# ASRock

# 990FX KILLER

FATAL1TY
GAMING GEAR

User Manual

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

## CALIFORNIA, USA ONLY

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

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

**dts®** Connect



**dts®** Interactive



**dts®** Neo:PC

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

# Contents

# Chapter 1 Introduction

Thank you for purchasing ASRock Fatal1ty 990FX Killer Series motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this manual, Chapter 1 and 2 contains the introduction of the motherboard and step-by-step installation guides. Chapter 3 contains the operation guide of the software and utilities. Chapter 4 contains the configuration guide of the BIOS setup.

*Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock's 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. You may find the latest VGA cards and CPU support list on ASRock's website as well. ASRock website http://www.asrock.com.*

## 1.1 Package Contents

- ASRock Fatal1ty 990FX Killer Series Motherboard (ATX Form Factor)
- ASRock Fatal1ty 990FX Killer Series Quick Installation Guide
- ASRock Fatal1ty 990FX Killer Series Support CD
- 4 x Serial ATA (SATA) Data Cables (Optional)
- 1 x I/O Panel Shield
- 1 x ASRock SLI_Bridge_2S Card
- 1 x M.2_SSD (NGFF) Socket 3 Screw

English

## 1.2 Specifications

| | |
|---|---|
| **Platform** | • ATX Form Factor<br>• Premium Gold Capacitor design (100% Japan-made high-quality conductive polymer capacitors) |
| **A-Style** | • Purity Sound™ |
| **Gaming Armor** | **CPU Power**<br>• Hi-Density Power Connector<br>**VGA Card**<br>• 15μGold Finger in VGA PCIe Slots (PCIE2/PCIE3)<br>• SLI/CrossFireX Power Connector<br>**Internet**<br>• Qualcomm® Atheros® Killer™ LAN<br>**Audio**<br>• Purity Sound™ |
| **CPU** | • Supports Socket AM3+ processors<br>• Supports Socket AM3 processors: AMD Phenom™ II X6 / X4 / X3 / X2 (except 920 / 940) / Athlon II X4 / X3 / X2 / Sempron processors<br>• Supports 8-Core CPU<br>• Supports UCC feature (Unlock CPU Core)<br>• Digi Power design<br>• 8 + 2 Power Phase design<br>• Supports CPU up to 140W<br>• Supports AMD's Cool 'n' Quiet Technology<br>• FSB 2600 MHz (5.2 GT/s)<br>• Supports Untied Overclocking Technology<br>• Supports Hyper-Transport 3.0 (HT 3.0) Technology |
| **Chipset** | • Northbridge: AMD 990FX<br>• Southbridge: AMD SB950 |
| **Memory** | • Dual Channel DDR3 Memory Technology<br>• 4 x DDR3 DIMM Slots<br>• Supports DDR3 2450(OC)/2100(OC)/1600/1333/1066 non-ECC, un-buffered memory (see CAUTION1) |

- Max. capacity of system memory: 64GB (see CAUTION2)
- Supports Intel® Extreme Memory Profile (XMP) 1.3 / 1.2
- Supports AMD Memory Profile (AMP)

| | |
|---|---|
| **Expansion Slot** | - 3 x PCI Express 2.0 x16 Slots (PCIE2/PCIE3 @ x16 mode; PCIE5 @ x4 mode)<br>- 2 x PCI Express 2.0 x1 Slots<br>- Supports AMD Quad CrossFireX™, 3-Way CrossFireX™ and CrossFireX™<br>- Supports NVIDIA® Quad SLI™ and  SLI™ |
| **Audio** | - 7.1 CH HD Audio with Content Protection (Realtek ALC1150 Audio Codec)<br>- Premium Blu-ray Audio Support<br>- Supports Purity Sound™<br>  - 115dB SNR DAC with Differential Amplifier<br>  - TI® NE5532 Premium Headset Amplifier (Supports up to 600 ohm headsets)<br>  - Direct Drive Technology<br>  - EMI Shielding Cover<br>  - PCB Isolate Shielding<br>- Supports DTS Connect |
| **LAN** | - PCIE x1 Gigabit LAN 10/100/1000 Mb/s<br>- Qualcomm® Atheros® Killer™ E2200 Series<br>- Supports Wake-On-LAN<br>- Supports Energy Efficient Ethernet 802.3az<br>- Supports PXE |
| **Rear Panel I/O** | - 1 x PS/2 Mouse Port<br>- 1 x PS/2 Keyboard Port<br>- 1 x Optical SPDIF Out Port<br>- 5 x USB 2.0 Ports<br>- 1 x Fatal1ty Mouse Port (USB 2.0)<br>- 4 x USB 3.0 Ports (ASMedia Hub)<br>- 1 x eSATA3 Connector |

English

3

|           |                                                                                           |
| --------- | ----------------------------------------------------------------------------------------- |
|           | • 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED)                                 |
|           | • HD Audio Jacks: Rear Speaker / Central / Bass / Line in / Front Speaker / Microphone     |
| **Storage** | • 5 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1, RAID 0+1, JBOD and RAID 5), NCQ, AHCI and Hot Plug<br>• 1 x M.2_SSD (NGFF) Socket 3, supports M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen2 x2 (10 Gb/s) (M.2_SSD (NGFF) Socket 3 is shared with the eSATA3 connector) |
| **Connector** | • 1 x IR Header<br>• 1 x COM Port Header<br>• 1 x TPM Header<br>• 1 x Power LED Header<br>• 2 x CPU Fan Connectors (1 x 4-pin, 1 x 3-pin)<br>• 3 x Chassis Fan Connectors (1 x 4-pin, 2 x 3-pin)<br>• 1 x Power Fan Connector (3-pin)<br>• 1 x 24 pin ATX Power Connector<br>• 1 x 8 pin 12V Power Connector (Hi-Density Power Connector)<br>• 1 x SLI/XFire Power Connector (see CAUTION3)<br>• 1 x Front Panel Audio Connector<br>• 1 x SPDIF Out Connector<br>• 2 x USB 2.0 Headers (Support 4 USB 2.0 ports)<br>• 1 x Vertical Type A USB 3.0<br>• 1 x USB 3.0 Header by Etron EJ188 (Supports 2 USB 3.0 ports) |
| **BIOS Feature** | • 32Mb AMI UEFI Legal BIOS with with GUI support<br>• Supports "Plug and Play"<br>• ACPI 1.1 Compliant wake up events<br>• Supports jumperfree<br>• SMBIOS 2.3.1 support<br>• CPU, DRAM, NB, HT, CPU VDDA, PCIE VDDA, CPU NB Voltage multi-adjustment |

| **Support CD** | • Drivers, Utilities, AntiVirus Software (Trial Version), Google Chrome Browser and Toolbar, Start8 (30 days trial), XSplit, Killer Network Manager |
| --- | --- |
| **Hardware Monitor** | • CPU/Chassis temperature sensing<br>• CPU/Chassis/Power Fan Tachometer<br>• CPU/Chassis Quiet Fan (Auto adjust fan speed by CPU temperature)<br>• CPU/Chassis Fan multi-speed control<br>• Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore Voltage |
| **OS** | • Microsoft® Windows® 10 64-bit / 8.1 32-bit / 8.1 64-bit / 8 32-bit / 8 64-bit / 7 32-bit / 7 64-bit |
| **Certifications** | • FCC, CE, WHQL<br>• ErP/EuP ready (ErP/EuP ready power supply is required) |

*\* For detailed product information, please visit our website: http://www.asrock.com*

Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's 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.

1. Whether 2450/2100MHz memory speed is supported depends on the AM3/AM3+ CPU you adopt. If you want to adopt DDR3 2450/2100 memory module on this motherboard, please refer to the memory support list on our website for the compatible memory modules. ASRock website: http://www.asrock.com
2. Due to the operating system limitation, the actual memory size may be less than 4GB for the reservation for system usage under Windows® 8 / 7. For Windows® 64-bit OS with 64-bit CPU, there is no such limitation. You can use ASRock XFast RAM to utilize the memory that Windows® cannot use.
3. Please plug the power cable to the SLI/XFire power connector only when you install three or more VGA cards.

## 1.3 Unique Features

### ASRock F-Stream

F-Stream is an all-in-one tool to fine-tune different system functions in a user-friendly interface, it includes Hardware Monitor, Fan Control, Overclocking, Fatal1ty Mouse Port, Energy Saving and XFast RAM.

### ASRock Instant Boot

ASRock Instant Boot allows you to turn on your PC in just a few seconds, provides a much more efficient way to save energy, time, money, and improves system running speed for your system. It leverages the S3 and S4 ACPI features which normally enable the Sleep/Standby and Hibernation modes in Windows® to shorten boot up time. By calling S3 and S4 at specific timing during the shutdown and startup process, Instant Boot allows you to enter your Windows® desktop in a few seconds.

### ASRock Instant Flash

ASRock Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows you to update the system BIOS in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Just save the new BIOS file to your USB storage and launch this tool by pressing <F6> or <F2> during POST to enter the BIOS setup menu to access ASRock Instant Flash. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

### ASRock APP Charger

Simply by installing the ASRock APP Charger makes your iPhone/iPad/iPod Touch charge up to 40% faster than before on your computer. ASRock APP Charger allows you to quickly charge many Apple devices simultaneously and even supports continuous charging when your PC enters into Standby mode (S1), Suspend to RAM (S3), hibernation mode (S4) or power off (S5).

### ASRock XFast RAM

ASRock XFast RAM is included in F-Stream. It fully utilizes the memory space that cannot be used under Windows® 32-bit operating systems. ASRock XFast RAM shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage of ASRock XFast RAM is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

### ASRock Crashless BIOS

ASRock Crashless BIOS allows users to update their BIOS without fear of failing. If power loss occurs during the BIOS updating process, ASRock Crashless BIOS will automatically finish the BIOS update procedure after regaining power. Please note that BIOS files need to be placed in the root directory of your USB disk. Only USB 2.0 ports support this feature.

