HD 4830 as the example graphics card. For other CrossFireX™ cards that ATI™ has released or will release in the future, please refer to ATI™ graphics card manuals for detailed installation guide.

Step 1. Insert one Radeon graphics card into PCIE2 slot and the other Radeon graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.



Step 2. Connect two Radeon graphics cards by installing CrossFire Bridge on CrossFire Bridge Interconnects on the top of Radeon graphics cards. (CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)


**CrossFire Bridge**




Step 3. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)

### 2.8.1.2 Installing Three CrossFireX™-Ready Graphics Cards

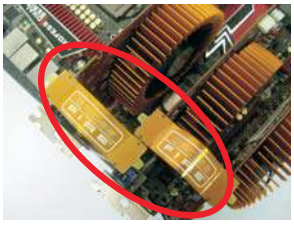
Step 1. Install one Radeon graphics card to PCIE2 slot. For the proper installation procedures, please refer to section “Expansion Slots”.

Step 2. Install one Radeon graphics card to PCIE4 slot. For the proper installation procedures, please refer to section “Expansion Slots”.

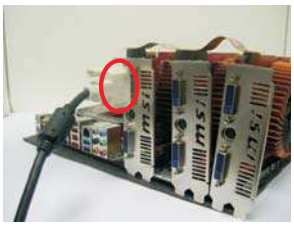
Step 3. Install one Radeon graphics card to PCIE5 slot. For the proper installation procedures, please refer to section “Expansion Slots”.

Step 4. Use one CrossFire™ Bridge to connect Radeon graphics cards on PCIE2 and PCIE4 slots, and use the other CrossFire™ Bridge to connect Radeon graphics cards on PCIE4 and PCIE5 slots. (CrossFire™ Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)


**CrossFire™ Bridge**



Step 5. Connect the DVI monitor cable to the DVI connector on the Radeon graphics card on PCIE2 slot. (You may use the DVI to D-Sub adapter to convert the DVI connector to D-Sub interface, and then connect the D-Sub monitor cable to the DVI to D-Sub adapter.)



## 2.8.2 Driver Installation and Setup

Step 1. Power on your computer and boot into OS.

Step 2. Remove the ATI™ driver if you have any VGA driver installed in your system.

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

Step 3. Install the required drivers to your system.

**For Windows® XP OS:**

A. ATI™ recommends Windows® XP Service Pack 2 or higher to be installed (If you have Windows® XP Service Pack 2 or higher installed in your system, there is no need to download it again): http://www.microsoft.com/windowsxp/sp2/default.mspx

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

**For Windows® 7 / Vista™ OS:**

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

Step 4. Restart your computer.

Step 5. Install the VGA card drivers to your system, and restart your computer. Then you will find "ATI Catalyst Control Center" on your Windows® taskbar.


**ATI Catalyst Control Center**

Step 6. Double-click "ATI Catalyst Control Center". Click "View", select "CrossFireX™", and then check the item "Enable CrossFireX™". Select "2 GPUs" and click "Apply" (if you install two Radeon graphics cards). Select "3 GPUs" and click "OK" (if you install three Radeon graphics cards).

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

Step 7. You can freely enjoy the benefit of CrossFireX™, 3-Way CrossFireX™ or Quad CrossFireX™ feature.

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

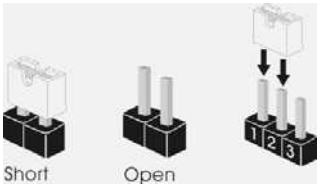
## 2.9 Surround Display Feature

This motherboard supports Surround Display upgrade. With the external add-on PCI Express VGA cards, you can easily enjoy the benefits of Surround Display feature. For the detailed instruction, please refer to the document at the following path in the Support CD:

**..\ Surround Display Information**

## 2.10 Jumpers Setup

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




| Jumper | Setting | Description |
|---|---|---|
| Clear CMOS Jumper (CLRCMOS1) (see p.16, No. 28) | 1_2 Default; 2_3 Clear CMOS | |

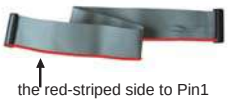
Note: CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not clear the CMOS right after you update the BIOS. If you need to clear the CMOS when you just finish updating the BIOS, you must boot up the system first, and then shut it down before you do the clear-CMOS action. Please be noted that the password, date, time, user default profile, 1394 GUID and MAC address will be cleared only if the CMOS battery is removed.

The Clear CMOS Switch has the same function as the Clear CMOS jumper.

## 2.11 Onboard Headers and Connectors

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

FDD connector (33-pin FLOPPY1) (see p.16 No. 38)


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

Primary IDE connector (Black)

(39-pin IDE1, see p.16 No. 9)


connect the blue end to the motherboard

connect the black end to the IDE devices

80-conductor ATA 66/100/133 cable

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

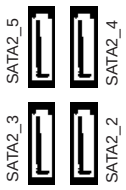
Serial ATAII Connectors

(SATA2_2: see p.16, No. 14)

(SATA2_3: see p.16, No. 13)

(SATA2_4: see p.16, No. 12)

(SATA2_5: see p.16, No. 11)




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

Serial ATA3 Connectors

(SATA3_0: see p.16, No. 16)

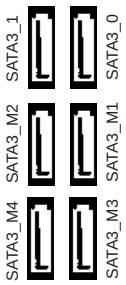
(SATA3_1: see p.16, No. 15)

(SATA3_M1: see p.16, No. 18)

(SATA3_M2: see p.16, No. 17)

(SATA3_M3: see p.16, No. 20)

(SATA3_M4: see p.16, No. 19)




These six Serial ATA3 (SATA3) connectors support SATA data cables for internal storage devices. The current SATA3 interface allows up to 6.0 Gb/s data transfer rate. If you install the HDD on the eSATA port on the rear I/O, the internal SATA3_M4 will not function.

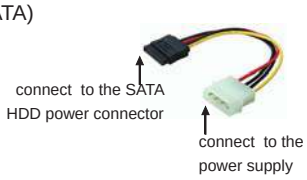
We recommend to use Intel® P67 SATA ports (SATA3_0, SATA3_1, SATA2_2, SATA2_3, SATA2_4 and SATA2_5) for your bootable devices. This will minimum your boot time and get the best performance. But if you still want to boot from Marvell SATA3 controller, you can still enable Marvell SATA3 Bootable in UEFI. If you want to install USB 3.0 device on Marvell SATA3 port, please use SATA3_M1 and SATA3_M2 as the first priority for better performance.

Serial ATA (SATA) Data Cable

(Optional)

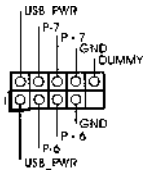
Either end of the SATA data cable can be connected to the SATA / SATAII / SATA3 hard disk or the SATAII / SATA3 connector on this motherboard.

Serial ATA (SATA)
Power Cable
(Optional)



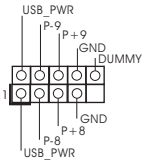

Please connect the black end of SATA power cable to the power connector on each drive. Then connect the white end of SATA power cable to the power connector of the power supply.

USB 2.0 Headers
(9-pin USB6_7)
(see p.16 No. 35)

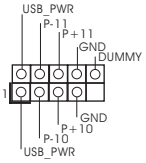



Besides four default USB 2.0 ports on the I/O panel, there are four USB 2.0 headers on this motherboard. Each USB 2.0 header can support two USB 2.0 ports.

