PRO

PRO SERIES

X570 PRO4

ASRock

User Manual

FC

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

CALIFORNIA, USA ONLY

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

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

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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)

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Contents

Chapter 1 Introduction

Thank you for purchasing ASRock X570 Pro4 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 X570 Pro4 Motherboard (ATX Form Factor)
- ASRock X570 Pro4 Quick Installation Guide
- ASRock X570 Pro4 Support CD
- 2 x Serial ATA (SATA) Data Cables (Optional)
- 3 x Screws for M.2 Sockets (Optional)
- 1 x Standoff for M.2 Socket (Optional)
- 1 x I/O Panel Shield

English

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1.2 Specifications

Platform	• ATX Form Factor • Solid Capacitor design • 2oz Copper PCB
CPU	• Supports AMD AM4 socket Ryzen™ 2000 and 3000 series processors • Digi Power design • 10 Power Phase design
Chipset	• AMD X570
Memory	• Dual Channel DDR4 Memory Technology • 4 x DDR4 DIMM Slots • AMD Ryzen series CPUs (Matisse) support DDR4 4066+ (OC)/3466(OC)/3200/2933/2667/2400/2133 ECC & non-ECC, un-buffered memory* • AMD Ryzen series CPUs (Pinnacle Ridge) support DDR4 3466+(OC)/3200(OC)/2933/2667/2400/2133 ECC & non-ECC, un-buffered memory* • AMD Ryzen series CPUs (Picasso) support DDR4 3466+ (OC)/3200(OC)/2933/2667/2400/2133 non-ECC, un-buffered memory* * For Ryzen Series CPUs (Picasso), 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 22 for DDR4 UDIMM maximum frequency support. • Max. capacity of system memory: 64GB • 15μ Gold Contact in DIMM Slots
Expansion Slot	**AMD Ryzen series CPUs (Matisse)** • 2 x PCI Express 4.0 x16 Slots (PCIE1/PCIE3: single at x16 (PCIE1); dual at x16 (PCIE1) / x4 (PCIE3))*

AMD Ryzen series CPUs (Pinnacle Ridge)
- 2 x PCI Express 3.0 x16 Slots (PCIE1/PCIE3: single at x16 (PCIE1); dual at x16 (PCIE1) / x4 (PCIE3))*

AMD Ryzen series CPUs (Picasso)
- 2 x PCI Express 3.0 x16 Slots (PCIE1/PCIE3: single at x8 (PCIE1); dual at x8 (PCIE1) / x4 (PCIE3))*

* Supports NVMe SSD as boot disks
- 2 x PCI Express 4.0 x1 Slots
- Supports AMD Quad CrossFireX™ and CrossFireX™
- 1 x M.2 Socket (Key E), supports type 2230 WiFi/BT module
- 15μ Gold Contact in VGA PCIe Slot (PCIE1)

Graphics	- Integrated AMD Radeon™ Vega Series Graphics in Ryzen Series APU*

* Actual support may vary by CPU
- DirectX 12, Pixel Shader 5.0
- Shared memory default 2GB. Max Shared memory supports up to 16GB.

* The Max shared memory 16GB requires 32GB system memory installed.
- Dual graphics output: support HDMI and DisplayPort 1.2 ports by independent display controllers
- Supports HDMI 1.4 with max. resolution up to 4K x 2K (4096x2160) @ 30Hz
- Supports DisplayPort 1.2 with max. resolution up to 4K x 2K (4096x2160) @ 60Hz
- Supports Auto Lip Sync, Deep Color (12bpc), xvYCC and HBR (High Bit Rate Audio) with HDMI 1.4 Ports (Compliant HDMI monitor is required)
- Supports HDCP 1.4 with HDMI 1.4 and DisplayPort 1.2 Ports
- Supports 4K Ultra HD (UHD) playback with HDMI 1.4 and DisplayPort 1.2 Ports
- Supports Microsoft PlayReady®

English

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Audio	• 7.1 CH HD Audio with Content Protection (Realtek ALC1200 Audio Codec) • Premium Blu-ray Audio support • Supports Surge Protection • ELNA Audio Caps • PCB Isolate Shielding • Individual PCB Layers for R/L Audio Channel
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
Rear Panel I/O	• 3 x Antenna Ports (on I/O Panel Shield) • 1 x PS/2 Mouse/Keyboard Port • 1 x HDMI Port • 1 x DisplayPort 1.2 • 1 x USB 3.2 Gen2 Type-A Port (10 Gb/s) (Supports ESD Protection) • 1 x USB 3.2 Gen2 Type-C Port (10 Gb/s) (Supports ESD Protection) • 6 x USB 3.2 Gen1 Ports (Supports ESD Protection) • 1 x RJ-45 LAN Port with LED (ACT/LINK LED and SPEED LED) • HD Audio Jacks: Line in / Front Speaker / Microphone
Storage	• 8 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1 and RAID 10), NCQ, AHCI and Hot Plug • 1 x Hyper M.2 Socket (M2_1), supports M Key type 2230/2242/2260/2280/22110 M.2 PCI Express module up to Gen4x4 (64 Gb/s) (with Matisse) or Gen3x4 (32 Gb/s) (with Pinnacle Ridge and Picasso)* • 1 x Hyper M.2 Socket (M2_3), supports M Key type 2230/2242/2260/2280/22110 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen4x4 (64 Gb/s) (with Matisse) or Gen3x4 (32 Gb/s) (with Pinnacle Ridge and Picasso)* * Supports NVMe SSD as boot disks * Supports ASRock U.2 Kit

Connector	• 1 x COM Port Header
	• 1 x TPM Header
	• 1 x SPI TPM Header
	• 1 x Power LED and Speaker Header
	• 2 x RGB LED Headers

    * Support in total up to 12V/3A, 36W LED Strip
- 1 x Addressable LED Header

    * Supports in total up to 5V/3A, 15W 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/Water Pump Fan Connector (4-pin) (Smart Fan Speed Control)

    * The CPU/Water Pump Fan supports the water cooler fan of maximum 2A (24W) fan power.
- 3 x Chassis/Water Pump Fan Connectors (4-pin) (Smart Fan Speed Control)

    * The Chassis/Water Pump Fan supports the water cooler fan of maximum 2A (24W) fan power.

    * CPU_FAN2/WP, CHA_FAN1/WP, CHA_FAN2/WP and CHA_FAN3/WP can auto detect if 3-pin or 4-pin fan is in use.
- 1 x 24 pin ATX Power Connector
- 1 x 8 pin 12V Power Connector
- 1 x Front Panel Audio Connector
- 1 x AMD LED Fan USB Header
- 1 x Thunderbolt AIC Connector (5-pin) (Supports ASRock Thunderbolt AIC Card only)
- 1 x USB 2.0 Header (Supports 2 USB 2.0 ports) (Supports ESD Protection)
- 2 x USB 3.2 Gen1 Headers (Support 4 USB 3.2 Gen1 ports) (Supports ESD Protection)

BIOS Feature	• AMI UEFI Legal BIOS with GUI support
	• Supports "Plug and Play"
	• ACPI 5.1 compliance wake up events
	• Supports jumperfree
	• SMBIOS 2.3 support
	• CPU, CPU VDDCR_SOC, DRAM, VPPM, PREM VDD_CLDO, PERM VDDCR_SOC, +1.8V, VDDP, VDDG, CPU Load-Line Calibration, CPU VDDCR_SOC Load-Line Calibration Voltage Multi-adjustment

|	
Hardware Monitor	• Temperature Sensing: CPU, CPU/Water Pump, Chassis, Chassis/Water Pump Fans • Fan Tachometer: CPU, CPU/Water Pump, Chassis, Chassis/Water Pump Fans • Quiet Fan (Auto adjust chassis fan speed by CPU temperature): CPU, CPU/Water Pump, Chassis, Chassis/Water Pump Fans • Fan Multi-Speed Control: CPU, CPU/Water Pump, Chassis, Chassis/Water Pump Fans • Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore, CPU VDDCR_SOC, DRAM, PREM VDDCR_SOC, +1.8V, VDDP
OS	• Microsoft® Windows® 10 64-bit
Certifications	• FCC, CE • 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
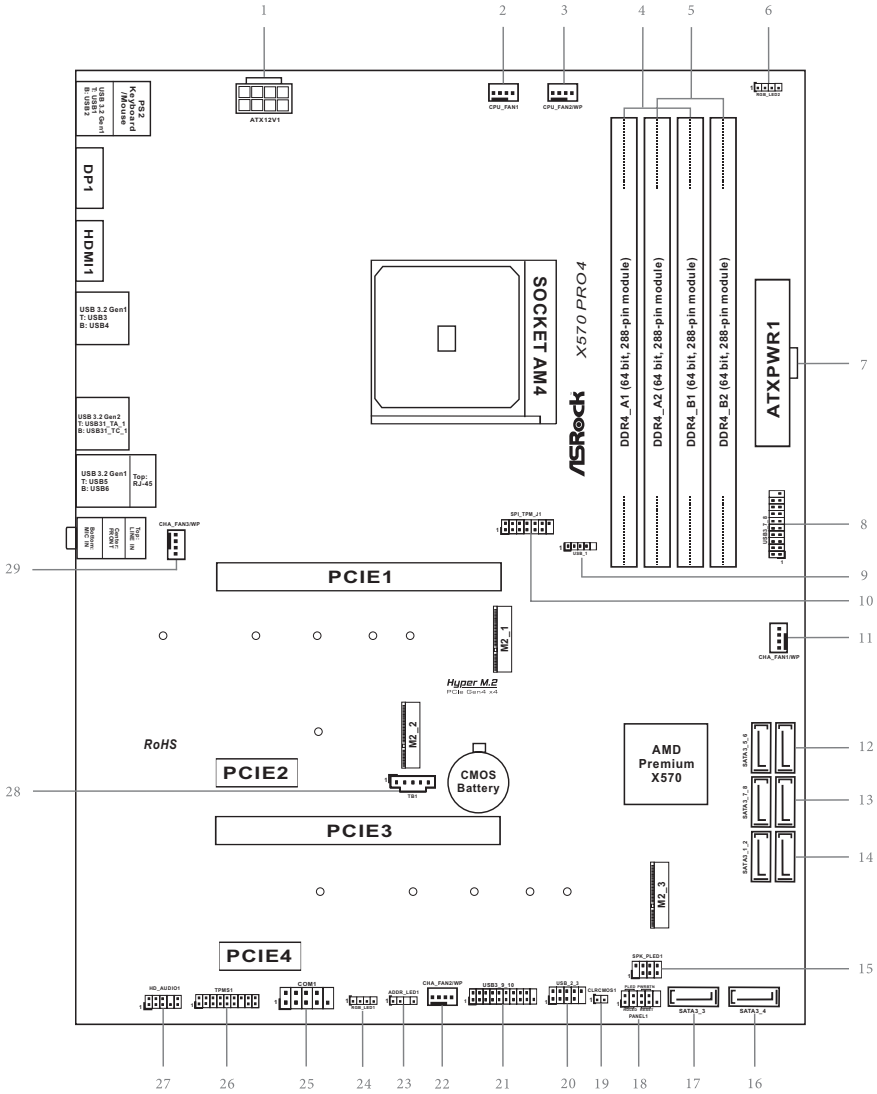
No.	Description
1	ATX 12V Power Connector (ATX12V1)
2	CPU Fan Connector (CPU_FAN1)
3	CPU Fan / Waterpump Fan Connector (CPU_FAN2/WP)
4	2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1)
5	2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2)
6	RGB LED Header (RGB_LED2)
7	ATX Power Connector (ATXPWR1)
8	USB 3.2 Gen1 Header (USB3_7_8)
9	AMD LED Fan USB Header (USB_1)
10	SPI TPM Header (SPI_TPM_J1)
11	Chassis Fan / Waterpump Fan Connector (CHA_FAN1/WP)
12	SATA3 Connector (SATA3_5_6)
13	SATA3 Connector (SATA3_7_8)
14	SATA3 Connector (SATA3_1_2)
15	Power LED and Speaker Header (SPK_PLED1)
16	SATA3 Connector (SATA3_4)
17	SATA3 Connector (SATA3_3)
18	System Panel Header (PANEL1)
19	Clear CMOS Jumper (CLRCMOS1)
20	USB 2.0 Header (USB_2_3)
21	USB 3.2 Gen1 Header (USB3_9_10)
22	Chassis Fan / Waterpump Fan Connector (CHA_FAN2/WP)
23	Addressable LED Header (ADDR_LED1)
24	RGB LED Header (RGB_LED1)
25	COM Port Header (COM1)
26	TPM Header (TPMS1)
27	Front Panel Audio Header (HD_AUDIO1)
28	Thunderbolt AIC Header (TB1)
29	Chassis Fan / Waterpump Fan Connector (CHA_FAN3/WP)