### ASRock OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

### ASRock Internet Flash

ASRock Internet Flash downloads and updates the latest UEFI firmware version from our servers for you without entering Windows* OS. Please setup network configuration before using Internet Flash.

### ASRock UEFI System Browser

ASRock System Browser shows the overview of your current PC and the devices connected.

### ASRock UEFI Tech Service

Contact ASRock Tech Service by sending a support request from the UEFI setup utility if you are having trouble with your personal computer. Users may try to choose the category of the issue they have encountered, describe the problem in detail, and then attach an optional picture or log file for our technical support team.

### ASRock Dehumidifier Function

Users may prevent motherboard damages due to dampness by enabling "Dehumidifier Function". When enabling Dehumidifier Function, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

### ASRock Easy RAID Installer

ASRock Easy RAID Installer can help you to copy the RAID driver from the support CD to your USB storage device. After copying the RAID driver to your USB storage device, please change "SATA Mode" to "RAID", then you can start installing the OS in RAID mode.

## ASRock Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other required drivers automatically.

## ASRock Fast Boot

With ASRock's exclusive Fast Boot technology, it takes less than 1.5 seconds to logon to Windows 8 from a cold boot. No more waiting! The speedy boot will completely change your user experience and behavior.

## ASRock X-Boost

ASRock's X-Boost Technology is a smart auto-overclocking function and is brilliantly designed to unlock the hidden power of your CPUs. Simply press "X" when turning on the PC, X-Boost will automatically overclock the relative components to get up to 15.77% performance boost! With the smart X-Boost, overclocking CPU can become a near one-button process. * The functionality of "Unlock CPU Cores" feature might vary by different processors.

## ASRock Restart to UEFI

Windows® 8 brings the ultimate boot up experience. The lightning boot up speed makes it hard to access the UEFI setup. ASRock Restart to UEFI allows users to enter the UEFI automatically when turning on the PC. By enabling this function, the PC will enter the UEFI directly after you restart.

## Turbo 50 / Turbo 60 Overclocking

Simply select Turbo 50 / Turbo 60 in BIOS, the system performance will boost up to 50% / 60% increase by automatically overclocking CPU, Memory frequency and all related voltage settings!

## ASRock Good Night LED

ASRock Good Night LED technology offers you a better sleeping environment by extinguishing the unessential LEDs. By enabling Good Night LED in the BIOS, the Power/HDD LEDs will be switched off when the system is powered on. Good Night LED will automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode as well.

# 1.4 Motherboard Layout
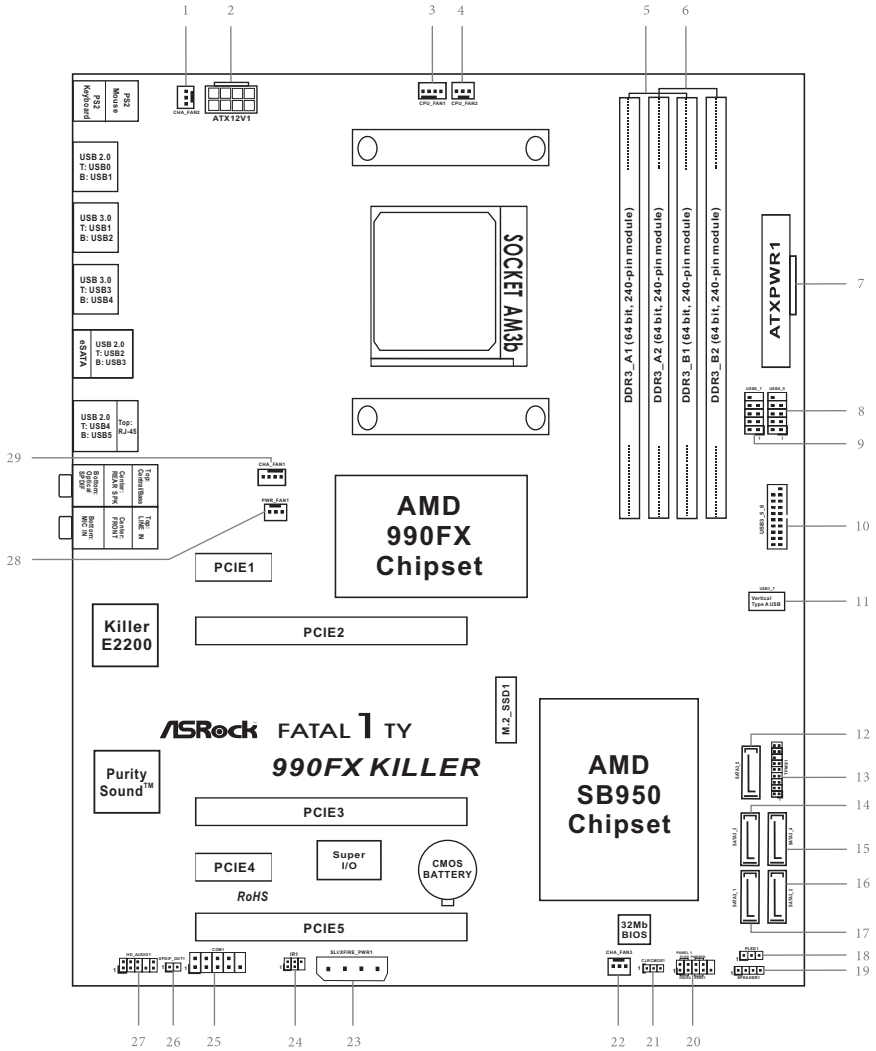
| No. | Description |
|-----|-------------|
| 1 | Chassis Fan Connector (CHA_FAN2) |
| 2 | ATX 12V Power Connector (ATX12V1) |
| 3 | CPU Fan Connector (CPU_FAN1) |
| 4 | CPU Fan Connector (CPU_FAN2) |
| 5 | 2 x 240-pin DDR3 DIMM Slots (DDR3_A1, DDR3_B1) |
| 6 | 2 x 240-pin DDR3 DIMM Slots (DDR3_A2, DDR3_B2) |
| 7 | ATX Power Connector (ATXPWR1) |
| 8 | USB 2.0 Header (USB8_9) |
| 9 | USB 2.0 Header (USB6_7) |
| 10 | USB 3.0 Header (USB3_5_6) |
| 11 | Vertical Type A USB 3.0 (USB3_7) |
| 12 | SATA3 Connector (SATA3_5) |
| 13 | TPM Header (TPMS1) |
| 14 | SATA3 Connector (SATA3_3) |
| 15 | SATA3 Connector (SATA3_4) |
| 16 | SATA3 Connector (SATA3_2) |
| 17 | SATA3 Connector (SATA3_1) |
| 18 | Power LED Header (PLED1) |
| 19 | Chassis Speaker Header (SPEAKER1) |
| 20 | System Panel Header (PANEL1) |
| 21 | Clear CMOS Jumper (CLRCMOS1) |
| 22 | Chassis Fan Connector (CHA_FAN3) |
| 23 | SLI/XFIRE Power Connector (SLI/XFIRE_PWR1) |
| 24 | Infrared Module Header (IR1) |
| 25 | COM Port Header (COM1) |
| 26 | SPDIF Out Connector (SPDIF_OUT1) |
| 27 | Front Panel Audio Header (HD_AUDIO1) |
| 28 | Power Fan Connector (PWR_FAN1) |
| 29 | Chassis Fan Connector (CHA_FAN1) |

## 1.5 I/O Panel
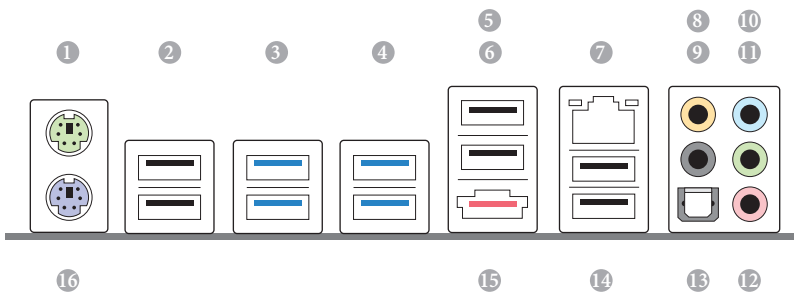
| No. | Description | No. | Description |
|-----|-------------|-----|-------------|
| 1 | PS/2 Mouse Port | 9 | Rear Speaker (Black) |
| 2 | USB 2.0 Ports (USB_01) | 10 | Line In (Light Blue) |
| 3 | USB 3.0 Ports (USB3_12) | 11 | Front Speaker (Lime)** |
| 4 | USB 3.0 Ports (USB3_34) | 12 | Microphone (Pink) |
| 5 | Fatal1ty Mouse Port (USB2) | 13 | Optical SPDIF Out Port |
| 6 | USB 2.0 Port (USB3) | 14 | USB 2.0 Ports (USB_45) |
| 7 | LAN RJ-45 Port* | 15 | eSATA3 Port (ESATA1)*** |
| 8 | Central / Bass (Orange) | 16 | PS/2 Keyboard Port |

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

ACT/LINK LED

SPEED LED

LAN Port
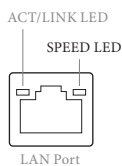
| Activity / Link LED | | Speed LED | |
|---|---|---|---|
| Status | Description | Status | Description |
| Off | No Link | Off | 10Mbps connection |
| Blinking | Data Activity | Orange | 100Mbps connection |
| On | Link | Green | 1Gbps connection |

** If you use a 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.

| Audio Output Channels | Front Speaker (No. 11) | Rear Speaker (No. 9) | Central / Bass (No. 8) | Line In (No. 10) |
|---|---|---|---|---|
| 2 | V | -- | -- | -- |
| 4 | V | V | -- | -- |
| 6 | V | V | V | -- |
| 8 | V | V | V | V |

To enable Multi-Streaming, you need to connect a front panel audio cable to the front panel audio header. After restarting your computer, you will find the "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 the Rear Speaker, Central/Bass, and Front Speaker, or select "Realtek HDA Audio 2nd output" to use the front panel audio.

