

ASRock®

# ***B550M-C*** R2.0

User Manual

## 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 <https://event.asrock.com/tsd.asp>

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# Chapter 1 Introduction

Thank you for purchasing ASRock B550M-C R2.0 motherboard, a reliable motherboard produced under ASRock's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock's commitment to quality and endurance.

In this 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 B550M-C R2.0 Motherboard (Micro ATX Form Factor)
- 1 x I/O Panel Shield
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 2 x ASRock WiFi 2.4/5/6 GHz Antennas (Optional)
- 2 x Screws for M.2 Sockets (Optional)

# 1.2 Specifications

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Platform</b> | <ul style="list-style-type: none"><li>• Micro ATX Form Factor</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>CPU</b>      | <ul style="list-style-type: none"><li>• Supports AMD AM4 Socket Ryzen™ 3000, 3000 G-Series, 4000 G-Series, 5000 and 5000 G-Series Desktop Processors*</li></ul> <p>* Not compatible with AMD Athlon™ Processors.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Chipset</b>  | <ul style="list-style-type: none"><li>• AMD B550</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Memory</b>   | <ul style="list-style-type: none"><li>• Dual Channel DDR4 Memory Technology</li><li>• 4 x DDR4 DIMM Slots</li><li>• AMD Ryzen series CPUs (Vermeer) support DDR4 4533+(OC)/4466(OC)/4400(OC)/4333(OC)/4266(OC)/4200(OC)/4133(OC)/4000(OC)/3866(OC)/3800(OC)/3733(OC)/3600(OC)/3466(OC)/3200/2933/2667/2400/2133 ECC &amp; non-ECC, un-buffered memory*</li><li>• AMD Ryzen series CPUs (Matisse) support DDR4 4533+(OC)/4466(OC)/4400(OC)/4333(OC)/4266(OC)/4200(OC)/4133(OC)/4000(OC)/3866(OC)/3800(OC)/3733(OC)/3600(OC)/3466(OC)/3200/2933/2667/2400/2133 ECC &amp; non-ECC, un-buffered memory*</li><li>• AMD Ryzen series APUs (Cezanne) support DDR4 4733+(OC)/4666(OC)/4600(OC)/4533(OC)/4466(OC)/4400(OC)/4333(OC)/4266(OC)/4200(OC)/4133(OC)/4000(OC)/3866(OC)/3800(OC)/3733(OC)/3600(OC)/3466(OC)/3200/2933/2667/2400/2133 ECC &amp; non-ECC, un-buffered memory*</li><li>• AMD Ryzen series APUs (Renoir) support DDR4 4733+(OC)/4666(OC)/4600(OC)/4533(OC)/4466(OC)/4400(OC)/4333(OC)/4266(OC)/4200(OC)/4133(OC)/4000(OC)/3866(OC)/3800(OC)/3733(OC)/3600(OC)/3466(OC)/3200/2933/2667/2400/2133 ECC &amp; non-ECC, un-buffered memory*</li><li>• AMD Ryzen series APUs (Picasso) support DDR4 3333+(OC)/3200(OC)/2933/2667/2400/2133 non-ECC, un-buffered memory*</li></ul> |

- \* For Ryzen Series APU's (Picasso, Cezanne and Renoir), ECC is only supported with PRO CPUs.
- \* Please refer to Memory Support List on ASRock's website for more information. (<http://www.asrock.com/>)
- \* Please refer to page 23 for AMD non-XMP memory frequency support. For more details, please refer to the QVL on ASRock's website.
- Max. capacity of system memory: 128GB
- Supports Extreme Memory Profile (XMP) memory modules

**Expansion Slot**

- AMD Ryzen series CPUs (Vermeer and Matisse)**
- 2 x PCI Express x16 Slots (PCIe1: Gen4x16 mode; PCIe4: Gen3 x4 mode)\*
- AMD Ryzen series APU's (Cezanne and Renoir)**
- 2 x PCI Express x16 Slots (PCIe1: Gen3x16 mode; PCIe4: Gen3 x4 mode)\*
- AMD Ryzen series APU's (Picasso)**
- 2 x PCI Express x16 Slots (PCIe1: Gen3x8 mode; PCIe4: Gen3 x4 mode)\*
- \* Supports NVMe SSD as boot disks
- Supports AMD CrossFire™
  - 2 x PCI Express 3.0 x16 Slots (PCIe2/PCIe3: x1 mode)
  - 1 x Vertical M.2 Socket (Key E), supports type 2230 WiFi/BT PCIe WiFi module

**Graphics**

- Integrated AMD Radeon™ Vega Series Graphics in Ryzen Series APU\* (Actual support may vary by CPU)
- 1 x HDMI 2.1, supports HDR, HDCP 2.3, 4K Ultra HD (UHD) playback and max. resolution up to 4K 60Hz\*
- \* Picasso supports HDCP 2.2 with HDMI 2.0 Port

**Audio**

- 7.1 CH HD Audio (Realtek ALC897 Audio Codec)

**LAN**

- Gigabit LAN 10/100/1000 Mb/s
- Realtek RTL8111H

## Wireless LAN

- 802.11ax Wi-Fi 6E Module
- Supports IEEE 802.11a/b/g/n/ac/ax
- Supports Dual-Band 2x2 with extended 6GHz band\* support

\* Wi-Fi 6E (6GHz band) will be supported by Microsoft® Windows® 11. The availability will depend on the different regulation status of each country and region. It will be activated (for supported countries) through Windows Update and software updates once available.

\* A 6GHz compatible router is required for 6E functionality.

- 2 antennas to support 2 (Transmit) x 2 (Receive) diversity technology
- Supports Bluetooth 5.2 + High speed class II
- Supports MU-MIMO

## USB

- 1 x USB 3.2 Gen2 Type-C (Rear)
- 1 x USB 3.2 Gen2 Type-A (Rear)
- 1 x USB 3.2 Gen1 Type-C (Front)
- 8 x USB 3.2 Gen1 Type-A (4 Rear, 4 Front)
- 6 x USB 2.0 (2 Rear, 4 Front)

\* All USB ports support ESD Protection

## Rear Panel I/O

- 2 x Antenna Ports
- 1 x PS/2 Mouse/Keyboard Port
- 1 x HDMI Port
- 1 x USB 3.2 Gen2 Type-A Port (10 Gb/s)
- 1 x USB 3.2 Gen2 Type-C Port (10 Gb/s)
- 4 x USB 3.2 Gen1 Ports
- 2 x USB 2.0 Ports
- 1 x RJ-45 LAN Port
- HD Audio Jacks: Line in / Front Speaker / Microphone

## Storage

CPU:

- 1 x Hyper M.2 Socket (M2\_1, Key M), supports type 2280 PCIe Gen4x4 (64 Gb/s) mode (with Vermeer, Matisse) or Gen3x4 (32 Gb/s) mode (with Cezanne, Renoir and Picasso)\*

Chipset:

- 1 x M.2 Socket (M2\_2, Key M), supports type 2280 SATA3 6.0 Gb/s & PCIe Gen3x2 (16 Gb/s) modes\*
- 5 x SATA3 6.0 Gb/s Connectors

- \* Supports NVMe SSD as boot disks
- \* M2\_2 and SATA3\_4\_5 share lanes. If either one of them is in use, the other one will be disabled.

**RAID**

- Supports RAID 0, RAID 1 and RAID 10 for SATA storage devices

**Connector**

- 1 x SPI TPM Header
- 1 x Power LED and Speaker Header
- 2 x RGB LED Headers\*
- 2 x Addressable LED Headers\*\*
- 1 x CPU Fan Connector (4-pin)\*\*\*
- 3 x Chassis/Water Pump Fan Connectors (4-pin) (Smart Fan Speed Control)\*\*\*\*
- 1 x 24 pin ATX Power Connector
- 1 x 8 pin 12V Power Connector
- 1 x Front Panel Audio Connector
- 2 x USB 2.0 Headers (Support 4 USB 2.0 ports)
- 2 x USB 3.2 Gen1 Headers (Support 4 USB 3.2 Gen1 ports)
- 1 x Front Panel Type C USB 3.2 Gen1 Header
- \* Support in total up to 12V/3A, 36W LED Strip
- \*\* Support in total up to 5V/3A, 15W LED Strip
- \*\*\* CPU\_FAN1 supports the fan power up to 1A (12W).
- \*\*\*\* CHA\_FAN1~3/WP support the fan power up to 2A (24W).
- \*\*\*\* CHA\_FAN1~3/WP can auto detect if 3-pin or 4-pin fan is in use.

**BIOS  
Feature**

- AMI UEFI Legal BIOS with GUI support

**OS**

- Microsoft® Windows® 10 64-bit / 11 64-bit

**Certifica-  
tions**

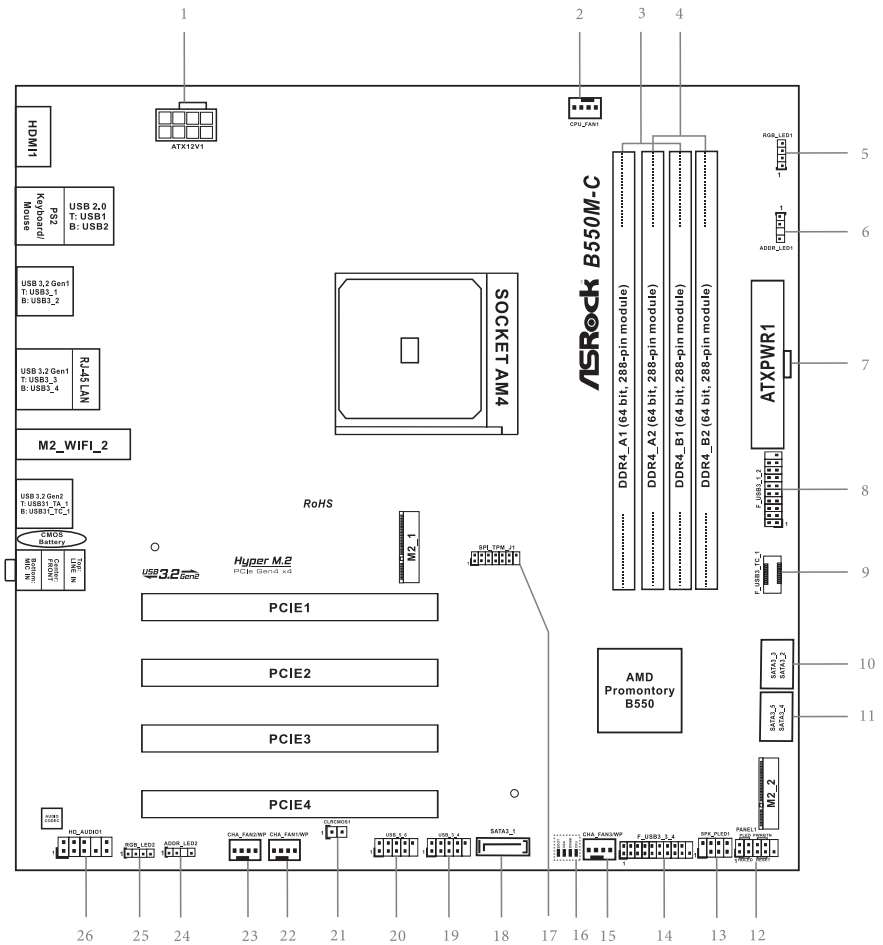
- FCC, CE
- ErP/EuP ready (ErP/EuP ready power supply is required)
- CEC Tier II ready