1.4 I/O Panel
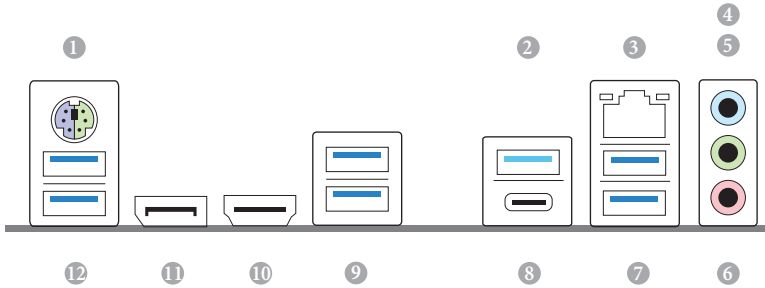
No.	Description	No.	Description
1	PS/2 Mouse/Keyboard Port	7	USB 3.2 Gen1 Ports (USB3_5_6)
2	USB 3.2 Gen2 Type-A Port (USB31_TA_1)	8	USB 3.2 Gen2 Type-C Port (USB31_TC_1)
3	LAN RJ-45 Port*	9	USB 3.2 Gen1 Ports (USB3_3_4)
4	Line In (Light Blue)	10	HDMI Port
5	Front Speaker (Lime)	11	DisplayPort 1.2
6	Microphone (Pink)	12	USB 3.2 Gen1 Ports (USB3_1_2)

English

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

ACT/LINK LED

SPEED LED

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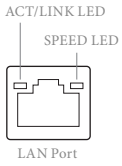
Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection
Blinking	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

Chapter 2 Installation

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

Pre-installation Precautions

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

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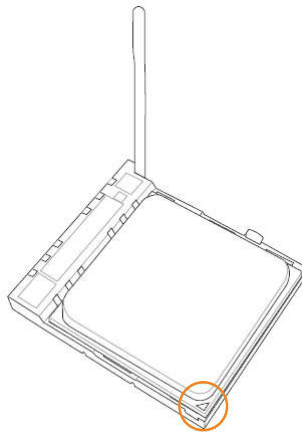
English

2.1 Installing the CPU

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

1
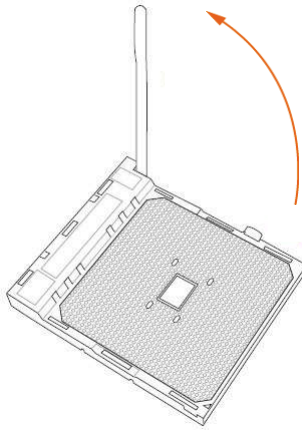
2

3

2.2 Installing the CPU Fan and Heatsink

After you install the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. You also need to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other.
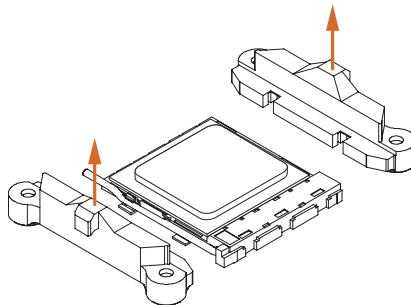
☆ *Please turn off the power or remove the power cord before changing a CPU or heatsink.*
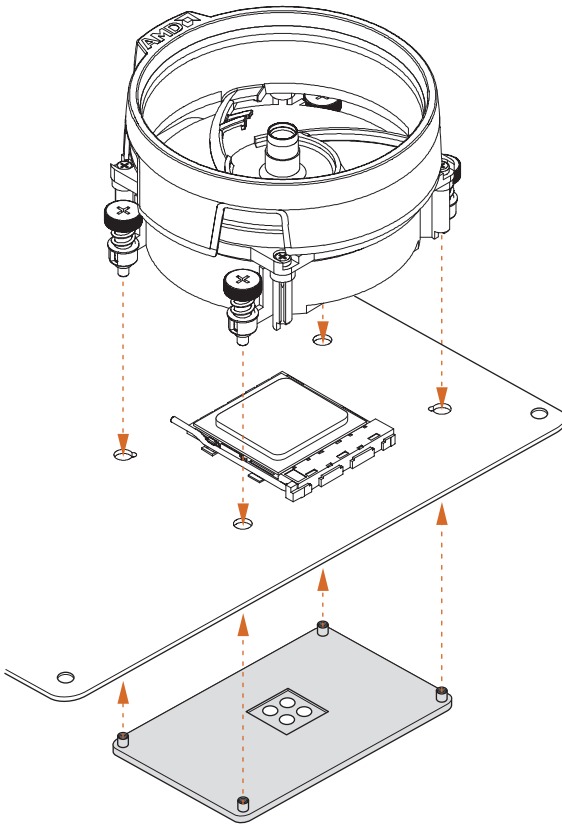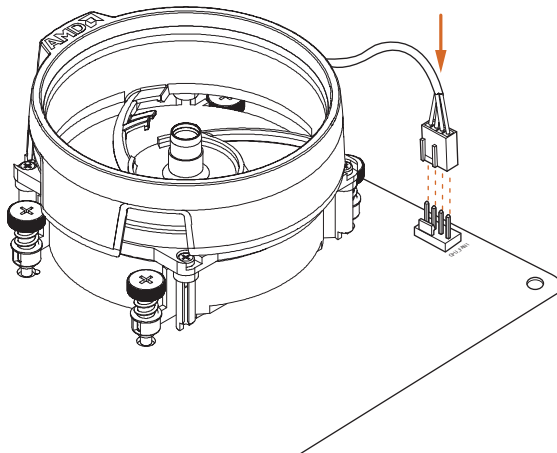
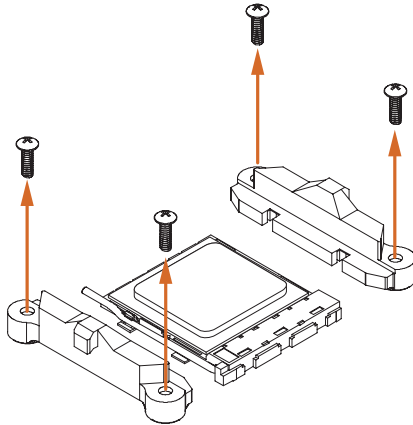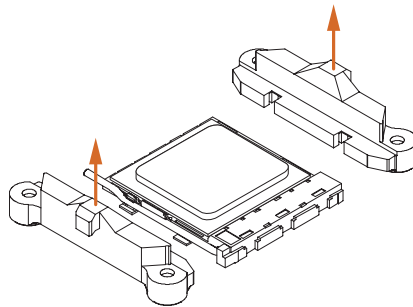## Installing the CPU Box Cooler SR1

1

2
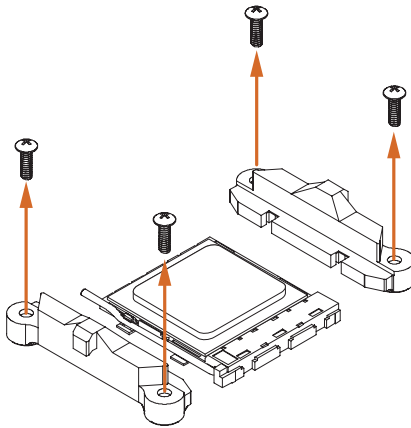
Installing the AM4 Box Cooler SR2

1

2

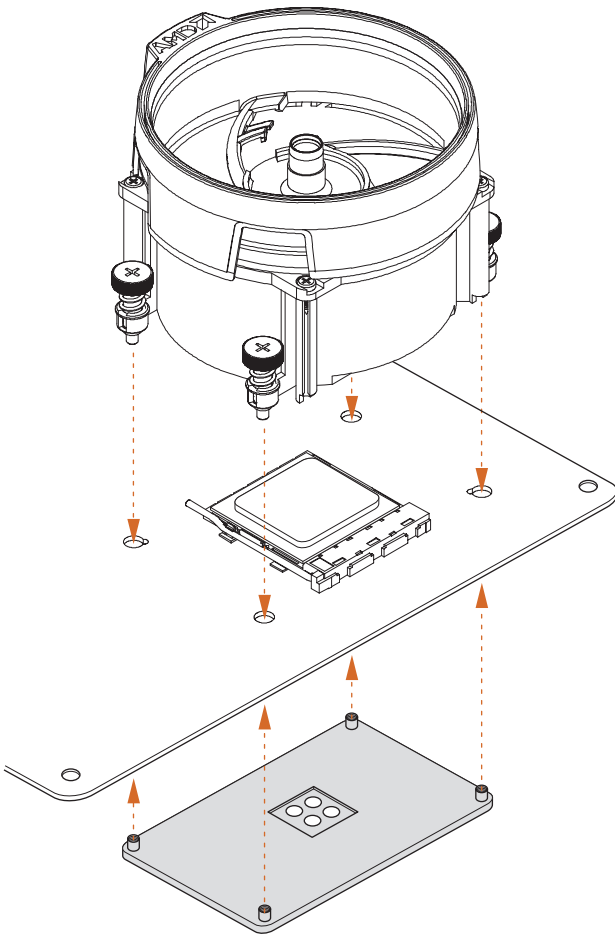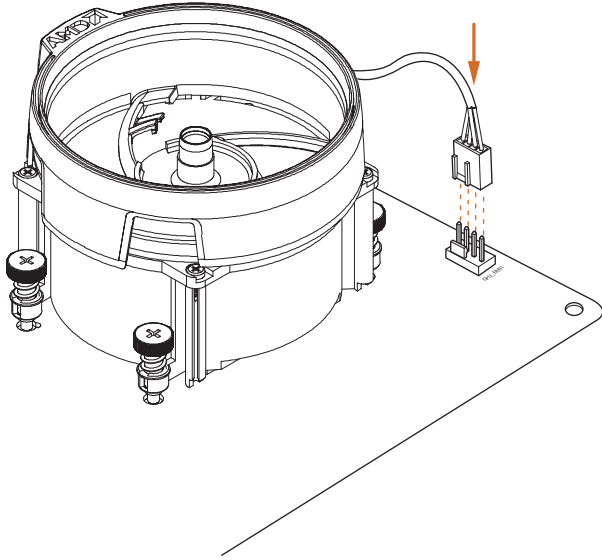## Installing the AM4 Box Cooler SR3