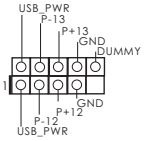
(9-pin USB8_9)
(see p.16 No. 34)



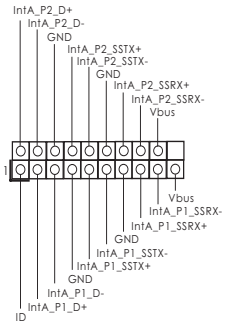

(9-pin USB10_11)
(see p.16 No. 33)




(9-pin USB12_13)
(see p.16 No. 32)




USB 3.0 Header
(19-pin USB3_2_3)
(see p.16 No. 36)

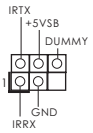



Besides four default USB 3.0 ports on the I/O panel, there is one USB 3.0 header on this motherboard. This USB 3.0 header can support two USB 3.0 ports.

### Infrared Module Header

(5-pin IR1)

(see p.16 No. 40)




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

### Internal Audio Connectors

(4-pin CD1)

(CD1: see p.16 No. 46)

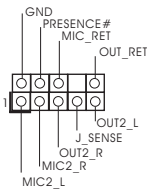

CD1

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

### Front Panel Audio Header

(9-pin HD_AUDIO1)

(see p.16 No. 39)



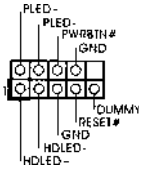

This is an interface for front panel audio cable that allows convenient connection and control of audio devices.

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instruction in our manual and chassis manual to install your system.
2. If you use AC'97 audio panel, please install it to the front panel audio header as below:
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for HD audio panel only. You don't need to connect them for AC'97 audio panel.
   E. To activate the front mic.
      For Windows® XP / XP 64-bit OS:
      Select "Mixer". Select "Recorder". Then click "FrontMic".
      For Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS:
      Go to the "FrontMic" Tab in the Realtek Control panel. Adjust "Recording Volume".

### System Panel Header

(9-pin PANEL1)

(see p.16 No. 27)

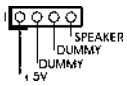
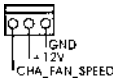
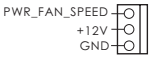



This header accommodates several system front panel functions.

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

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

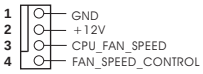
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assign-ments are matched correctly.

| | | |
|---|---|---|
| Chassis Speaker Header<br>(4-pin SPEAKER 1)<br>(see p.16 No. 26) |  | Please connect the chassis speaker to this header. |
| Power LED Header<br>(3-pin PLED1)<br>(see p.16 No. 25) |  | Please connect the chassis power LED to this header to indicate system power status. The LED is on when the system is operating. The LED keeps blinking in S1 state. The LED is off in S3/S4 state or S5 state (power off). |
| Chassis and Power Fan Connectors<br>(4-pin CHA_FAN1)<br>(see p.16 No. 29)<br>(3-pin CHA_FAN2)<br>(see p.16 No. 30)<br>(3-pin CHA_FAN3)<br>(see p.16 No. 7)<br>(3-pin PWR_FAN1)<br>(see p.16 No. 50) |  <br>  <br>  <br>  | Please connect the fan cables to the fan connectors and match the black wire to the ground pin. |

## CPU Fan Connectors

(4-pin CPU_FAN1)

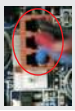
(see p.16 No. 4)




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

Though this motherboard provides 4-Pin CPU fan (Quiet Fan) support, the 3-Pin CPU fan still can work successfully even without the fan speed control function. If you plan to connect the 3-Pin CPU fan to the CPU fan connector on this motherboard, please connect it to Pin 1-3.

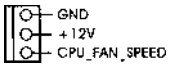
**Pin 1-3 Connected**



3-Pin Fan Installation

(3-pin CPU_FAN2)

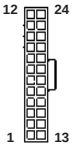
(see p.16 No. 3)




## ATX Power Connector

(24-pin ATXPWR1)

(see p.16 No. 8)




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

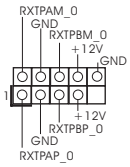
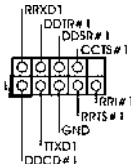
(8-pin ATX12V1)

(see p.16 No. 1)


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

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


4-Pin ATX 12V Power Supply Installation

| | | |
|---|---|---|
| IEEE 1394 Header<br>(9-pin FRONT_1394)<br>(see p.16 No. 31) |  | Besides one default IEEE 1394 port on the I/O panel, there is one IEEE 1394 header (FRONT_1394) on this motherboard. This IEEE 1394 header can support one IEEE 1394 port. |
| Serial port Header<br>(9-pin COM1)<br>(see p.16 No. 37) |  | This COM1 header supports a serial port module. |
| HDMI_SPDIF Header<br>(2-pin HDMI_SPDIF1)<br>(see p.16 No. 42) |  | HDMI_SPDIF header, providing SPDIF audio output to HDMI VGA card, allows the system to connect HDMI Digital TV/ projector/LCD devices. Please connect the HDMI_SPDIF connector of HDMI VGA card to this header. |

## The Installation Guide of Front USB 3.0 Panel

Step *1* Prepare the bundled Front USB 3.0 Panel, four HDD screws, and six chassis screws.

Step *2* Screw the 2.5" HDD/SSD to the Front USB 3.0 Panel with four HDD screws.

Step *3* Intall the Front USB 3.0 Panel into the 2.5" drive bay of the chassis.

Step *4* Screw the Front USB 3.0 Panel to the drive bay with six chassis screws.

Step *5* Plug the Front USB 3.0 cable into the USB 3.0 header (USB3_2_3) on the motherboard.

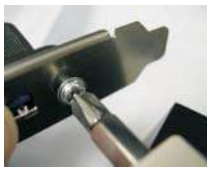
Step *6* The Front USB 3.0 Panel is ready to use.

## The Installation Guide of Rear USB 3.0 Bracket

Step *1* Unscrew the two screws from the Front USB 3.0 Panel.

Step *2* Put the USB 3.0 cable and the rear USB 3.0 bracket together.

Step *3* Screw the two screws into the rear USB 3.0 bracket.



Step *4* Put the rear USB 3.0 bracket into the chassis.

## 2.12 Smart Switches

The motherboard has three smart switches: power switch, reset switch and clear CMOS switch, allowing users to quickly turn on/off or reset the sytem clear the CMOS values.

| | | |
|---|---|---|
| Power Switch<br>(PWRBTN)<br>(see p.16 No. 24) |  | Power Switch is a smart switch, allowing users to quickly turn on/off the system. |
| Reset Switch<br>(RSTBTN)<br>(see p.16 No. 23) |  | Reset Switch is a smart switch, allowing users to quickly reset the system. |
| Clear CMOS Switch<br>(CLRCBTN)<br>(see p.17 No. 19) |  | Clear CMOS Switch is a smart switch, allowing users to quickly clear the CMOS values. |

## 2.13 Dr. Debug

Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes.