*** The eSATA3 port supports SATA Gen3 in cable 1M. The eSATA3 port is shared with M.2_SSD (NGFF) Socket 3.

# Chapter 2 Installation

This is an ATX form factor motherboard. Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it.

## Pre-installation Precautions

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

- 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.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a carpet. Also remember to use a grounded wrist strap or touch a safety grounded object before you handle the components.
- Hold components by the edges and do not touch the ICs.
- Whenever you uninstall any components, place them on a grounded anti-static pad or in the bag that comes with the components.
- When placing screws to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.
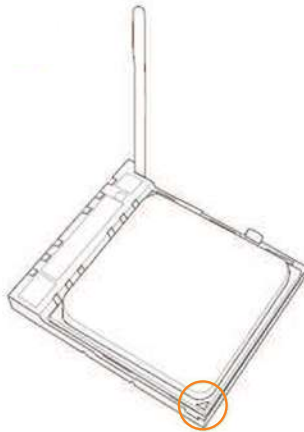
English

## 2.1 Installing the CPU

⭐ *Unplug all power cables before installing the CPU.*

**1**
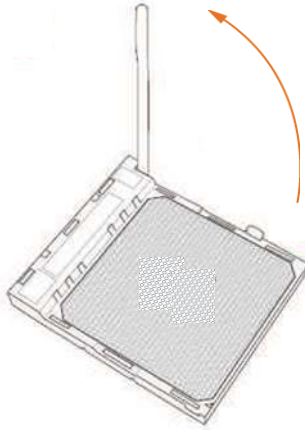


**2**

**3**

## 2.2  Installing the CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other. Then connect the CPU fan to the CPU FAN connector.  For proper installation, please kindly refer to the instruction manuals of the CPU fan and  the heatsink.

## 2.3 Installing Memory Modules (DIMM)

This motherboard provides four 240-pin DDR3 (Double Data Rate 3) DIMM slots, and supports Dual Channel Memory Technology.

☆

1.  *For dual channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR3 DIMM pairs.*
2.  *It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.*
3.  *It is not allowed to install a DDR or DDR2 memory module into a DDR3 slot; otherwise, this motherboard and DIMM may be damaged.*
4.  *Please install the memory module into DDR3_A2 and DDR3_B2 slots for the first priority.*
5.  *If you adopt DDR3 2450/2100 memory modules on this motherboard, it is recommended to install them on DDR3_A2 and DDR3_B2 slots.*
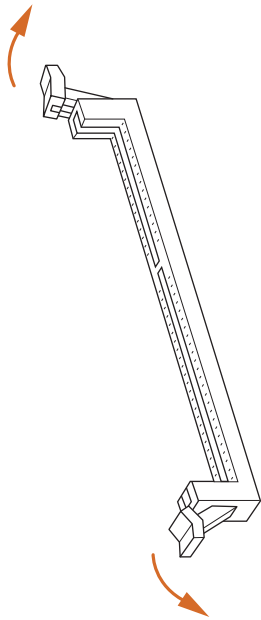
### Dual Channel Memory Configuration

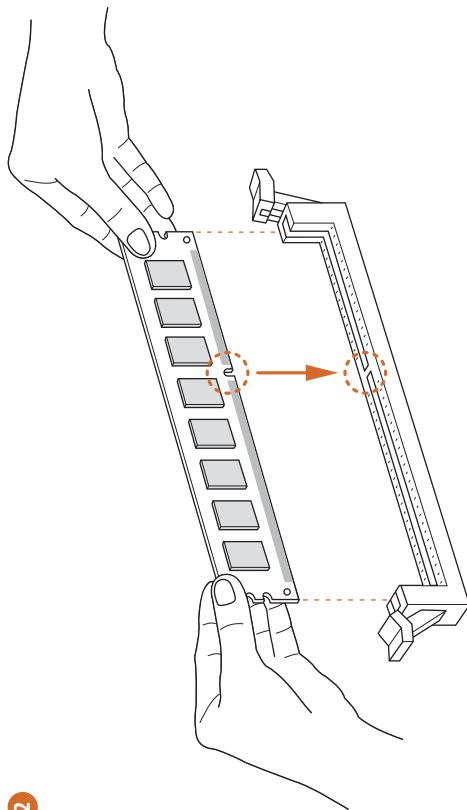| Priority | DDR3_A1 | DDR3_A2 | DDR3_B1 | DDR3_B2 |
|----------|---------|---------|---------|---------|
| 1 | | Populated | | Populated |
| 2 | Populated | | Populated | |
| 3 | Populated | Populated | Populated | Populated |

⚠

*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.*
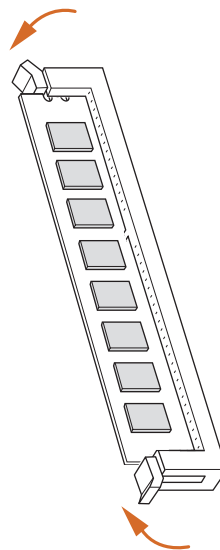
English

## 2.4 Expansion Slots (PCI Express Slots)

There are 5 PCI Express slots on the motherboard.

> ⚠️ *Before installing an 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.*

**PCIe slots:**

PCIE1 (PCIe 2.0 x1 slots) is used for PCI Express x1 lane width cards.

PCIE2 (PCIe 2.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

PCIE3 (PCIe 2.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

PCIE4 (PCIe 2.0 x1 slots) is used for PCI Express x1 lane width cards.

PCIE5 (PCIe 2.0 x16 slot) is used for PCI Express x4 lane width graphics cards

## PCIe Slot Configurations

|  | PCIE2 | PCIE3 | PCIE5 |
|---|---|---|---|
| **Single Graphics Card** | x16 | N/A | N/A |
| **Two Graphics Cards in CrossFireX™ or SLI™ Mode** | x16 | x16 | N/A |
| **Three Graphics Cards in 3-Way CrossFireX™ Mode** | x16 | x16 | x4 |

> 🔍 *For a better thermal environment, please connect a chassis fan to the motherboard's chassis fan connector (CHA_FAN1, CHA_FAN2 or CHA_FAN3) when using multiple graphics cards.*

## 2.5  Jumpers Setup

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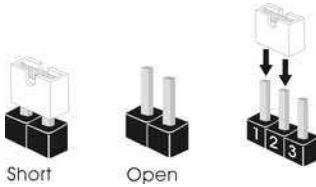


| Clear CMOS Jumper | 1_2 | 2_3 |
|---|---|---|
| (CLRCMOS1) | | |
| (see p.9, No. 21) | Default | Clear CMOS |
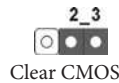
CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short pin2 and pin3 on CLRCMOS1 for 5 seconds. However, please do not 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, and user default profile will be cleared only if the CMOS battery is removed.

## 2.6 Onboard Headers and Connectors

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

System Panel Header
(9-pin PANEL1)
(see p.9, No. 20)

PLED+
PLED-
PWRBTN#
GND

1

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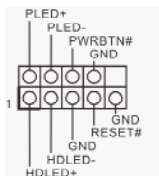
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

🔍 **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/S3 sleep state. The LED is off when the system is in 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 assignments are matched correctly.

Power LED Header
(3-pin PLED1)
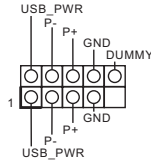(see p.9, No. 18)

PLED-
PLED+
PLED+
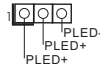
Please connect the chassis power LED to this header to indicate the system's power status.

Serial ATA3 Connectors
(SATA3_1:
see p.9, No. 17)
(SATA3_2:
see p.9, No. 16)
(SATA3_3:
see p.9, No. 14)
(SATA3_4:
see p.9, No. 15)
(SATA3_5:
see p.9, No. 12)

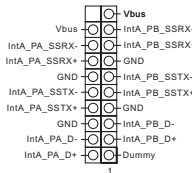SATA3_5
SATA3_3   SATA3_4
SATA3_1   SATA3_2

These five SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

USB 2.0 Headers
(9-pin USB6_7)
(see p.9, No. 9)
(9-pin USB8_9)
(see p.9, No. 8)

USB_PWR
P-
P+
GND
DUMMY
1
GND
P+
P-
USB_PWR

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

USB 3.0 Headers
(19-pin USB3_5_6)
(see p.9, No. 10)

Vbus
Vbus              IntA_PB_SSRX-
IntA_PA_SSRX-     IntA_PB_SSRX+
IntA_PA_SSRX+     GND
GND               IntA_PB_SSTX-
IntA_PA_SSTX-     IntA_PB_SSTX+
IntA_PA_SSTX+     GND
GND               IntA_PB_D-
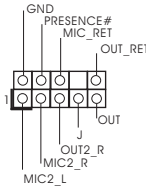IntA_PA_D-        IntA_PB_D+
IntA_PA_D+        Dummy
1

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

(USB3_7)
(see p.9, No. 11)

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.9, No. 27)

GND
PRESENCE #
MIC_RET
OUT_RET

1

OUT
J
OUT2_R
MIC2_R
MIC2_L

This header is for
connecting audio devices
to the front audio panel.

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.
2. If you use an AC'97 audio panel, please install it to the front panel audio header by the steps 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 the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
   E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

Chassis Speaker Header
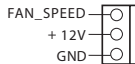(4-pin SPEAKER1)
(see p.9, No. 19)

DUMMY  SPEAKER

1

+5V      DUMMY
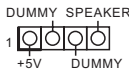
Please connect the chassis
speaker to this header.

Chassis and Power Fan
Connectors
(4-pin CHA_FAN1)
(see p.9, No. 29)

GND
+12V
FAN_SPEED
FAN_SPEED_CONTROL
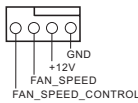
Please connect fan cables
to the fan connectors and
match the black wire to
the ground pin.