1

2

3

4

5

4-pin FAN cable
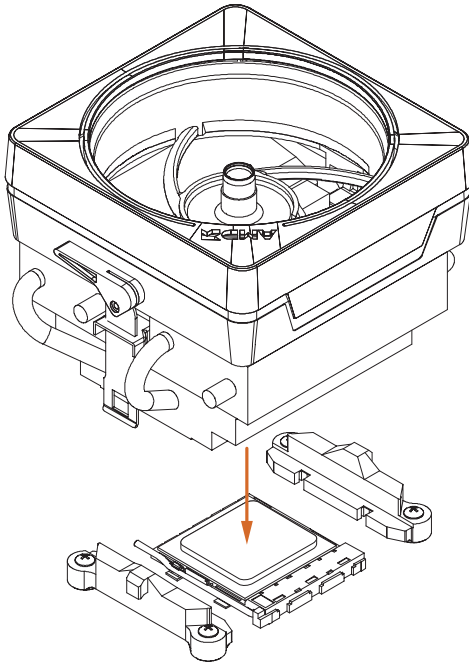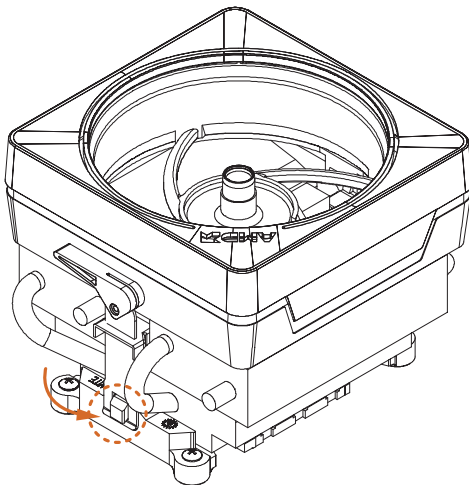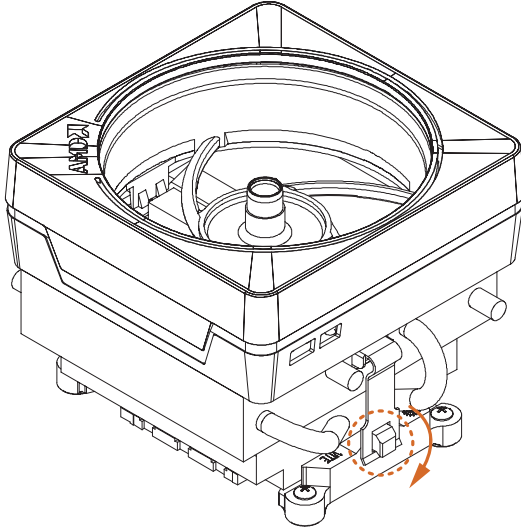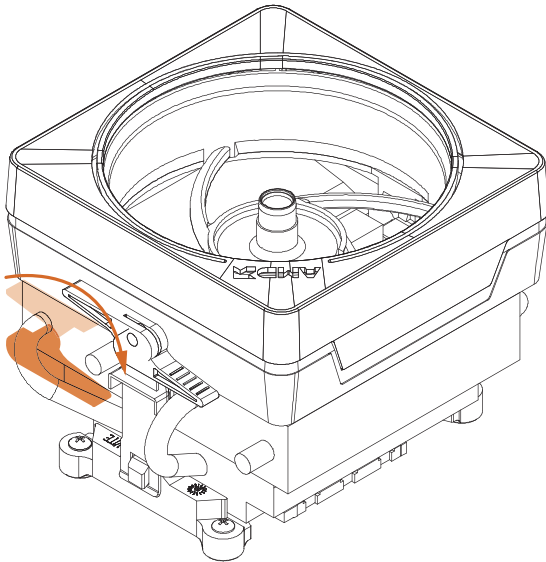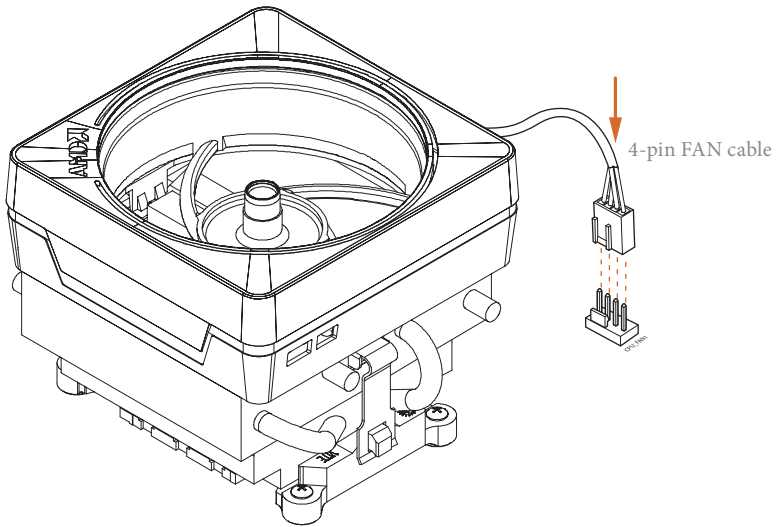
6
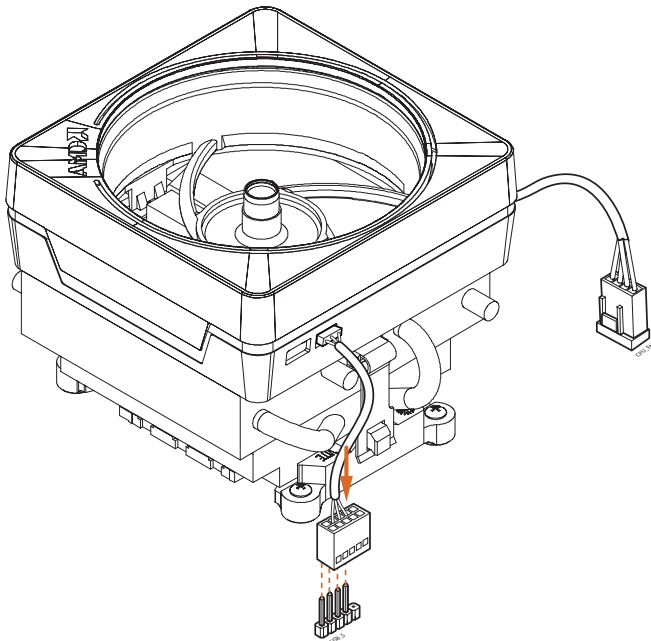
Please note that this connector is the interface to the LED control board on the SR3, it requires the AMD utility "SR3 Settings Software" to control the LED.

*The diagrams shown here are for reference only. The headers might be in a different position on your motherboard. Please refer to page 29 for the orientation of AMD LED Fan USB Header (USB_1).

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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 (Matisse):

UDIMM Memory Slot				Frequency (Mhz)
A1	A2	B1	B2	
-	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 (Pinnacle Ridge):

UDIMM Memory Slot				Frequency (Mhz)
A1	A2	B1	B2	
-	SR	-	-	2933
-	DR	-	-	2933
-	SR	-	SR	2933
-	DR	-	DR	2933
SR	SR	SR	SR	2933
SR/DR	DR	SR/DR	DR	2667
SR/DR	SR/DR	SR/DR	SR/DR	2133-2400

Ryzen Series CPUs (Picasso):

| UDIMM/SO-DIMMs Memory Slot		
# of DIMMs on the Channel	# of Ranks per DIMM	1.20V
1 of 1	xR	SR: 2933 DR: 2677
1 of 2	xR-0	SR: 2667 DR: 2400
2 of 2	1R-1R	2133
2 of 2	2R-xR	1866

x=1 or 2

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

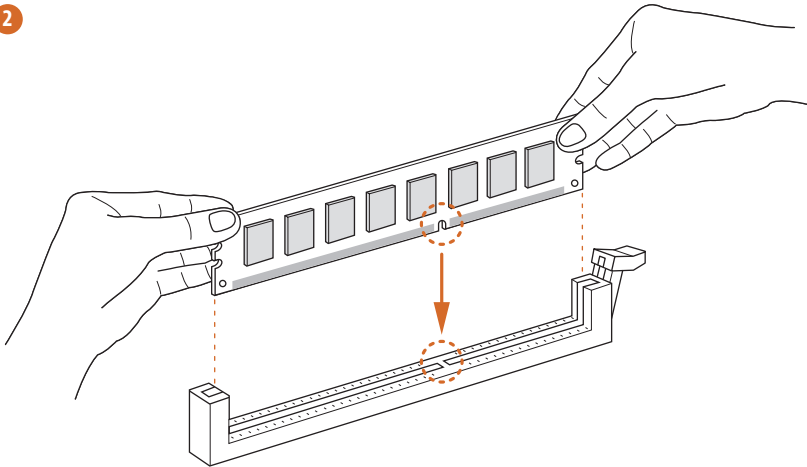DR: Dual rank DIMM, 2Rx4 or 2Rx8 on DIMM module label

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.
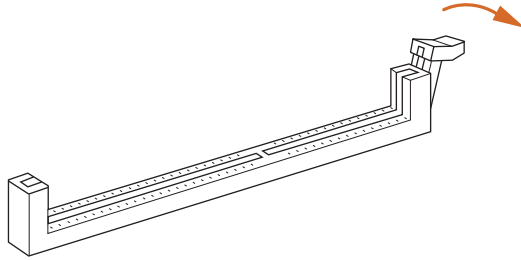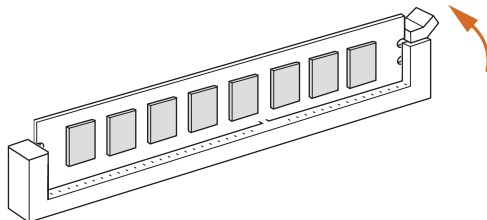
2.4 Expansion Slots (PCI Express Slots)

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 4.0 x1 slot) is used for PCI Express x1 lane width cards.
PCIE3 (PCIe 4.0 x16 slot) is used for PCI Express x4 lane width graphics cards.
PCIE4 (PCIe 4.0 x1 slot) is used for PCI Express x1 lane width cards.

