

ASRock®



TRX40 CREATOR

User Manual

Version 1.0

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- (1) this device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

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CE Warning

This device complies with directive 2014/53/EU issued by the Commision 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 | UK | | |



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 |

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Chapter 1 Introduction

Thank you for purchasing ASRock TRX40 Creator 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 TRX40 Creator Motherboard (ATX Form Factor)
- ASRock TRX40 Creator Quick Installation Guide
- ASRock TRX40 Creator Support CD
- 4 x Serial ATA (SATA) Data Cables (Optional)
- 1 x ASRock SLI_HB_Bridge_3S Card (Optional)
- 1 x ASRock WiFi 2.4/5 GHz Antenna (Optional)
- 3 x Screws for M.2 Sockets (Optional)
- 3 x Standoffs for M.2 Sockets (Optional)
- 1 x I/O Panel Shield

1.2 Specifications

- Platform**
- ATX Form Factor
 - 8 Layer PCB
 - 2oz Copper PCB

- CPU**
- Supports AMD Socket sTRX4
 - Intersil Digital PWM
 - 8 Power Phase design
 - Supports ASRock Hyper BCLK Engine II

- Chipset**
- AMD TRX40

- Memory**
- Quad Channel DDR4 Memory Technology
 - 8 x DDR4 DIMM Slots
 - Supports DDR4 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 & non-ECC, unbuffered memory (U-DIMM)
 - Max. capacity of system memory: 256GB
 - 15μ Gold Contact in DIMM Slots

- Expansion Slot**
- 4 x PCI Express 4.0 x16 Slots (PCIe1/PCIe2/PCIe3/PCIe4: single at x16 (PCIe1); dual at x16 (PCIe1) / x16 (PCIe3); triple at x16 (PCIe1) / x16 (PCIe3) / x8 (PCIe4); quad at x16 (PCIe1) / x8 (PCIe2) / x16 (PCIe3) / x8 (PCIe4))
 - * Supports NVMe SSD as boot disks
 - Supports AMD 4-Way CrossFireX™, 3-Way CrossFireX™ and CrossFireX™
 - Supports NVIDIA® 4-Way SLI™, 3-Way SLI™ and SLI™
 - Support NVIDIA® SLI™ with NVIDIA® Quadro graphics cards
 - Supports NVIDIA® NVLink™ with dual NVIDIA® GeForce® RTX series graphics cards**

** NVIDIA NVLink Bridge does not come with the package. Please purchase it from NVIDIA® if necessary.

- 1 x Vertical M.2 Socket (Key E) with the bundled Wi-Fi-802.11ax module (on the rear I/O)
- 15μ Gold Contact in VGA PCIe Slots (PCIe1 and PCIe3)

Audio

- 7.1 CH HD Audio (Realtek ALC4050H+ALC1220)
- Premium Blu-ray Audio support
- Supports Surge Protection
- Supports Purity Sound™ 4
 - Nichicon Fine Gold Series Audio Caps
 - NE5532 Premium Headset Amplifier for Front Panel Audio Connector (Supports up to 600 Ohm headsets)
 - Pure Power-In
 - Direct Drive Technology
 - PCB Isolate Shielding
 - Impedance Sensing on Front Out port
 - Individual PCB Layers for R/L Audio Channel
 - Gold Audio Jacks
 - 15μ Gold Audio Connector
- Supports DTS Connect

LAN

1 x 10 Gigabit LAN 100/1000/2500/5000/10000 Mb/s (AQUANTIA® AQC107):

- Supports Lightning/ESD Protection
- Supports PXE

1 x 2.5 Gigabit LAN 10/100/1000/2500 Mb/s (Dragon RTL8125AG):

- Supports Dragon 2.5G LAN Software
 - Smart Auto Adjust Bandwidth Control
 - Visual User Friendly UI
 - Visual Network Usage Statistics
 - Optimized Default Setting for Game, Browser, and Streaming Modes
 - User Customized Priority Control
- Supports Wake-On-LAN
- Supports Lightning/ESD Protection
- Supports Energy Efficient Ethernet 802.3az
- Supports PXE

Wireless LAN

- Intel® 802.11ax WiFi Module
- Supports IEEE 802.11a/b/g/n/ax
- Supports Dual-Band (2.4/5 GHz)
- Supports WiFi6 802.11ax (2.4Gbps)
- 2 antennas to support 2 (Transmit) x 2 (Receive) diversity technology
- Supports Bluetooth 5.0 + High speed class II
- Supports MU-MIMO