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



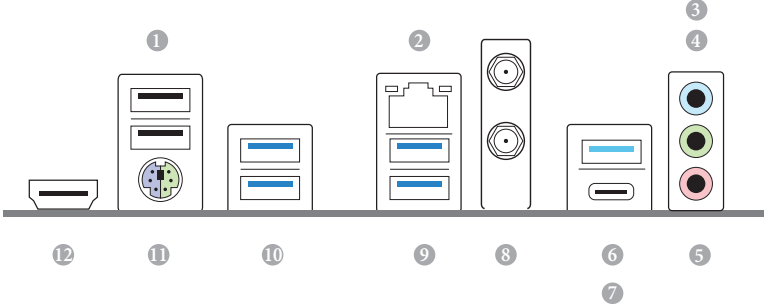
*Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of 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



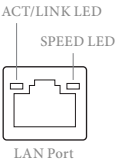
| No. | Description                                                          |
|-----|----------------------------------------------------------------------|
| 1   | 8 pin 12V Power Connector (ATX12V1)                                  |
| 2   | CPU Fan Connector (CPU_FAN1)                                         |
| 3   | 2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1)                       |
| 4   | 2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2)                       |
| 5   | RGB LED Header (RGB_LED1)                                            |
| 6   | Addressable LED Header (ADDR_LED1)                                   |
| 7   | ATX Power Connector (ATXPWR1)                                        |
| 8   | USB 3.2 Gen1 Header (F_USB3_1_2)                                     |
| 9   | Front Panel Type C USB 3.2 Gen1 Header (F_USB3_TC_1)                 |
| 10  | SATA3 Connector (SATA3_3) (Upper), SATA3 Connector (SATA3_2) (Lower) |
| 11  | SATA3 Connector (SATA3_5) (Upper), SATA3 Connector (SATA3_4) (Lower) |
| 12  | System Panel Header (PANEL1)                                         |
| 13  | Power LED and Speaker Header (SPK_PLED1)                             |
| 14  | USB 3.2 Gen1 Header (F_USB3_3_4)                                     |
| 15  | Chassis/Water Pump Fan Connector (CHA_FAN3/WP)                       |
| 16  | Post Status Checker (PSC)                                            |
| 17  | SPI TPM Header (SPI_TPM_J1)                                          |
| 18  | SATA3 Connector (SATA3_1)                                            |
| 19  | USB 2.0 Header (USB_3_4)                                             |
| 20  | USB 2.0 Header (USB_5_6)                                             |
| 21  | Clear CMOS Jumper (CLRCMOS1)                                         |
| 22  | Chassis/Water Pump Fan Connector (CHA_FAN1/WP)                       |
| 23  | Chassis/Water Pump Fan Connector (CHA_FAN2/WP)                       |
| 24  | Addressable LED Header (ADDR_LED2)                                   |
| 25  | RGB LED Header (RGB_LED2)                                            |
| 26  | Front Panel Audio Header (HD_AUDIO1)                                 |

1.4 I/O Panel



| No. | Description                           | No. | Description                           |
|-----|---------------------------------------|-----|---------------------------------------|
| 1   | USB 2.0 Ports (USB12)                 | 7   | USB 3.2 Gen2 Type-C Port (USB31_TC_1) |
| 2   | LAN RJ-45 Port*                       | 8   | Antenna Ports                         |
| 3   | Line In (Light Blue)**                | 9   | USB 3.2 Gen1 Ports (USB3_34)          |
| 4   | Front Speaker (Lime)**                | 10  | USB 3.2 Gen1 Ports (USB3_12)          |
| 5   | Microphone (Pink)**                   | 11  | PS/2 Mouse/Keyboard Port              |
| 6   | USB 3.2 Gen2 Type-A Port (USB31_TA_1) | 12  | HDMI 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       | Off       | 10Mbps connection  |
| Blinking            | Data Activity | Orange    | 100Mbps connection |
| On                  | Link          | Green     | 1Gbps connection   |

\*\* Function of the Audio Ports in 7.1-channel Configuration:

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

## 1.5 802.11ax Wi-Fi 6E Module and ASRock WiFi 2.4/5/6 GHz Antennas

### 802.11ax Wi-Fi 6E + BT Module

This motherboard comes with an exclusive 802.11 a/b/g/n/ac/ax Wi-Fi 6E + BT module that offers support for 802.11 a/b/g/n/ac/ax Wi-Fi 6E connectivity standards and Bluetooth. Wi-Fi 6E + BT module is an easy-to-use wireless local area network (WLAN) adapter to support Wi-Fi 6E + BT. Bluetooth standard features Smart Ready technology that adds a whole new class of functionality into the mobile devices. BT also includes Low Energy Technology and ensures extraordinary low power consumption for PCs.

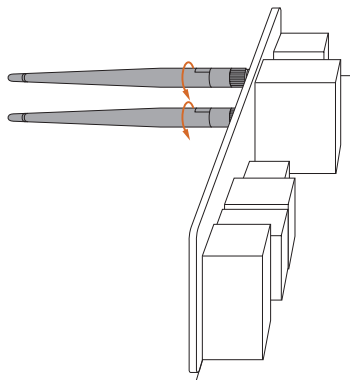
- \* The transmission speed may vary according to the environment.
- \* Wi-Fi 6E (6GHz band) will be supported by Microsoft® Windows® 11. The availability will depend on the different regulation status of each country and region. It will be activated (for supported countries) through Windows Update and software updates once available.
- \* A 6GHz compatible router is required for 6E functionality.

## WiFi Antennas Installation Guide



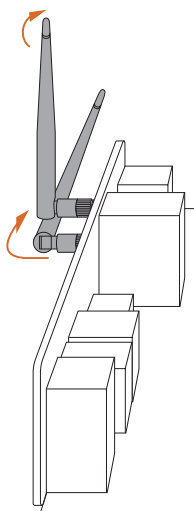
### Step 1

Prepare the WiFi 2.4/5/6 GHz Antennas that come with the package.



### Step 2

Connect the two WiFi 2.4/5/6 GHz Antennas to the antenna connectors. Turn the antenna clockwise until it is securely connected.



### Step 3

Set the WiFi 2.4/5/6 GHz Antenna as shown in the illustration.

\*You may need to adjust the direction of the antenna for a stronger signal.

---

## Chapter 2 Installation

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

### Pre-installation Precautions

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

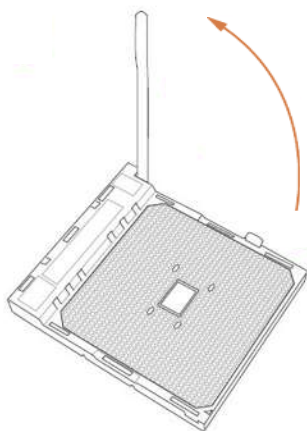
- Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries to you and damages to motherboard components.
- In order to avoid damage from static electricity to the motherboard's components, NEVER place your motherboard directly on a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

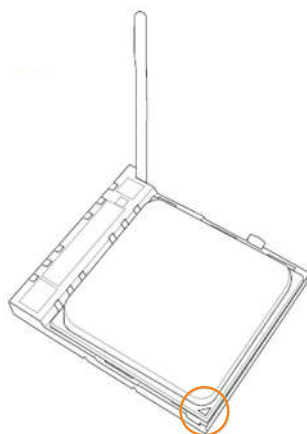


*Unplug all power cables before installing the CPU.*

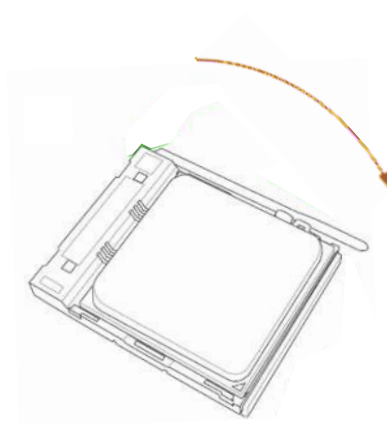
1



2



3



## 2.2 Installing the CPU Fan and Heatsink

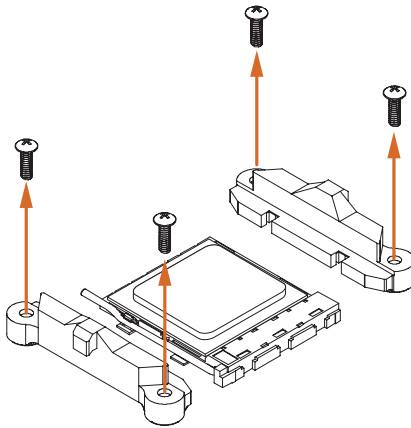
After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good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



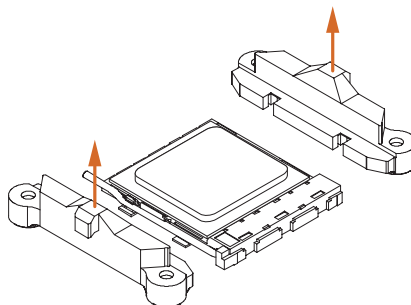
*Please turn off the power or remove the power cord before changing a CPU or heatsink.*