PCIe Slot Configurations

	PCIE1	PCIE3
Ryzen Series CPUs (Matisse)	Gen4x16	Gen4x4
Ryzen Series CPUs (Pinnacle Ridge)	Gen3x16	Gen3x4
Ryzen Series CPUs (Picasso)	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".
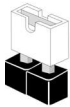
Short   Open

Clear CMOS Jumper
(CLRCMOS1)
(see p.7, No. 19)

2-pin Jumper

Short: Clear CMOS
Open: Default

CLRCMOS1 allows you to clear the data in CMOS. The data in CMOS includes system setup information such as system password, date, time, and system setup parameters. To clear and reset the system parameters to default setup, please turn off the computer and unplug the power cord, then use a jumper cap to short the pins on CLRCMOS1 for 3 seconds. Please remember to remove the jumper cap after clearing the CMOS. 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.

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)

PLED+
PLED-
PWRBTN#
GND

1

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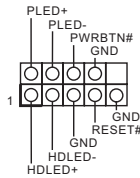
Connect the power button, reset button and system status indicator on the chassis to this header according to the pin assignments below. Note the positive and negative pins before connecting the cables.

🔍 **PWRBTN (Power Button):**
Connect to the power button on the chassis front panel. You may configure the way to turn off your system using the power button.

RESET (Reset Button):
Connect to the reset button on the chassis front panel. Press the reset button 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 button, reset button, 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.
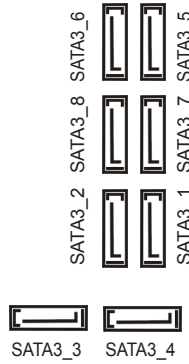
Power LED and Speaker
Header
(7-pin SPK_PLED1)
(see p.7, No. 15)

SPEAKER
DUMMY
DUMMY
+5V

1

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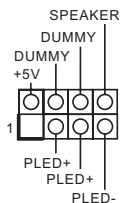
Please connect the chassis power LED and the chassis speaker to this header.

English

27

Serial ATA3 Connectors
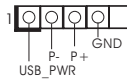(SATA3_5_6:
see p.7, No. 12)
(SATA3_7_8:
see p.7, No. 13)
(SATA3_1_2:
see p.7, No. 14)
(SATA3_3:
see p.7, No. 17)
(SATA3_4:
see p.7, No. 16)

SATA3_6 SATA3_5
SATA3_8 SATA3_7
SATA3_2 SATA3_1

SATA3_3 SATA3_4

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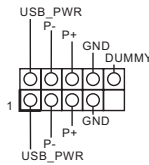6.0 Gb/s data transfer rate.

AMD LED Fan USB
Header
(4-pin USB_1)
(see p.7, No. 9)

P- P+
GND
USB_PWR

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

USB 2.0 Header
(9-pin USB_2_3)
(see p.7, No. 20)

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

There is one header on
this motherboard. This
USB 2.0 header can
support two ports.

USB 3.2 Gen1 Headers
(19-pin USB3_7_8)
(see p.7, No. 8)

Vbus
Vbus
IntA_PA_SSRX-
IntA_PA_SSRX+
GND
IntA_PA_SSTX-
IntA_PA_SSTX+
GND
IntA_PA_D-
IntA_PA_D+
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PB_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy
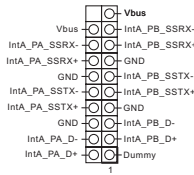
There are two headers on
this motherboard. Each
USB 3.2 Gen1 header can
support two ports.

(19-pin USB3_9_10)
(see p.7, No. 21)

IntA_P_D+
IntA_P_D-
GND
IntA_P_SSTX+
IntA_P_SSTX-
GND
IntA_P_SSRX+
IntA_P_SSRX-
Vbus
Vbus
IntA_P_SSRX-
IntA_P_SSRX+
GND
IntA_P_SSTX-
IntA_P_SSTX+
GND
IntA_P_D-
IntA_P_D+

28
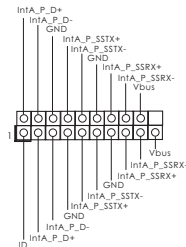
Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.7, No. 27)

GND
PRESENCE#
MIC_RET
OUT_RET
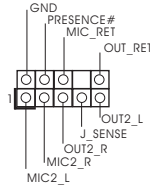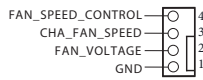
OUT2_L
J_SENSE
OUT2_R
MIC2_R
MIC2_L

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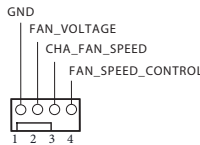
⊕

1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.

2. If you use an AC'97 audio panel, please install it to the front panel audio header by the steps below:
A. Connect Mic_IN (MIC) to MIC2_L.
B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
C. Connect Ground (GND) to Ground (GND).
D. MIC_RET and OUT_RET are for the HD audio panel only. You don't need to connect them for the AC'97 audio panel.
E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

Chassis Water Pump Fan
Connectors
(4-pin CHA_FAN1/WP)
(see p.7, No. 11)

FAN_SPEED_CONTROL — 4
CHA_FAN_SPEED — 3
FAN_VOLTAGE — 2
GND — 1

GND
FAN_VOLTAGE
CHA_FAN_SPEED
FAN_SPEED_CONTROL

(4-pin CHA_FAN2/WP)
(see p.7, No. 22)

1 2 3 4

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.

(4-pin CHA_FAN3/WP)
(see p.7, No. 29)

1 — GND
2 — FAN_VOLTAGE
3 — CHA_FAN_SPEED
4 — FAN_SPEED_CONTROL

CPU Fan Connector
(4-pin CPU_FAN1)
(see p.7, No. 2)

+12V
CPU_FAN_SPEED
GND   FAN_SPEED_CONTROL

1 2 3 4

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.

English

CPU Water Pump Fan
Connector
(4-pin CPU_FAN2/WP)
(see p.7, No. 3)
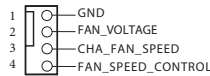
FAN_SPEED_CONTROL
CPU_FAN_SPEED
FAN_VOLTAGE
GND

1 2 3 4
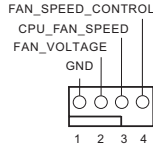
This motherboard
provides a 4-Pin water
cooling CPU fan
connector. If you plan
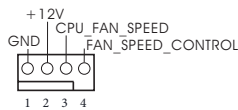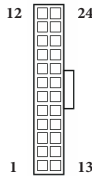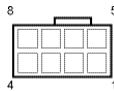to connect a 3-Pin CPU
water cooler fan, please
connect it to Pin 1-3.

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

12   24

1   13

This motherboard pro-
vides 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)

8   5

4   1

This motherboard pro-
vides 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.**

TPM Header
(17-pin TPMS1)
(see p.7, No. 26)

GND
SMB_CLK_MAIN
SMB_DATA_MAIN
LAD2
LAD1
GND
S_PWRDWN#
SERIRQ#
GND

PCICLK
FRAME
PCIRST#
LAD3
+3V
LAD0
+3VSB
GND
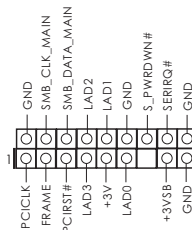
This connector supports Trusted
Platform Module (TPM) system,
which can securely store keys,
digital certificates, passwords,
and data. A TPM system also
helps enhance network security,
protects digital identities, and
ensures platform integrity.

SPI TPM Header
(13-pin SPI_TPM_J1)
(see p.7, No. 10)

SPI_DQ3
+3.3V
Dummy
CLK
SPI_MOSI
RST#
TPM_PIRQ

1

SPI_TPM_CS#
GND
RSMRST#
SPI_MISO
SPI_CS0
SPI_DQ2
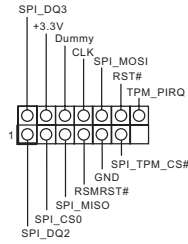
This connector supports
SPI Trusted Platform
Module (TPM) system,
which can securely store
keys, digital certificates,
passwords, and data. A
TPM system also helps
enhance network security,
protects digital identities,
and ensures platform
integrity.

Thunderbolt AIC
Connector
(5-pin TB1)
(see p.7, No. 28)

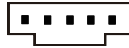Please connect a Thunderbolt™
add-in card (AIC) to the
Thunderbolt AIC connector via
the GPIO cable.
* Please install the Thunderbolt™
AIC card to PCIE3 (default
slot).
* For the further information,
please visit www.asrock.com.

RGB LED Headers
(4-pin RGB_LED1)
(see p.7, No. 24)
(4-pin RGB_LED2)
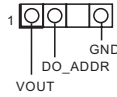(see p.7, No. 6)

1
12V G R B

RGB header is used to connect
RGB LED extension cable which
allows users to choose from vari-
ous LED lighting effects.
**Caution: Never install the RGB
LED cable in the wrong orienta-
tion; otherwise, the cable may
be damaged.**
* Please refer to page 55 for
further instructions on this
header.

Addressable LED Header
(3-pin ADDR_LED1)
(see p.7, No. 23)

1 ⬜🔘🔘 🔘
      GND
   DO_ADDR
VOUT

This header is 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.

Serial Port Header
(9-pin COM1)
(see p.7, No. 25)

RRXD1
  DDTR#1
   DDSR#1
    CCTS#1
🔘🔘🔘🔘🔘
1 🔘🔘🔘🔘⬜
     RRI#1
    RRTS#1
  GND
 TTXD1
DDCD#1
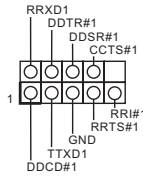
This COM1 header supports a serial port module.

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 CrossFireX™ and Quad CrossFireX™ Operation Guide

This motherboard supports CrossFireX™ and Quad CrossFireX™ that allows you to install up to three 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
3. Make sure that your power supply unit (PSU) can provide at least the minimum power your system requires. It is recommended to use a AMD certified PSU. Please refer to the AMD's website for details.
4. If you pair a 12-pipe CrossFireX™ Edition card with a 16-pipe card, both cards will operate as 12-pipe cards while in CrossFireX™ mode.
5. Different CrossFireX™ cards may require different methods to enable CrossFireX™. Please refer to AMD graphics card manuals for detailed installation guide.

2.8.1 Installing Two CrossFireX™-Ready Graphics Cards
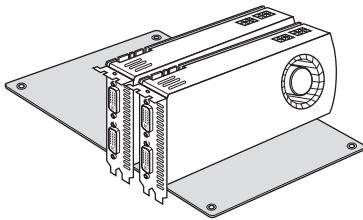
Step 1

Insert one graphics card into PCIE1 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.)
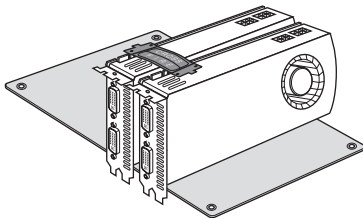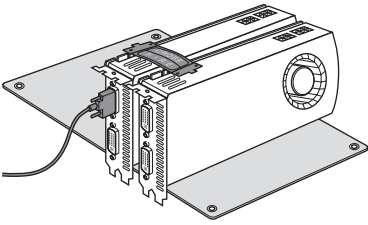
Step 3

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to 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.
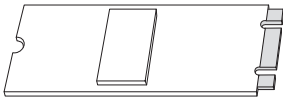
Step 5

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**.