Rear Panel I/O

- 2 x Antenna Ports
 - 1 x PS/2 Mouse/Keyboard Port
 - 1 x Optical SPDIF Out Port
 - 2 x USB 3.2 Gen2 Type-A Ports (10 Gb/s) (Supports ESD Protection)
- * Ultra USB Power is supported on USB32G2_1_2 ports.
- * ACPI wake-up function is not supported on USB32G2_1_2 ports.
- 1 x USB 3.2 Gen2x2 Type-C Port (20 Gb/s) (Supports ESD Protection)
 - 4 x USB 3.2 Gen1 Ports (Supports ESD Protection)
 - 2 x RJ-45 LAN Ports with LED (ACT/LINK LED and SPEED LED)
 - 1 x Clear CMOS Button
 - 1 x BIOS Flashback Button
 - HD Audio Jacks: Rear Speaker / Central / Line in / Front Speaker / Microphone (Gold Audio Jacks)

Storage

- 8 x SATA3 6.0 Gb/s Connectors, support RAID (RAID 0, RAID 1 and RAID 10), NCQ, AHCI and Hot Plug
 - 2 x Hyper M.2 Sockets (M2_1 and M2_2), support M Key type 2260/2280 M.2 PCI Express module up to Gen4x4 (64 Gb/s)*
 - 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)*
- * Supports NVMe SSD as boot disks

Connector

- 1 x TPM Header
- 1 x Power LED and Speaker Header
- 2 x RGB LED Headers
- * Support in total up to 12V/3A, 36W LED Strip
 - 2 x Addressable LED Headers
- * Support 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 (Hi-Density Power Connector)
 - 2 x 8 pin 12V Power Connectors (Hi-Density Power Connector)
 - 1 x 6 pin 12V Power Connector (Hi-Density Power Connector)
 - 1 x Front Panel Audio Connector (15μ Gold Audio Connector)*
 - 1 x Right Angle Front Panel Audio Connector*
- * Connect the audio device to either one of the audio connectors.
 - 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)
 - 1 x Front Panel Type C USB 3.2 Gen2 Header (Supports ESD Protection)
 - 1 x Dr. Debug with LED
 - 1 x Power Button
 - 1 x Reset Button
 - 1 x CPU Xtreme OC Switch

**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 Voltage Multi-adjustment

**Hardware
Monitor**

- Temperature Sensing: CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Fan Tachometer: CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Quiet Fan (Auto adjust chassis fan speed by CPU temperature): CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Fan Multi-Speed Control: CPU, CPU/Water Pump, Chassis/Water Pump Fans
- Voltage monitoring: +12V, +5V, +3.3V, CPU Vcore, CPU VDDCR_SOC, DRAM, VPPM, PREM VDDCR_SOC, +1.8V

OS

- Microsoft® Windows® 10 64-bit

Certifications

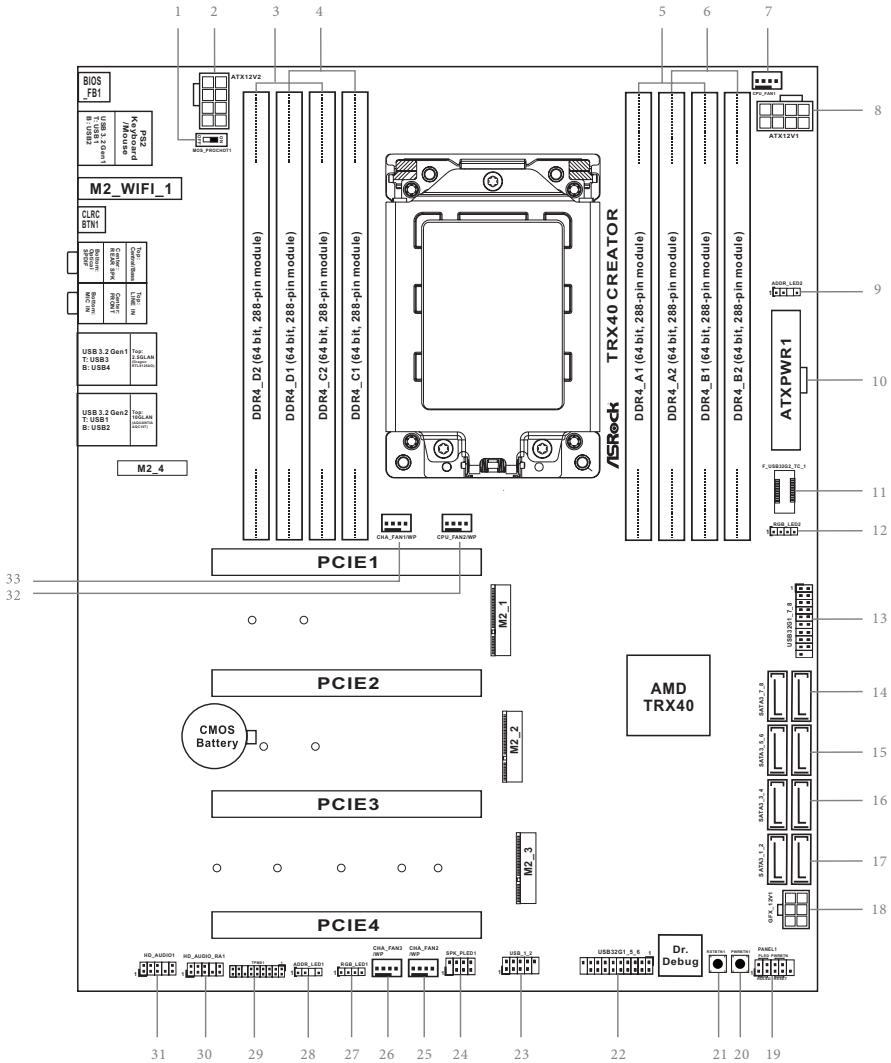
- FCC, CE
- ErP/EuP ready (ErP/EuP ready power supply is required)

