



ASRock®



X370 Taichi

User Manual

Version 1.0

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# Contents

<b>Chapter 1 Introduction</b>	<b>1</b>
1.1 Package Contents	1
1.2 Specifications	2
1.3 Motherboard Layout	7
1.4 I/O Panel	9
<b>Chapter 2 Installation</b>	<b>11</b>
2.1 Installing the CPU	12
2.2 Installing the CPU Fan and Heatsink	14
2.3 Installing Memory Modules (DIMM)	23
2.4 Expansion Slots (PCI Express Slots)	25
2.5 Jumpers Setup	26
2.6 Onboard Headers and Connectors	27
2.7 Smart Switch	32
2.8 Dr. Debug	33
2.9 SLI™ and Quad SLI™ Operation Guide	35
2.9.1 Installing Two SLI™-Ready Graphics Cards	35
2.9.2 Driver Installation and Setup	37
2.10 CrossFireX™ and Quad CrossFireX™ Operation Guide	38
2.10.1 Installing Two CrossFireX™-Ready Graphics Cards	38
2.10.2 Driver Installation and Setup	40
2.11 M.2_SSD (NGFF) Module Installation Guide (M2_1)	41
2.12 M.2_SSD (NGFF) Module Installation Guide (M2_2)	45

**Chapter 3 Software and Utilities Operation 48**

- 3.1 Installing Drivers 48
- 3.2 A-Tuning 49
  - 3.2.1 Installing A-Tuning 49
  - 3.2.2 Using A-Tuning 49
- 3.3 ASRock Live Update & APP Shop 52
  - 3.3.1 UI Overview 52
  - 3.3.2 Apps 53
  - 3.3.3 BIOS & Drivers 56
  - 3.3.4 Setting 57
- 3.4 ASRock RGB LED 58

**Chapter 4 UEFI SETUP UTILITY 60**

- 4.1 Introduction 60
  - 4.1.1 UEFI Menu Bar 60
  - 4.1.2 Navigation Keys 61
- 4.2 Main Screen 62
- 4.3 OC Tweaker Screen 63
- 4.4 Advanced Screen 65
  - 4.4.1 CPU Configuration 66
  - 4.4.2 North Bridge Configuration 67
  - 4.4.3 South Bridge Configuration 68
  - 4.4.4 Storage Configuration 69
  - 4.4.5 Super IO Configuration 70
  - 4.4.6 ACPI Configuration 71

4.4.7	USB Configuration	72
4.4.8	Trusted Computing	73
4.5	Tools	74
4.6	Hardware Health Event Monitoring Screen	76
4.7	Security Screen	78
4.8	Boot Screen	79
4.9	Exit Screen	81

# Chapter 1 Introduction

Thank you for purchasing ASRock X370 Taichi 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 documentation, 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 documentation will be subject to change without notice. In case any modifications of this documentation 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 X370 Taichi Motherboard (ATX Form Factor)
- ASRock X370 Taichi Quick Installation Guide
- ASRock X370 Taichi Support CD
- 1 x I/O Panel Shield
- 4 x Serial ATA (SATA) Data Cables (Optional)
- 1 x ASRock SLI\_HB\_Bridge\_2S Card (Optional)
- 2 x ASRock WiFi 2.4/5 GHz Antennas
- 2 x Screws for M.2 Socket (Optional)

## 1.2 Specifications

**Platform** • ATX Form Factor

**CPU** • Supports AMD AM4 Socket Ryzen CPUs (Summit Ridge)  
• IR Digital PWM  
• 16 Power Phase design  
• Supports ASRock Hyper BCLK Engine II

**Chipset** • AMD Promontory X370

**Memory** • Dual Channel DDR4 Memory Technology  
• 4 x DDR4 DIMM Slots  
• Supports DDR4 3200+(OC)/2933(OC)/2667/2400/2133 ECC & non-ECC, un-buffered memory\*  
\* Please refer to Memory Support List on ASRock's website for more information. (<http://www.asrock.com/>)  
\* Please refer to page 23 for DDR4 UDIMM maximum frequency support.  
• Max. capacity of system memory: 64GB  
• 15 $\mu$  Gold Contact in DIMM Slots

**Expansion Slot** • 2 x PCI Express 3.0 x16 Slots (single at x16 (PCIE2); dual at x8 (PCIE2) / x8 (PCIE3))\*  
\* Supports NVMe SSD as boot disks  
• 1 x PCI Express 2.0 x16 Slot (PCIE5 @ x4 mode)  
\* If PCIE5 slot is occupied, M2\_2 will be disabled  
• 2 x PCI Express 2.0 x1 Slots  
• Supports AMD Quad CrossFireX™ and CrossFireX™  
• Supports NVIDIA® Quad SLI™ and SLI™  
• 1 x Vertical M.2 Socket (Key E) with the bundled WiFi-802.11ac module (on the rear I/O)  
• 15 $\mu$  Gold Contact in VGA PCIe Slot (PCIE2)

**Audio** • 7.1 CH HD Audio with Content Protection (Realtek ALC1220 Audio Codec)  
• Premium Blu-ray Audio support  
• Supports Surge Protection



- Supports Purity Sound™ 4
  - Nichicon Fine Gold Series Audio Caps
  - 120dB SNR DAC with Differential Amplifier
  - TI® NE5532 Premium Headset Amplifier for Front Panel Audio Connector (Supports up to 600 Ohm headsets)
  - Pure Power-In
  - Direct Drive Technology
  - PCB Isolate Shielding
  - Impedance Sensing on Line Out port
  - Individual PCB Layers for R/L Audio Channel
  - Gold Audio Jacks
  - 15μ Gold Audio Connector
- Supports DTS Connect

#### **LAN**

- Gigabit LAN 10/100/1000 Mb/s
- GigaLAN Intel® I211AT
- Supports Wake-On-LAN
- Supports Lightning/ESD Protection
- Supports Energy Efficient Ethernet 802.3az
- Supports PXE

#### **Wireless LAN**

- Intel® 802.11ac WiFi Module (Free Bundle)
- Supports IEEE 802.11a/b/g/n/ac
- Supports Dual-Band (2.4/5 GHz)
- Supports high speed wireless connections up to 433Mbps
- Supports Bluetooth 4.2 / 3.0 + High speed class II

#### **Rear Panel I/O**

- 2 x Antenna Ports
- 1 x PS/2 Mouse/Keyboard Port (with Y-cable support)
- 1 x Optical SPDIF Out Port
- 1 x USB 3.1 Type-A Port (10 Gb/s) (Supports ESD Protection)
- 1 x USB 3.1 Type-C Port (10 Gb/s) (Supports ESD Protection)
- 6 x USB 3.0 Ports (Supports ESD Protection)
- 1 x RJ-45 LAN Ports with LED (ACT/LINK LED and SPEED LED)
- 1 x Clear CMOS Switch
- HD Audio Jacks: Rear Speaker / Central / Bass / Line in / Front Speaker / Microphone (Gold Audio Jacks)

## Storage

- 8 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1 and RAID 10), NCQ, AHCI and Hot Plug
  - 2 x SATA3 6.0 Gb/s Connectors by ASMedia ASM1061, support NCQ, AHCI and Hot Plug
  - 1 x Ultra M.2 Socket (M2\_1), supports type 2242/2260/2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s)\*
  - 1 x M.2 Socket (M2\_2), supports type 2230/2242/2260/2280 M.2 PCI Express module up to Gen2 x4 (20 Gb/s)\*
- \* If M2\_2 is occupied, PCIE5 slot will be disabled
- \* Supports NVMe SSD as boot disks
- \* Supports ASRock U.2 Kit

## Connector

- 1 x Power LED and Speaker Header
  - 1 x AMD Fan LED Header
  - 2 x RGB LED Headers
- \* Supports up to 12V/3A, 36W LED Strip
- 1 x CPU Fan Connector (4-pin)
- \* The CPU Fan Connector supports the CPU fan of maximum 1A (12W) fan power.
- 1 x CPU Optional/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)
- \* The CPU Optional/Water Pump Fan supports the water cooler fan of maximum 1.5A (18W) fan power.
- 2 x Chassis Fan Connectors (4-pin) (Smart Fan Speed Control)
  - 1 x Chassis Optional/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)
- \* The Chassis Optional/Water Pump Fan supports the water cooler fan of maximum 1.5A (18W) fan power.
- \* CPU\_FAN1, CHA\_FAN1, CHA\_FAN2 can auto detect if 3-pin or 4-pin fan is in use.
- 1 x 24 pin ATX Power Connector (Hi-Density Power Connector)
  - 1 x 8 pin 12V Power Connector (Hi-Density Power Connector)
  - 1 x Front Panel Audio Connector (15 $\mu$  Gold Audio Connector)

- 1 x AMD LED Fan USB Header
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports) (Supports ESD Protection)
- 2 x USB 3.0 Headers (Support 4 USB 3.0 ports) (Supports ESD Protection)
- 1 x Dr. Debug with LED

### **BIOS Feature**

- AMI UEFI Legal BIOS with multilingual GUI support
- Supports “Plug and Play”
- ACPI 5.1 compliance wake up events
- Supports jumperfree
- SMBIOS 2.3 support
- CPU, VCORE\_NB, DRAM, VPPM, PCH 1.05V, +1.8V, VDDP, PROM 2.5V, Voltage Multi-adjustment