| Status Code | Description |
|---|---|
| 0x00 | Not used |
| 0x01 | Power on. Reset type detection (soft/hard) |
| 0x02 | AP initialization before microcode loading |
| 0x03 | North Bridge initialization before microcode loading |
| 0x04 | South Bridge initialization before microcode loading |
| 0x05 | OEM initialization before microcode loading |
| 0x06 | Microcode loading |
| 0x07 | AP initialization after microcode loading |
| 0x08 | North Bridge initialization after microcode loading |
| 0x09 | South Bridge initialization after microcode loading |
| 0x0A | OEM initialization after microcode loading |
| 0x0B | Cache initialization |
| 0x0C – 0x0D | Reserved for future AMI SEC error codes |
| 0x0E | Microcode not found |
| 0x0F | Microcode not loaded |
| 0x10 | PEI Core is started |
| 0x11 | Pre-memory CPU initialization is started |
| 0x12 | Pre-memory CPU initialization (CPU module specific) |
| 0x13 | Pre-memory CPU initialization (CPU module specific) |
| 0x14 | Pre-memory CPU initialization (CPU module specific) |
| 0x15 | Pre-memory North Bridge initialization is started |
| 0x16 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x17 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x18 | Pre-Memory North Bridge initialization (North Bridge module specific) |
| 0x19 | Pre-memory South Bridge initialization is started |
| 0x1A | Pre-memory South Bridge initialization (South Bridge module specific) |
| 0x1B | Pre-memory South Bridge initialization (South Bridge module specific) |
| 0x1C | Pre-memory South Bridge initialization (South Bridge module specific) |
| 0x1D – 0x2A | OEM pre-memory initialization codes |
| 0x2B | Memory initialization. Serial Presence Detect (SPD) data reading |
| 0x2C | Memory initialization. Memory presence detection |
| 0x2D | Memory initialization. Programming memory timing information |
| 0x2E | Memory initialization. Configuring memory |
| 0x2F | Memory initialization (other) |
| 0x30 | Reserved for ASL (see ASL Status Codes section below) |
| 0x31 | Memory Installed |
| 0x32 | CPU post-memory initialization is started |
| 0x33 | CPU post-memory initialization. Cache initialization |
| 0x34 | CPU post-memory initialization. Application Processor(s) (AP) initialization |
| 0x35 | CPU post-memory initialization. Boot Strap Processor (BSP) selection |
| 0x36 | CPU post-memory initialization. System Management Mode (SMM) initialization |

| | |
|---|---|
| 0x37 | Post-Memory North Bridge initialization is started |
| 0x38 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x39 | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3A | Post-Memory North Bridge initialization (North Bridge module specific) |
| 0x3B | Post-Memory South Bridge initialization is started |
| 0x3C | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3D | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3E | Post-Memory South Bridge initialization (South Bridge module specific) |
| 0x3F-0x4E | OEM post memory initialization codes |
| 0x4F | DXE IPL is started |
| 0x50 | Memory initialization error. Invalid memory type or incompatible memory speed |
| 0x51 | Memory initialization error. SPD reading has failed |
| 0x52 | Memory initialization error. Invalid memory size or memory modules do not match |
| 0x53 | Memory initialization error. No usable memory detected |
| 0x54 | Unspecified memory initialization error |
| 0x55 | Memory not installed |
| 0x56 | Invalid CPU type or Speed |
| 0x57 | CPU mismatch |
| 0x58 | CPU self test failed or possible CPU cache error |
| 0x59 | CPU micro-code is not found or micro-code update is failed |
| 0x5A | Internal CPU error |
| 0x5B | reset PPI is not available |
| 0x5C-0x5F | Reserved for future AMI error codes |
| 0xE0 | S3 Resume is stared (S3 Resume PPI is called by the DXE IPL) |
| 0xE1 | S3 Boot Script execution |
| 0xE2 | Video repost |
| 0xE3 | OS S3 wake vector call |
| 0xE4-0xE7 | Reserved for future AMI progress codes |
| 0xE8 | S3 Resume Failed |
| 0xE9 | S3 Resume PPI not Found |
| 0xEA | S3 Resume Boot Script Error |
| 0xEB | S3 OS Wake Error |
| 0xEC-0xEF | Reserved for future AMI error codes |
| 0xF0 | Recovery condition triggered by firmware (Auto recovery) |
| 0xF1 | Recovery condition triggered by user (Forced recovery) |
| 0xF2 | Recovery process started |
| 0xF3 | Recovery firmware image is found |
| 0xF4 | Recovery firmware image is loaded |
| 0xF5-0xF7 | Reserved for future AMI progress codes |
| 0xF8 | Recovery PPI is not available |
| 0xF9 | Recovery capsule is not found |
| 0xFA | Invalid recovery capsule |
| 0xFB – 0xFF | Reserved for future AMI error codes |
| 0x60 | DXE Core is started |
| 0x61 | NVRAM initialization |

| | |
|---|---|
| 0x62 | Installation of the South Bridge Runtime Services |
| 0x63 | CPU DXE initialization is started |
| 0x64 | CPU DXE initialization (CPU module specific) |
| 0x65 | CPU DXE initialization (CPU module specific) |
| 0x66 | CPU DXE initialization (CPU module specific) |
| 0x67 | CPU DXE initialization (CPU module specific) |
| 0x68 | PCI host bridge initialization |
| 0x69 | North Bridge DXE initialization is started |
| 0x6A | North Bridge DXE SMM initialization is started |
| 0x6B | North Bridge DXE initialization (North Bridge module specific) |
| 0x6C | North Bridge DXE initialization (North Bridge module specific) |
| 0x6D | North Bridge DXE initialization (North Bridge module specific) |
| 0x6E | North Bridge DXE initialization (North Bridge module specific) |
| 0x6F | North Bridge DXE initialization (North Bridge module specific) |
| 0x70 | South Bridge DXE initialization is started |
| 0x71 | South Bridge DXE SMM initialization is started |
| 0x72 | South Bridge devices initialization |
| 0x73 | South Bridge DXE Initialization (South Bridge module specific) |
| 0x74 | South Bridge DXE Initialization (South Bridge module specific) |
| 0x75 | South Bridge DXE Initialization (South Bridge module specific) |
| 0x76 | South Bridge DXE Initialization (South Bridge module specific) |
| 0x77 | South Bridge DXE Initialization (South Bridge module specific) |
| 0x78 | ACPI module initialization |
| 0x79 | CSM initialization |
| 0x7A – 0x7F | Reserved for future AMI DXE codes |
| 0x80 – 0x8F | OEM DXE initialization codes |
| 0x90 | Boot Device Selection (BDS) phase is started |
| 0x91 | Driver connecting is started |
| 0x92 | PCI Bus initialization is started |
| 0x93 | PCI Bus Hot Plug Controller Initialization |
| 0x94 | PCI Bus Enumeration |
| 0x95 | PCI Bus Request Resources |
| 0x96 | PCI Bus Assign Resources |
| 0x97 | Console Output devices connect |
| 0x98 | Console input devices connect |
| 0x99 | Super IO Initialization |
| 0x9A | USB initialization is started |
| 0x9B | USB Reset |
| 0x9C | USB Detect |
| 0x9D | USB Enable |
| 0x9E – 0x9F | Reserved for future AMI codes |
| 0xA0 | IDE initialization is started |
| 0xA1 | IDE Reset |
| 0xA2 | IDE Detect |
| 0xA3 | IDE Enable |
| 0xA4 | SCSI initialization is started |
| 0xA5 | SCSI Reset |