### Installing the CPU Box Cooler SR1

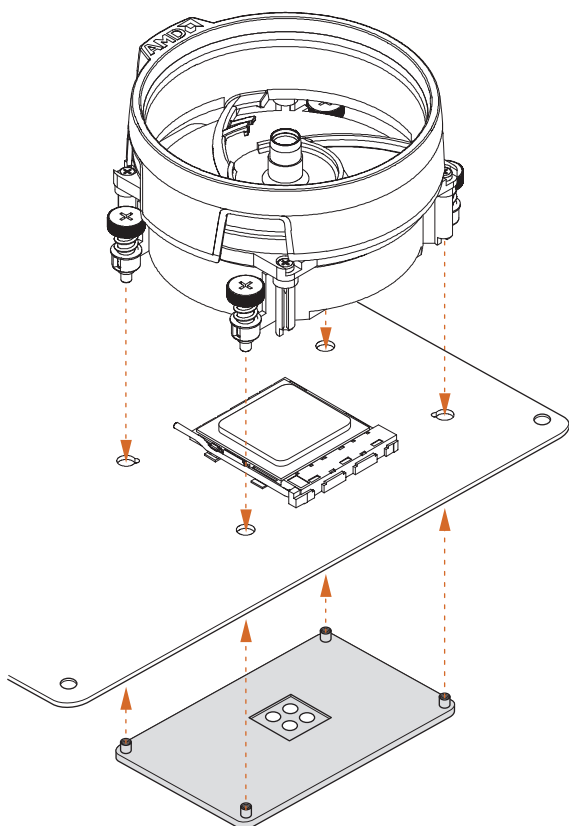
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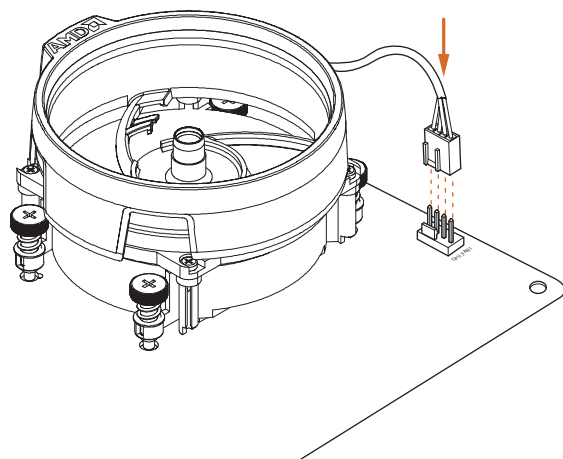
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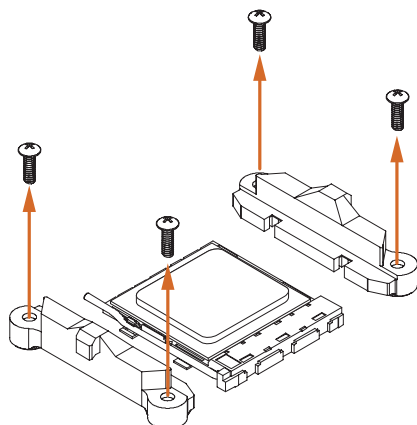
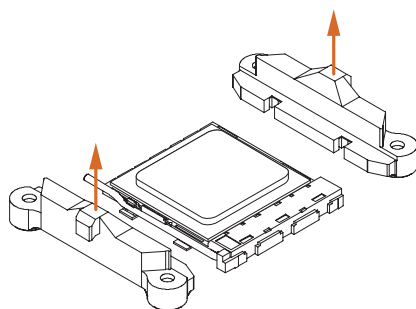
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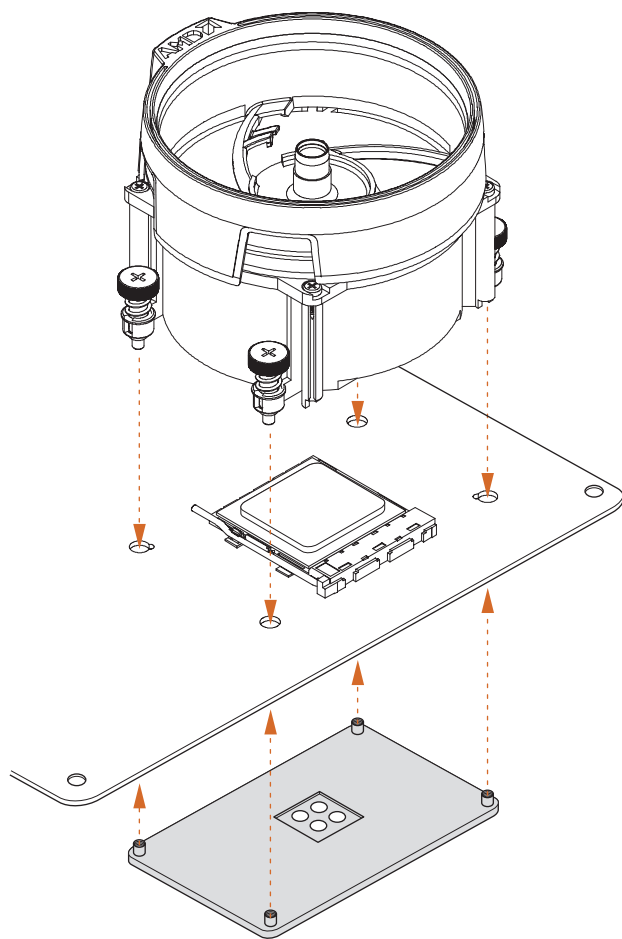
4



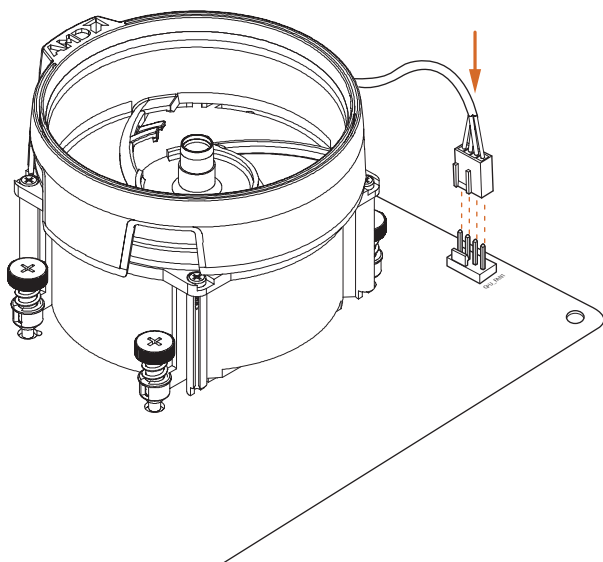
## Installing the AM4 Box Cooler SR2

**1****2**

3



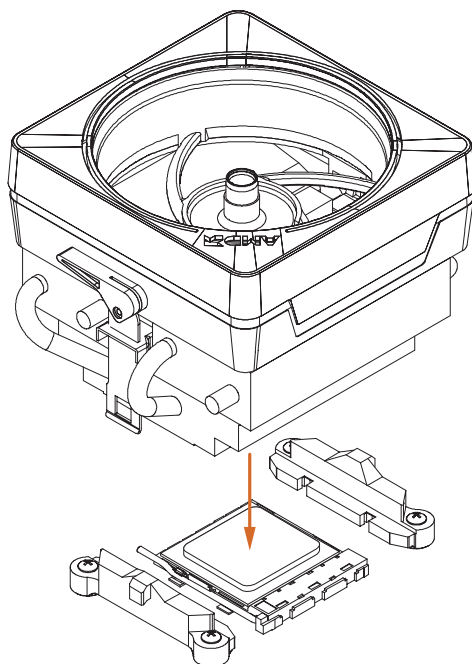
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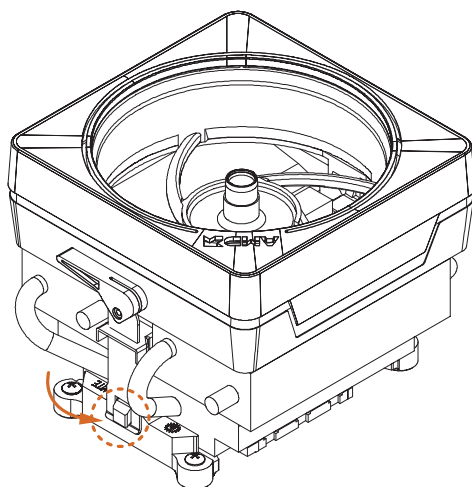
\*The diagrams shown here are for reference only. The headers might be in a different position on your motherboard.

## Installing the AM4 Box Cooler SR3

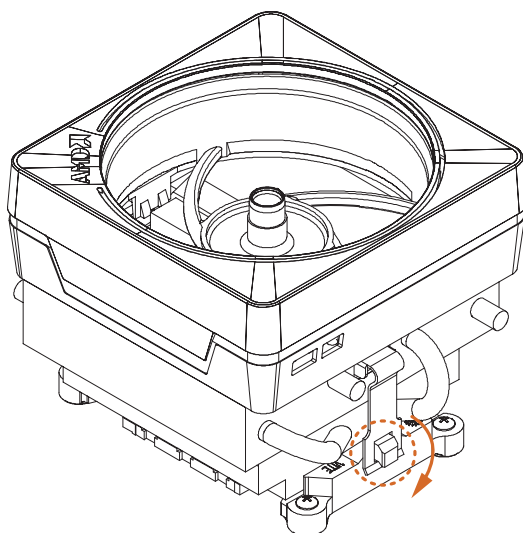
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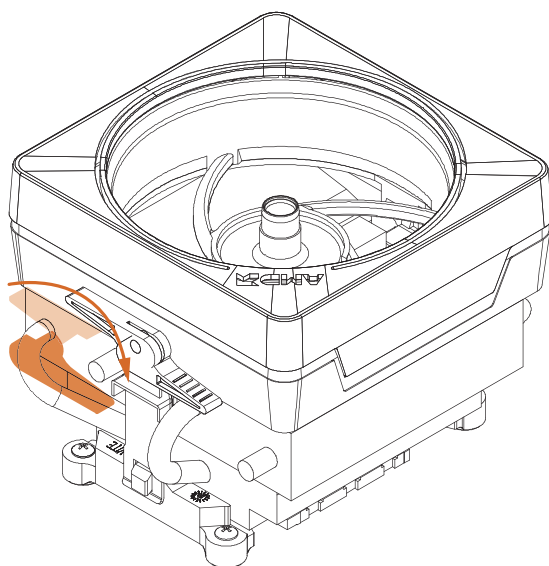
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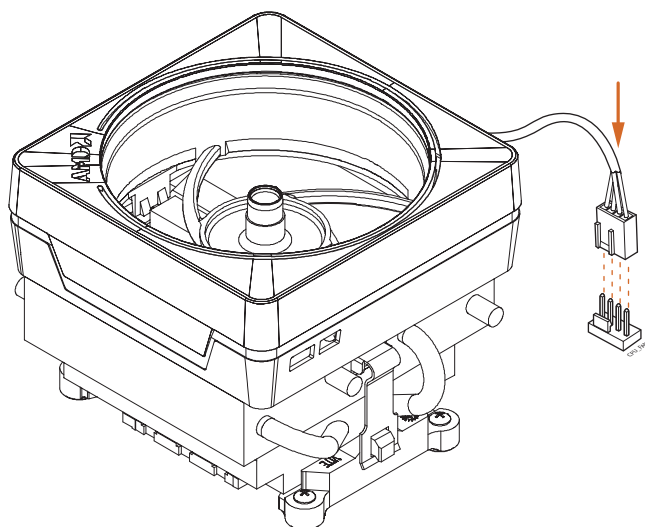
3



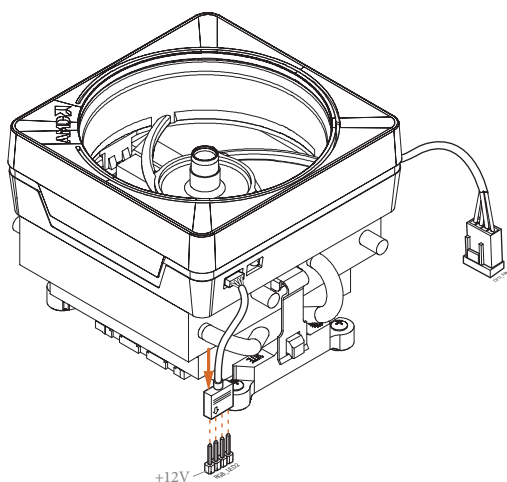
4



5



6



\*The diagrams shown here are for reference only. The headers might be in a different position on your motherboard.