### **Hardware Monitor**

- Temperature Sensing: CPU, CPU Optional/Water Pump, Chassis, Chassis Optional/Water Pump Fans
- Fan Tachometer: CPU, CPU Optional/Water Pump, Chassis, Chassis Optional/Water Pump Fans
- Quiet Fan (Auto adjust chassis fan speed by CPU temperature): CPU, CPU Optional/Water Pump, Chassis, Chassis Optional/Water Pump Fans
- Fan Multi-Speed Control: CPU, CPU Optional/Water Pump, Chassis, Chassis Optional/Water Pump Fans
- Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore, VCORE\_NB, DRAM, PCH 1.05V, +1.8V, VDDP

### **OS**

- Microsoft® Windows® 10 64-bit
- \* For the updated Windows® 10 driver, please visit ASRock’s website for details: <http://www.asrock.com>

### **Certifica- tions**

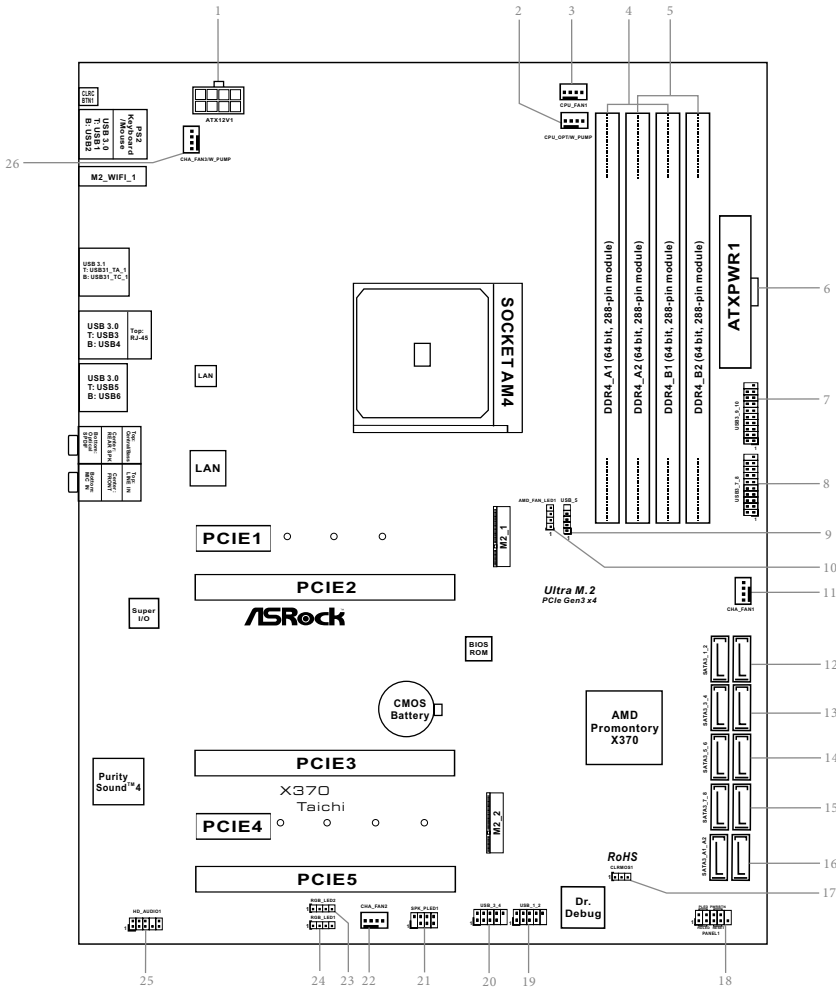
- FCC, CE, WHQL
- ErP/EuP ready (ErP/EuP ready power supply is required)

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



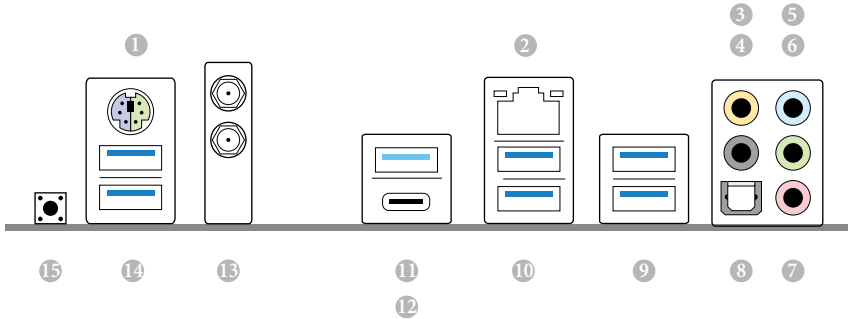
*Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of your system. It should be done at your own risk and expense. We are not responsible for possible damage caused by overclocking.*

### 1.3 Motherboard Layout



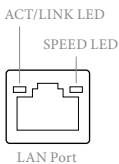
No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	CPU Fan / Waterpump Fan Connector (CPU_OPT/W_PUMP)
3	CPU Fan Connector (CPU_FAN1)
4	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1)
5	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2)
6	ATX Power Connector (ATXPWR1)
7	USB 3.0 Header (USB3_9_10)
8	USB 3.0 Header (USB3_7_8)
9	AMD LED Fan USB Header (USB_5)
10	AMD Fan LED Header (AMD_FAN_LED1)
11	Chassis Fan Connector (CHA_FAN1)
12	SATA3 Connectors (SATA3_1_2)
13	SATA3 Connectors (SATA3_3_4)
14	SATA3 Connectors (SATA3_5_6)
15	SATA3 Connectors (SATA3_7_8)
16	SATA3 Connectors (SATA3_A1_A2)
17	Clear CMOS Jumper (CLRMOS1)
18	System Panel Header (PANEL1)
19	USB 2.0 Header (USB_1_2)
20	USB 2.0 Header (USB_3_4)
21	Power LED and Speaker Header (SPK_PLED1)
22	Chassis Fan Connector (CHA_FAN2)
23	RGB LED Header (RGB_LED1)
24	RGB LED Header (RGB_LED2)
25	Front Panel Audio Header (HD_AUDIO1)
26	Chassis Fan / Waterpump Fan Connector (CHA_FAN3/W_PUMP)

## 1.4 I/O Panel



No.	Description	No.	Description
1	PS/2 Mouse/Keyboard Port (PS2_KB1)	9	USB 3.0 Ports (USB3_5_6)
2	LAN RJ-45 Port*	10	USB 3.0 Ports (USB3_3_4)
3	Central / Bass (Orange)	11	USB 3.1 Type-A Port (USB31_TA_1)
4	Rear Speaker (Black)	12	USB 3.1 Type-C Port (USB31_TC_1)
5	Line In (Light Blue)	13	Antenna Ports
6	Front Speaker (Lime)**	14	USB 3.0 Port (USB3_1_2)
7	Microphone (Pink)	15	Clear CMOS Switch
8	Optical SPDIF Out Port		

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




Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Orange	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. 6)	Rear Speaker (No. 4)	Central / Bass (No. 3)	Line In (No. 5)
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.



## Chapter 2 Installation

This is a 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.

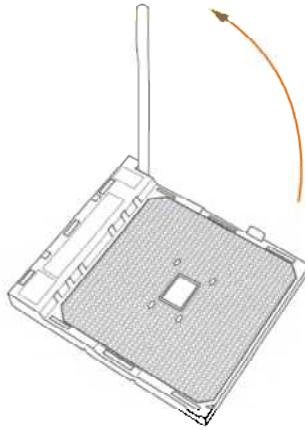
- Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a 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.

## 2.1 Installing the CPU



*Unplug all power cables before installing the CPU.*

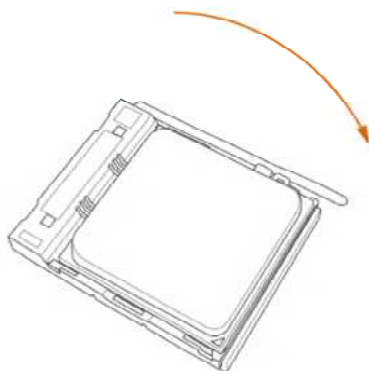
1



2



3



## 2.2 Installing the CPU Fan and Heatsink

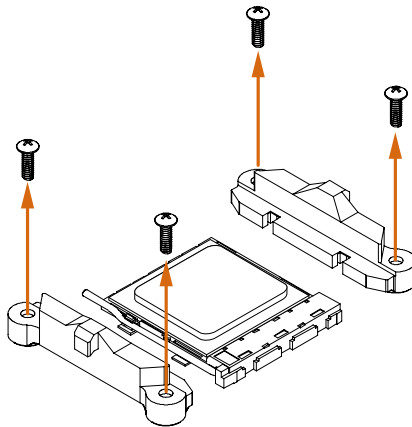
After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other.