| | |
|---|---|
| 0xA6 | SCSI Detect |
| 0xA7 | SCSI Enable |
| 0xA8 | Setup Verifying Password |
| 0xA9 | Start of Setup |
| 0xAA | Reserved for ASL (see ASL Status Codes section below) |
| 0xAB | Setup Input Wait |
| 0xAC | Reserved for ASL (see ASL Status Codes section below) |
| 0xAD | Ready To Boot event |
| 0xAE | Legacy Boot event |
| 0xAF | Exit Boot Services event |
| 0xB0 | Runtime Set Virtual Address MAP Begin |
| 0xB1 | Runtime Set Virtual Address MAP End |
| 0xB2 | Legacy Option ROM Initialization |
| 0xB3 | System Reset |
| 0xB4 | USB hot plug |
| 0xB5 | PCI bus hot plug |
| 0xB6 | Clean-up of NVRAM |
| 0xB7 | Configuration Reset (reset of NVRAM settings) |
| 0xB8 – 0xBF | Reserved for future AMI codes |
| 0xC0 – 0xCF | OEM BDS initialization codes |
| 0xD0 | CPU initialization error |
| 0xD1 | North Bridge initialization error |
| 0xD2 | South Bridge initialization error |
| 0xD3 | Some of the Architectural Protocols are not available |
| 0xD4 | PCI resource allocation error. Out of Resources |
| 0xD5 | No Space for Legacy Option ROM |
| 0xD6 | No Console Output Devices are found |
| 0xD7 | No Console Input Devices are found |
| 0xD8 | Invalid password |
| 0xD9 | Error loading Boot Option (LoadImage returned error) |
| 0xDA | Boot Option is failed (StartImage returned error) |
| 0xDB | Flash update is failed |
| 0xDC | Reset protocol is not available |

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

This motherboard adopts Intel® P67 chipset that supports Serial ATA (SATA) / Serial ATAII (SATAII) hard disks and RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage) functions. You may install SATA / SATAII hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA / SATAII hard disks.

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

## 2.15 Serial ATA3 (SATA3) Hard Disks Installation

This motherboard adopts Intel® P67 chipset that supports Serial ATA3 (SATA3) hard disks and RAID (RAID 0, RAID 1, RAID 10, RAID 5 and Intel Rapid Storage) functions for SATA3_0 and SATA3_1 connectors. It also adopts Marvell SE9120 chipset that supports Serial ATA3 (SATA3) hard disks for SATA3_M1, SATA3_M2, SATA3_M3 and SATA3_M4 connectors. You may install SATA3 hard disks on this motherboard for internal storage devices. This section will guide you to install the SATA3 hard disks.

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

Please be noted that SATA3_M1, SATA3_M2, SATA3_M3 and SATA3_M4 do not support RAID function. If you want to use RAID function on SATA3 connectors, please use SATA3_0 and SATA3_1 connectors.

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

This motherboard supports Hot Plug and Hot Swap functions for SATA / SATAII in RAID / AHCI mode. Intel® P67 chipset provides hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

**NOTE**

**What is Hot Plug Function?**

If the SATA / SATAII HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA / SATAII HDD.

**What is Hot Swap Function?**

If SATA / SATAII HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA / SATAII HDDs while the system is still power-on and in working condition.

## 2.17 Hot Plug and Hot Swap Functions for SATA3 HDDs

This motherboard supports Hot Plug and Hot Swap functions for SATA3 in RAID / AHCI mode. Intel® P67 and Marvell SE9120 chipsets provide hardware support for Advanced Host controller Interface (AHCI), a new programming interface for SATA host controllers developed thru a joint industry effort.

**NOTE**

**What is Hot Plug Function?**

If the SATA3 HDDs are NOT set for RAID configuration, it is called "Hot Plug" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.
However, please note that it cannot perform Hot Plug if the OS has been installed into the SATA3 HDD.

**What is Hot Swap Function?**

If SATA3 HDDs are built as RAID 1 or RAID 5 then it is called "Hot Swap" for the action to insert and remove the SATA3 HDDs while the system is still power-on and in working condition.

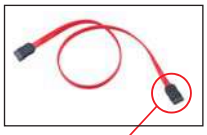
## 2.18 SATA / SATAII / SATA3 HDD Hot Plug Feature and Operation Guide

This motherboard supports Hot Plug feature for SATA / SATAII / SATA3 HDD in RAID / AHCI mode. Please read below operation guide of Hot Plug feature carefully. Before you process the SATA / SATAII / SATA3 HDD Hot Plug, please check below cable accessories from the motherboard gift box pack.

A. 7-pin SATA data cable

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

A. SATA data cable (Red)



SATA 7-pin connector

B. SATA power cable

The SATA 15-pin power connector (Black) connect to SATA / SATAII / SATA3 HDD

1x4-pin conventional power connector (White) connect to power supply

### Caution

1. Without SATA 15-pin power connector interface, the SATA / SATAII / SATA3 Hot Plug cannot be processed.
2. Even some SATA / SATAII / SATA3 HDDs provide both SATA 15-pin power connector and IDE 1x4-pin conventional power connector interfaces, the IDE 1x4-pin conventional power connector interface is definitely not able to support Hot Plug and will cause the HDD damage and data loss.

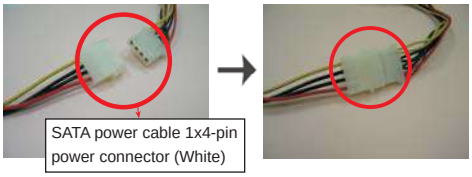
### Points of attention, before you process the Hot Plug:

1. Below operation procedure is designed only for our motherboard, which supports SATA / SATAII / SATA3 HDD Hot Plug.
   * The SATA / SATAII / SATA3 Hot Plug feature might not be supported by the chipset because of its limitation, the SATA / SATAII / SATA3 Hot Plug support information of our motherboard is indicated in the product spec on our website.
2. Make sure your SATA / SATAII / SATA3 HDD can support Hot Plug function from your dealer or HDD user manual. The SATA / SATAII / SATA3 HDD, which cannot support Hot Plug function, will be damaged under the Hot Plug operation.
3. Please make sure the SATA / SATAII / SATA3 driver is installed into system properly. The latest SATA / SATAII / SATA3 driver is available on our support website.
4. Make sure to use the SATA power cable & data cable, which are from our motherboard package.
5. Please follow below instructions step by step to reduce the risk of HDD crash or data loss.

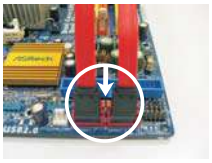
## How to Hot Plug a SATA / SATAII / SATA3 HDD:

Points of attention, before you process the Hot Plug:
Please do follow below instruction sequence to process the Hot Plug, improper procedure will cause the SATA / SATAII / SATA3 HDD damage and data loss.

Step *1* Please connect SATA power cable 1x4-pin end (White) to the power supply 1x4-pin cable.




Step *2* Connect SATA data cable to the motherboard's SATAII / SATA3 connector.



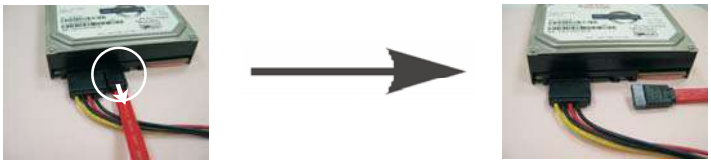
Step *3* Connect SATA 15-pin power cable connector (Black) end to SATA / SATAII / SATA3 HDD.

Step *4* Connect SATA data cable to the SATA / SATAII / SATA3 HDD.

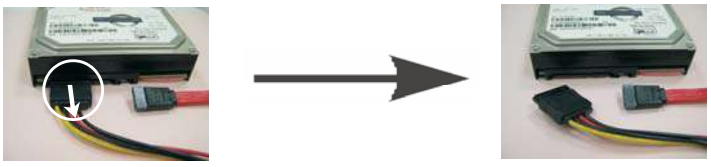
## How to Hot Unplug a SATA / SATAII / SATA3 HDD:

Points of attention, before you process the Hot Unplug:
Please do follow below instruction sequence to process the Hot Unplug, improper procedure will cause the SATA / SATAII / SATA3 HDD damage and data loss.