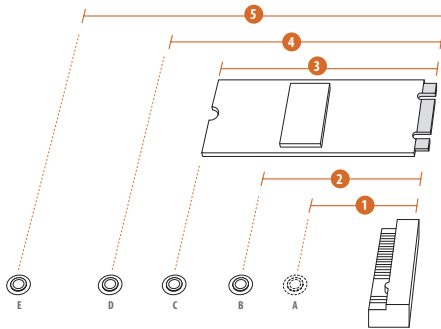## 2.9 M.2_SSD (NGFF) Module Installation Guide (M2_1)

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 M.2 Socket (M2_1) supports M Key type 2230/2242/2260/2280/22110 M.2 PCI Express module up to Gen4x4 (64 Gb/s) (with Matisse) or Gen3x4 (32 Gb/s) (with Pinnacle Ridge and Picasso).

Installing the M.2_SSD (NGFF) Module

Step 1

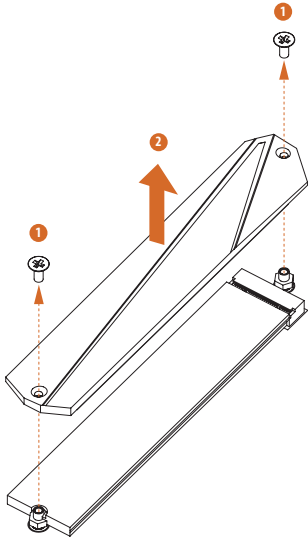Prepare a M.2_SSD (NGFF) module and the screw.

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	2	3	4	5
Nut Location	A	B	C	D	E
PCB Length	3cm	4.2cm	6cm	8cm	11cm
Module Type	Type2230	Type 2242	Type2260	Type 2280	Type 22110

English

Step 3

Before installing a M.2 (NGFF) SSD module, please loosen the screws to remove the M.2 heatsink.
*Please remove the protective films on the bottom side of the M.2 heatsink before you install a M.2 SSD module.
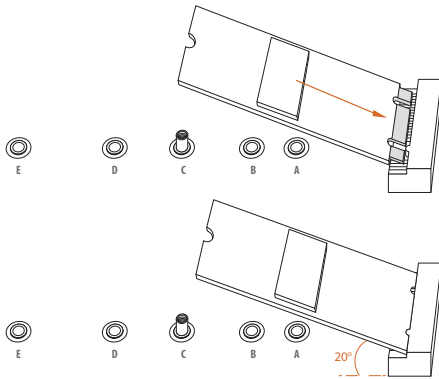
Step 4

Prepare the M.2 standoff that comes with the package. Then hand tighten the standoff into the desired nut location on the motherboard. 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.
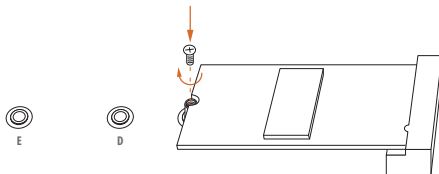
Step 5

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)

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

English

2.10 M.2 WiFi/BT 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 (Key E) supports type 2230 WiFi/BT module.

* The M.2 socket does not support SATA M.2 SSDs.

Installing the WiFi/BT module
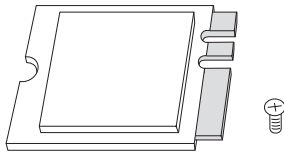
Step 1

Prepare a type 2230 WiFi/BT module and the screw.

PCB Length: 3cm
Module Type: Type2230

A

Step 2

Find the nut location to be used.
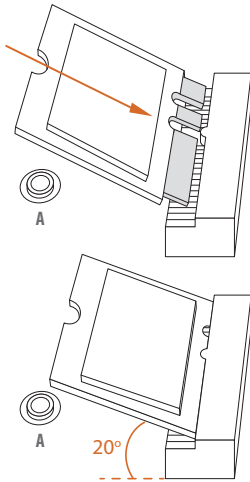
Step 3

Gently insert the WiFi/BT module into the M.2 slot. Please be aware that the module only fits in one orientation.

A

A 20°

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.

2.11 M.2_SSD (NGFF) Module Installation Guide (M2_3)

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 mPCI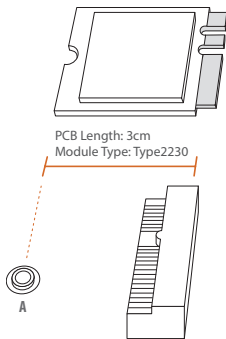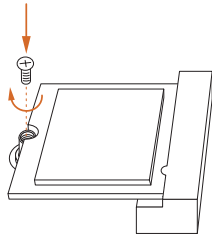e and mSATA. The M.2 Socket (M2_3) supports M Key type 2230/2242/2260/2280/22110 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen4x4 (64 Gb/s) (with Matisse) or Gen3x4 (32 Gb/s) (with Pinnacle Ridge and Picasso).

Installing the M.2_SSD (NGFF) Module
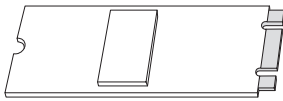
Step 1

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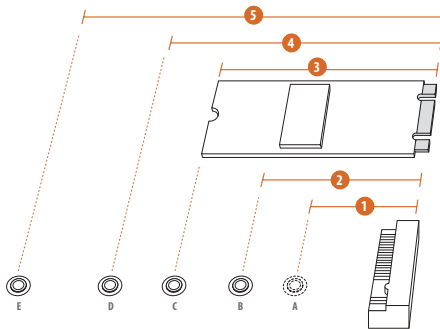
Step 2

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

No.	1	2	3	4	5
Nut Location	A	B	C	D	E
PCB Length	3cm	4.2cm	6cm	8cm	11cm
Module Type	Type2230	Type 2242	Type2260	Type 2280	Type 22110

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

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.

E   D   C   B   A

E   D   C   B   A

E   D   C   B   A

E   D   C   B   A   20°
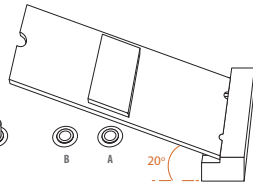
Step 6

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

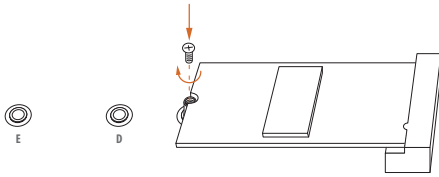| Vendor	Interface	P/N
SanDisk	PCIe	SanDisk-SD6PP4M-128G(Gen2 x2)
Intel	PCIe	INTEL 6000P-SSDPEKKF256G7 (nvme)
Intel	PCIe	INTEL 6000P-SSDPEKKF512G7 (nvme)
Kingston	PCIe	Kingston SHPM2280P2 / 240G (Gen2 x4)
Samsung	PCIe	Samsung XP941-MZHPU512HCGL(Gen2x4)
ADATA	SATA	ADATA - AXNS381E-128GM-B
Crucial	SATA	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

Chapter 3 Software and Utilities Operation

3.1 Installing Drivers

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

Running The Support CD

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

Drivers Menu

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

Utilities Menu

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

3.2 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 five 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.
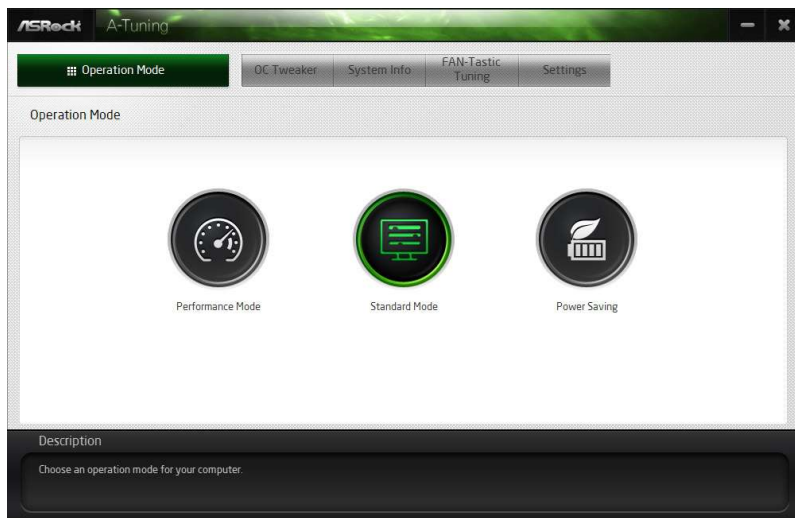
OC Tweaker

Configurations for overclocking the system.
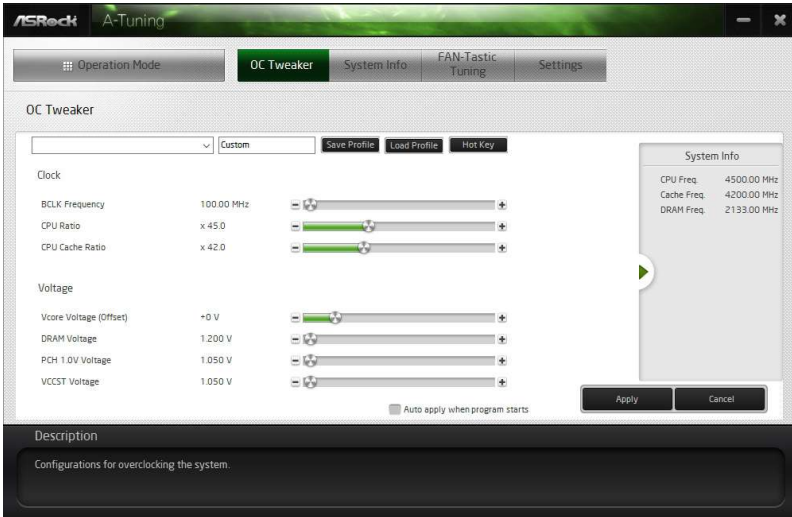
System Info
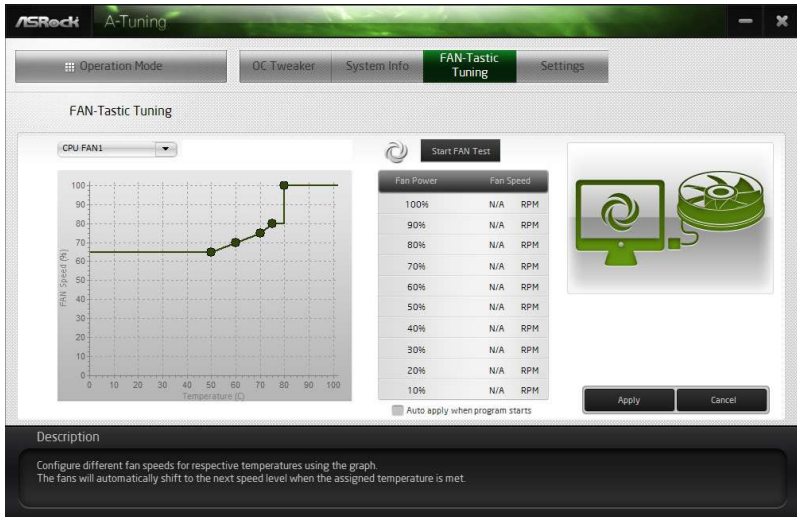
View information about the system.