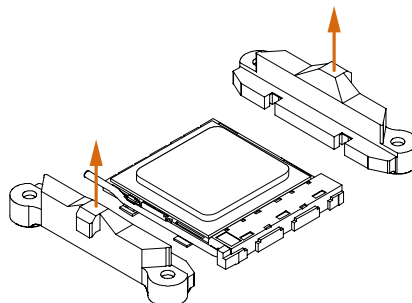
*Please turn off the power or remove the power cord before changing a CPU or heatsink.*

### Installing the CPU Box Cooler SR1

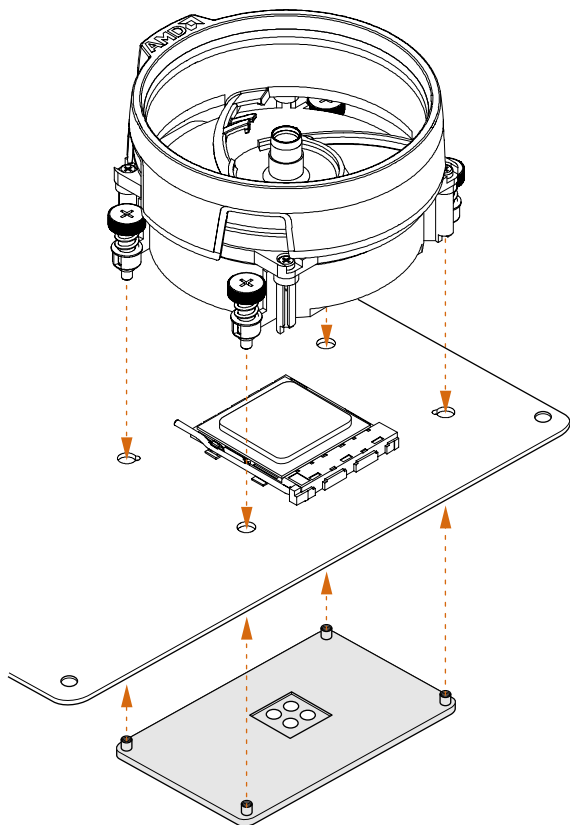
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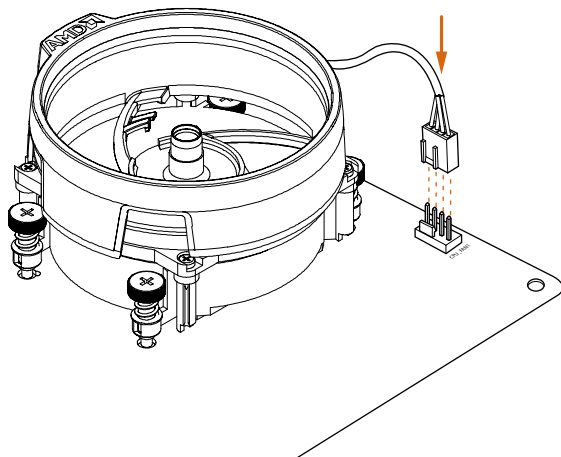
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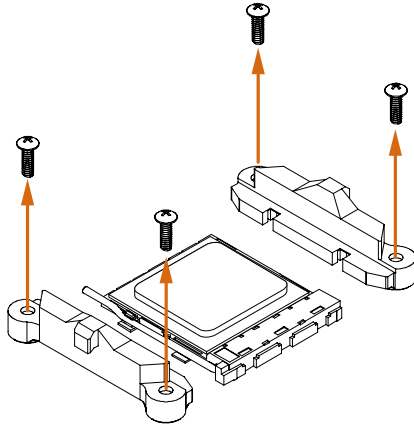


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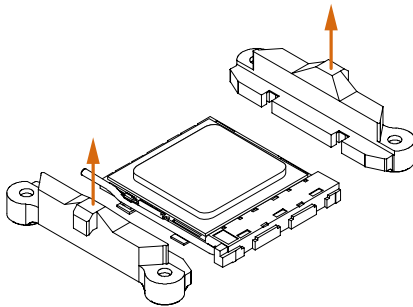


## Installing the AM4 Box Cooler SR2

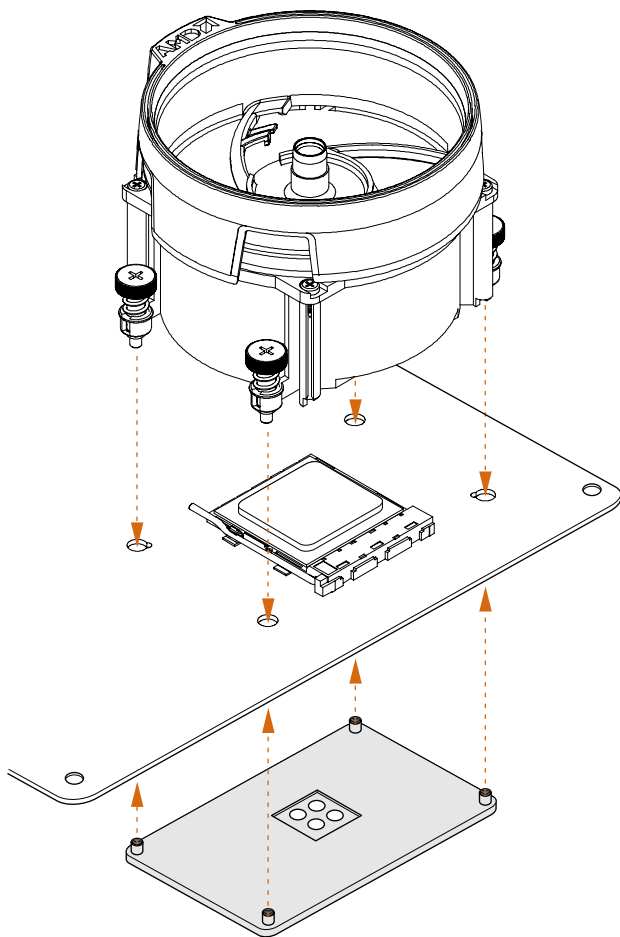
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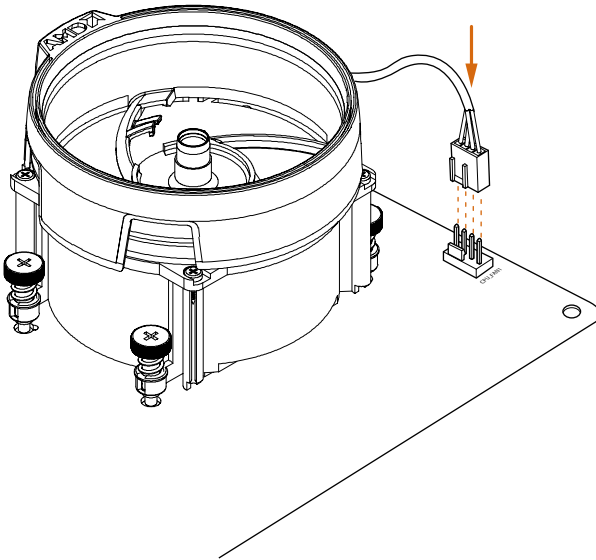
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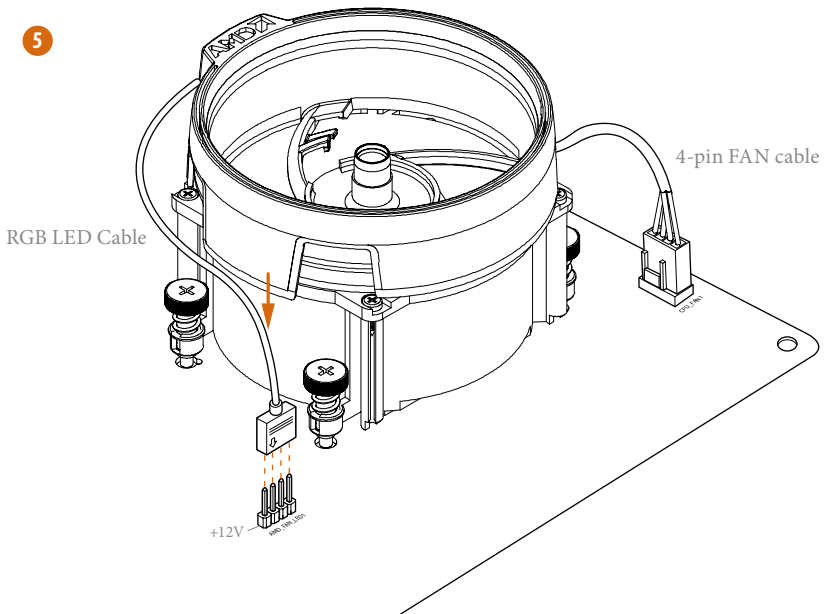
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4



5

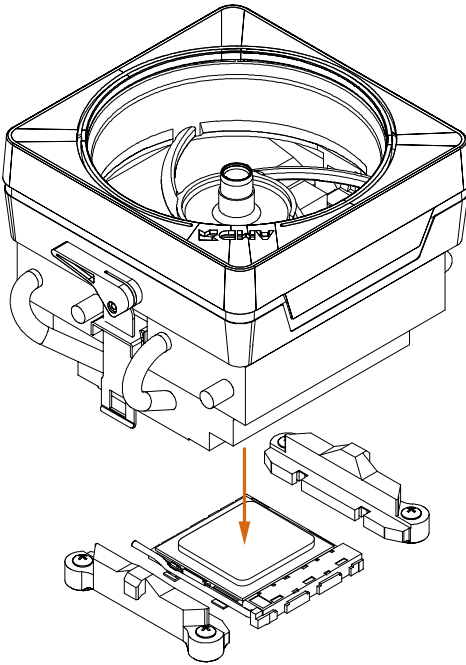


\*The diagram shown here are for reference only. Please refer to page 31 for the orientation of AMD Fan LED Header (AMD\_FAN\_LED1).