(3-pin CHA_FAN2)
(see p.9, No. 1)

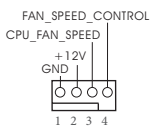FAN_SPEED
+ 12V
GND

(3-pin CHA_FAN3)
(see p.9, No. 22)

GND
+12V
FAN_SPEED

(3-pin PWR_FAN1)
(see p.9, No. 28)

GND
+12V
FAN_SPEED

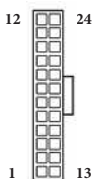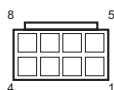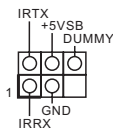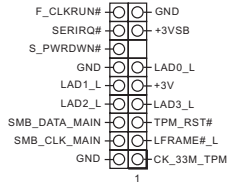| | | |
|---|---|---|
| CPU Fan Connectors<br>(4-pin CPU_FAN1)<br>(see p.9, No. 3)<br><br>(3-pin CPU_FAN2)<br>(see p.9, No. 4) | FAN_SPEED_CONTROL<br>CPU_FAN_SPEED<br>+12V<br>GND<br>1  2  3  4<br><br>GND<br>+12V<br>CPU_FAN_SPEED | This motherboard pro-<br>vides a 4-Pin CPU fan<br>(Quiet Fan) connector.<br>If you plan to connect a<br>3-Pin CPU fan, please<br>connect it to Pin 1-3. |
| ATX Power Connector<br>(24-pin ATXPWR1)<br>(see p.9, No. 7) | 12  24<br><br>1  13 | This motherboard pro-<br>vides a 24-pin ATX power<br>connector. To use a 20-pin<br>ATX power supply, please<br>plug it along Pin 1 and Pin<br>13. |
| ATX 12V Power<br>Connector<br>(8-pin ATX12V1)<br>(see p.9, No. 2) | 8  5<br><br>4  1 | This motherboard pro-<br>vides an 8-pin ATX 12V<br>power connector. To use a<br>4-pin ATX power supply,<br>please plug it along Pin 1<br>and Pin 5. |
| SLI/XFIRE Power<br>Connector<br>(4-pin SLI/XFIRE_<br>PWR1)<br>(see p.9, No. 23) | | Please connect this<br>connector with a hard<br>disk power connector<br>when three graphics<br>cards are installed on this<br>motherboard. |
| Infrared Module Header<br>(5-pin IR1)<br>(see p.9, No. 24) | IRTX<br>+5VSB<br>DUMMY<br>1<br>GND<br>IRRX | This header supports an optional<br>wireless transmitting and<br>receiving infrared module. |
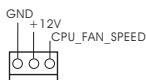
Serial Port Header
(9-pin COM1)
(see p.9, No. 25)
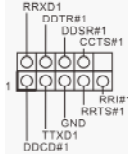
This COM1 header
supports a serial port
module.

SPDIF Out Connector
(2-pin SPDIF_OUT1)
(see p.9, No. 26)

GND
SPDIFOUT

Please connect the
SPDIF_OUT connector of
a HDMI VGA card to this
header with a cable.

TPM Header
(17-pin TPMS1)
(see p.9, No. 13)

F_CLKRUN# — GND
SERIRQ# — +3VSB
S_PWRDWN#
GND — LAD0_L
LAD1_L — +3V
LAD2_L — LAD3_L
SMB_DATA_MAIN — TPM_RST#
SMB_CLK_MAIN — LFRAME#_L
GND — CK_33M_TPM

This connector supports
Trusted Platform Module
(TPM) system, which can
securely store keys, digital
certificates, passwords,
and data. A TPM system
also helps enhance
network security, protects
digital identities, and
ensures platform integrity.

## 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 two identical PCI Express x16 graphics cards. Currently, NVIDIA* SLI™ and Quad SLI™ technology supports Windows* 7 / 7 64-bit / 8 / 8 64-bit OS.

*Requirements*

1. *You should only use identical SLI™-ready graphics cards that are NVIDIA* certified.*
2. *Make sure that your graphics card driver supports NVIDIA* SLI™ technology. Download the drivers from the NVIDIA* website: www.nvidia.com*
3. *Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a NVIDIA* certified PSU. Please refer to the NVIDIA* website for details.*
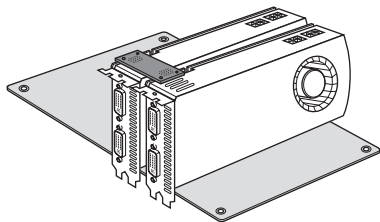
## 2.7.1 Installing Two SLI™-Ready Graphics Cards
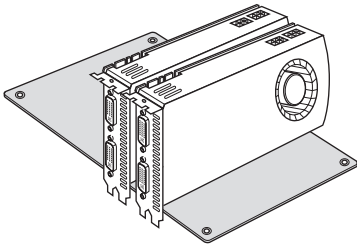
**Step 1**

Insert one graphics card into PCIE2 slot and the other graphics card to PCIE3 slot. Make sure that the cards are properly seated on the slots.
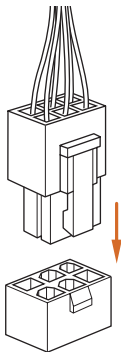
**Step 2**

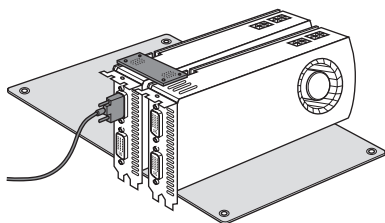If required, connect the auxiliary power source to the PCI Express graphics cards.

**Step 3**

Align and insert the ASRock SLI_ Bridge_2S Card to the goldfingers on each graphics card. Make sure the ASRock SLI_ Bridge_2S Card is firmly in place.



ASRock SLI_Bridge_2S Card



**Step 4**

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.

English

## 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) in the NVIDIA® nView system tray utility. Please follow the below procedures to enable the multi-GPU.

### For SLI™ and Quad SLI™ mode



**Step 1**

Double-click the **NVIDIA Control Panel** icon in the Windows® system tray.

**Step 2**

In the left pane, click **Set SLI and PhysX configuration**. Then select **Maximize 3D performance** and click **Apply**.

**Step 3**

Reboot your system.

**Step 4**

You can freely enjoy the benefits of SLI™ or Quad SLI™.

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

This motherboard supports CrossFireX™, 3-way CrossFireX™ and Quad CrossFireX™ that allows you to install up to three identical PCI Express x16 graphics cards. Currently CrossFireX™, 3-way CrossFireX™ and Quad CrossFireX™ are supported with Windows* 7 / 7 64-bit / 8 / 8 64-bit OS.

1. *You should only use identical CrossFireX™-ready graphics cards that are AMD certified.*
2. *Make sure that your graphics card driver supports AMD CrossFireX™ technology. Download the drivers from the AMD's website: www.amd.com*
3. *Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a AMD certified PSU. Please refer to the AMD's website for details.*
4. *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.*
5. *Different CrossFireX™ cards may require different methods to enable CrossFireX™. Please refer to AMD graphics card manuals for detailed installation guide.*

## 2.8.1 Installing Two CrossFireX™-Ready Graphics Cards
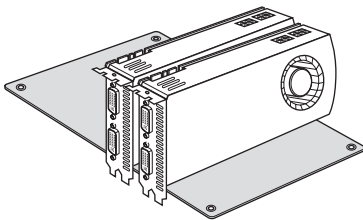
**Step 1**

Insert one graphics card into PCIE2 slot and the other graphics card to PCIE3 slot. Make sure that the cards are properly seated on the slots.

CrossFire Bridge

**Step 2**

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

English

**Step 3**

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.

## 2.8.2  Installing Three CrossFireX™-Ready Graphics Cards

**Step 1**

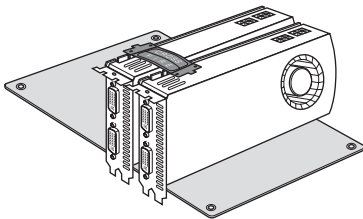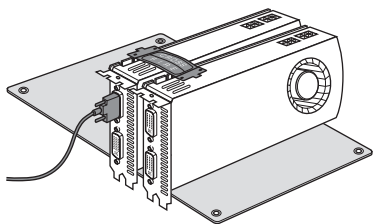Insert one graphics card into PCIE2 slot, another graphics card to PCIE3 slot, and the other graphics card to PCIE5 slot. Make sure that the cards are properly seated on the slots.

**Step 2**

CrossFire Bridge

Use one CrossFire Bridge to connect the graphics cards on PCIE2 and PCIE3 slots, and use the other CrossFire Bridge to connect the graphics cards on PCIE3 and PCIE5 slots. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)
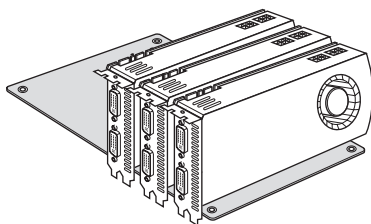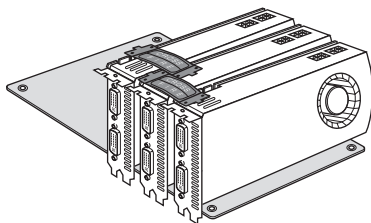
**Step 3**

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.
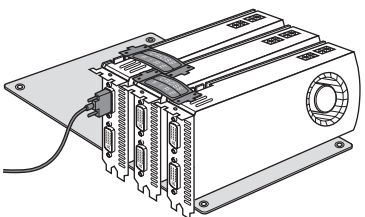
## 2.8.3 Driver Installation and Setup

**Step 1**

Power on your computer and boot into OS.

**Step 2**

Remove the AMD drivers if you have any VGA drivers 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's website for AMD driver updates.*

**Step 3**

Install the required drivers and CATALYST Control Center then restart your computer. Please check AMD's website for details.



AMD Catalyst Control Center



**Step 4**

Double-click the **AMD Catalyst Control Center** icon in the Windows* system tray.

**Step 5**

In the left pane, click **Performance** and then **AMD CrossFireX™**. Then select **Enable AMD CrossFireX** and click **Apply**. Select the GPU number according to your graphics card and click **Apply**.

## 2.9 M.2_SSD (NGFF) Module Installation Guide

The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The M.2_SSD (NGFF) Socket 3 can accommodate either a M.2 SATA3 6.0 Gb/s module or a M.2 PCI Express module up to Gen 2 x2 (10 Gb/s). Please be noted that the M.2_SSD (NGFF) Socket 3 is shared with the eSATA3 connector; you can only choose either the M.2_SSD (NGFF) Socket 3 or the eSATA3 connector to use.