*The System Browser tab may not appear for certain models.
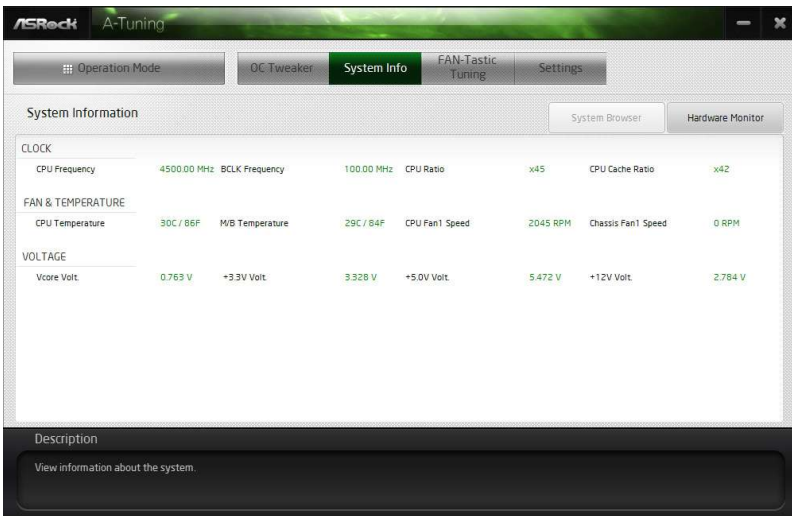
FAN-Tastic Tuning

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.

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.

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 [image] 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

Hot News
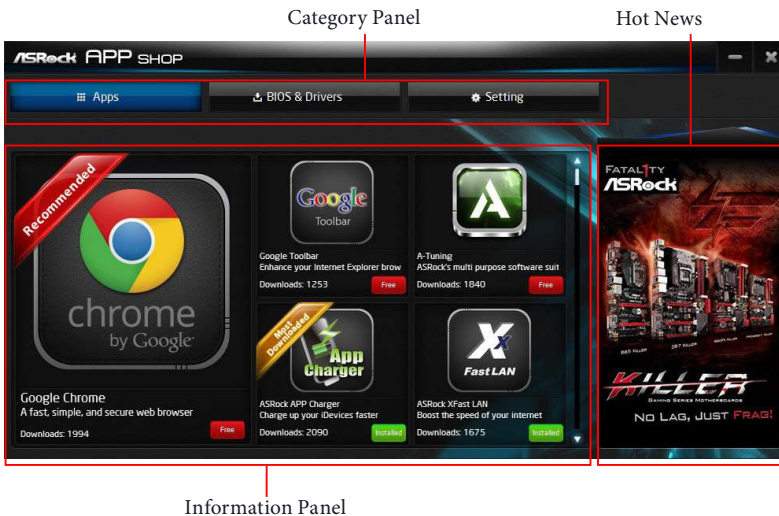
Information Panel

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.

English

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 intalled 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.
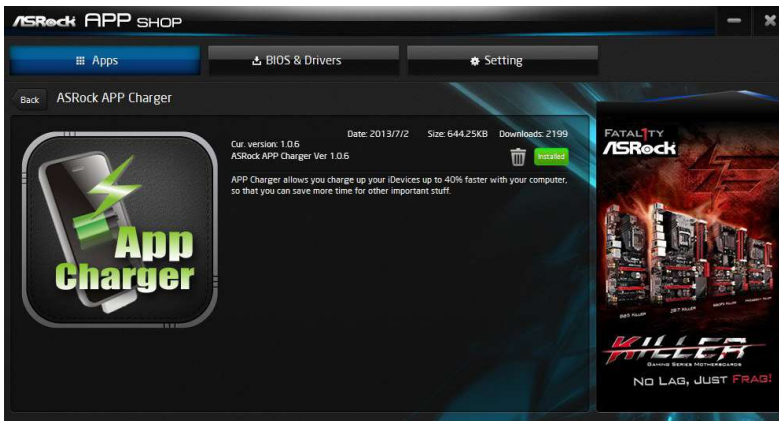
To uninstall it, simply click on the trash can icon 🗑 .
*The trash icon may not appear for certain apps.

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.
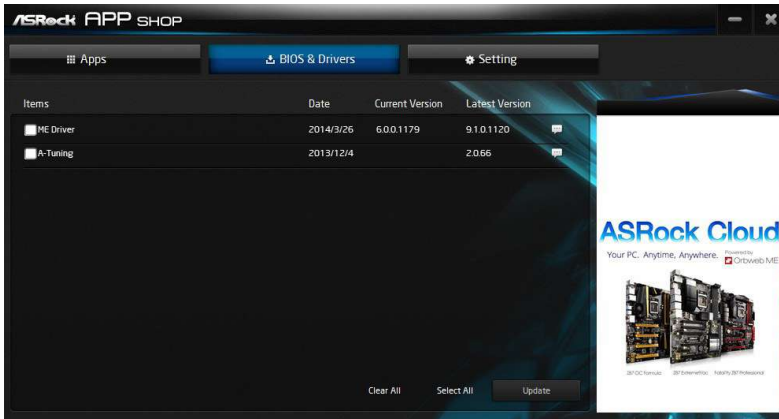
Step 1

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.
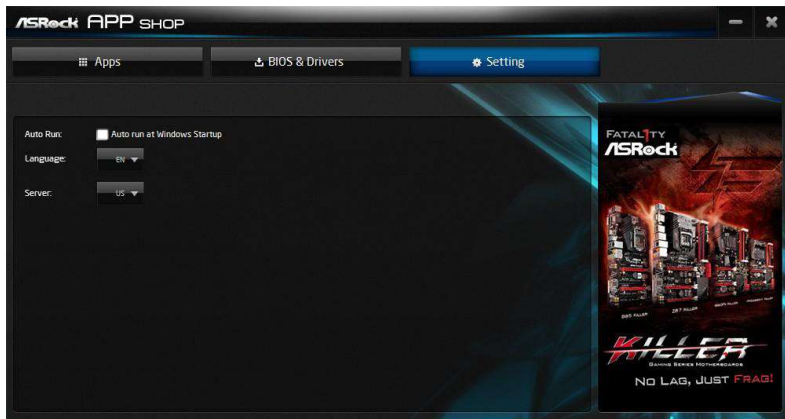
3.4 ASRock Polychrome SYNC

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 strip to the **RGB LED Header (RGB_LED1)** on the motherboard.
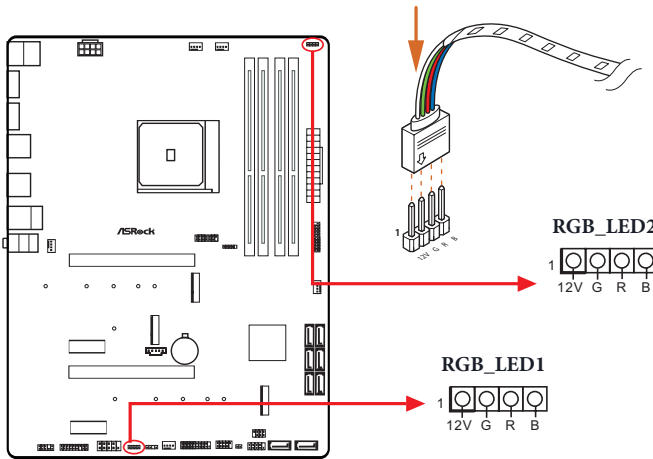
RGB_LED2

1   12V   G   R   B

RGB_LED1

1   12V   G   R   B

!

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.*

English

Connecting the Addressable RGB LED Strip

Connect your Addressable RGB LED strip to the **Addressable LED Header (ADDR_LED1)** on the motherboard.
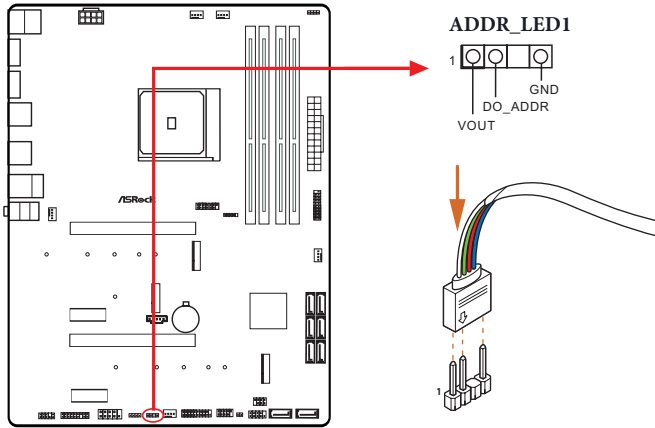
ADDR_LED1

GND
DO_ADDR
VOUT

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 RGB LED utility. Download this utility from the ASRock Live Update & APP Shop and start coloring your PC style your way!

Drag the tab to customize your preference.

Toggle on/off the RGB LED switch

Select a RGB LED light effect from the drop-down menu.

Sync RGB LED effects for all LED regions of the motherboard
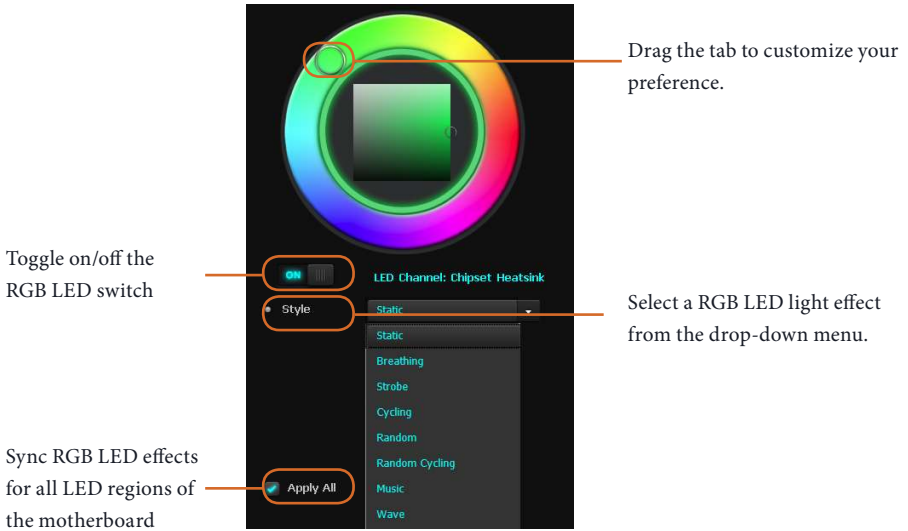
Chapter 4 UEFI SETUP UTILITY

4.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure your system. You may run the UEFI SETUP UTILITY by pressing <F2> or <Del> right after you power on the computer, otherwise, the Power-On-Self-Test (POST) will continue with its test routines. If you wish to enter the UEFI SETUP UTILITY after POST, restart the system by pressing <Ctl> + <Alt> + <Delete>, or by pressing the reset button on the system chassis. You may also restart by turning the system off and then back on.