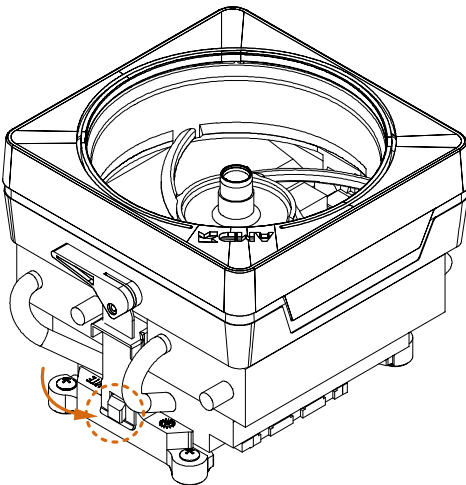


## Installing the AM4 Box Cooler SR3

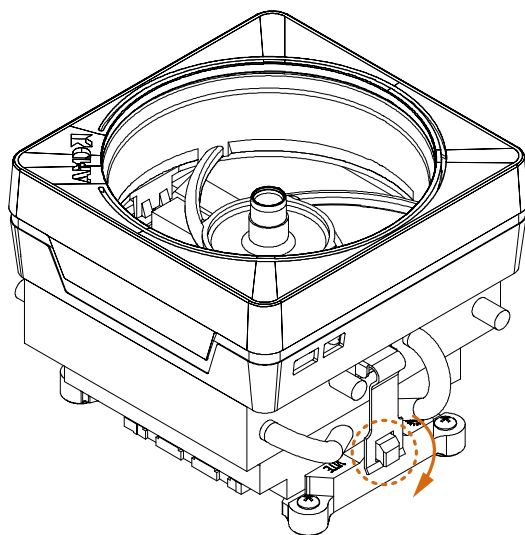
1



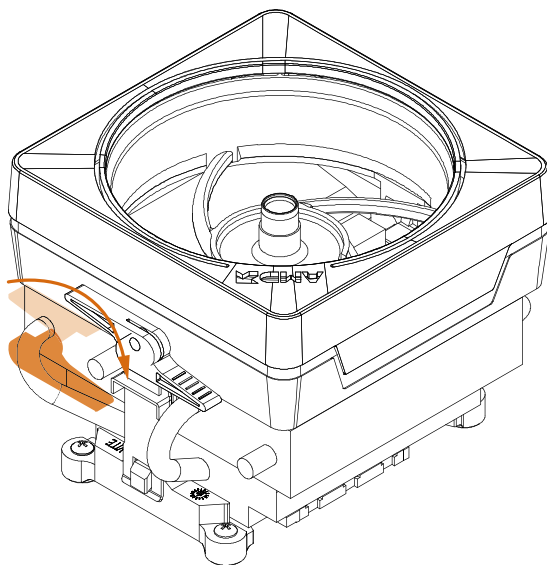
2



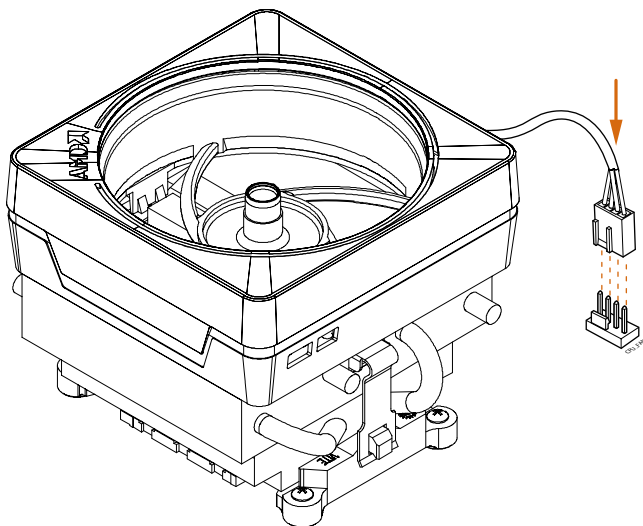
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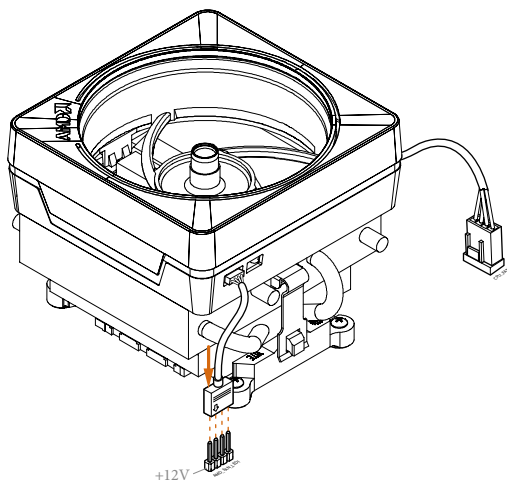
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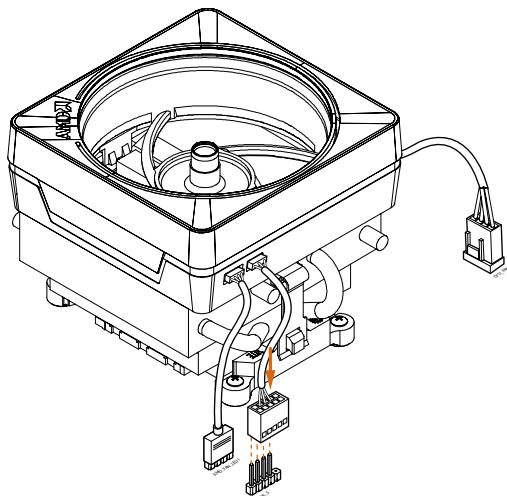


6



or

7



Please note that only one cable should be used at a time in this step.

If you select AMD\_FAN\_LED1, please install ASRock utility "ASRock RGB LED".

If you select USB connector, please install AMD utility "SR3 Settings Software".

\*The diagram shown here are for reference only. Please refer to page 31 for the orientation of AMD Fan LED Header (AMD\_FAN\_LED1) and page 28 for the orientation of AMD LED Fan USB Header (USB\_5).

## 2.3 Installing Memory Modules (DIMM)

This motherboard provides four 288-pin DDR4 (Double Data Rate 4) 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) DDR4 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, DDR2 or DDR3 memory module into a DDR4 slot; otherwise, this motherboard and DIMM may be damaged.

### DDR4 UDIMM Maximum Frequency Support

Ryzen CPUs:

UDIMM Memory Slot				Frequency (Mhz)
A1	A2	B1	B2	
-	SR	-	-	2667
-	DR	-	-	2667
-	SR	-	SR	2667
-	DR	-	DR	2400-2667
SR	SR	SR	SR	2133-2400
SR/DR	DR	SR/DR	DR	1866-2133

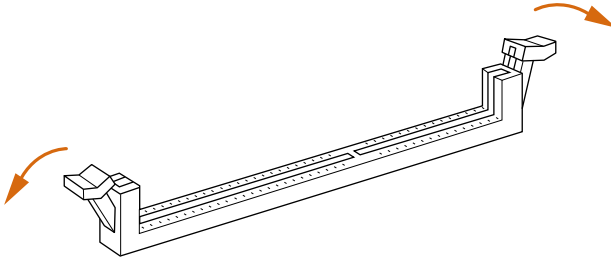
SR: Single rank DIMM, 1Rx4 or 1Rx8 on DIMM module label

DR: Dual rank DIMM, 2Rx4 or 2Rx8 on DIMM module label

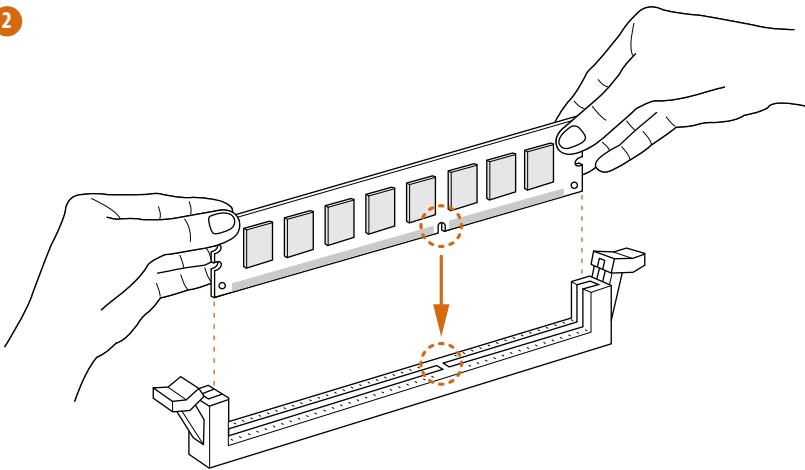


The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.

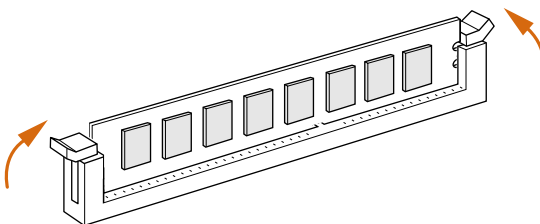
1



2



3



## 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 slot) is used for PCI Express x1 lane width cards.

PCIE2 (PCIe 3.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

PCIE3 (PCIe 3.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

PCIE4 (PCIe 2.0 x1 slot) 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.