### Installing the M.2_SSD (NGFF) Module
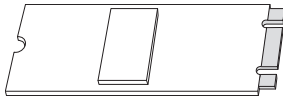


***Step 1***

Prepare a M.2_SSD (NGFF) module.
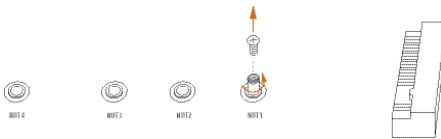


***Step 2***

Uninstall the screw knob and the standoff counterclockwise for later use.
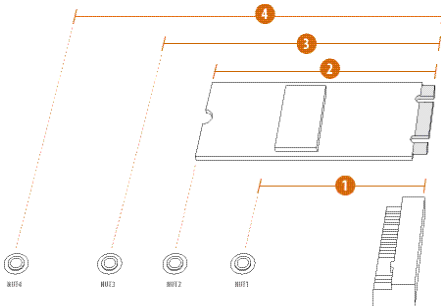


***Step 3***

Depending on the PCB length of your M.2_SSD (NGFF) module, find the corresponding NUT location to be used.

| No. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|
| Location | NUT1 | NUT2 | NUT3 | NUT4 |
| PCB Length | 4.2cm | 6cm | 8cm | 11cm |
| Module Type | Type 2242 | Type2260 | Type 2280 | Type 22110 |

**Step 4**

Hand tighten the standoff into the desired NUT on the motherboard.
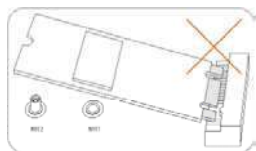
**Step 5**

Align and gently insert the M.2 (NGFF) SSD module into the M.2 slot.  Please be aware that the M.2 (NGFF) SSD module only fits in one orientation.
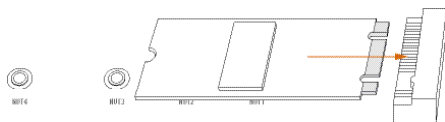
**Step 6**

Tighten the screw knob to secure the module into place.
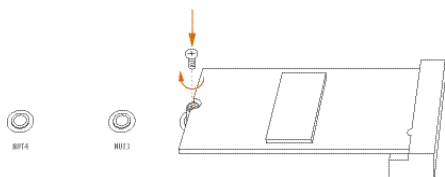
## M.2_SSD (NGFF) Module Support List

| PCIe Interface | SATA Interface |
|---|---|
| SanDisk SD6PP4M-128G | Intel SSDSCKGW080A401/80G |
| SanDisk SD6PP4M-256G | |

For the latest updates of M.2_SSD (NFGG) module support list, please visit our website for details: http://www.asrock.com

English

# Chapter 3 Software and Utilities Operation

## 3.1 Installing Drivers

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

### 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 does not appear automatically, locate and double click on the file "ASRSETUP.EXE" in the Support CD to display the menu.

### Drivers Menu

The drivers compatible to your system will be auto-detected and listed on the support CD driver page. Please click **Install All** or follow the order from top to bottom to install those required drivers. Therefore, the drivers you install can work properly.

### Utilities Menu

The Utilities Menu shows the application software that the motherboard supports. Click on a specific item then follow the installation wizard to install it.
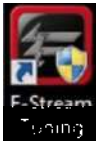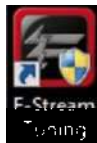
## 3.2  F-Stream

F-Stream is an all-in-one tool to fine-tune different system functions in a user-friendly interface, it includes Hardware Monitor, Fan Control, Overclocking, Fatal1ty Mouse Port, Energy Saving and XFast RAM. In Hardware Monitor, it shows the major readings of your system. In Fan Control, it shows the fan speed and temperature for you to adjust. In Overclocking, you are allowed to overclock CPU frequency for optimal system performance. In Fatal1ty Mouse Port, you can adjust the mouse polling rate to enjoy Fatal1ty Mouse Polling feature. In Energy Saving, you can enjoy the intelligent power saving feature. In XFast RAM, it fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. It also shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

### 3.2.1  Installing F-Stream

When you install the all-in-one driver to your system from our support CD, F-Stream will be auto-installed as well. After installation, you will find the icon "F-Stream" on your desktop. Double-click the "F-Stream" icon  , and the F-Stream main menu will pop out.

### 3.2.2  Using F-Stream

Please be noted that there is a button "Auto run when windows start" on the lower right corner. If you click this button, every time you turn on your system and enter Windows®, the system will automatically start F-Stream. 

There are six sections in the F-Stream main menu: Hardware Monitor, Fan Control, Overclocking, Fatal1ty Mouse Port, Energy Saving and XFast RAM.

English

35
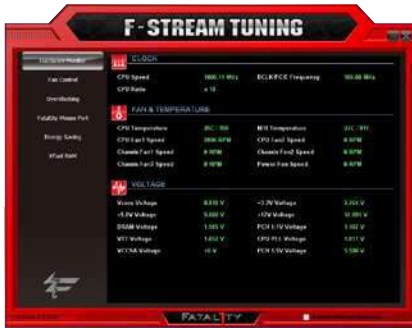
### Hardware Monitor



In the Hardware Monitor section, it shows the major readings of your system. The main readings include Clock, Fan & Temperature, and Voltage. In Clock, there are CPU speed and CPU ratio. In Fan & Temperature, there are CPU temperature and CPU fan speed. You may find out if there are any abnormal situations occuring to your system's temperature. In Voltage, there are many respective voltages.

### Fan Control



In the Fan Control section, there are two major chapters: Temperature and CPU/Chassis Fan. In Temperature, it shows the major readings of CPU and motherboard temperature. In CPU/Chassis Fan, it shows the fan target speed and temperature, and you are able to adjust the settings by clicking the "+/-" and confirming by "APPLY" afterwards.

## Overclocking
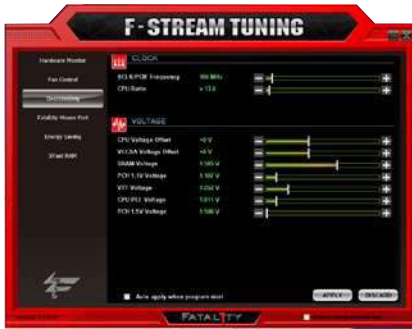


In the Overclocking section, there are Clock and Voltage chapters for users to adjust settings and pursuit optimal system performance. You are able to fine-tune the CPU ratio, CPU frequency, and respective voltages by clicking the "+/-" at the display panel. After confirmation of the settings, please click on the "APPLY" button.

> *Overclocking and over-voltage may affect your system's stability, or even cause damage to your hardware devices. It should be done at your own risk and expense. We are not responsible for the possible damage caused by overclocking and overvoltage. If system hangs after overclocking, please remove the AC power cord and plug the AC power cord back on again before you power on your system.*

## Fatal1ty Mouse Port
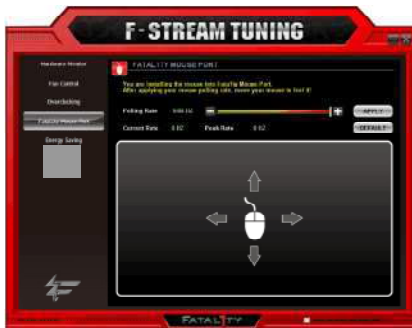


Fatal1ty Mouse Port is a customizable technology for PC gamers. After plugging the USB mouse into the Fatal1ty Mouse Port and running F-Stream, gamers can use Fatal1ty's personal preferred mouse polling rate at 500 Hz. F-Stream also provides the flexibility for gamers to adjust the mouse polling rate from 125 Hz to 1000 Hz. This is helpful for professional gamers to experience smoother game play and faster response time from the mouse. After confirmation of the settings, please click on the "APPLY" button.

English

## Energy Saving



Featuring an advanced proprietary hardware and software design, Energy Saving is a revolutionary technology that delivers unparalleled power saving. The voltage regulator can reduce the number of output phases to improve efficiency when the CPU cores are idle. In other words, it is able to provide exceptional power saving and improve power efficiency without sacrificing computing performance.

## XFast RAM



XFast RAM fully utilizes the memory space that cannot be used under Windows® OS 32-bit CPU. It also shortens the loading time of previously visited websites, making web surfing faster than ever. And it also boosts the speed of Adobe Photoshop 5 times faster. Another advantage is that it reduces the frequency of accessing your SSDs or HDDs in order to extend their lifespan.

## 3.3 Killer Network Manager

Qualcomm® Atheros® Killer Network Manager allows you to control the upload and download speeds for online applications accessing your network resources, as well as allowing you to customize priority and bandwidth for all network traffic to fit your needs.

### 3.3.1 Installing Killer Network Manager

When you install the all-in-one driver to your system from ASRock's support CD, Killer Network Manager will be auto-installed as well. After the installation, you will find the icon "Killer Network Manager" on your desktop. Double-click the ⚡ icon, Killer Network Manager main menu will pop up.

### 3.3.2 Using Killer Network Manager

There are four tabs in Killer Network Manager:  Applications, Performance, Network and Killer Ethernet.