### 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.
4. We suggest that you install the memory modules on DDR4\_A2 and DDR4\_B2 first for better DRAM compatibility on 2 DIMMs configuration.

#### AMD non-XMP Memory Frequency Support

Ryzen Series CPUs (Vermeer):

| UDIMM Memory Slot |       |       |       | Frequency |
|-------------------|-------|-------|-------|-----------|
| A1                | A2    | B1    | B2    | (Mhz)     |
| -                 | SR    | -     | -     | 3200      |
| -                 | DR    | -     | -     | 3200      |
| -                 | SR    | -     | SR    | 3200      |
| -                 | DR    | -     | DR    | 3200      |
| SR                | SR    | SR    | SR    | 2933      |
| SR/DR             | DR    | SR/DR | DR    | 2667      |
| SR/DR             | SR/DR | SR/DR | SR/DR | 2667      |

Ryzen Series CPUs (Matisse):

| UDIMM Memory Slot |       |       |       | Frequency |
|-------------------|-------|-------|-------|-----------|
| A1                | A2    | B1    | B2    | (Mhz)     |
| -                 | SR    | -     | -     | 3200      |
| -                 | DR    | -     | -     | 3200      |
| -                 | SR    | -     | SR    | 3200      |
| -                 | DR    | -     | DR    | 3200      |
| SR                | SR    | SR    | SR    | 2933      |
| SR/DR             | DR    | SR/DR | DR    | 2667      |
| SR/DR             | SR/DR | SR/DR | SR/DR | 2667      |

Ryzen Series APUs (Cezanne):

| UDIMM Memory Slot |       |       |       | Frequency |
|-------------------|-------|-------|-------|-----------|
| A1                | A2    | B1    | B2    | (Mhz)     |
| -                 | SR    | -     | -     | 3200      |
| -                 | DR    | -     | -     | 3200      |
| -                 | SR    | -     | SR    | 3200      |
| -                 | DR    | -     | DR    | 3200      |
| SR                | SR    | SR    | SR    | 2933      |
| SR/DR             | DR    | SR/DR | DR    | 2667      |
| SR/DR             | SR/DR | SR/DR | SR/DR | 2667      |

Ryzen Series APUs (Renoir):

| UDIMM Memory Slot |       |       |       | Frequency |
|-------------------|-------|-------|-------|-----------|
| A1                | A2    | B1    | B2    | (Mhz)     |
| -                 | SR    | -     | -     | 3200      |
| -                 | DR    | -     | -     | 3200      |
| -                 | SR    | -     | SR    | 3200      |
| -                 | DR    | -     | DR    | 3200      |
| SR                | SR    | SR    | SR    | 2933      |
| SR/DR             | DR    | SR/DR | DR    | 2667      |
| SR/DR             | SR/DR | SR/DR | SR/DR | 2667      |

Ryzen Series APUs (Picasso):

| UDIMM Memory Slot |       |       |       | Frequency<br>(Mhz) |
|-------------------|-------|-------|-------|--------------------|
| A1                | A2    | B1    | B2    |                    |
| -                 | SR    | -     | -     | 2933               |
| -                 | DR    | -     | -     | 2667               |
| -                 | SR    | -     | SR    | 2667               |
| -                 | DR    | -     | DR    | 2400               |
| SR                | SR    | SR    | SR    | 2133               |
| SR/DR             | DR    | SR/DR | DR    | 1866               |
| SR/DR             | SR/DR | SR/DR | SR/DR | 1866               |

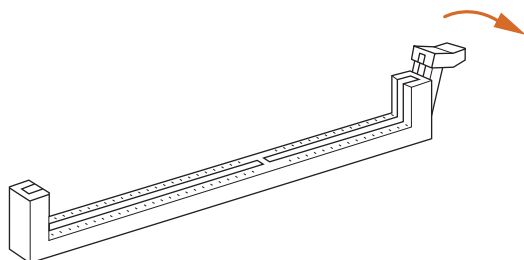
SR: Single rank DIMM, 1Rx4 or 1Rx8 on DIMM module label

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

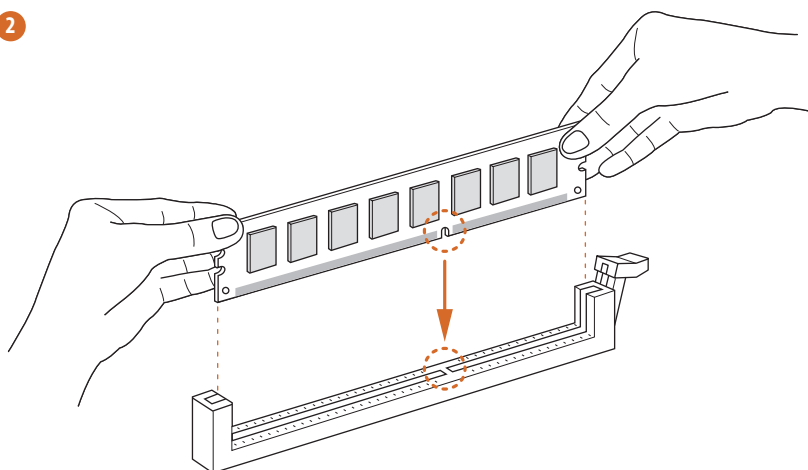


*The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if you force the DIMM into the slot at incorrect orientation.*

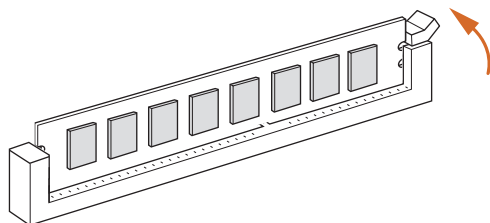
1



2



3



## 2.4 Expansion Slots (PCI Express Slots)

There are 4 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 4.0 x16 slot) is used for PCI Express x16 lane width graphics cards.

PCIE2 (PCIe 3.0 x16 slot) is used for PCI Express x1 lane width cards.

PCIE3 (PCIe 3.0 x16 slot) is used for PCI Express x1 lane width cards.

PCIE4 (PCIe 3.0 x16 slot) is used for PCI Express x4 lane width graphics cards.

### PCIe Slot Configurations

Ryzen series CPUs (Vermeer and Matisse):

|                             | PCIE1   | PCIE4 |
|-----------------------------|---------|-------|
| <b>Single Graphics Card</b> | Gen4x16 | N/A   |

|                                                   |         |        |
|---------------------------------------------------|---------|--------|
| <b>Two Graphics Cards in<br/>CrossFireX™ Mode</b> | Gen4x16 | Gen3x4 |
|---------------------------------------------------|---------|--------|

Ryzen series APUs (Cezanne and Renoir):

|                             | PCIE1   | PCIE4 |
|-----------------------------|---------|-------|
| <b>Single Graphics Card</b> | Gen3x16 | N/A   |

|                                                   |         |        |
|---------------------------------------------------|---------|--------|
| <b>Two Graphics Cards in<br/>CrossFireX™ Mode</b> | Gen3x16 | Gen3x4 |
|---------------------------------------------------|---------|--------|

Ryzen series APUs (Picasso):

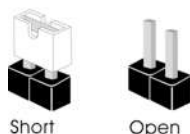
|                                        | PCIe1  | PCIe4  |
|----------------------------------------|--------|--------|
| Single Graphics Card                   | Gen3x8 | N/A    |
| Two Graphics Cards in CrossFireX™ Mode | Gen3x8 | Gen3x4 |



For a better thermal environment, please connect a chassis fan to the motherboard's chassis fan connector (CHA\_FAN1/WP, CHA\_FAN2/WP or CHA\_FAN3/WP ) 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”.



Clear CMOS Jumper  
(see p.7, No. 21)



Short: Clear CMOS  
Open: Default

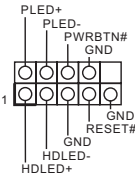
CLRCMOS1 allows you to clear the data in CMOS. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord from the power supply. After waiting for 15 seconds, use a jumper cap to short the pins on CLRCMOS1 for 5 seconds. However, please do not clear 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. Please remember to remove the jumper cap after clearing the CMOS.

# 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. 12)



Connect the power button, reset button 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):**

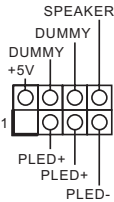
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED keeps blinking when the system is in S3 sleep state. The LED is off when the system is in S4 sleep state or powered off (S5).

**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. 13)



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

Serial ATA3 Connectors

Right Angle:

(SATA3\_3:

see p.7, No. 10) (Upper)

(SATA3\_2:

see p.7, No. 10) (Lower)

(SATA3\_5:

see p.7, No. 11) (Upper)

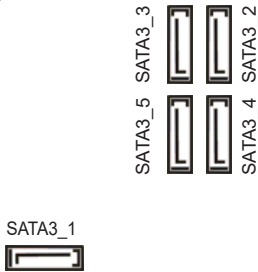
(SATA3\_4:

see p.7, No. 11) (Lower)

Vertical:

(SATA3\_1:

see p.7, No. 18)



These five SATA3

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

\* M2\_2 and SATA3\_4\_5 share lanes. If either one of them is in use, the other one will be disabled.

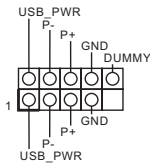
USB 2.0 Headers

(9-pin USB\_3\_4)

(see p.7, No. 19)

(9-pin USB\_5\_6)

(see p.7, No. 20)



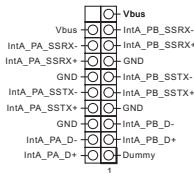
There are two headers on this motherboard.

Each USB 2.0 header can support two ports.

USB 3.2 Gen1 Headers

(19-pin F\_USB3\_1\_2)

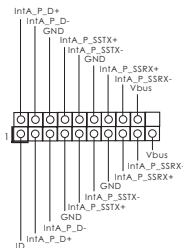
(see p.7, No. 8)



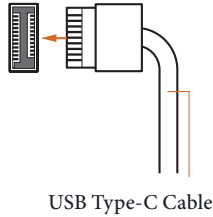
There are two headers on this motherboard. Each USB 3.2 Gen1 header can support two ports.

(19-pin F\_USB3\_3\_4)

(see p.7, No. 14)

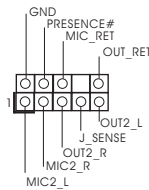


Front Panel Type C USB  
3.2 Gen1 Header  
(20-pin F\_USB3\_TC\_1)  
(see p.7, No. 9)



There is one Front  
Panel Type C USB 3.2  
Gen1 Header on this  
motherboard. This header  
is used for connecting a  
USB 3.2 Gen1 module for  
additional USB 3.2 Gen1  
ports.