\* If PCIE5 slot is occupied, M2\_2 will be disabled

### PCIe Slot Configurations

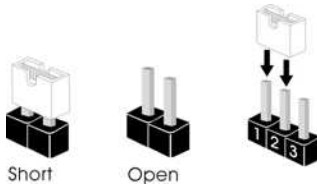
	PCIE2	PCIE3
<b>Single Graphics Card</b>	x16	N/A
<b>Two Graphics Cards in CrossFireX™ or SLI™ Mode</b>	x8	x8



*For a better thermal environment, please connect a chassis fan to the motherboard's chassis fan connector (CHA\_FAN1 or CHA\_FAN2) when using multiple graphics cards.*

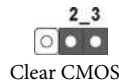
## 2.5 Jumpers Setup

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  
(CLRMO51)  
(see p.7, No. 17)



---

CLRMO51 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 CLRMO51 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.

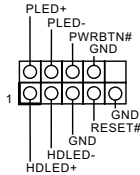


## 2.6 Onboard Headers and Connectors



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.7, No. 18)



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):**

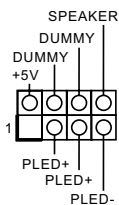
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S1/S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

**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.

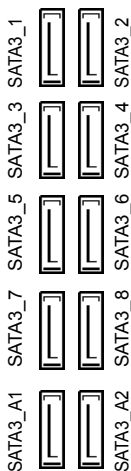
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting your chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Power LED and Speaker Header  
 (7-pin SPK\_PLED1)  
 (see p.7, No. 21)



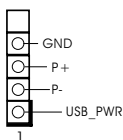
Please connect the chassis power LED and the chassis speaker to this header.

Serial ATA3 Connectors  
 (SATA3\_1\_2:  
 see p.7, No. 12)  
 (SATA3\_3\_4:  
 see p.7, No. 13)  
 (SATA3\_5\_6:  
 see p.7, No. 14)  
 (SATA3\_7\_8:  
 see p.7, No. 15)  
 (SATA3\_A1\_A2:  
 see p.7, No. 16)



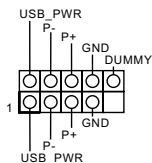
These ten SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.  
 \* To minimize the boot time, use AMD SATA ports (SATA3\_1~8) for your bootable devices.

AMD LED Fan USB Header  
 (5-pin USB\_5)  
 (see p.7, No. 9)



This header is used for connecting the USB connector on the AMD SR3 Heatsink.

USB 2.0 Headers  
 (9-pin USB\_1\_2)  
 (see p.7, No. 19)  
 (9-pin USB\_3\_4)  
 (see p.7, No. 20)



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

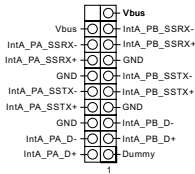
### USB 3.0 Header

(19-pin USB3\_7\_8)

(see p.7, No. 8)

(19-pin USB3\_9\_10)

(see p.7, No. 7)

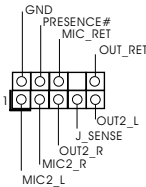


Besides four USB 3.0 ports on the I/O panel, there are two headers on this motherboard. Each USB 3.0 header can support two ports.

### Front Panel Audio Header

(9-pin HD\_AUDIO1)

(see p.7, No. 25)



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

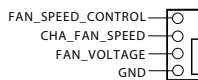


- High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.
- If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:
  - Connect Mic\_IN (MIC) to MIC2\_L.
  - Connect Audio\_R (RIN) to OUT2\_R and Audio\_L (LIN) to OUT2\_L.
  - Connect Ground (GND) to Ground (GND).
  - 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.
  - To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

### Chassis Fan Connectors

(4-pin CHA\_FAN1)

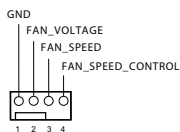
(see p.7, No. 11)



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

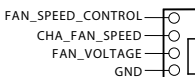
(4-pin CHA\_FAN2)

(see p.7, No. 22)



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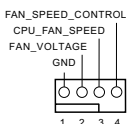
Chassis Optional/Water  
Pump Fan Connector  
(4-pin CHA\_FAN3/W\_  
PUMP)  
(see p.7, No. 26)



This motherboard provides two 4-Pin water cooling chassis fan connectors. If you plan to connect a 3-Pin chassis water cooler fan, please connect it to Pin 1-3.

---

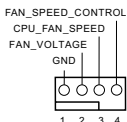
CPU Fan Connectors  
(4-pin CPU\_FAN1)  
(see p.7, No. 3)



This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

---

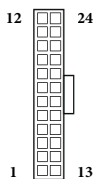
CPU Optional/Water  
Pump Fan Connector  
(4-pin CPU\_OPT/W\_  
PUMP)  
(see p.7, No. 2)



This motherboard provides a 4-Pin water cooling CPU fan connector. If you plan to connect a 3-Pin CPU water cooler fan, please connect it to Pin 1-3.

---

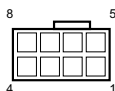
ATX Power Connector  
(24-pin ATXPWR1)  
(see p.7, No. 6)



This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

---

ATX 12V Power  
Connector  
(8-pin ATX12V1)  
(see p.7, No. 1)



This motherboard provides an 8-pin ATX 12V power connector. To use a 4-pin ATX power supply, please plug it along Pin 1 and Pin 5.

RGB LED Headers  
 (4-pin RGB\_LED1)  
 (see p.7, No. 24)  
 (4-pin RGB\_LED2)  
 (see p.7, No. 23)



These two RGB headers are used to connect RGB LED extension cable which allows users to choose from various LED lighting effects.

**Caution: Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.**

\*Please refer to page 59 for further instructions on these two headers.

AMD Fan LED Header  
 (4-pin AMD\_FAN\_LED1)  
 (see p.7, No. 10)



AMD Fan LED Header is used to connect RGB LED extension cable that comes with AMD heatsink. The cable connection allows users to choose from various LED lighting effects.

**Caution: Never install the FAN LED cable in the wrong orientation; otherwise, the cable may be damaged.**

## 2.7 Smart Switch

The motherboard has Clear CMOS Switch, allowing users to quickly clear the CMOS values.

Clear CMOS Switch  
(CLRBTN)  
(see p.9, No. 15)



Clear CMOS Switch  
allows users to quickly  
clear the CMOS values.



*This function is workable only when you power off your computer and unplug the power supply.*

## 2.8 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.

Code	Description
00	Please check if the CPU is installed correctly and then clear CMOS.
0d	Problem related to memory, VGA card or other devices. Please clear CMOS, re-install the memory and VGA card, and remove other USB, PCI devices.
01 - 54 (except 0d), 5A- 60	Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
55	The Memory could not be detected. Please re-install the memory and CPU. If the problem still exists, please install only one memory module or try using other memory modules.
61 - 91	Chipset initialization error. Please press reset or clear CMOS.
92 - 99	Problem related to PCI-E devices. Please re-install PCI-E devices or try installing them in other slots. If the problem still exists, please remove all PCI-E devices or try using another VGA card.
A0 - A7	Problem related to IDE or SATA devices. Please re-install IDE and SATA devices. If the problem still exists, please clear CMOS and try removing all SATA devices.
b0	Problem related to memory. Please re-install the CPU and memory. If the problem still exists, please install only one memory module or try using other memory modules.

- b4 Problem related to USB devices. Please try removing all USB devices.
- b7 Problem related to memory. Please re-install the CPU and memory then clear CMOS. If the problem still exists, please install only one memory module or try using other memory modules.
- d6 The VGA could not be recognized. Please clear CMOS and try re-installing the VGA card. If the problem still exists, please try installing the VGA card in other slots or use other VGA cards.
- d7 The Keyboard and mouse could not be recognized. Please try re-installing the keyboard and mouse.
- d8 Invalid Password.
- FF Please check if the CPU is installed correctly and then clear CMOS.



## 2.9 SLI™ and Quad SLI™ Operation Guide

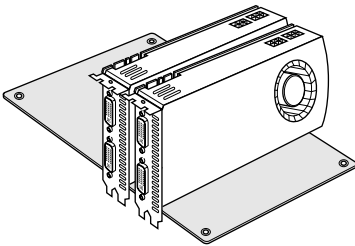
This motherboard supports NVIDIA® SLI™ and Quad SLI™ (Scalable Link Interface) technology that allows you to install up to two identical PCI Express x16 graphics cards.



### Requirements

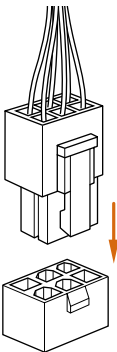
1. You should only use identical SLI™-ready graphics cards that are NVIDIA® certified.
2. Make sure that your graphics card driver supports NVIDIA® SLI™ technology. Download the drivers from the NVIDIA® website: [www.nvidia.com](http://www.nvidia.com)
3. Make sure that your power supply unit (PSU) can 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.