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

4.1.1 UEFI Menu Bar

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

Main	For setting system time/date information
OC Tweaker	For overclocking configurations
Advanced	For advanced system configurations
Tool	Useful tools
H/W Monitor	Displays current hardware status
Security	For security settings
Boot	For configuring boot settings and boot priority
Exit	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.
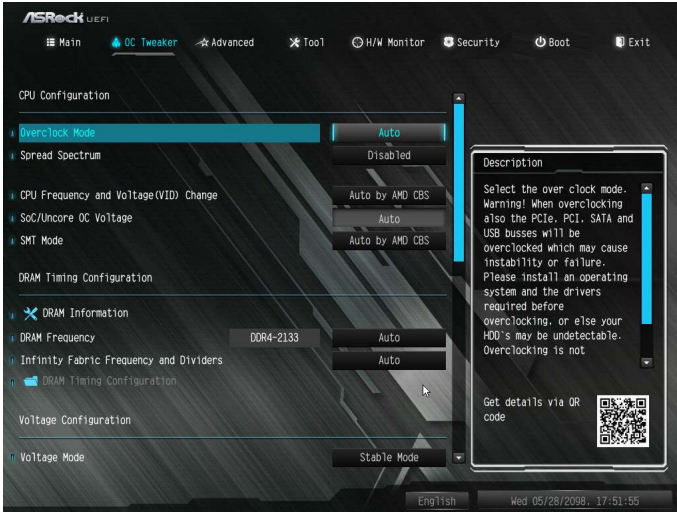
🔍 *Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what you see on your screen.*

CPU Configuration

Overclock Mode

Select the overclock mode.

Spread Spectrum

Enable CPU Spread Spectrum to reduce electromagnetic interference for passing EMI tests. Disable to achieve higher clock speeds when overclocking.

CPU Frequency and Voltage 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.

SoC/Uncore OC Voltage

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" need to be enabled to force this voltage.

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.

DRAM Timing Configuration

Load XMP Setting

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

DRAM Information

Browse the serial presence detect (SPD) for DDR4 modules.

DRAM Frequency

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

Infinity Fabric Frequency and Dividers

Set Infinity Fabric Frequency and Dividers (FCLK).

GFX Clock Frequency (Only for processor with integrated graphics)

This item allows you to alter the frequency for the GFX clock frequency. After you alter the GFX Clock Frequency settings, make sure to adjust the GFX Core Voltage settings.

*The adjustable range is dependent on the CPU being installed.

GFX Core Voltage (Only for processor with integrated graphics)

This item allows you to alter the voltage for the GFX Core Voltage.

*The adjustable range is dependent on the CPU being installed.

Voltage Configuration

Voltage Mode

[OC]
If this option is selected, there is larger range voltage for overclocking.

[Stable]
If this option is selected, there is smaller range voltage for stable system.

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.

CPU VDDCR_SOC Voltage

Configure the voltage for the VID-requested VDDCR_SOC supply level.

VDDG Voltage Control

VDDG 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.

CPU VDDCR_SOC Load-Line Calibration

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

DRAM Voltage

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

VPPM

Configure the voltage for the VPPM.

PREM VDD_CLDO Voltage

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

CPU VDD 1.8 Voltage

Configure the voltage for the CPU VDD 1.8 PROM.

English

VDDP

Configure the voltage for the VDDP.

PREM VDDCR_SOC Voltage

Use this to select PREM VDDCR_SOC 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

Save current UEFI settings as an user default profile to disk.

Load User UEFI Setup Profile to Disk

Load previously saved user defaults 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, Super IO Configuration, Trusted Computing , AMD CBS, AMD PBS and AMD Overclocking.
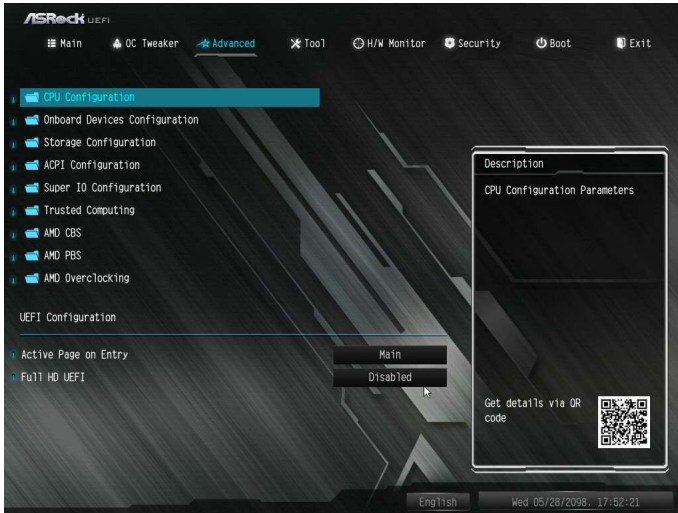
Setting wrong values in this section may cause the system to malfunction.

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]. Coniguration options: [Enabled] and [Disabled].
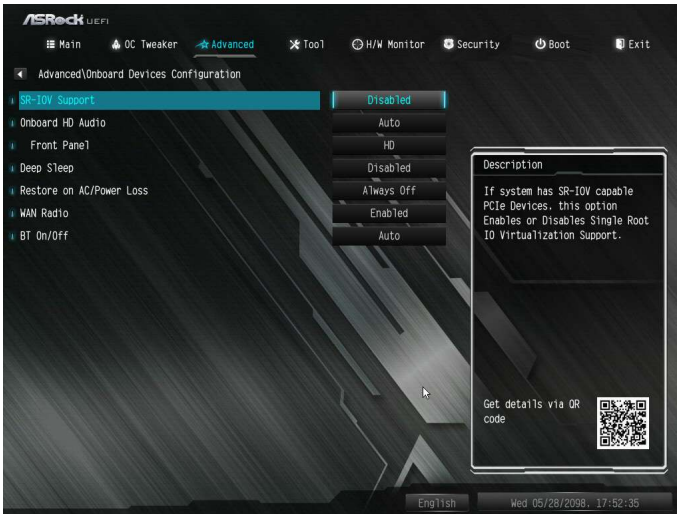
SMT Mode

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

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.

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.
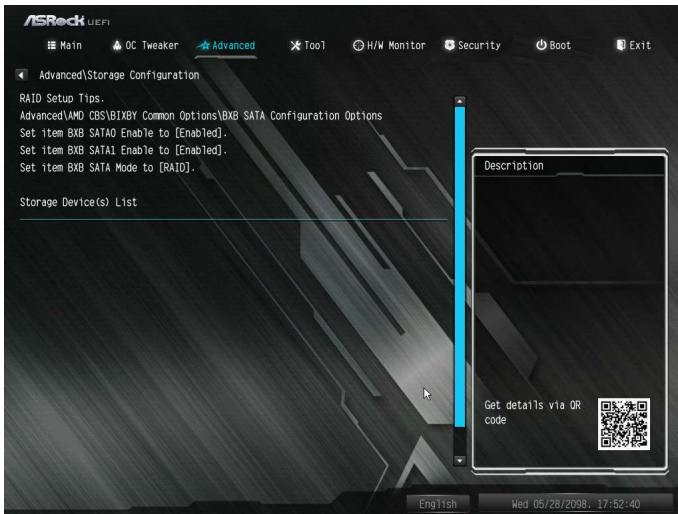
WAN Radio
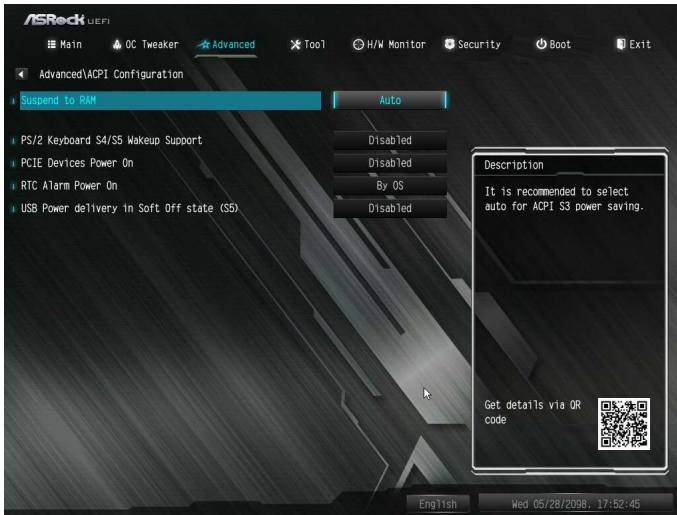
Configure the WiFi module's connectivity.

BT On/Off

Enable/disable the bluetooth.

4.4.3 Storage Configuration

4.4.4 ACPI Configuration

Suspend to RAM

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

PS/2 Keyboard S4/S5 Wakeup Support

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

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 Super IO Configuration
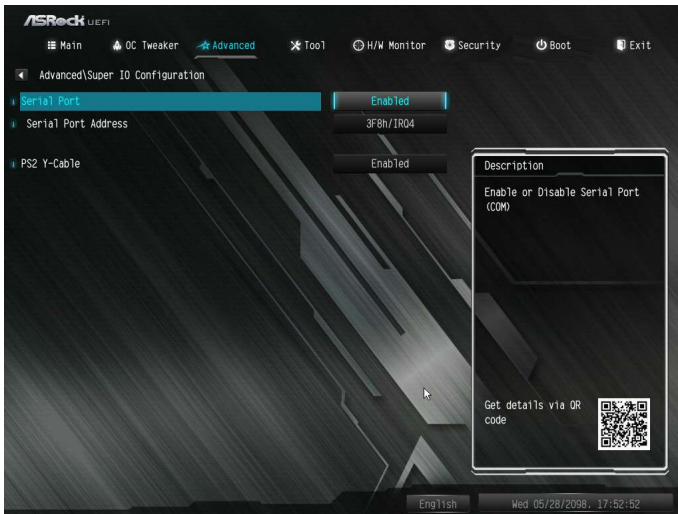
Serial Port

Enable or disable the Serial port.
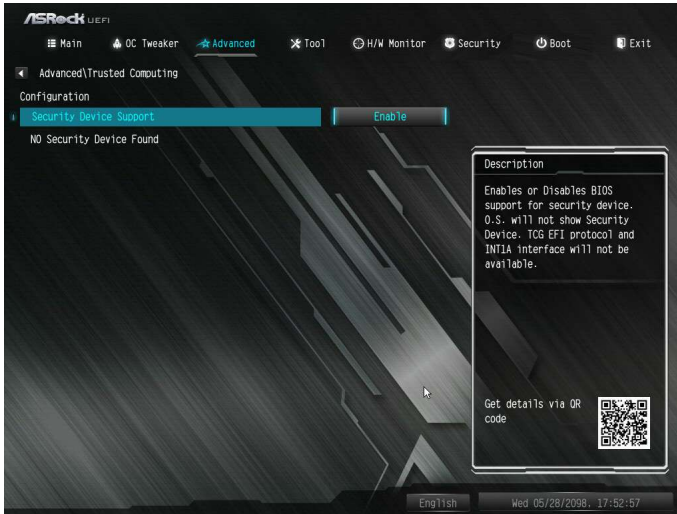
Serial Port Address

Select the address of the Serial port.