Front Panel Audio Header  
(9-pin HD\_AUDIO1)  
(see p.7, No. 26)

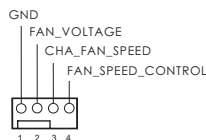


This header is for  
connecting audio devices  
to the front audio panel.



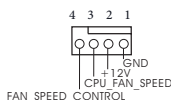
1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.
2. If you use an AC'97 audio panel, please install it to the front panel audio header by the 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 Water Pump Fan  
Connectors  
(4-pin CHA\_FAN1/WP)  
(see p.7, No. 22)  
(4-pin CHA\_FAN2/WP)  
(see p.7, No. 23)  
(4-pin CHA\_FAN3/WP)  
(see p.7, No. 15)



This motherboard  
provides three 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.

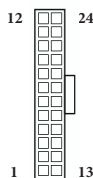
CPU Fan Connector  
(4-pin CPU\_FAN1)  
(see p.7, No. 2)



This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector.

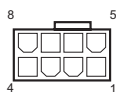
If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

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



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.

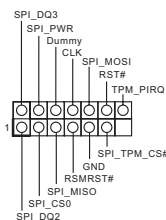
ATX 12V Power Connector  
(8-pin ATX12V1)  
(see p.7, No. 1)



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.

**\*Warning: Please make sure that the power cable connected is for the CPU and not the graphics card. Do not plug the PCIe power cable to this connector.**

SPI TPM Header  
(13-pin SPI\_TPM\_J1)  
(see p.7, No. 17)



This connector supports SPI 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.

RGB LED Headers  
(4-pin RGB\_LED1)  
(see p.7, No. 5)



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

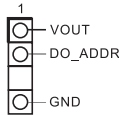
**Caution: Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.**

\*Please refer to page 55 for further instructions on these two headers.

(4-pin RGB\_LED2)  
(see p.7, No. 25)



Addressable LED Headers  
(3-pin ADDR\_LED1)  
(see p.7, No. 6)

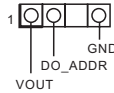


These two Addressable headers are used to connect Addressable LED extension cable which allows users to choose from various LED lighting effects.

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

\*Please refer to page 56 for further instructions on this header.

(3-pin ADDR\_LED2)  
(see p.7, No. 24)



## 2.7 Post Status Checker

Post Status Checker (PSC) diagnoses the computer when users power on the machine. It emits a red light to indicate whether the CPU, memory, VGA or storage is dysfunctional. The lights go off if the four mentioned above are functioning normally.

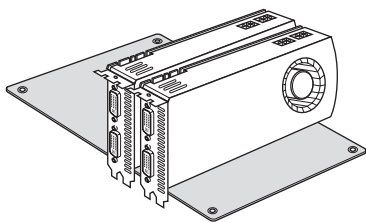
## 2.8 CrossFire™ Operation Guide

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



1. You should only use identical CrossFire™-ready graphics cards that are AMD certified.
2. Make sure that your graphics card driver supports AMD CrossFire™ 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 CrossFire™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFire™ mode.
5. Different CrossFire™ cards may require different methods to enable CrossFire™. Please refer to AMD graphics card manuals for detailed installation guide.

### 2.8.1 Installing Two CrossFire™-Ready Graphics Cards



#### Step 1

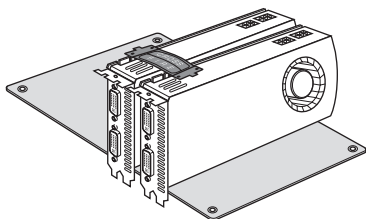
Insert one graphics card into PCIE1 slot and the other graphics card to PCIE4 slot. Make sure that the cards are properly seated on the slots.

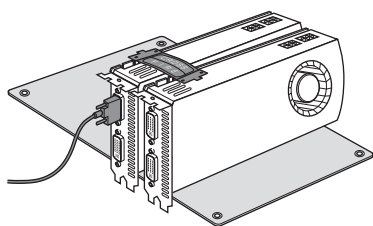


CrossFire Bridge

#### 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/DVI/DP/HDMI cable from the monitor to the corresponding port on the graphics card installed to the PCIE1 slot.

## 2.8.2 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

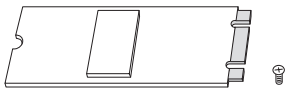
In the left pane, click **Performance** and then **AMD CrossFireX™**. Then select **Enable AMD CrossFireX** and click **Apply**. Select the GPU number according to your graphics card and click **Apply**.

## 2.9 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.

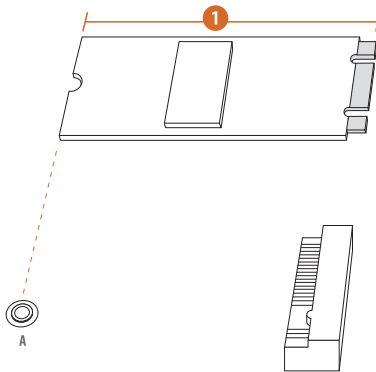
The Hyper M.2 Socket (M2\_1) supports M Key type 2280 M.2 PCI Express module up to Gen4x4 (64 Gb/s) (with Vermeer, Matisse) or Gen3x4 (32 Gb/s) (with Cezanne, Renoir and Picasso).

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



#### Step 1

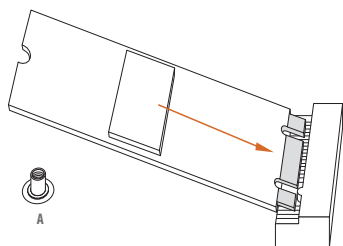
Prepare a M.2\_SSD (NGFF) module and the screw.



#### Step 2

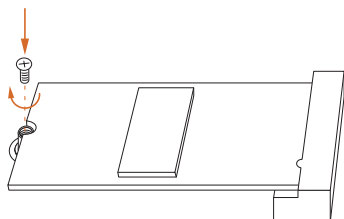
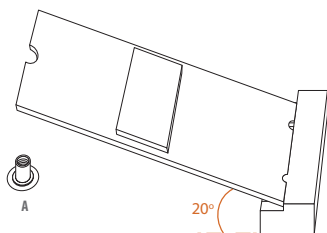
Depending on the PCB type and length of your M.2\_SSD (NGFF) module, find the corresponding nut location to be used.

| No.          | 1        |
|--------------|----------|
| Nut Location | A        |
| PCB Length   | 8cm      |
| Module Type  | Type2280 |



### Step 3

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 4

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 (M2\_1)

| Vendor   | Interface | P/N                          |
|----------|-----------|------------------------------|
| ADATA    | PCIe3 x4  | ASX7000NP-128GT-C            |
| ADATA    | PCIe3 x4  | ASX8000NP-256GM-C            |
| ADATA    | PCIe3 x4  | ASX7000NP-256GT-C            |
| ADATA    | PCIe3 x4  | ASX8000NP-512GM-C            |
| ADATA    | PCIe3 x4  | ASX7000NP-512GT-C            |
| Apacer   | PCIe3 x4  | AP240GZ280                   |
| Corsair  | PCIe3 x4  | CSSD-F240GBMP500             |
| Intel    | PCIe3 x4  | SSDPEKKF256G7                |
| Intel    | PCIe3 x4  | SSDPEKKF512G7                |
| Kingston | PCIe3 x4  | SKC1000/480G                 |
| Kingston | PCIe2 x4  | SH2280S3/480G                |
| OCZ      | PCIe3 x4  | RVD400 -M2280-512G (NVME)    |
| PATRIOT  | PCIe3 x4  | PH240GPM280SSDR NVME         |
| Plextor  | PCIe3 x4  | PX-128M8PeG                  |
| Plextor  | PCIe3 x4  | PX-1TM8PeG                   |
| Plextor  | PCIe3 x4  | PX-256M8PeG                  |
| Plextor  | PCIe3 x4  | PX-512M8PeG                  |
| Plextor  | PCIe      | PX-G256M6e                   |
| Plextor  | PCIe      | PX-G512M6e                   |
| Samsung  | PCIe3 x4  | SM961 MZVPPW128HEGM (NVM)    |
| Samsung  | PCIe3 x4  | PM961 MZVLW128HEGR (NVME)    |
| Samsung  | PCIe3 x4  | 960 EVO (MZ-V6E250) (NVME)   |
| Samsung  | PCIe3 x4  | 960 EVO (MZ-V6E250BW) (NVME) |
| Samsung  | PCIe3 x4  | SM951 (NVME)                 |
| Samsung  | PCIe3 x4  | SM951 (MZHPV256HDGL)         |
| Samsung  | PCIe3 x4  | SM951 (MZHPV512HDGL)         |
| Samsung  | PCIe3 x4  | SM951 (NVME)                 |
| Samsung  | PCIe x4   | XP941-512G (MZHPU512HCGL)    |
| SanDisk  | PCIe      | SD6PP4M-128G                 |
| SanDisk  | PCIe      | SD6PP4M-256G                 |
| TEAM     | PCIe3 x4  | TM8FP2240G0C101              |
| TEAM     | PCIe3 x4  | TM8FP2480GC110               |
| WD       | PCIe3 x4  | WDS256G1X0C-00ENX0 (NVME)    |
| WD       | PCIe3 x4  | WDS512G1X0C-00ENX0 (NVME)    |

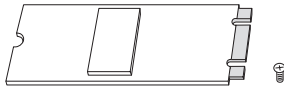
For the latest updates of M.2\_SSD (NFGG) module support list, please visit our website for details: <http://www.asrock.com>

## 2.10 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 Socket (M2\_2) supports M Key type 2280 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen3 x2 (16 Gb/s).

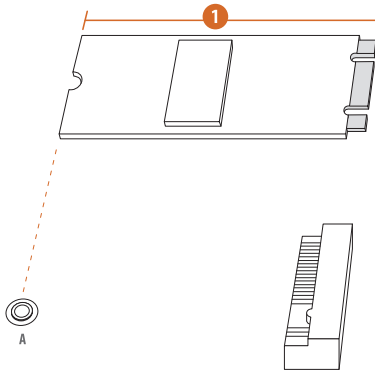
\* M2\_2 and SATA3\_4\_5 share lanes. If either one of them is in use, the other one will be disabled.

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



#### Step 1

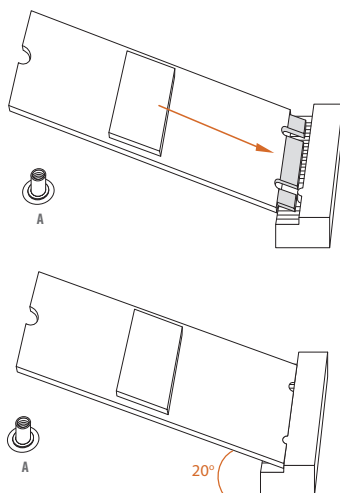
Prepare a M.2\_SSD (NGFF) module and the screw.