Step *1* Unplug SATA data cable from SATA / SATAII / SATA3 HDD side.



Step *2* Unplug SATA 15-pin power cable connector (Black) from SATA / SATAII / SATA3 HDD side.



## 2.19 Driver Installation Guide

To install the drivers to your system, please insert the support CD to your optical drive first. Then, the drivers compatible to your system can be auto-detected and listed on the support CD driver page. Please follow the order from up to bottom side to install those required drivers. Therefore, the drivers you install can work properly.

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

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below procedures according to the OS you install.

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

If you want to install Windows® XP / XP 64-bit on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps.

**STEP 1: Set up UEFI.**

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

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

**STEP 2: Make a SATA / SATAII / SATA3 Driver Diskette.**

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

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

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

D. Then you will see these messages,

**Please insert a diskette into the floppy drive.**
**WARNING! Formatting the floppy diskette will**
**lose ALL data in it!**
**Start to format and copy files [YN]?**
Please insert a floppy diskette into the floppy drive, and press <Y>.

E. The system will start to format the floppy diskette and copy SATA / SATAII / SATA3 drivers into the floppy diskette.

**STEP 3: Use "RAID Installation Guide" to set RAID configuration.**
Before you start to configure the RAID function, you need to check the installation guide in the Support CD for proper configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path:
**.. \ RAID Installation Guide**
**STEP 4: Install Windows® XP / XP 64-bit OS on your system.**
After making a SATA / SATAII / SATA3 driver diskette and using "RAID Installation Guide" to set RAID configuration, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

After the installation of Windows® XP / XP-64bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "Intel Rapid Storage Information" for RAID configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: **.. \ RAID Installation Guide** and the document in the support CD, "Guide to Intel Rapid Storage", which is located in the folder at the following path:
**.. \ Intel Rapid Storage Information**

If you want to use "Intel Rapid Storage" in Windows® environment, install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well.

## 2.20.2 Setting Up a "RAID Ready" System

You can also set up a "RAID Ready" system with a single SATA / SATAII / SATA3 hard disk. A "RAID Ready" system can be seamlessly upgraded to RAID 0, RAID 1 or RAID 5 at a later date by using RAID migration feature of Intel Rapid Storage. The following steps outline how to build an Intel "RAID Ready" system.

1. Assemble the system and attach a single SATA / SATAII / SATA3 hard drive.
2. Set up system UEFI as step 1 of page 54. When done, exit Setup.
3. Make a SATA / SATAII / SATA3 driver diskette as step 2 of page 54. Begin Windows® setup by booting from the installation CD.
4. At the beginning of Windows® setup, press F6 to install a third-party RAID driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® RAID driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

5. Finish the Windows® installation and install all necessary drivers.
6. Install the Intel(R) Rapid Storage software via the CD-ROM included with your motherboard or after downloading it from the Internet. This will add the Intel(R) Rapid Storage Console which can be used to manage the RAID configuration.
7. After setting up a “RAID Ready” system as the above steps, you can follow the procedures of the next section to migrate the system to RAID 0, RAID 1 or RAID 5.

### 2.20.3 Migrating a “RAID Ready” System to RAID 0, RAID 1 or RAID 5

If you have an existing “RAID Ready” system, then you can use the following steps to perform a migration from a single non-RAID configuration to a two drive RAID 0, RAID 1 configuration or three drive RAID 5 configuration. To prepare for this, you will need another SATA / SATAII hard drive with a capacity equal to or greater than that currently being used as the source hard drive.

1. Physically attach one additional SATA / SATAII / SATA3 hard drive to the SATAII / SATA3 port not being used. Note the serial number of the hard drive already in the system; you will use this to select it as the source hard drive when initiating the migration.
2. Boot Windows®, install the Intel(R) Rapid Storage software, if not already installed, using the setup package obtained from a CD-ROM or from the Internet. This will install the necessary Intel Storage Utility and start menu links.
3. Open the Intel Storage Utility from the Start Menu and select “Create RAID volume from Existing Hard Drive” from the Actions menu. This will activate the Create RAID volume from Existing Hard Drive Wizard. Click through the dialogs as prompted. It’s important to understand what will occur during the migration process because any data on the destination hard drive will be lost.
4. Once the migration is complete, reboot the system. If you migrated to a RAID 0 volume, use Disk Management from within Windows® in order to partition and format the empty space created when the two hard drive capacities are combined. You may also use third-party software to extend any existing partitions within the RAID volume.

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

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit on your SATA / SATAII / SATA3 HDDs with RAID functions, please follow below steps.

**STEP 1: Set up UEFI.**

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

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

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

Before you start to configure the RAID function, you need to check the installation guide in the Support CD for proper configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path:

**.. \ RAID Installation Guide**

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

After the installation of Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS, if you want to manage RAID functions, you are allowed to use both "RAID Installation Guide" and "Intel Rapid Storage Information" for RAID configuration. Please refer to the document in the Support CD, "Guide to SATA Hard Disks Installation and RAID Configuration", which is located in the folder at the following path: **.. \ RAID Installation Guide** and the document in the support CD, "Guide to Intel Rapid Storage", which is located in the folder at the following path: **.. \ Intel Rapid Storage Information**

If you want to use "Intel Rapid Storage" in Windows® environment, install "SATAII driver" from the Support CD again so that "Intel Rapid Storage" will be installed to your system as well.

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

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below procedures according to the OS you install.

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

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

**Using SATA / SATAII / SATA3 HDDs with NCQ function**

**STEP 1: Set Up UEFI.**

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

B. Set the option "SATA Mode" to [AHCI]. (For SATA3_0, SATA3_1 and SATA2_2 to SATA2_5 ports.)
Set the option "Marvell SATA3 Operation Mode" to [AHCI]. (For SATA3_M1 to SATA3_M4 ports.)

**STEP 2: Make a SATA / SATAII / SATA3 driver diskette.**

Please make a SATA / SATAII / SATA3 driver diskette by following section 2.20.1 step 2 on page 54.

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

After making a SATA / SATAII / SATA3 driver diskette, you can start to install Windows® XP / XP 64-bit on your system. At the beginning of Windows® setup, press F6 to install a third-party AHCI driver. When prompted, insert the SATA / SATAII / SATA3 driver diskette containing the Intel® AHCI driver. After reading the floppy disk, the driver will be presented. Select the driver to install according to the mode you choose and the OS you install.

**Using SATA / SATAII / SATA3 HDDs without NCQ function**

**STEP 1: Set up UEFI.**

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

B. Set the option "SATA Mode" to [IDE]. (For SATA3_0, SATA3_1 and SATA2_2 to SATA2_5 ports.)
Set the option "Marvell SATA3 Operation Mode" to [IDE]. (For SATA3_M1 to SATA3_M4 ports.)

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

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

If you want to install Windows® 7 / 7 64-bit / Vista™ / Vista™ 64-bit OS on your SATA / SATAII / SATA3 HDDs without RAID functions, please follow below steps.

**Using SATA / SATAII / SATA3 HDDs with NCQ function**

**STEP 1: Set Up UEFI.**

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

B. Set the option "SATA Mode" to [AHCI]. (For SATA3_0, SATA3_1 and SATA2_2 to SATA2_5 ports.)
Set the option "Marvell SATA3 Operation Mode" to [AHCI]. (For SATA3_M1 to SATA3_M4 ports.)