**Applications**
**Applications** allows you to set the prioritization of network traffic, increase or reduce the bandwidth that a certain application uses, or block an application entirely.
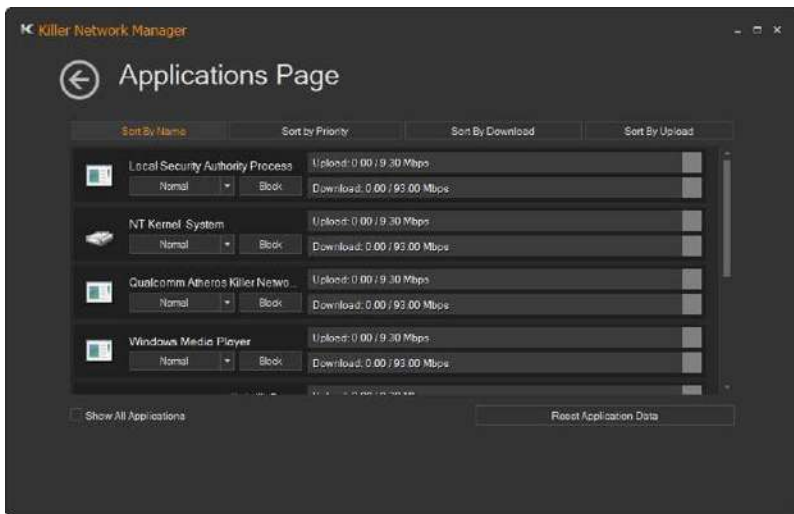
**Performance**

**Performance** allows you to view in real time your system performance and current network utilization for download and upload traffic.



**Network**

**Network** allows you to set your preferred upload/download speeds and test the network speed.

* You must have Adobe Flash Player installed to run the network speed test.
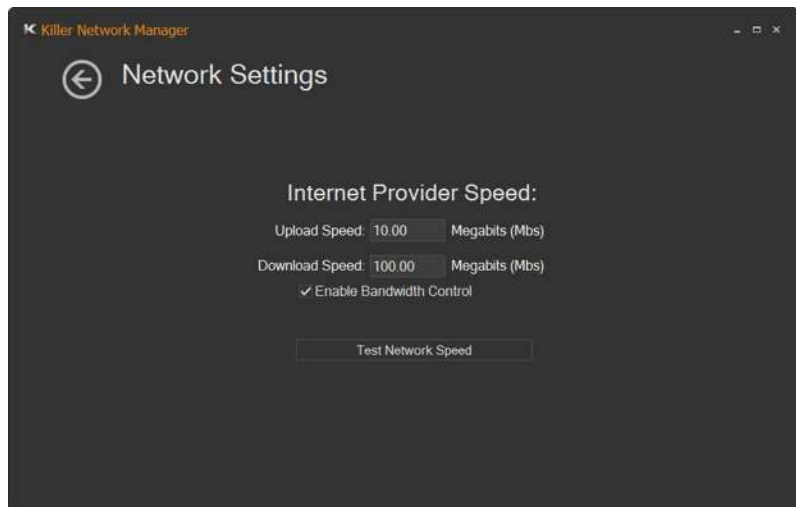
**Killer Ethernet**

**Killer Ethernet** displays the network information.
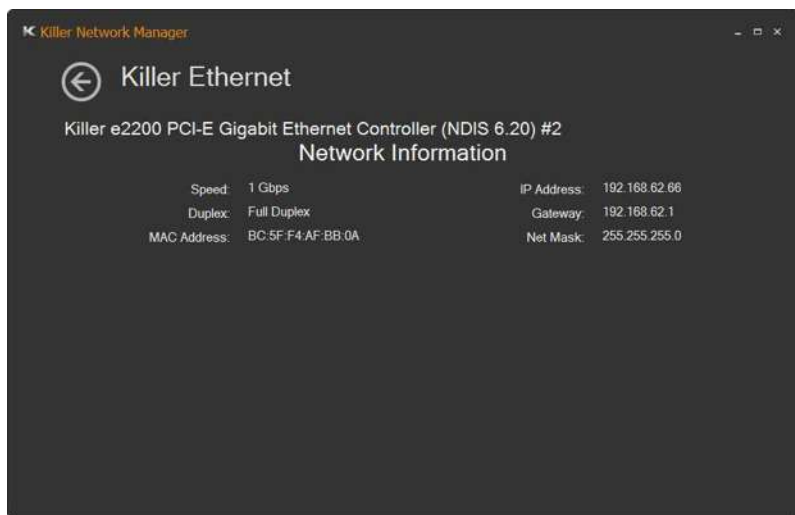
## 3.4 Start8

For those Windows 8 users who miss the Start Menu, Start8 is an ideal solution that brings back the familiar Start Menu along with added customizations for greater efficiency.

### 3.4.1 Installing Start8

Install **Start8**, which is located in the folder at the following path of the Support CD: **\ ASRock Utility > Start8**.

### 3.4.2 Configuring Start8

Style
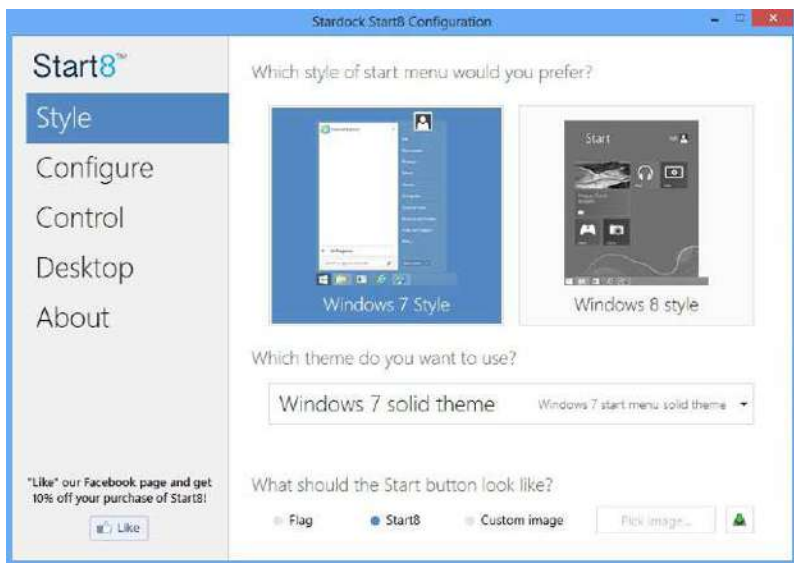


Select between the Windows 7 style and Windows 8 style Start Menu. Then select the theme of the Start Menu and customize the style of the Start icon.

## Configure
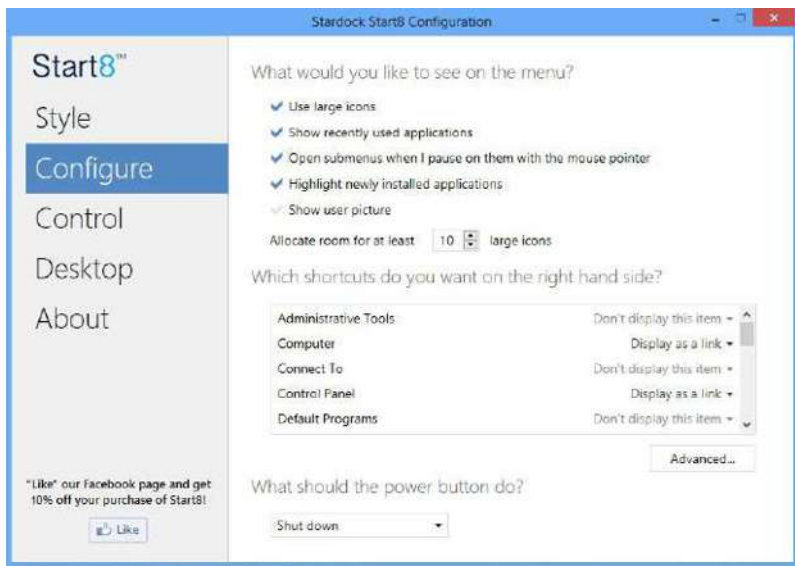


**Configure** provides configuration options, including icon sizes, which shortcuts you want Start Menu to display, quick access to recently used apps, the functionality of the power button, and more.

## Control

English
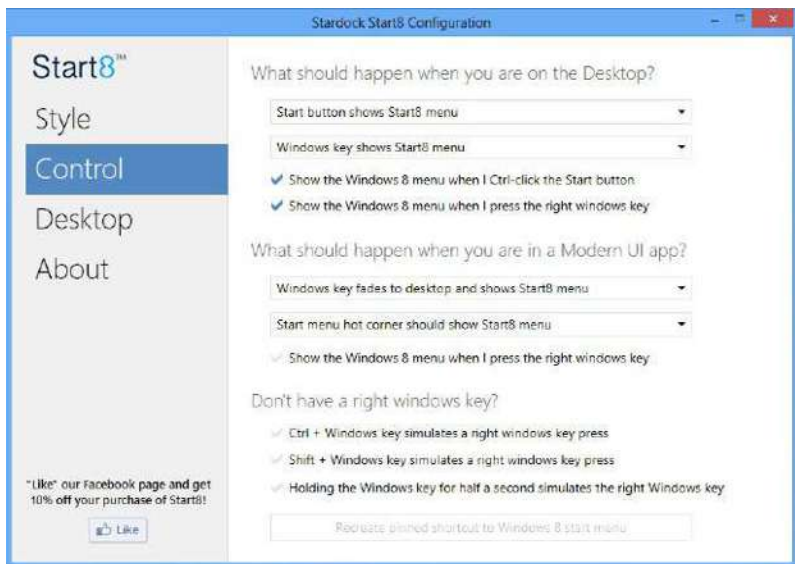
Control lets you configure what a click on the start button or a press on the Windows key does.

## Desktop
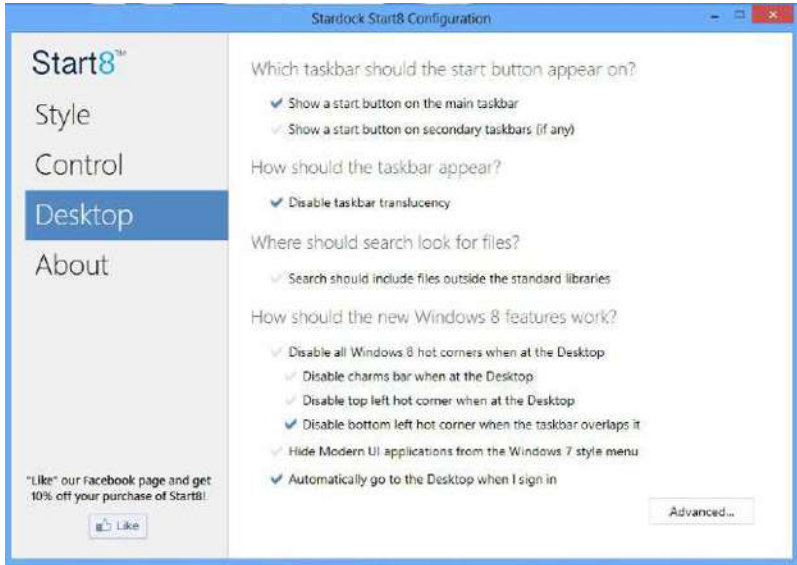


Desktop allows you to disable the hot corners when you are working on the desktop. It also lets you choose whether or not the system boots directly into desktop mode and bypass the Metro user interface.