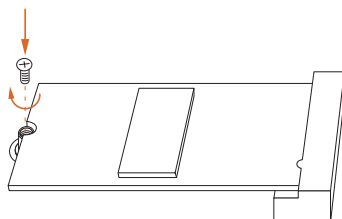
#### Step 2

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

| No.          | 1        |
|--------------|----------|
| Nut Location | A        |
| PCB Length   | 8cm      |
| Module Type  | Type2280 |

**Step 3**

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 4**

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 (M2\_2)

| Vendor    | Interface | P/N                       |
|-----------|-----------|---------------------------|
| ADATA     | SATA3     | AXNS330E-32GM-B           |
| ADATA     | SATA3     | AXNS381E-128GM-B          |
| ADATA     | SATA3     | AXNS381E-256GM-B          |
| ADATA     | SATA3     | ASU800NS38-256GT-C        |
| ADATA     | SATA3     | ASU800NS38-512GT-C        |
| Crucial   | SATA3     | CT120M500SSD4             |
| Crucial   | SATA3     | CT240M500SSD4             |
| Intel     | SATA3     | Intel SSDSCKGW080A401/80G |
| Kingston  | SATA3     | SM2280S3                  |
| Plextor   | PCIe      | PX-G256M6e                |
| Plextor   | PCIe      | PX-G512M6e                |
| SanDisk   | PCIe      | SD6PP4M-128G              |
| SanDisk   | PCIe      | SD6PP4M-256G              |
| Team      | SATA3     | TM4PS4128GMC105           |
| Team      | SATA3     | TM4PS4256GMC105           |
| Team      | SATA3     | TM8PS4128GMC105           |
| Team      | SATA3     | TM8PS4256GMC105           |
| Transcend | SATA3     | TS256GMTS400              |
| Transcend | SATA3     | TS512GMTS600              |
| Transcend | SATA3     | TS512GMTS800              |
| V-Color   | SATA3     | VLM100-120G-2280B-RD      |
| V-Color   | SATA3     | VLM100-240G-2280RGB       |
| V-Color   | SATA3     | VSM100-240G-2280          |
| V-Color   | SATA3     | VLM100-240G-2280B-RD      |
| WD        | SATA3     | WDS100T1B0B-00AS40        |
| WD        | SATA3     | WDS240G1G0B-00RC30        |

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

Go to our website to download the necessary drivers and useful utilities that enhance the motherboard's features.

## 3.2 ASRock Motherboard Utility (A-Tuning)

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

### 3.2.1 Installing ASRock Motherboard Utility (A-Tuning)

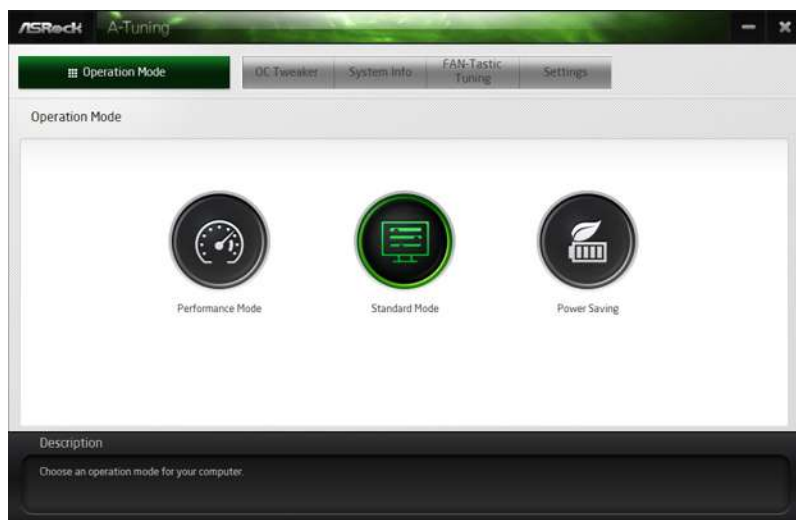
ASRock Motherboard Utility (A-Tuning) can be downloaded from ASRock Live Update & APP Shop. After the installation, you will find the icon "ASRock Motherboard Utility (A-Tuning)" on your desktop. Double-click the "ASRock Motherboard Utility (A-Tuning)"  icon, ASRock Motherboard Utility (A-Tuning) main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

### 3.2.2 Using ASRock Motherboard Utility (A-Tuning)

There are five sections in ASRock Motherboard Utility (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

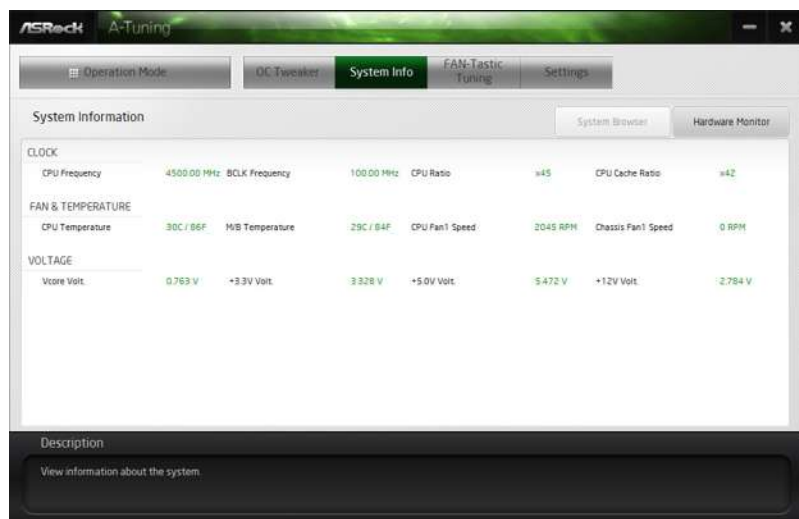
Configurations for overclocking the system.



## System Info

View information about the system.

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



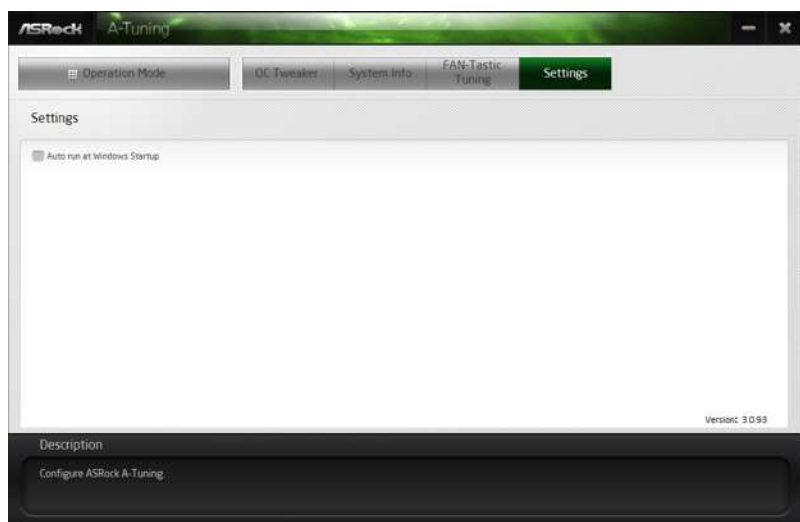
## FAN-Tastic Tuning

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.



## Settings

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



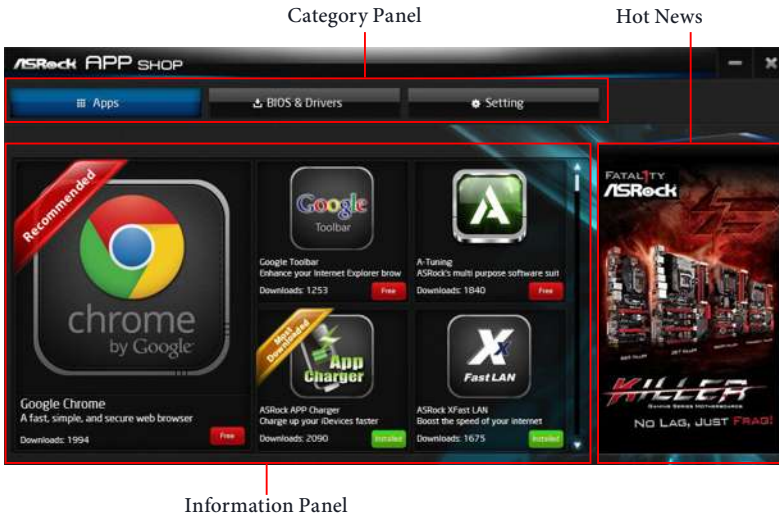
### 3.3 ASRock Live Update & APP Shop

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 Live Update & 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 **Free** 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.

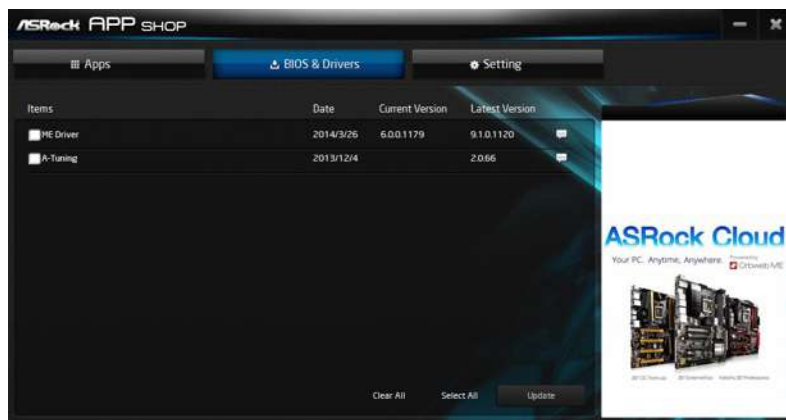
### Step 2

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

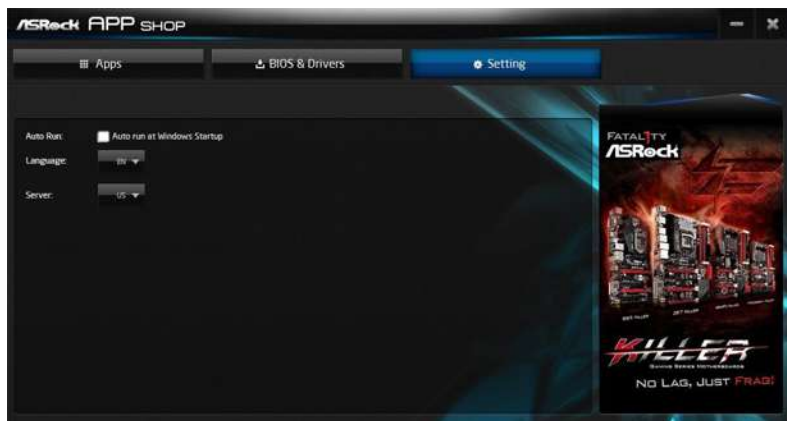
Click to select one or more items you want to update.