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

**Using SATA / SATAII / STA3 HDDs without NCQ function**

**STEP 1: Set up UEFI.**

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

B. Set the option "SATA Mode" to [IDE]. (For SATA3_0, SATA3_1 and SATA2_2 to SATA2_5 ports.)
Set the option "Marvell SATA3 Operation Mode" to [IDE]. (For SATA3_M1 to SATA3_M4 ports.)

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

## 2.22 Teaming Function Operation Guide

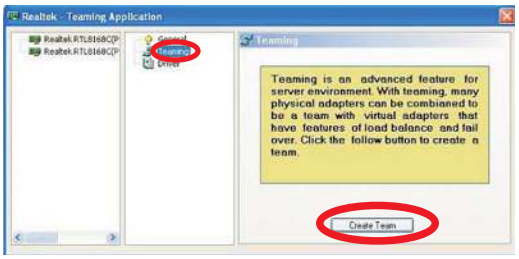
Dual LAN with Teaming function enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

The speed of transmission is subject to the actual network environment or status even with Teaming enabled.

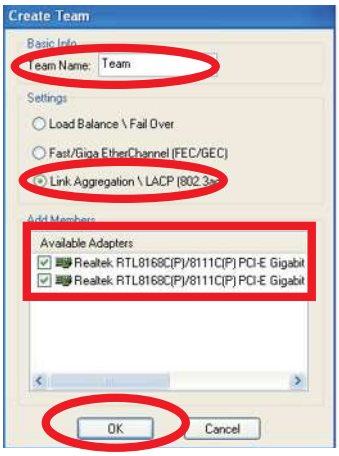
Before setting up Teaming function, please make sure if your Switch (or Router) could support Teaming (IEEE 802.3ad Link Aggregation) function. (For example: D-Link DGS-3100.) Then, please refer to following steps to set up Teaming function according to the OS you install.

**For Windows® XP / XP 64-bit OS:**

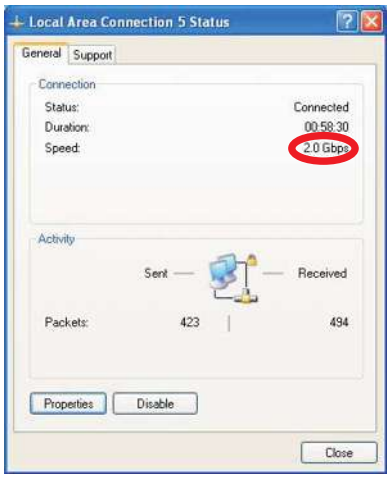
1. Install Teaming driver from the following path of motherboard Support CD:
   **.. \ Drivers \ other \ EXE_Teaming_Green(Normal)**
   (This is a special driver for Teaming function only. If you don't want to use Teaming, please install the LAN driver provided by our support CD link.)
   When installing teaming driver, system will show below warming message. Please choose **Continue Anyway** and keep installing driver.
2. After installing driver, please open **Teaming Utility** in Programs.
   (**Start > Programs > Realtek > Teaming Utility**)
3. Click **Teaming** item and then press **Create Team** button.



4. Key in Team Name and choose **Link Aggregation \ LACP (802.3ad)** for Settings.

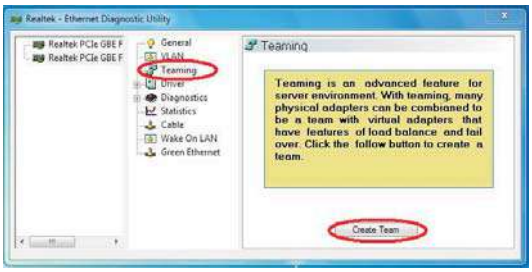



5. Select two available onboard LAN cards and then press **OK** button. (After pressing **OK** button, system will show below warming message. Please choose **Continue Anyway**.)
6. After doing above settings, system will auto create a new Local Area Connection.
7. Reboot your system. Then, you will find the **Speed** column of new Local Area Connection show 2.0Gbps.

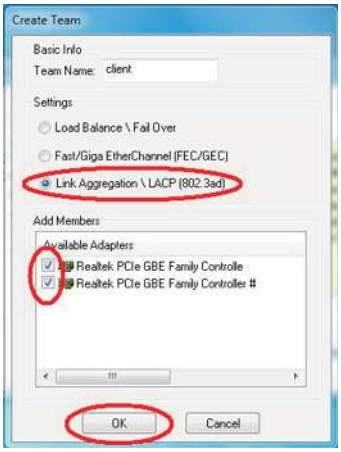


**For Windows® Vista™ / Vista™ 64-bit / 7 / 7 64-bit OS:**

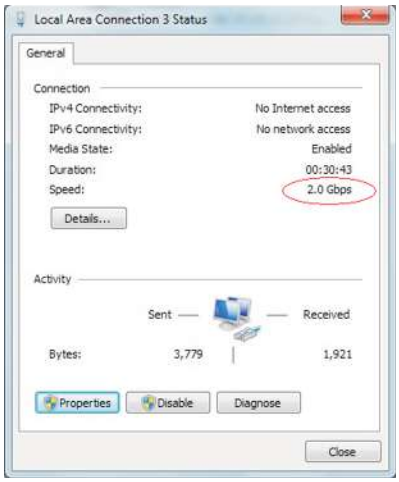
1. Install Teaming driver from the following path of motherboard Support CD:
   **.. \ Drivers \ other \ EXE_Teaming_Green(Normal)**
   (This is a special driver for Teaming function only. If you don't want to use Teaming, please install the LAN driver provided by our support CD link.)
   When installing teaming driver, system will show below warming message. Please choose **Continue Anyway** and keep installing driver.
2. After installing driver, please open **Teaming Utility** in Programs.
   (**Start > Programs > Realtek > Teaming Utility**)
3. Click **Teaming** item and then press **Create Team** button.




4. Key in Team Name and choose **Link Aggregation \ LACP (802.3ad)** for Settings.



5. Select two available onboard LAN cards and then press **OK** button. (After pressing **OK** button, system will show below warming message. Please choose **Continue Anyway**.)
6. After doing above settings, system will auto create a new Local Area Connection.
7. Reboot your system. Then, you will find the **Speed** column of new Local Area Connection show 2.0Gbps.



# Chapter 3: UEFI SETUP UTILITY

## 3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. You may run the UEFI SETUP UTILITY when you start up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY, otherwise, POST will continue with its test routines.

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

### 3.1.1 UEFI 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 UEFI 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 UEFI 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. You can also use the mouse to click your required item.

### 3.1.2 Navigation Keys

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

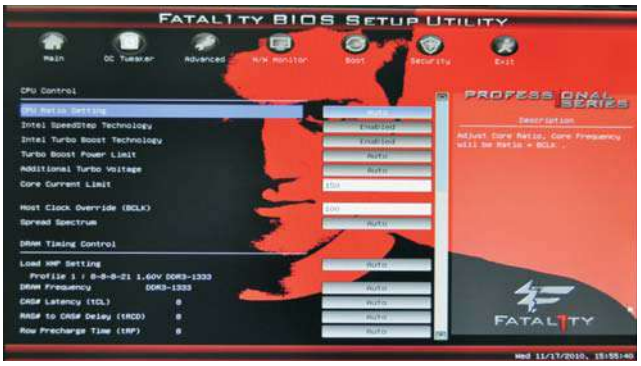
| Navigation Key(s) | Function Description |
|---|---|
| ← / → | Moves cursor left or right to select Screens |
| ↑ / ↓ | Moves cursor up or down to select items |
| + / - | To change option for the selected items |
| <Enter> | To bring up the selected screen |
| <F1> | To display the General Help Screen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

## 3.2 Main Screen

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

## 3.3 OC Tweaker Screen

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




**EZ OC**

Use this item to load EZ overclocking setting. Please note that overclocking may cause damage to your components and motherboard. It should be done at your own risk and expense.