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



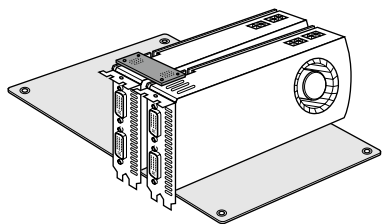
#### Step 1

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.

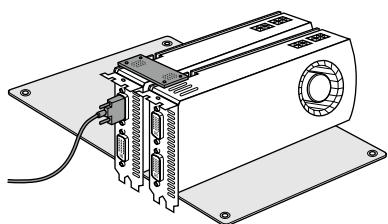


### **Step 3**

Align and insert the ASRock SLI\_HB\_Bridge\_2S Card to the goldfingers on each graphics card. Make sure the ASRock SLI\_HB\_Bridge\_2S Card is firmly in place.



ASRock SLI\_HB\_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.

## 2.9.2 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™.

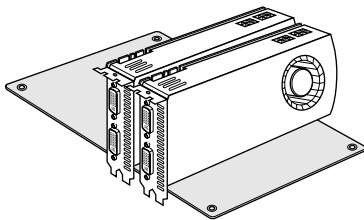
## 2.10 CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™ and Quad CrossFireX™ that allows you to install up to two identical PCI Express x16 graphics cards.



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](http://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.

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



#### Step 1

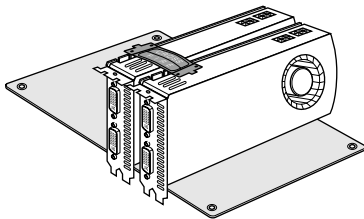
Insert one graphics card into PCIE2 slot and the other graphics card to PCIE3 slot. Make sure that the cards are properly seated on the slots.

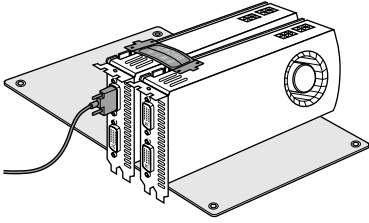


CrossFire Bridge

#### 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.)



**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.

## 2.10.2 Driver Installation and Setup

### Step 1

Power on your computer and boot into OS.

### Step 2

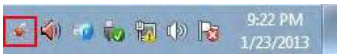
Remove the AMD drivers if you have any VGA drivers installed in your system.



*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

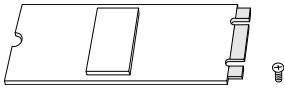
In the left pane, click **Performance** and then **AMD CrossFireX™**. Then select **Enable AMD CrossFireX** and click **Apply**. Select the GPU number according to your graphics card and click **Apply**.

## 2.11 M.2\_SSD (NGFF) Module Installation Guide (M2\_1)

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 Ultra M.2 Socket (M2\_1) supports SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x4 (32 Gb/s).

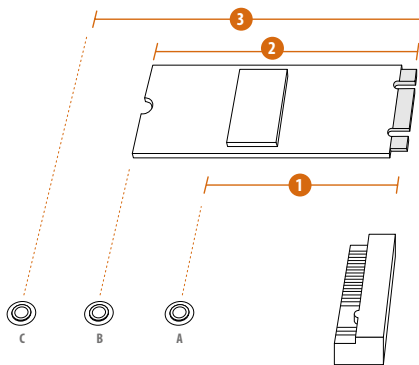
\* If M2\_1 is occupied, PCIE4 will be disabled.

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



#### Step 1

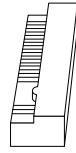
Prepare a M.2\_SSD (NGFF) module and the screw.



#### Step 2

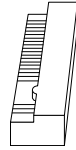
Depending on the PCB type and length of your M.2\_SSD (NGFF) module, find the corresponding nut location to be used.

No.	1	2	3
Nut Location	A	B	C
PCB Length	4.2cm	6cm	8cm
Module Type	Type 2242	Type2260	Type 2280



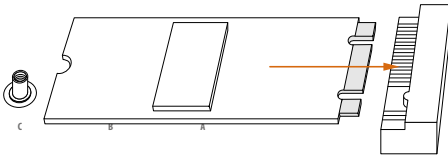
### Step 3

Move the standoff based on the module type and length. The standoff is placed at the nut location C by default. Skip Step 3 and 4 and go straight to Step 5 if you are going to use the default nut. Otherwise, release the standoff by hand.



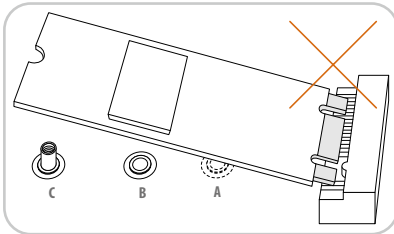
### Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.

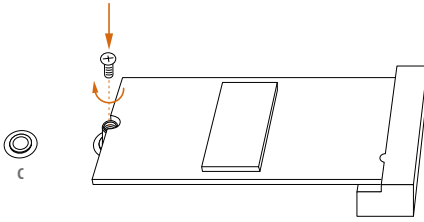


### Step 5

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 with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

## M.2\_SSD (NGFF) Module Support List

Vendor	Interface	P/N
SanDisk	PCIe	SanDisk-SD6PP4M-128G( Gen2 x2)
Intel	PCIe	INTEL 6000P-SSDPEKKF256G7 (nvme)
Intel	PCIe	INTEL 6000P-SSDPEKKF512G7 (nvme)
Kingston	PCIe	Kingston SHPM2280P2 / 240G (Gen2 x4)
Samsung	PCIe	Samsung XP941-MZHPU512HCGL(Gen2x4)
ADATA	SATA	ADATA - AXNS381E-128GM-B
Crucial	SATA	Crucial-CT240M500SSD4-240GB
ezlink	SATA	ezlink P51B-80-120GB
Intel	SATA	INTEL 540S-SSDSCKKW240H6-240GB
Kingston	SATA	Kingston SM2280S3G2/120G - Win8.1
Kingston	SATA	Kingston-RBU-SNS8400S3 / 180GD
LITEON	SATA	LITEON LJH-256V2G-256GB (2260)
PLEXTOR	SATA	PLEXTOR PX-128M6G-2260-128GB
PLEXTOR	SATA	PLEXTOR PX-128M7VG-128GB
SanDisk	SATA	SanDisk X400-SD8SN8U-128G
SanDisk	SATA	Sandisk Z400s-SD8SNAT-128G-1122
SanDisk	SATA	SanDisk-SD6SN1M-128G
Transcend	SATA	Transcend TS256GMTS800-256GB
V-Color	SATA	V-Color 120G
V-Color	SATA	V-Color 240G
WD	SATA	WD GREEN WDS240G1G0B-00RC30

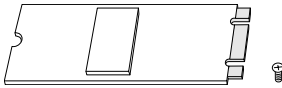
For the latest updates of M.2\_SSD (NFGG) module support list, please visit our website for details: <http://www.asrock.com>

## 2.12 M.2\_SSD (NGFF) Module Installation Guide (M2\_2)

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 Sockets (M2\_2) supports M.2 PCI Express module up to Gen2 x4 (20 Gb/s).

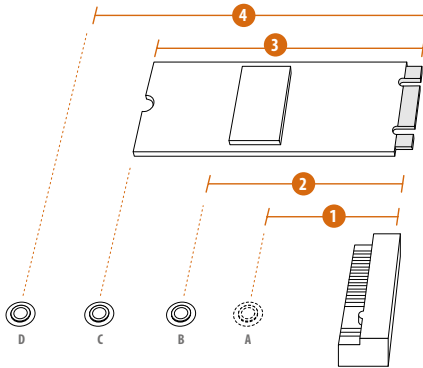
\* If M2\_2 is occupied, PCIE5 slot will be disabled

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



#### Step 1

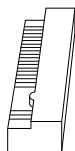
Prepare a M.2\_SSD (NGFF) module and the screw.



#### Step 2

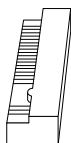
Depending on the PCB type and length of your M.2\_SSD (NGFF) module, find the corresponding nut location to be used.

No.	1	2	3	4
Nut Location	A	B	C	D
PCB Length	3cm	4.2cm	6cm	8cm
Module Type	Type2230	Type 2242	Type2260	Type 2280



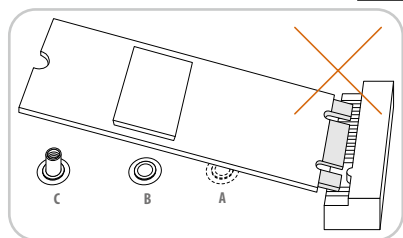
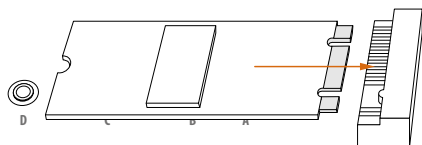
### Step 3

Move the standoff based on the module type and length. The standoff is placed at the nut location D by default. Skip Step 3 and 4 and go straight to Step 5 if you are going to use the default nut. Otherwise, release the standoff by hand.