## About

Displays information about Start8.

## 3.5 XSplit Broadcaster

XSplit Broadcaster is a desktop application designed to make your multimedia broadcasting, live-streaming and recording a lot easier and more fun to do, we are giving away the 3 months premium license which is worth US$24.95 for free!

### 3.5.1 Live Streaming Your Gameplay

***Step 1***

Go to **Start** > **All Programs** > **XSplit** > **XSplit Broadcaster** to launch it.
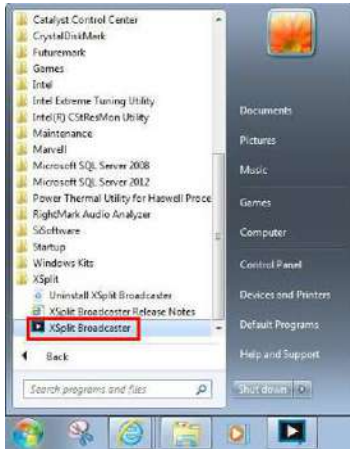


***Step 2***

Log in with your own username and password. (If you do not have an XSplit account, click **No XSplit account?** to register.)



English

45

### Step 3

Go to **Broadcast > Add Channels…**.
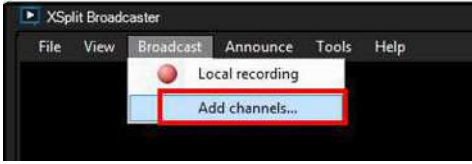


### Step 4

Click **Add…**.
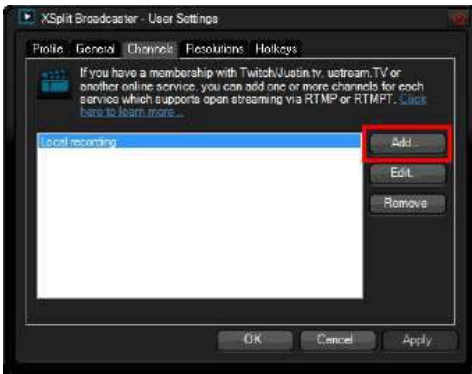


### Step 5

Select a platform for live streaming.

*Before you start streaming, you need to register an account for the streaming service website, such as Twitch.tv, USTREAM, or other livestreaming services.
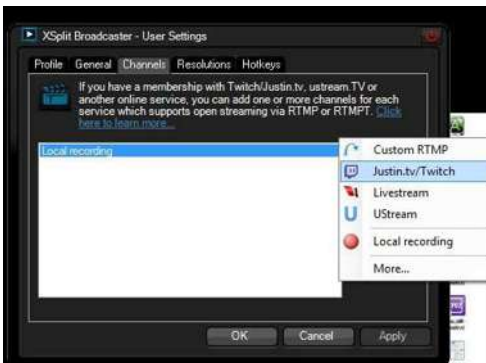
**Step 6**

Fill in your platform's **Username** and **Password**.

Based on your needs, configure the Video and Audio Encoding settings. Click **OK**.
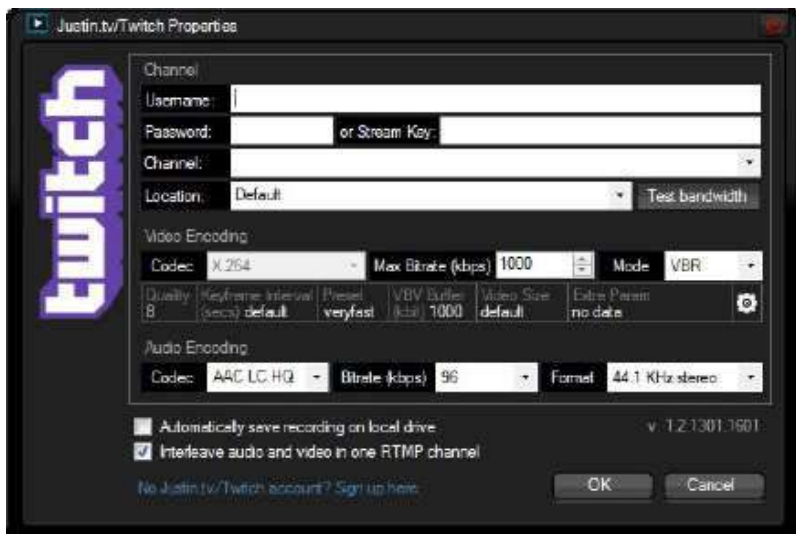


**Step 7**

The channel then appears in your broadcast list. Click **Apply** and **OK** to save the settings.
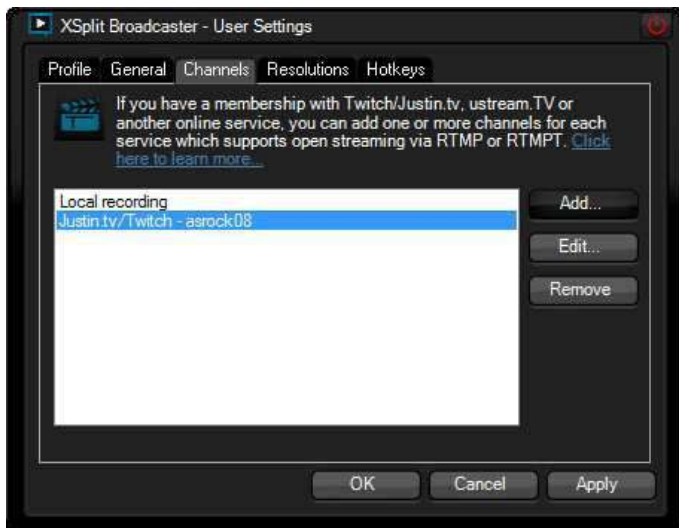
***Step 8***

Go to **Broadcast** and select the platform to enable live streaming.
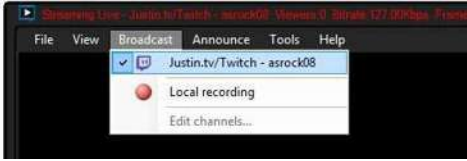


A link to view your live Broadcast has been copied for you automatically. Simply press CTRL-V or right click and choose Paste to paste the link into the browser, and you can see your broadcast.

To disable live streaming, go to **Broadcast** again and deselect the platform.

## 3.5.2  Recording Your Gameplay

***Step 1***

Go to **Broadcast** > **Local recording** to start recording.
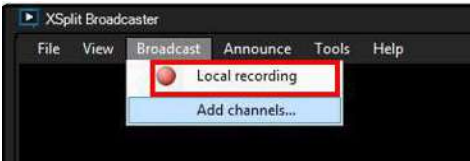


***Step 2***

To stop recording, Go to **Broadcast** again and deselect **Local recording**.

***Step 3***

Go to **Tools** > **My Recordings...**to access your recordings

# Chapter 4 UEFI SETUP UTILITY

## 4.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (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.*

## 4.1.1 UEFI Menu Bar

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

| | |
|---|---|
| **Main** | For setting system time/date information |
| **OC Tweaker** | For overclocking configurations |
| **Advanced** | For advanced system configurations |
| **Tool** | Useful tools |
| **H/W Monitor** | Displays current hardware status |
| **Boot** | For configuring boot settings and boot priority |
| **Security** | For security settings |
| **Exit** | Exit the current screen or the UEFI Setup Utility |

English

## 4.1.2 Navigation Keys

Use < ← > key or < → > key to choose among the selections on the menu bar, and use < ↑ > key or < ↓ > key to move the cursor up or down to select items, then press <Enter> to get into the sub screen. You can also use the mouse to click your required item.

Please check the following table for the descriptions of each navigation key.

| Navigation Key(s) | Description |
|---|---|
| + / - | To change option for the selected items |
| <Tab> | Switch to next function |
| <PGUP> | Go to the previous page |
| <PGDN> | Go to the next page |
| <HOME> | Go to the top of the screen |
| <END> | Go to the bottom of the screen |
| <F1> | To display the General Help Screen |
| <F7> | Discard changes and exit the SETUP UTILITY |
| <F9> | Load optimal default values for all the settings |
| <F10> | Save changes and exit the SETUP UTILITY |
| <F12> | Print screen |
| <ESC> | Jump to the Exit Screen or exit the current screen |

## 4.2  Main Screen

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



### Active Page on Entry

Select the default page when entering the UEFI setup utility.

## 4.3  OC Tweaker Screen

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



> 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.

### OC Mode

Use this to select Overclock Mode. Please note that overclocing may cause damage to your components and motherboard. It should be done at your own risk and expense.

### Load Optimized CPU OC Setting

Please note that overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense.

### CPU Configuration

### Overclock Mode

Use this to select Overclock Mode. Configuration options: [Auto] and [Manual]. The default value is [Auto].

## Spread Spectrum

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

## ASRock UCC

ASRock UCC (Unlock CPU Core) feature simplifies AMD CPU activation. As long as a simple switch of the UEFI option "ASRock UCC", you can unlock the extra CPU core to enjoy an instant performance boost. When UCC feature is enabled, the dual-core or triple-core CPU will boost to the quad-core CPU, and some CPU, including quad-core CPU, can also increase L3 cache size up to 6MB, which means you can enjoy the upgrade CPU performance with a better price. Please be noted that UCC feature is supported with AM3/AM3+ CPU only, and in addition, not every AM3/AM3+ CPU can support this function because some CPU's hidden core may be malfunctioned.