**CPU Ratio Setting**

Use this item to change the ratio value of this motherboard.

**Intel SpeedStep Technology**

Intel SpeedStep technology is Intel's new power saving technology. Processor can switch between multiple frequency and voltage points to enable power savings. The default value is [Enabled]. Configuration options: [Auto], [Enabled] and [Disabled]. If you install Windows® XP and select [Auto], you need to set the "Power Schemes" as "Portable/Laptop" to enable this function. If you install Windows® Vista™ / 7 and want to enable this function, please set this item to [Enabled]. This item will be hidden if the current CPU does not support Intel SpeedStep technology.

Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issue with some power supplies. Please set this item to [Disable] if above issue occurs.

**Intel Turbo Boost Technology**

Use this item to enable or disable Intel Turbo Boost Technology. Turbo Boost allows processor cores to run faster than marked frequency in specific condition. The default value is [Enabled].

**Turbo Boost Power Limit**

Use this item to adjust Turbo Boost power limit. Configuration options: [Auto] and [Manual]. The default value is [Auto].

**Additional Turbo Voltage (mV)**

Use this item to add voltage when CPU is in Turbo mode.

**Core Current Limit**

Use this item to add voltage when CPU is in Turbo mode.

**Host Clock Override (BCLK)**

Use this to adjust the host clock (BCLK) frequency. Min: 95MHz, Max: 110MHz.

**Spread Spectrum**

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

**Load XMP Setting**

Use this to load XMP setting. Configuration options: [Auto], [Profile 1] and [Profile 2]. The default value is [Auto].

**DRAM Frequency**

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

**CAS# Latency (tCL)**

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

**RAS# to CAS# Delay (tRCD)**

Use this item to change RAS# to CAS# Delay (tRCD) Auto/Manual setting. The default is [Auto].

**Row Precharge Time (tRP)**

Use this item to change Row Precharge Time (tRP) Auto/Manual setting. The default is [Auto].

**RAS# Active Time (tRAS)**

Use this item to change RAS# Active Time (tRAS) Auto/Manual setting. The default is [Auto].

**Command Rate (CR)**

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

**Write Recovery Time (tWR)**

Use this item to change Write Recovery Time (tWR) Auto/Manual setting. The default is [Auto].

**Refresh Cyle Time (tRFC)**

Use this item to change Refresh Cyle Time (tRFC) Auto/Manual setting. The default is [Auto].

**RAS to RAS Delay (tRRD)**

Use this item to change RAS to RAS Delay (tRRD) Auto/Manual setting. The default is [Auto].

**Write to Read Delay (tWTR)**

Use this item to change Write to Read Delay (tWTR) Auto/Manual setting. The default is [Auto].

**Read to Precharge (tRTP)**

Use this item to change Read to Precharge (tRTP) Auto/Manual setting. The default is [Auto].

**Four Activate Window (tFAW)**

Use this item to change Four Activate Window (tFAW) Auto/Manual setting. The default is [Auto].

**Memory Power Down Mode**

Use this item to adjust DDR power down mode. Configuration options: [Auto], [Slow] and [Fast]. The default value is [Auto].

**Power Saving Mode**

Use this to enable or disable Power Saving Mode. The default value is [Disabled].

**CPU Core Voltage**

Use this to select CPU Core Voltage. Configuration options: [Auto], [Offset Mode] and [Fixed Mode]. The default value is [Auto].

**CPU Load-Line Calibration**

CPU Load-Line Calibration helps prevent CPU voltage droop when the system is under heavy load. Configuration options: [Level 1] to [Level 5]. The default value is [Level 5].

**DRAM Voltage**

Use this to select DRAM Voltage. Configuration options: [Auto], [1.200V] to [1.800V]. The default value is [Auto].

**PCH Voltage**

Use this to select PCH Voltage. Configuration options: [Auto], [0.780V] to [1.646V]. The default value is [Auto].

**CPU PLL Voltage**

Use this to select CPU PLL Voltage. Configuration options: [Auto], [1.586V] to [2.349V]. The default value is [Auto].

**VTT Voltage**

Use this to select VTT Voltage. Configuration options: [Auto], [0.661V] to [1.870V]. The default value is [Auto].

**VCCSA Voltage**

Use this to select VCCSA Voltage. Configuration options: [Auto], [0.925V] to [1.200V]. The default value is [Auto].

**User Default**

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, North Bridge Configuration, South Bridge Configuration, Storage Configuration, Super IO Configuration, ACPI Configuration and USB Configuration.


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

**Instant Flash**

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows you to update system UEFI without entering operating systems first like MS-DOS or Windows®. Just launch this tool and save the new UEFI file to your USB flash drive, floppy disk or hard drive, then you can update your UEFI 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 UEFI files and their respective information. Select the proper UEFI file to update your UEFI, and reboot your system after UEFI update process completes.

### 3.4.1 CPU Configuration


**Intel Hyper Threading Technology**

To enable this feature, it requires a computer system with an Intel processor that supports Hyper-Threading technology and an operating system that includes optimization for this technology, such as Microsoft® Windows® XP / Vista™ / 7. Set to [Enabled] if using Microsoft® Windows® XP, Vista™, 7, or Linux kernel version 2.4.18 or higher. This option will be hidden if the installed CPU does not support Hyper-Threading technology.

**Active Processor Cores**

Use this item to select the number of cores to enable in each processor package. Configuration options: [All], [1] and [2]. The default value is [All].

**Hardware Prefetcher**

Use this item to turn on/off the MLC streamer prefetcher.

**Adjacent Cache Line Prefetch**

Use this item to turn on/off prefetching of adjacent cache lines.

**Enhance Halt State (C1E)**

All processors support the Halt State (C1). The C1 state is supported through the native processor instructions HLT and MWAIT and requires no hardware support from the chipset. In the C1 power state, the processor maintains the context of the system caches.

**CPU C3 State Support**

Use this to enable or disable CPU C3 (ACPI C2) report to OS.

**CPU C6 State Support**

Use this to enable or disable CPU C6 (ACPI C3) report to OS.

**Package C State Support**

Selected option will program into C State package limit register. The default value is [Auto].

**CPU Thermal Throttling**

You may select [Enabled] to enable CPU internal thermal control mechanism to keep the CPU from overheated.

**Intel Virtualization Technology**

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by Vanderpool Technology. This option will be hidden if the installed CPU does not support Intel Virtualization Technology.

**No-Excute Memory Protection**

No-Execution (NX) Memory Protection Technology is an enhancement to the IA-32 Intel Architecture. An IA-32 processor with “No Execute (NX) Memory Protection” can prevent data pages from being used by malicious software to execute code. This option will be hidden if the current CPU does not support No-Excute Memory Protection.

**Local x2APIC**

Use this to enable or disable Local x2APIC. The default value is [Disabled]. Please be noted that some OS do not support this function.

### 3.4.2 North Bridge Configuration


**Low MMIO Align**

Low MMIO resources align at 64MB/1024MB. The default value is [64MB].