#### 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.

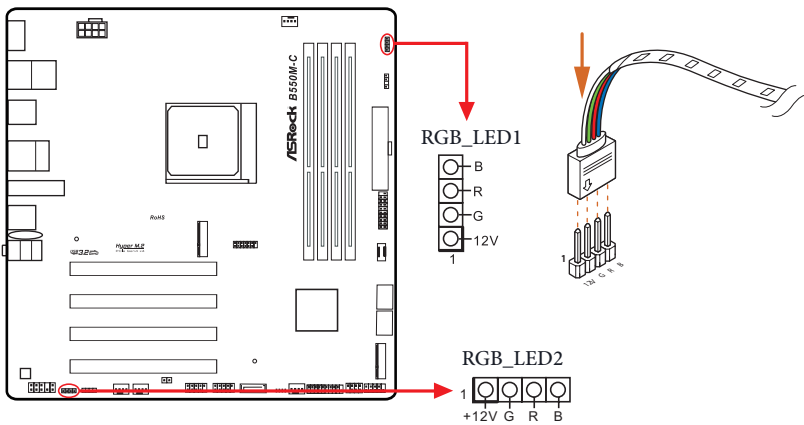


### 3.4 ASRock Polychrome SYNC

ASRock Polychrome SYNC 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.



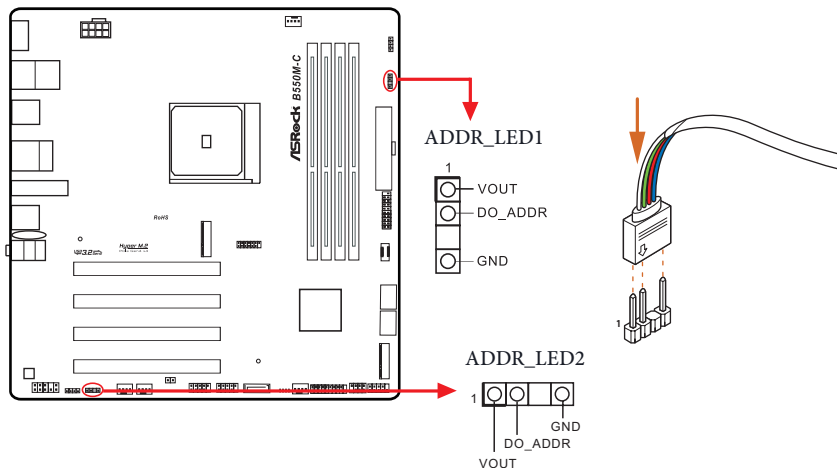
1. Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.
2. Before installing or removing your RGB LED cable, please power off your system and unplug the power cord from the power supply. Failure to do so may cause damages to motherboard components.



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.

## Connecting the Addressable RGB LED Strip

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



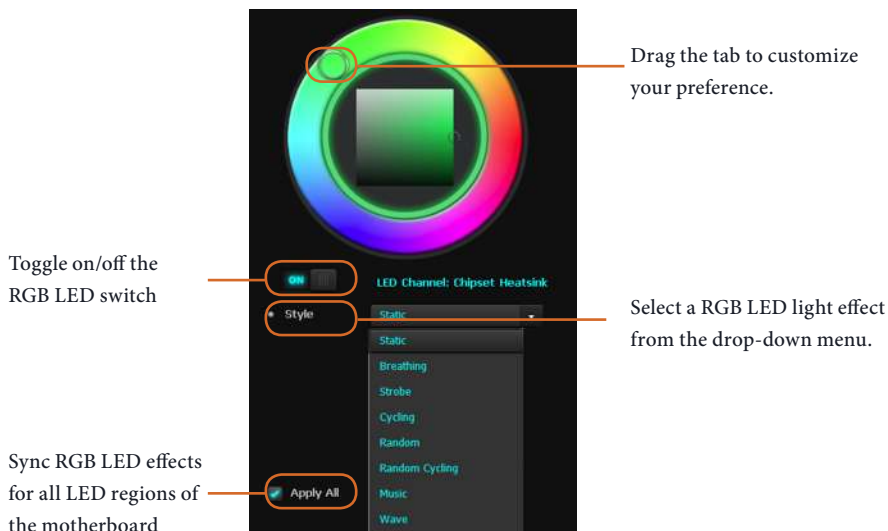
1. Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.
2. Before installing or removing your RGB LED cable, please power off your system and unplug the power cord from the power supply. Failure to do so may cause damages to motherboard components.



1. Please note that the RGB LED strips do not come with the package.
2. The RGB LED header supports WS2812B addressable RGB LED strip (5V/Data/GND), with a maximum power rating of 3A (5V) and length within 2 meters.

## ASRock Polychrome SYNC Utility

Now you can adjust the RGB LED color through the ASRock Polychrome SYNC 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.*

#### Overclock Mode(Bus Speed)

Select the overclock mode. Warning! When overclocking also the PCIe, PCI, SATA and USB busses will be overclocked which may cause instability or failure. Please install an operating system and the drivers required before overclocking, or else your HDD's may be undetectable. Overclocking is not supported if the monitor is connected via the onboard D-Bus/VGA connector.

#### CPU Frequency and Voltage(VID) Change

If this item is set to [Manual], the multiplier and voltage will be set based on user selection. Final result is depending on the CPU's capability.

#### CPU Core (Per CCX)

#### CPU Voltage

Specifies a custom CPU core voltage (mV), Should be combined with a custom CPU core

frequency. Power saving features for idle cores (e.g. cc6 sleep) remain active.

## CCD0

### CCX0 Frequency (MHz)

Use this item to adjust CCX0 Frequency.

### CCX1 Frequency (MHz)

Use this item to adjust CCX1 Frequency.

## CCD1

### CCX0 Frequency (MHz)

Use this item to adjust CCX0 Frequency.

### CCX1 Frequency (MHz)

Use this item to adjust CCX1 Frequency.

## SoC/Uncore OC Voltage(VID)

Specify the SoC/Uncore voltage (VDD\_SOC) in mV to support memory and Infinity Fabric overclocking. VDD\_SOC also determines the GPU voltage on processors with integrated graphics. “SoC/Uncore OC Mode” needs to be enabled to force this voltage.

## CLD0 VDDP Voltage Control

AMD Overclocking Setup VDDP is a voltage for the DDR4 bus signaling (PHY), and it is derived from your DRAM Voltage (VDDIO\_Mem). As a result, VDDP voltage in mV can approach but not exceed your DRAM Voltage.

## CLD0 VDDG CCD Voltage Control

AMD Overclocking Setup VDDG CCD represents voltage for the data portion of the Infinity Fabric. It is derived from the CPU SoC/Uncore Voltage (VDD\_SOC). VDDG can approach but not exceed VDD\_SOC.

## CLD0 VDDG IOD Voltage Control

AMD Overclocking Setup VDDG IOD represents voltage for the data portion of the Infinity Fabric. It is derived from the CPU SoC/Uncore Voltage (VDD\_SOC). VDDG can approach but not exceed VDD\_SOC.

## DRAM Information

### Load XMP Setting

Load XMP settings to overclock the memory and perform beyond standard specifications.

### DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically. Setting DRAM Frequency can adjust DRAM Timing.

### DRAM Voltage

Configure the voltage for the DRAM Voltage.

### Infinity Fabric Frequency and Dividers

AMD Overclocking Setup Set Infinity Fabric frequency (FCLK). Auto: FCLK = MCLK. Manual: FCLK must be less than or equal to MCLK for best performance in most cases. Latency penalties are incurred if FCLK and MCLK are mismatched, but sufficiently high MCLK can negate or overcome this penalty.

### DRAM Timing Configuration

### External Voltage Settings and Load-line Calibration

#### CPU Vcore Voltage

Input voltage for the processor by the external voltage regulator.

#### CPU Load-Line Calibration

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

#### VDDCR\_SOC Voltage

Input voltage for the processor by the external voltage regulator.

#### VDDCR\_SOC Load-Line Calibration

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

### VPPM

Configure the voltage for the VPPM.

---

## 2.50V Voltage

Configure the voltage for the 2.50V PROM Voltage.

## CPU VDD 1.8V Voltage

Configure the voltage for the CPU VDD 1.8V Voltage. The default value is [Auto].

## 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.

## Save User UEFI Setup Profile to Disk

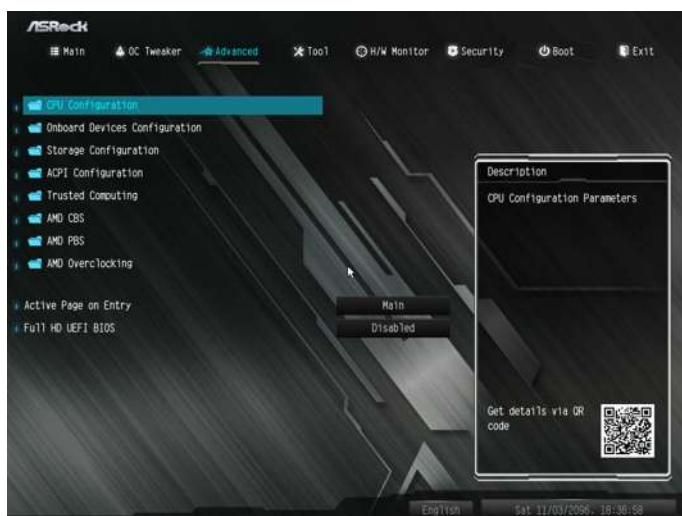
It helps you to save current UEFI settings as an user profile to disk.

## Load User UEFI Setup Profile from Disk

You can load previous saved profile from the disk.

## 4.4 Advanced Screen

In this section, you may set the configurations for the following items: CPU Configuration, Onboard Devices Configuration, Storage Configuration, ACPI Configuration, Trusted Computing, AMD CBS, AMD PBS and AMD Overclocking.



*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



### PSS Support

Use this to enable or disable the generation of ACPI\_PPC, \_PSS, and \_PCT objects.

### NX Mode

Use this to enable or disable NX mode.

### SVM Mode

When this 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].

### SMT Mode

This item can be used to disable symmetric multithreading. To re-enable SMT, a power cycle is needed after selecting [Auto].

Warning: S3 is not supported on systems where SMT is disabled.

### AMD fTPM Switch

Use this to enable or disable AMD CPU fTPM.

## 4.4.2 Onboard Devices Configuration



### Turn On LED in S5

Turn on LED in the ACPI S5 state.

### SR-IOV Support

Enable/disable the SR-IOV (Single Root IO Virtualization Support) if the system has SR-IOV capable PCIe devices.

### UMA Frame buffer Size (Only for processor with integrated graphics)

This item allows you to set the size of the UMA frame buffer.

### Gnb 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.

### 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.

---

## WAN Radio

Configure the WiFi module's connectivity.

## BT On/Off

Enable/disable the bluetooth.

## PS2 Y-Cable

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

### 4.4.3 Storage Configuration



#### SATA Mode

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

#### SATA Hot Plug

Enable/disable the SATA Hot Plug function.

## 4.4.4 ACPI Configuration



### Suspend to RAM

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

### Deep Sleep

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

### PS/2 Keyboard S4/S5 Wakeup Support

Allow the system to be waked up by a PS/2 Keyboard in S4/S5.

### USB Keyboard/Mouse Power On

Allow the system to be waked up by an USB Keyboard/Mouse device.