## CPU Active Core Control

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

## AMD Turbo Core Technology

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

## AMD Application Power Management

Application Power Management (APM) ensures that average power con-sumption over a thermally significant time period remains at or below the TDP for the CPU mode being used. If [Enabled] is selected, the power consumption is reduced when overclocking.

## Processor Maximum Frequency

It will display Processor Maximum Frequency for reference.

## North Bridge Maximum Frequency

It will display North Bridge Maximum Frequency for reference.

## Processor Maximum Voltage

It will display Processor Maximum Voltage for reference.

## Multiplier/Voltage Change

This item is set to [Auto] by default. If it is set to [Manual], you may adjust the value of Processor Frequency and Processor Voltage. However, it is recommended to keep the default value for system stability.

English

### CPU Frequency Multiplier

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

### CPU Voltage

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

### NB Frequency Multiplier

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

### CPU NB Voltage

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

### HT Bus Speed

This feature allows you selecting Hyper-Transport bus speed. Configuration options: [200MHz] to [2000MHz].

### HT Bus Width

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

### DRAM Timing Configuration

### DRAM Frequency

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

### DRAM Timing Control



### DRAM Slot

Use this item to view SPD data.

### DRAM Timing Control

Use this item to control DRAM timing.

### Power Down Enable

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

### Bank Interleaving

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

### Channel Interleaving

It allows you to enable Channel Memory Interleaving. Configuration options: [Disabled], [Auto]. The default value is [Auto].

### Voltage Configuration

### DRAM Voltage

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

### CPU Voltage Offset

Configure the dynamic CPU voltage added to the CPU.

### NB Voltage

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

### HT Voltage

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

### CPU VDDA Voltage

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

### PCIE VDDA Voltage

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

## 4.4  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, USB Configuration and Trusted Computing.



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

## 4.4.1 CPU Configuration



### Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet$^{TM}$ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows$^*$ 8 / 7 / Vista$^{TM}$ and want to enable this function, please set this item to [Enabled]. Please note that enabling this function may reduce CPU voltage and memory frequency, and lead to system stability or compatibility issue with some memory modules or power supplies. Please set this item to [Disable] if above issue occurs.

### 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.

### Secure Virtual Machine

When this option is set to [Enabled], a VMM (Virtual Machine Architecture) can utilize the additional hardware capabilities provided by AMD-V. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled].

### Core C6 Mode

Use this item to enable or disable Core C6 mode. The default value is [Enabled].

## CPU Thermal Throttle

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

## 4.4.2  North Bridge Configuration



### IOMMU

Use this to enable or disable IOMMU. The default value of this feature is [Disabled].

### 4.4.3 South Bridge Configuration



### Onboard HD Audio

Enable/disable onboard HD audio. Set to Auto to enable onboard HD audio and automatically disable it when a sound card is installed.

### Front Panel

Enable/disable front panel HD audio.

### Onboard LAN

Enable or disable the onboard network interface controller.

### Good Night LED

By enabling Good Night LED, the Power/HDD LEDs will be switched off when the system is on. It will also automatically switch off the Power and Keyboard LEDs when the system enters into Standby/Hibernation mode.

## 4.4.4 Storage Configuration



### SATA Controller(s)

Enable/disable the SATA controllers.

### SATA Mode

IDE: For better compatibility.

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

> *If you set this item to RAID mode, it is suggested to install SATA ODD driver on SATA3_5 or eSATA3 port.*

### AMD AHCI BIOS ROM

Use this item to enable or disable AMD AHCI BIOS ROM. The default value of this option is [Disabled].

### SATA IDE Combined Mode

This item is for SATA3_5 and eSATA3 ports. Use this item to enable or disable SATA IDE combined mode. The default value is [Enabled].

*If you want to build RAID on SATA3_5 and eSATA3 ports, please disable this item.*

## Aggressive Link Power Management

Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode.

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

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

### 4.4.5 Super IO Configuration



### Serial Port

Enable or disable the Serial port.

### Serial Port Address

Select the address of the Serial port.

### Infrared Port

Enable or disable the Infrared port.

## 4.4.6 ACPI Configuration



### Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.

### Check Ready Bit

Enable to enter the operating system after S3 only when the hard disk is ready, this is recommended for better system stability.

### ACPI HPET Table

Enable the High Precision Event Timer for better performance and to pass WHQL tests.

### Restore on AC/Power Loss

Select the power state after a power failure. If [Power Off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

### PS/2 Keyboard Power On

Allow the system to be waked up by a PS/2 Keyboard.

### PCI Devices Power On

Allow the system to be waked up by a PCI device and enable wake on LAN.

### Ring-In Power On

Allow the system to be waked up by onboard COM port modem Ring-In signals.

### RTC Alarm Power On

Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by your operating system.

### USB Phy Power On

Allow the system to be waked up by an USB Phy.

### USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

### USB Mouse Power On

Allow the system to be waked up by an USB mouse.

### CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test. If you are using Windows 8 64-bit and all of your devices support UEFI, you may also disable CSM for faster boot speed.

## 4.4.7  USB Configuration



### USB Controller

Enable or disable all the USB 2.0 ports.

### USB 3.0 Controller

Enable or disable all the USB 3.0 ports.

### Legacy USB Support

Enable or disable Legacy OS Support for USB 2.0 devices. If you encounter USB compatibility issues it is recommended to disable legacy USB support. Select UEFI Setup Only to support USB devices under the UEFI setup and Windows/Linux operating systems only.

### Legacy USB 3.0 Support

Enable or disable Legacy OS Support for USB 3.0 devices.

## 4.4.8 Trusted Computing



### Security Device Support

Enable to activate Trusted Platform Module (TPM) security for your hard disk drives.

## 4.5 Tools



### System Browser

ASRock System Browser shows the overview of your current PC and the devices connected.

### OMG (Online Management Guard)

Administrators are able to establish an internet curfew or restrict internet access at specified times via OMG. You may schedule the starting and ending hours of internet access granted to other users. In order to prevent users from bypassing OMG, guest accounts without permission to modify the system time are required.

### UEFI Tech Service

Contact ASRock Tech Service if you are having trouble with your PC. Please setup network configuration before using UEFI Tech Service.

### Easy RAID Installer

Easy RAID Installer helps you to copy the RAID driver from the support CD to your USB storage device. After copying the drivers please change the SATA mode to RAID, then you can start installing the operating system in RAID mode.

### Easy Driver Installer

For users that don't have an optical disk drive to install the drivers from our support CD, Easy Driver Installer is a handy tool in the UEFI that installs the LAN driver to your system via an USB storage device, then downloads and installs the other

required drivers automatically.

### Instant Flash

Save UEFI files in your USB storage device and run Instant Flash to update your UEFI.

### Internet Flash

ASRock Internet Flash downloads and updates the latest UEFI firmware version from our servers for you. Please setup network configuration before using Internet Flash.

\*For BIOS backup and recovery purpose, it is recommended to plug in your USB pen drive before using this function.

### Network Configuration

Use this to configure internet connection settings for Internet Flash.



### Internet Setting

Enable or disable sound effects in the setup utility.

### UEFI Download Server

Select a server to download the UEFI firmware.

### Dehumidifier Function

If Dehumidifier Function is enabled, the computer will power on automatically to dehumidify the system after entering S4/S5 state.

### Dehumidifier Period

Configure the period of time until the computer powers on and enables Dehumidifier after entering S4/S5 state.

### Dehumidifier Duration

Configure the duration of the dehumidifying process before it returns to S4/S5 state.

### Dehumidifier CPU Fan Setting

Configure the speed of the CPU fan while Dehumidifier is enabled. The higher the value, the faster the fan speed.

Max: 255

Min: 1

### Save User Default

Type a profile name and press enter to save your settings as user default.

### Load User Default

Load previously saved user defaults.

## 4.6  Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and 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] and [Automatic Mode]. The default is value [Full On].

### Chassis Fan 2 Setting

This allows you to set the chassis fan 2 speed. Configuration options: [Full On] and [Manual]. The default is value [Full On].

### Chassis Fan 3 Setting

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

## 4.7 Boot Screen

This section displays the available devices on your system for you to configure the boot settings and the boot priority.



### Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device. Ultra Fast mode is only supported by Windows 8 and the VBIOS must support UEFI GOP if you are using an external graphics card. Please notice that Ultra Fast mode will boot so fast that the only way to enter this UEFI Setup Utility is to Clear CMOS or run the Restart to UEFI utility in Windows.

### Boot From Onboard LAN

Allow the system to be waked up by the onboard LAN.

### Setup Prompt Timeout

Configure the number of seconds to wait for the setup hot key.

### Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.

### Full Screen Logo

Enable to display the boot logo or disable to show normal POST messages.

### AddOn ROM Display

Enable AddOn ROM Display to see the AddOn ROM messages or configure the AddOn ROM if you've enabled Full Screen Logo. Disable for faster boot speed.

### Boot Failure Guard

If the computer fails to boot for a number of times the system automatically restores the default settings.

### Boot Failure Guard Count

Configure the number of attempts to boot until the system automatically restores the default settings.

## 4.8  Security Screen

In this section you may set or change the supervisor/user password for the system. You may also clear the user password.



### Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### Secure Boot

Enable to support Windows 8 Secure Boot.

## 4.9  Exit Screen



### Save Changes and Exit

When you select this option the following message, "Save configuration changes and exit setup?" will pop out. Select [OK] to save changes and exit the UEFI SETUP UTILITY.

### Discard Changes and Exit

When you select this option the following message, "Discard changes and exit setup?" will pop out. Select [OK] to exit the UEFI SETUP UTILITY without saving any changes.

### Discard Changes

When you select this option the following message, "Discard changes?" will pop out. Select [OK] to discard all changes.

### Load UEFI Defaults

Load UEFI default values for all options. The F9 key can be used for this operation.

## Contact Information

If you need to contact ASRock or want to know more about ASRock, you're welcome to visit ASRock's website at http://www.asrock.com; or you may contact your dealer for further information. For technical questions, please submit a support request form at http://www.asrock.com/support/tsd.asp

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