PS2 Y-Cable

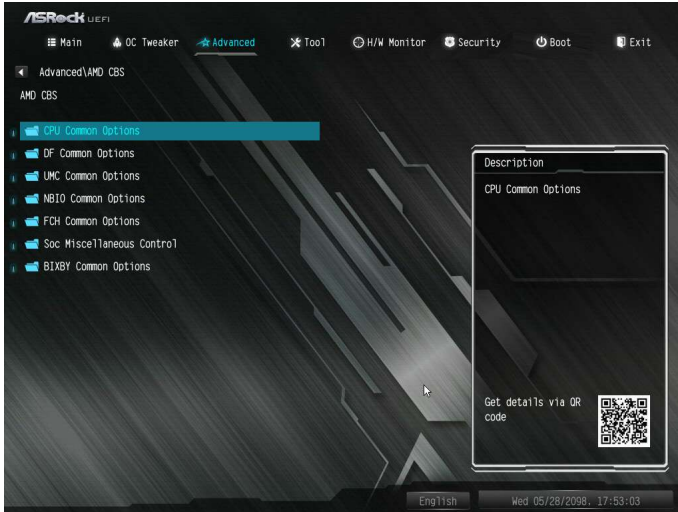Enable the PS2 Y-Cable or set this option to Auto.

4.4.6 Trusted Computing

Security Device Support

Enable or disable BIOS support for security device.
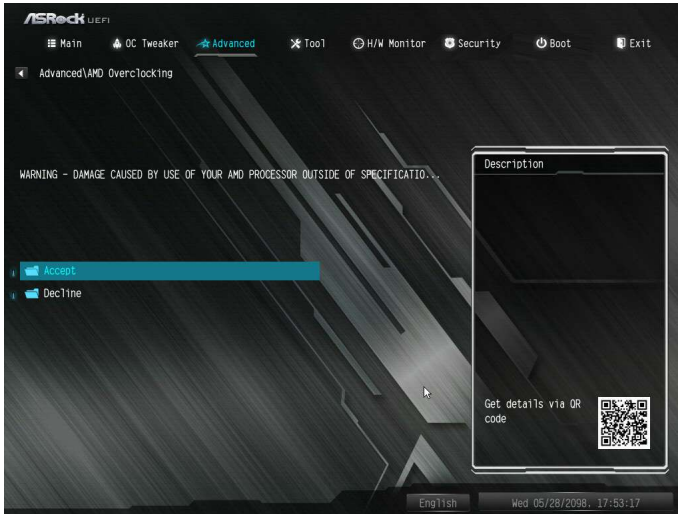
4.4.7 AMD CBS

The AMD CBS menu accesses AMD specific features.

4.4.8 AMD PBS

The AMD PBS menu accesses AMD specific features.

4.4.9 AMD Overclocking

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

4.5 Tools
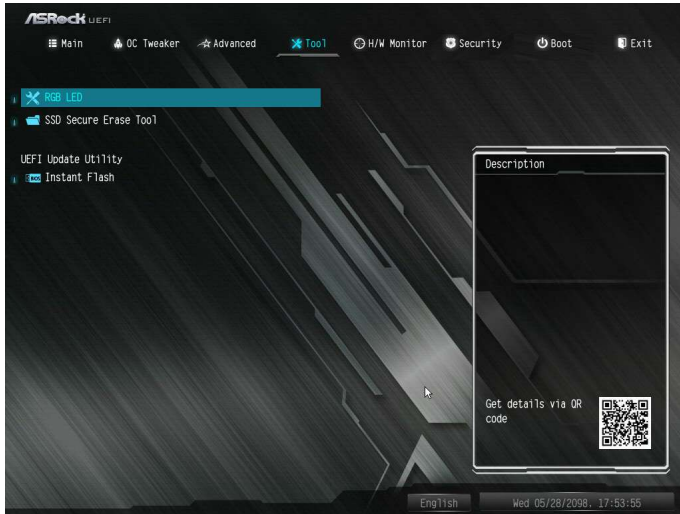
RGB LED

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

Easy Driver Installer

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

SSD Secure Erase Tool

Use this tool to securely erase SSD.

Instant Flash

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

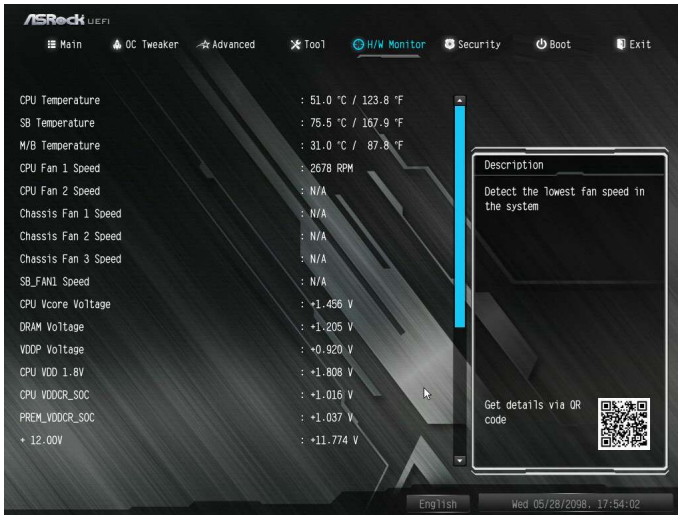## 4.6 Hardware Health Event Monitoring Screen

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.

Fan Tuning

Measure Fan Min Duty Cycle.

Fan-Tastic Tuning

Select a fan mode for CPU Fans 1&2, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

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

CPU_FAN2 / WP Switch

Select CPU Water Pump mode.

CPU Fan 2 Control Mode

Select PWM mode or DC mode for CPU Fan 2 .

CPU Fan 2 Setting

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

CPU Fan 2 Temp Source

Select a fan temperature source for CPU Fan 2.

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.
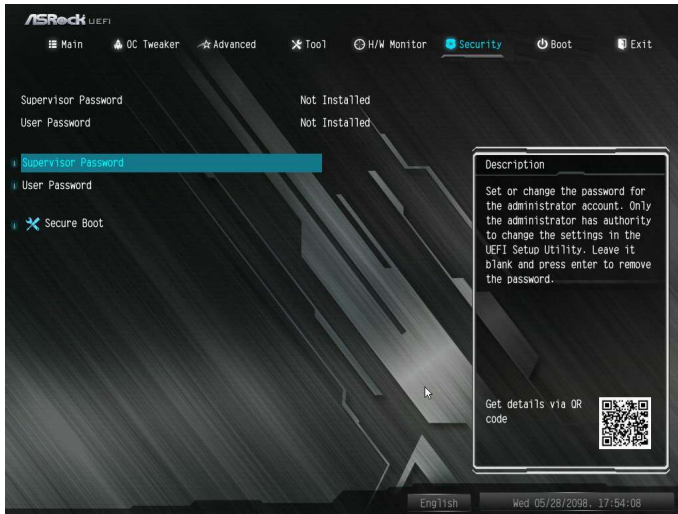
SB_FAN1 Setting

Select a fan mode for SB_FAN1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

SB_FAN1 Temp Source

Select a fan temperature source for SB_FAN1.

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.
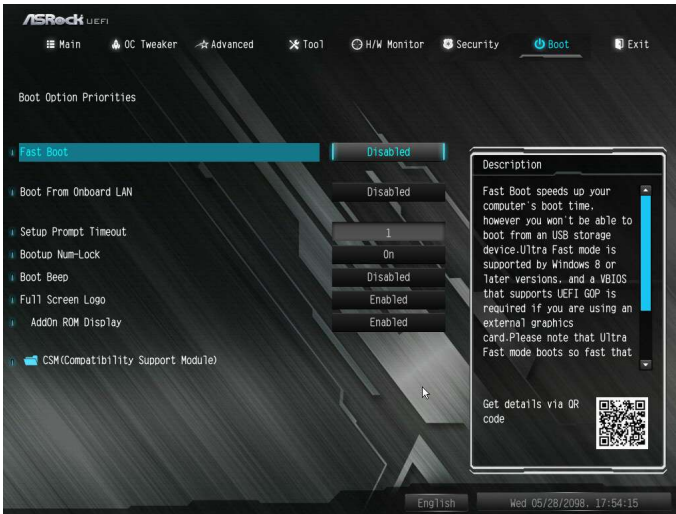
User Password

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.
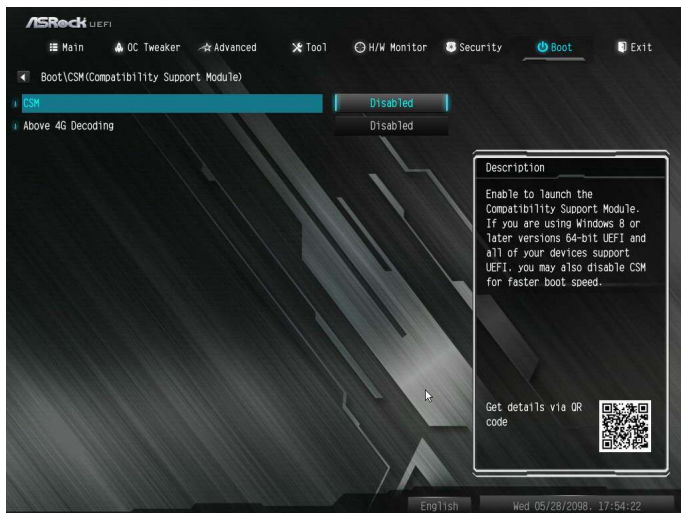
Full Screen Logo

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.

Above 4G Decoding

Enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

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.

4.9 Exit Screen
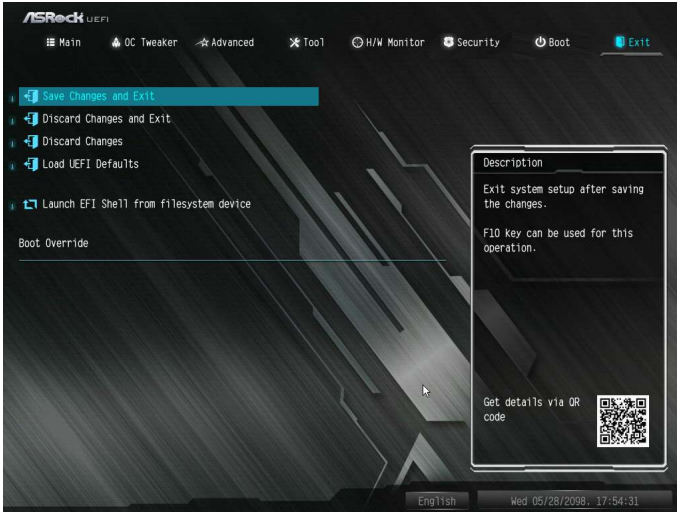
Save Changes and Exit

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 https://event.asrock.com/tsd.asp

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