### PCIe Devices Power On

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

### 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 Power Delivery in Soft Off State (S5)

If this option is enabled, the USB port will provide power to your devices even when the system is in Power State S5.

## 4.4.5 Trusted Computing



### Security Device Support

Enable or disable BIOS support for security device.

## 4.4.6 AMD CBS



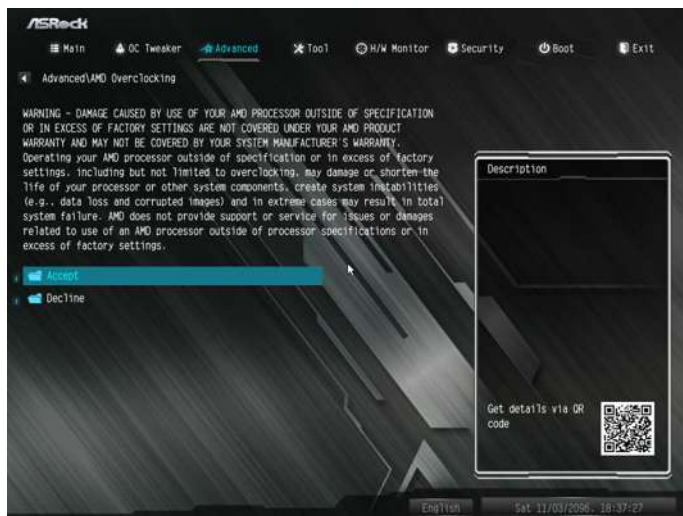
The AMD CBS menu accesses AMD specific features.

## 4.4.7 AMD PBS



The AMD PBS menu accesses AMD specific features.

## 4.4.8 AMD Overclocking



The AMD Overclocking menu accesses options for configuring CPU frequency and voltage.

## 4.5 Tools



### 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.

### SSD Secure Erase Tool

Use this tool to securely erase SSD.

### NVME Sanitization Tool

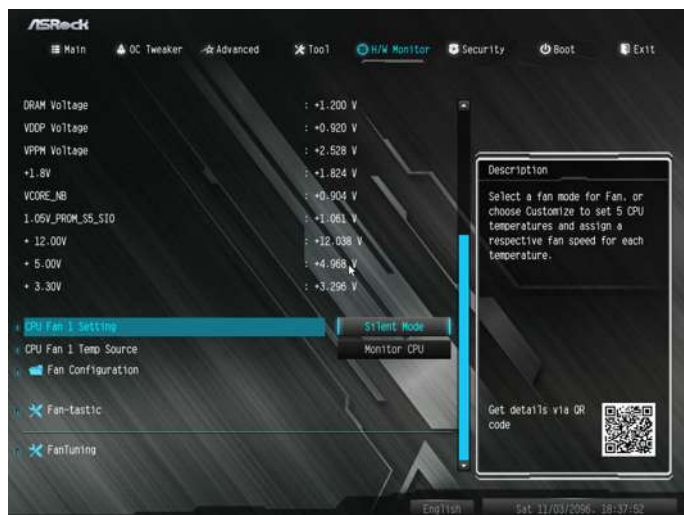
After you sanitize SSD, all user data will be permanently destroyed on the SSD and cannot be recovered.

### Instant Flash

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

## 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 FAN1 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 FAN1 Temp Source

Select a fan temperature source for CPU Fan 1.

### FAN Configuration

### CHA\_FAN1/WP Switch

Select CHA\_FAN1 or Water Pump mode.

### Chassis Fan 1 Control Mode

Select PWM mode or DC mode for Chassis Fan 1 .

### 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.

## CHA\_FAN2/WP Switch

Select CHA\_FAN2 or Water Pump mode.

## Chassis Fan 2 Control Mode

Select PWM mode or DC mode for Chassis Fan 2 .

## 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/WP 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.

## Fan-Tastic

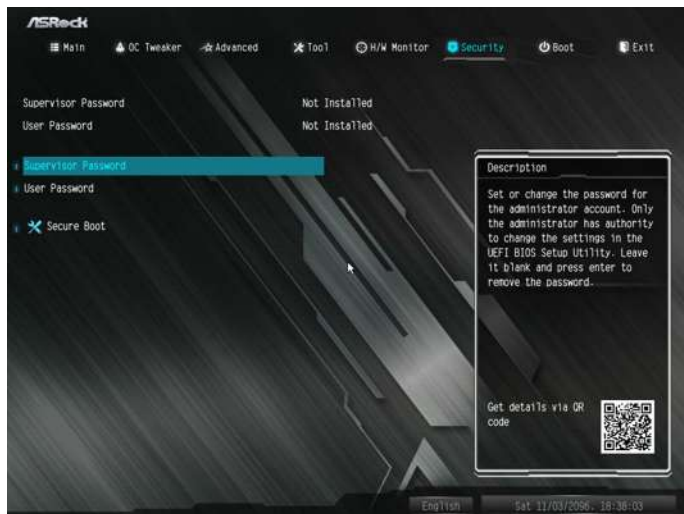
Select a fan mode for Fan, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

## FanTuning

Detect the lowest fan speed in the system. It may take 3-5 minutes to complete.

## 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

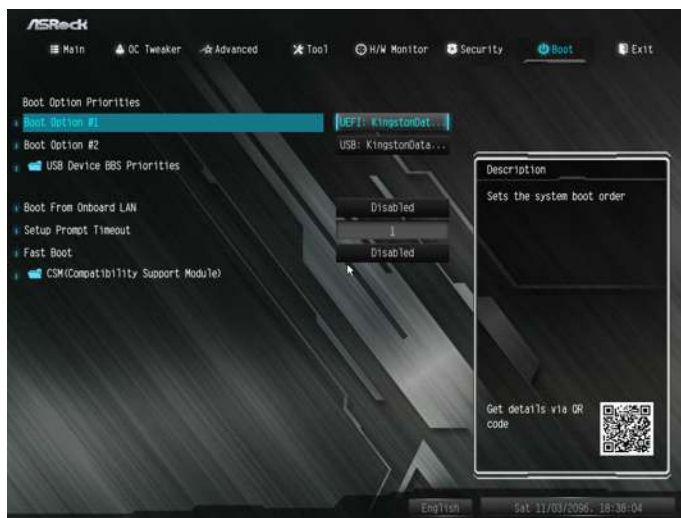
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

### 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.



### 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.

### Fast Boot

Fast Boot minimizes your computer's boot time. In fast mode you may not boot from an USB storage device.

## 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.

### Bootup Num-Lock

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

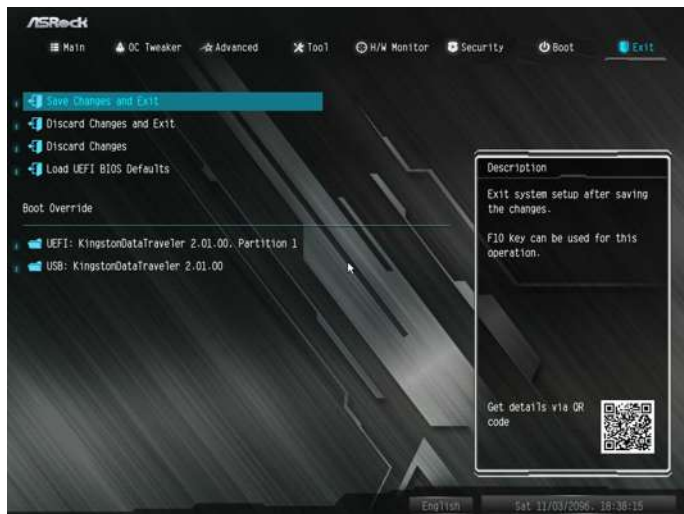
### Full Screen Logo

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.

## 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 BIOS Defaults

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

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Version 1.0

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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.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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#### WARNING

THIS PRODUCT CONTAINS A BUTTOON BATTERY

If swallowed, a button battery can cause serious injury or death.  
Please keep batteries out of sight or reach of children.

#### 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](http://www.dtsc.ca.gov/hazardouswaste/perchlorate)”

#### AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you require assistance please call ASRock Tel : +886-2-28965588 ext.123 (Standard International call charges apply)



ASRock INC. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related UKCA Directives. Full text of UKCA declaration of conformity is available at: <http://www.asrock.com>



ASRock INC. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related Directives. Full text of EU declaration of conformity is available at: <http://www.asrock.com>

ASRock follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASRock product is in line with global environmental regulations. In addition, ASRock disclose the relevant information based on regulation requirements.

Please refer to <https://www.asrock.com/general/about.asp?cat=Responsibility> for information disclosure based on regulation requirements ASRock is complied with.



DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

## CE Warning

This device complies with directive 2014/53/EU issued by the Commission of the European Community.

This equipment complies with EU radiation exposure limits set forth for an uncontrolled environment.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Operations in the 5.15-5.35GHz band are restricted to indoor usage only.

|                                                                                   |    |    |    |    |    |    |    |
|-----------------------------------------------------------------------------------|----|----|----|----|----|----|----|
|  | AT | BE | BG | CH | CY | CZ | DE |
|                                                                                   | DK | EE | EL | ES | FI | FR | HR |
|                                                                                   | HU | IE | IS | IT | LI | LT | LU |
|                                                                                   | LV | MT | NL | NO | PL | PT | RO |
|                                                                                   | SE | SI | SK | TR |    |    |    |



Radio transmit power per transceiver type

| Function  | Frequency       | Maximum Output Power (EIRP) |
|-----------|-----------------|-----------------------------|
| WiFi      | 2400-2483.5 MHz | 18.5 + / -1.5 dbm           |
|           | 5150-5250 MHz   | 21.5 + / -1.5 dbm           |
|           | 5250-5350 MHz   | 18.5 + / -1.5 dbm (no TPC)  |
|           |                 | 21.5 + / -1.5 dbm (TPC)     |
|           | 5470-5725 MHz   | 25.5 + / -1.5 dbm (no TPC)  |
| Bluetooth |                 | 28.5 + / -1.5 dbm (TPC)     |
|           | 2400-2483.5 MHz | 8.5 + / -1.5 dbm            |

|                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>ASRock Incorporation</p> <p>Contains Wi-Fi 6E module with Bluetooth</p> <p><b>AMD® Wi-Fi 6E RZ608</b></p> <p>Model: MT7921K</p> <p>FCC ID: RAS-MT7921K</p> <p>IC: 7542A-MT7921K</p> <p> [R] 020-200172  CCAI20LP2410T7</p> <p>5.15~5.35GHz indoor use only</p> | <p>ASRock Incorporation</p> <p>Contains Wi-Fi 6E module with Bluetooth</p> <p><b>AMD® Wi-Fi 6E RZ616</b></p> <p>Model: MT7922A22M</p> <p>FCC ID: RAS-MT7922A22M</p> <p>IC: 7542A-MT7922A22M</p> <p> [R] 020-210086 [T] D210041020  CCAI21Y10050T2</p> <p>5.15~5.35GHz indoor use only</p> |
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