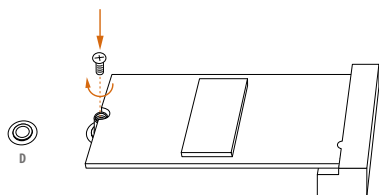
### Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location 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 with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

## M.2\_SSD (NGFF) Module Support List

Vendor	Interface	P/N
SanDisk	PCIe	SanDisk-SD6PP4M-128G( Gen2 x2)
Intel	PCIe	INTEL 6000P-SSDPEKKF256G7 (nvme)
Intel	PCIe	INTEL 6000P-SSDPEKKF512G7 (nvme)
Intel	PCIe	INTEL 600P-SSDPEKKW128G7-128GB (nvme)
Intel	PCIe	INTEL 600P-SSDPEKKW256G7-256GB (nvme)
Kingston	PCIe	Kingston SHPM2280P2 / 240G (Gen2 x4)
Samsung	PCIe	Samsung MZ-VLW1280 (PM961) (nvme)
Samsung	PCIe	Samsung XP941-MZHPU512HCGL(Gen2x4)
WD		WD WDS256G1X0C-00ENX0

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

# 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.




*To improve Windows 7 compatibility, please download and install the following hot fix provided by Microsoft.*

*"KB2720599": <http://support.microsoft.com/kb/2720599/en-us>*

## 3.2 A-Tuning

A-Tuning is ASRock's multi purpose software suite with a new interface, more new features and improved utilities.

### 3.2.1 Installing A-Tuning

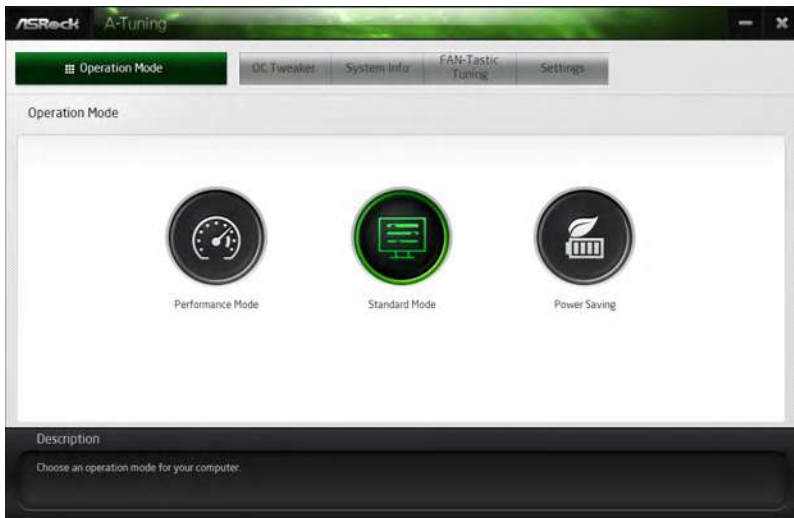
A-Tuning can be downloaded from ASRock Live Update & APP Shop. After the installation, you will find the icon "A-Tuning" on your desktop. Double-click the "A-Tuning"  icon, A-Tuning main menu will pop up.

### 3.2.2 Using A-Tuning

There are six sections in A-Tuning main menu: Operation Mode, OC Tweaker, System Info, FAN-Tastic Tuning and Settings.

#### Operation Mode

Choose an operation mode for your computer.



## OC Tweaker

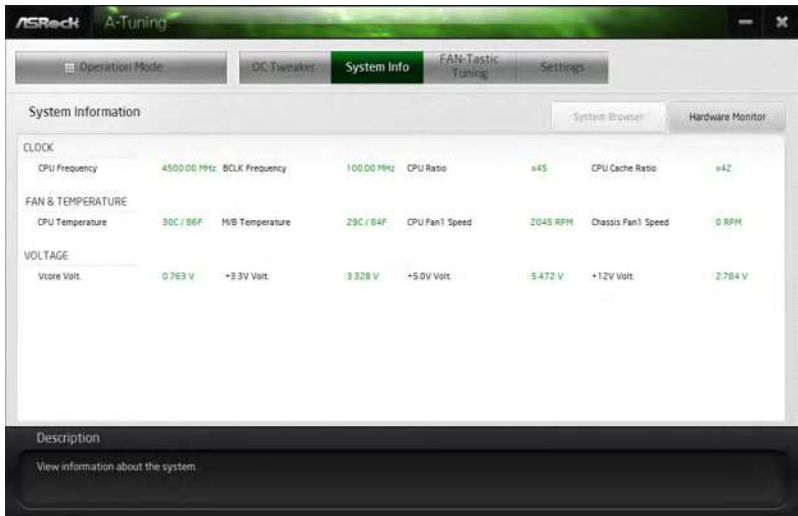
Configurations for overclocking the system.



## System Info

View information about the system.

\*The System Browser tab may not appear for certain models.





## FAN-Tastic Tuning

Configure up to five different fan speeds using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.

**FAN-Tastic Tuning**

CPU FAN: [Dropdown]

Start FAN Test

Fan Power	Fan Speed
100%	N/A RPM
90%	N/A RPM
80%	N/A RPM
70%	N/A RPM
60%	N/A RPM
50%	N/A RPM
40%	N/A RPM
30%	N/A RPM
20%	N/A RPM
10%	N/A RPM

Auto apply when program starts

Apply Cancel

**Description**

Configure different fan speeds for respective temperatures using the graph. The fans will automatically shift to the next speed level when the assigned temperature is met.

## Settings

Configure ASRock A-Tuning. Click to select "Auto run at Windows Startup" if you want A-Tuning to be launched when you start up the Windows operating system.

**Settings**

Auto run at Windows Startup


Version: 3.0.0

**Description**

Configure ASRock A-Tuning.

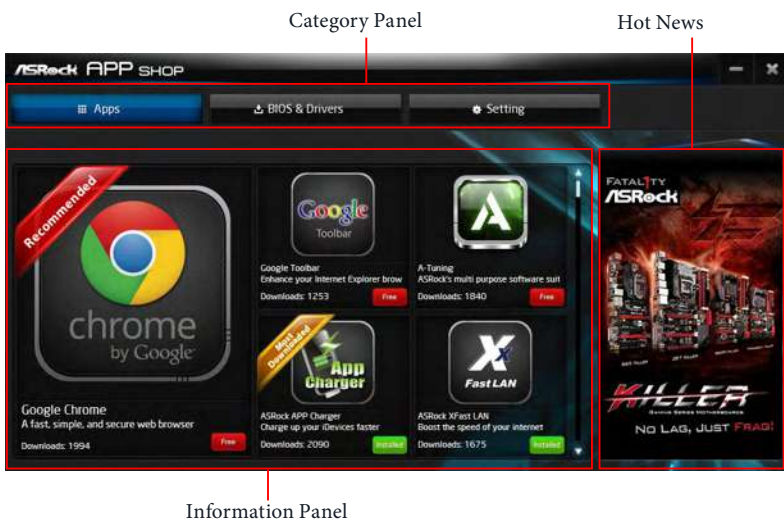
### 3.3 ASRock Live Update & APP Shop

The ASRock Live Update & APP Shop is an online store for purchasing and downloading software applications for your ASRock computer. You can quickly and easily install various apps and support utilities. With ASRock APP Shop, you can optimize your system and keep your motherboard up to date simply with a few clicks.

Double-click  on your desktop to access ASRock Live Update & APP Shop utility.

*\*You need to be connected to the Internet to download apps from the ASRock Live Update & APP Shop.*

#### 3.3.1 UI Overview



**Category Panel:** The category panel contains several category tabs or buttons that when selected the information panel below displays the relative information.

**Information Panel:** The information panel in the center displays data about the currently selected category and allows users to perform job-related tasks.

**Hot News:** The hot news section displays the various latest news. Click on the image to visit the website of the selected news and know more.

## 3.3.2 Apps

When the "Apps" tab is selected, you will see all the available apps on screen for you to download.

### Installing an App

#### Step 1

Find the app you want to install.



The most recommended app appears on the left side of the screen. The other various apps are shown on the right. Please scroll up and down to see more apps listed.

You can check the price of the app and whether you have already installed it or not.

**Free** - The red icon displays the price or "Free" if the app is free of charge.

**Installed** - The green "Installed" icon means the app is installed on your computer.

#### Step 2

Click on the app icon to see more details about the selected app.

### Step 3

If you want to install the app, click on the red icon  to start downloading.



### Step 4


When installation completes, you can find the green "Installed" icon appears on the upper right corner.



To uninstall it, simply click on the trash can icon .

\*The trash icon may not appear for certain apps.

## Upgrading an App

You can only upgrade the apps you have already installed. When there is an available new version for your app, you will find the mark of "New Version"  appears below the installed app icon.



### Step 1

Click on the app icon to see more details.

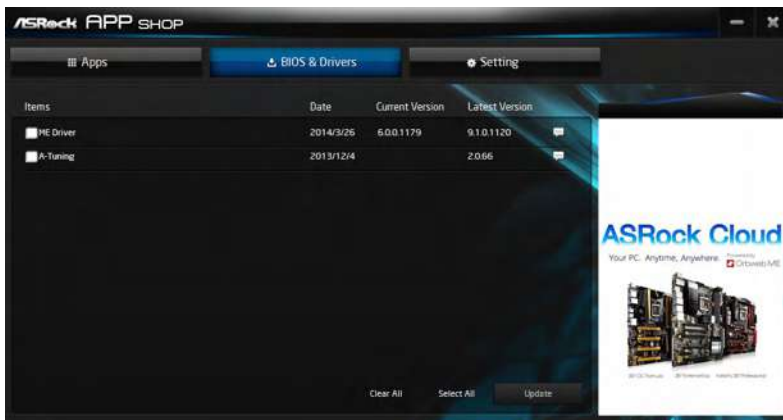
### Step 2

Click on the yellow icon  to start upgrading.