**VT-d**

Use this to enable or disable Intel® VT-d technology (Intel® Virtualization Technology for Directed I/O). The default value of this feature is [Disabled].

**Primary Graphics Adapter**

This allows you to select [PCI] or [PCI Express] as the boot graphic adapter priority. The default value is [PCI].

### 3.4.3 South Bridge Configuration


**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.

**Deep Sx**

Mobile platforms support Deep S4/S5 in DC only and desktop platforms support Deep S4/S5 in AC only. Configuration options: [Disabled], [Enabled in S5] and [S4 and S5]. The default value is [Disabled].

**Onboard LAN 1**

This allows you to enable or disable the “Onboard LAN 1” feature.

**Onboard LAN 2**

This allows you to enable or disable the “Onboard LAN 2” feature.

**Onboard 1394**

This allows you to enable or disable the “Onboard 1394” 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.

**ACPI HPET Table**

Use this item to enable or disable ACPI HPET Table. The default value is [Enabled]. Please set this option to [Enabled] if you plan to use this motherboard to submit Windows® Vista™ certification.

### 3.4.4 Storage Configuration


**Marvell SATA3 Operation Mode**

This item is for SATA3_M1 to SATA3_M4 ports. Use this to select Marvell SATA3 operation mode. Configuration options: [IDE Mode], [AHCI Mode] and [Disabled]. The default value is [IDE Mode].

**Marvell SATA3 Bootable**

Use this to enable or disable Onboard Marvell SATA3 Option ROM. If Option ROM is disabled, UEFI cannot use the SATA device to connect to Marvell SATA3 controller as Boot Device.

We recommend to use Intel® P67 SATA ports (SATA3_0, SATA3_1, SATA2_2, SATA2_3, SATA2_4 and SATA2_5) for your bootable devices. This will minimum your boot time and get the best performance. But if you still want to boot from Marvell SATA3 controller, you can still enable this in UEFI.

**SATA Mode**

This item is for SATA3_0, SATA3_1 and SATA2_2 to SATA2_5 ports. Use this to select SATA mode. Configuration options: [IDE Mode], [AHCI Mode], [RAID Mode] and [Disabled]. The default value is [IDE Mode].

AHCI (Advanced Host Controller Interface) supports NCQ and other new features that will improve SATA disk performance but IDE mode does not have these advantages.

**SATA Controller 0**

Please select [**Compatible**] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [**Enhanced**].

**SATA Controller 1**

Please select [**Compatible**] when you install legacy OS. If native OS (Windows® XP / Vista™ / 7) is installed, please select [**Enhanced**].

**Hard Disk S.M.A.R.T.**

Use this item to enable or disable the S.M.A.R.T. (Self-Monitoring, Analysis, and Reporting Technology) feature. Configuration options: [Disabled], [Auto], [Enabled].

### 3.4.5 Super IO Configuration


**OnBoard Floppy Controller**

Use this item to enable or disable floppy drive controller.

**Serial Port**

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

**Serial Port Address**

Use this item to set the address for the onboard serial port. Configuration options: [Auto], [3F8 / IRQ4], [2F8 / IRQ3], [3E8 / IRQ4], [2E8 / IRQ3].

**Infrared Port**

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

**Infrared Port Address**

Use this item to set the address for the onboard infrared port.

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

### 3.4.6 ACPI Configuration


**Suspend to RAM**

Use this item to select whether to auto-detect or disable the Suspend-to-RAM feature. Select [Auto] will enable this feature if the OS supports it.

**Check Ready Bit**

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

**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.

**PCI Devices Power On**

Use this item to enable or disable PCI devices to turn on the system from the power-soft-off mode.

**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.

**RTC Alarm Power On**

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

### 3.4.7 USB Configuration


**USB 2.0 Controller**

Use this item to enable or disable the use of USB 2.0 controller.

**USB 3.0 Controller**

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

**Legacy USB Support**

Use this option to select legacy support for USB devices. There are four configuration options: [Enabled], [Auto], [Disabled] and [UEFI 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 UEFI setup when [Disabled] is selected. If you have USB compatibility issue, it is recommended to select [Disabled] to enter OS.

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

**Legacy USB 3.0 Support**

Use this option to enable or disable legacy support for USB 3.0 devices. The default value is [Enabled].

## 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 1 & 2 Setting**

This allows you to set the CPU fan 1 & 2 speed. Configuration options: [Full On] and [Automatic Mode]. The default is value [Full On].

**Chassis Fan 1 Setting**

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

**Chassis Fan 2 Setting**

This allows you to set the chassis fan 2 speed. Configuration options: [Level 1] to [Level 4]. The default is value [Level 4].

**Chassis Fan 3 Setting**

This allows you to set the chassis fan 3 speed. Configuration options: [Full On] and [Manual Mode]. The default is value [Full On].

**Over Temperature Protection**

Use this to enable or disable Over Temperature Protection. The default value is [Enabled].

## 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.


**Boot Option Priorities**

**Boot Option #1**

Set the first priority of the system boot device.

**Boot Option #2**

Set the second priority of the system boot device.

**Boot Option #3**

Set the third priority of the system boot device.

**Boot Option #4**

Set the fourth priority of the system boot device.

**Hard Drive BBS Priorities**

Set the order of the legacy devices in this group.

**Floppy Drive BBS Priorities**

Set the order of the legacy devices in this group.

**Setup Prompt Timeout**

This shows the number of seconds to wait for setup activation key. 65535(0XFFFF) means indefinite waiting.

**Bootup Num-Lock**

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

**Full Screen Logo**

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

**AddOn ROM Display**

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

**Boot From Onboard LAN**

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

**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.

## 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 UEFI 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 UEFI 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 UEFI Defaults**

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

**Launch EFI Shell from filesystem device**

Attempts to Launch EFI Shell application (Shell64.efi) from one of the available filesystem devices.

# Chapter 4: Software Support

## 4.1 Install Operating System

This motherboard supports various Microsoft® Windows® operating systems: 7 / 7 64-bit / Vista™ / Vista™ 64-bit / XP / XP 64-bit. Because motherboard settings and hardware options vary, use the setup procedures in this chapter for general reference only. Refer to your OS documentation for more information.

## 4.2 Support CD Information

The Support CD that came with the motherboard contains necessary drivers and useful utilities that enhance the motherboard features.

### 4.2.1 Running The Support CD

To begin using the support CD, insert the CD into your CD-ROM drive. The CD automatically displays the Main Menu if "AUTORUN" is enabled in your computer. If the Main Menu did not appear automatically, locate and double click on the file "ASSETUP.EXE" from the BIN folder in the Support CD to display the menus.

### 4.2.2 Drivers Menu

The Drivers Menu shows the available devices drivers if the system detects 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 us or want to know more about us, welcome to visit our website; or you may contact your dealer for further information.

## Installing OS on a HDD Larger Than 2TB

This motherboard is adopting UEFI BIOS that allows Windows® OS to be installed on a large size HDD (>2TB). Please follow below procedure to install the operating system.

1. Please make sure to use **Windows® Vista™ 64-bit (with SP1 or above)** or **Windows® 7 64-bit**.
2. Set **AHCI Mode** in UEFI Setup Utility > Advanced > Storage Configuration > SATA Mode.
3. Press F11 to launch boot menu at system POST.
4. Choose the item **"UEFI:xxx"** to boot. ("xxx" is the device which contains your Windows® installation files. Normally it is an optical drive.)
5. Start Windows® installation.