### 3.3.3 BIOS & Drivers

#### Installing BIOS or Drivers

When the "BIOS & Drivers" tab is selected, you will see a list of recommended or critical updates for the BIOS or drivers. Please update them all soon.



#### Step 1

Please check the item information before update. Click on  to see more details.

#### Step 2

Click to select one or more items you want to update.

#### Step 3

Click Update to start the update process.

### 3.3.4 Setting

In the "Setting" page, you can change the language, select the server location, and determine if you want to automatically run the ASRock Live Update & APP Shop on Windows startup.

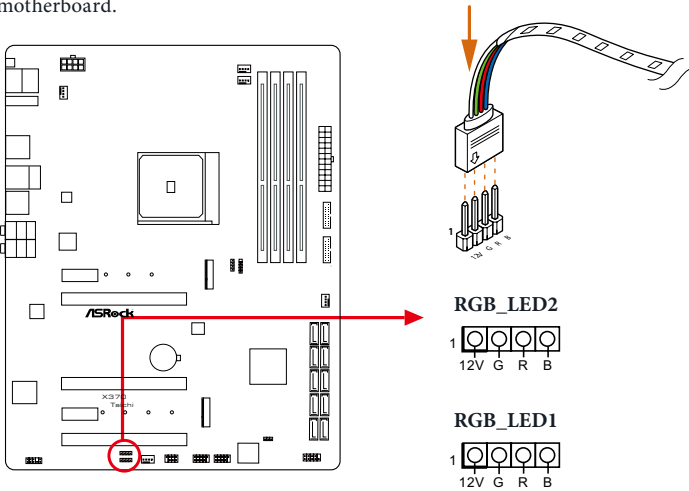


### 3.4 ASRock RGB LED

ASRock RGB LED is a lighting control utility specifically designed for unique individuals with sophisticated tastes to build their own stylish colorful lighting system. Simply by connecting the LED strip, you can customize various lighting schemes and patterns, including Static, Breathing, Strobe, Cycling, Music, Wave and more.

#### Connecting the LED Strip

Connect your RGB LED strips to the **RGB LED Headers (RGB\_LED1, RGB\_LED2)** on the motherboard.



1. Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.
2. Before installing or removing your RGB LED cable, please power off your system and unplug the power cord from the power supply. Failure to do so may cause damages to motherboard components.

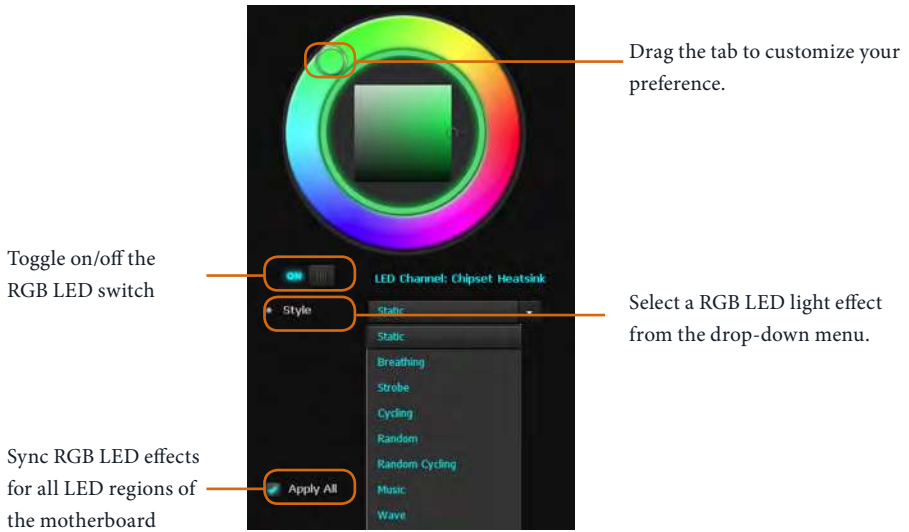


1. Please note that the RGB LED strips do not come with the package.
2. The RGB LED header supports standard 5050 RGB LED strip (12V/G/R/B), with a maximum power rating of 3A (12V) and length within 2 meters.



## ASRock RGB LED Utility

Now you can adjust the RGB LED color through the ASRock RGB LED utility. Download this utility from the ASRock Live Update & APP Shop and start coloring your PC style your way!



# 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:

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

## 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.



## 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.*

### Voltage Configuration

#### CPU Vcore Voltage

Configure the voltage for the CPU Vcore.

#### CPU Load-Line Calibration

CPU Load-Line Calibration helps prevent CPU voltage droop when the system is under heavy loading.

#### GT Voltage

Configure the voltage for the integrated GPU.

#### GT Load-Line Calibration

GT Load-Line Calibration helps prevent integrated GPU voltage droop when the system is under heavy load.

## CPU OVP

Configure the CPU OVP (Over Voltage Protection).

## CPU OCP

Configure the CPU OCP (Over Current Protection).

## UVP

Configure the UVP (Under Voltage Protection).

## DRAM Voltage

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

## VPPM

Configure the VPPM.

## 2.50V\_PROM Voltage

Use this to select 2.50V\_PROM Voltage. The default value is [Auto].

## VTT\_DDR

Configure the VTT DDR voltage. The default value is [Auto].

## +1.8 Voltage

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

## VDDP

Configure the VDDP.

## 1.05V\_PROM Voltage

Configure the voltage for the 1.05V PROM.

## 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.*

### UEFI Configuration

#### Active Page on Entry

Select the default page when entering the UEFI setup utility.

#### Full HD UEFI

When [Auto] is selected, the resolution will be set to 1920 x 1080 if the monitor supports Full HD resolution. If the monitor does not support Full HD resolution, then the resolution will be set to 1024 x 768. When [Disable] is selected, the resolution will be set to 1024 x 768 directly.

## 4.4.1 CPU Configuration



### Cool 'n' Quiet

Use this item to enable or disable AMD's Cool 'n' Quiet™ technology. The default value is [Enabled]. Configuration options: [Enabled] and [Disabled]. If you install Windows® OS 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.

### AMD fTPM Switch

Use this to enable or disable AMD CPU fTPM.

### SVM Mode

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].

### C6 Mode

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



## 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.

### Deep Sleep

Configure deep sleep mode for power saving when the computer is shut down.

### 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.

## 4.4.4 Storage Configuration



### SATA Controller(s)

Enable/disable the SATA controllers.

### SATA Mode

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

### ASMedia SATA3 Mode

AHCI: Supports new features that improve performance.

## 4.4.5 Super IO Configuration



### PS2 Y-Cable

Enable the PS2 Y-Cable or set this option to Auto.

## 4.4.6 ACPI Configuration



### Suspend to RAM

It is recommended to select auto for ACPI S3 power saving.

### HPET In SB

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

### PS/2 Keyboard Power On

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

### PCIE Devices Power On

Allow the system to be waked up by a PCIE 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.

## 4.4.7 USB Configuration



### USB Controller

Enable or disable all the USB 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.

### USB 3.0 Controller

Enable or disable all the USB 3.0 ports.

### XHCI Legacy Support

Enable or disable XHCI Controller Legacy support.

## 4.4.8 Trusted Computing



### Security Device Support

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

## 4.5 Tools



### RGB LED

ASRock RGB LED allows you to adjust the RGB LED color to your liking.

### 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.



## Instant Flash

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

## Internet Flash - DHCP (Auto IP), Auto

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.

## 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 Setting

Select a fan mode for CPU Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

### CPU\_OPT / W\_Pump Switch

Select CPU Optional or Water Pump mode.

### CPU Optional Fan Control Mode

Select PWM mode or DC mode for CPU Optional fan.

### CPU Optional Fan Setting

Select a fan mode for CPU Optional fan, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

### CPU Optional Fan Temp Source

Select a fan temperature source for CPU Optional fan.

## Chassis Fan 1 Setting

Select a fan mode for Chassis Fan 1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## Chassis Fan 1 Temp Source

Select a fan temperature source for Chassis Fan 1.

## Chassis Fan 2 Setting

Select a fan mode for Chassis Fan 2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## Chassis Fan 2 Temp Source

Select a fan temperature source for Chassis Fan 2.

## CHA\_FAN3 / W\_Pump Switch

Select CHA\_FAN3 or Water Pump mode.

## Chassis Fan 3 Control Mode

Select PWM mode or DC mode for Chassis Fan 3 .

## Chassis Fan 3 Setting

Select a fan mode for Chassis Fan 3, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## Chassis Fan 3 Temp Source

Select a fan temperature source for Chassis Fan 3.

## Over Temperature Protection

When Over Temperature Protection is enabled, the system automatically shuts down when the motherboard is overheated.

## 4.7 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 Secure Boot.

## 4.8 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.

### 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.

### Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

### 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.

## CSM (Compatibility Support Module)



## CSM

Enable to launch the Compatibility Support Module. Please do not disable unless you're running a WHCK test.

## Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

## Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

## Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

## 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.

### Launch EFI Shell from filesystem device

Copy shellx64.efi to the root directory to launch EFI Shell.

## 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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