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



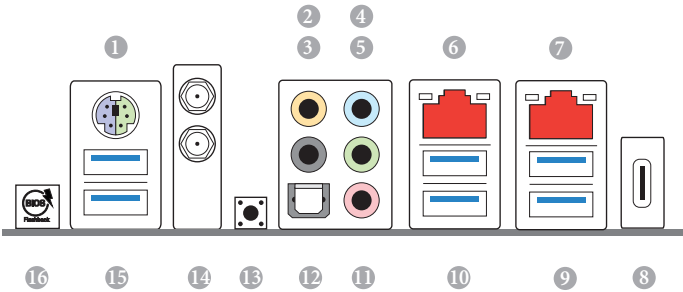
Please realize that there is a certain risk involved with overclocking, including adjusting the setting in the BIOS, applying Untied Overclocking Technology, or using third-party overclocking tools. Overclocking may affect your system's stability, or even cause damage to the components and devices of 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 | CPU Xtreme OC Switch (MOS_PROCHOT1) |
| 2 | 8 pin 12V Power Connector (ATX12V2) |
| 3 | 2 x 288-pin DDR4 DIMM Slots (DDR4_D2, DDR4_C2) |
| 4 | 2 x 288-pin DDR4 DIMM Slots (DDR4_D1, DDR4_C1) |
| 5 | 2 x 288-pin DDR4 DIMM Slots (DDR4_A1, DDR4_B1) |
| 6 | 2 x 288-pin DDR4 DIMM Slots (DDR4_A2, DDR4_B2) |
| 7 | CPU Fan Connector (CPU_FAN1) |
| 8 | 8 pin 12V Power Connector (ATX12V1) |
| 9 | Addressable LED Header (ADDR_LED2) |
| 10 | ATX Power Connector (ATXPWR1) |
| 11 | Front Panel Type C USB 3.2 Gen2 Header (F_USB32G2_TC_1) |
| 12 | RGB LED Header (RGB_LED2) |
| 13 | USB 3.2 Gen1 Header (USB32G1_7_8) |
| 14 | SATA3 Connectors (SATA3_7_8) |
| 15 | SATA3 Connectors (SATA3_5_6) |
| 16 | SATA3 Connectors (SATA3_3_4) |
| 17 | SATA3 Connectors (SATA3_1_2) |
| 18 | 6 pin 12V Power Connector (GFX_12V1) |
| 19 | System Panel Header (PANEL1) |
| 20 | Power Button (PWRBTN1) |
| 21 | Reset Button (RSTBTN1) |
| 22 | USB 3.2 Gen1 Header (USB32G1_5_6) |
| 23 | USB 2.0 Header (USB_1_2) |
| 24 | Power LED and Speaker Header (SPK_PLED1) |
| 25 | Chassis / Waterpump Fan Connector (CHA_FAN2/WP) |
| 26 | Chassis / Waterpump Fan Connector (CHA_FAN3/WP) |
| 27 | RGB LED Header (RGB_LED1) |
| 28 | Addressable LED Header (ADDR_LED1) |
| 29 | TPM Header (TPMS1) |
| 30 | Right Angle Front Panel Audio Header (HD_AUDIO_RA1) |
| 31 | Front Panel Audio Header (HD_AUDIOI1) |
| 32 | CPU / Waterpump Fan Connector (CPU_FAN2/WP) |
| 33 | Chassis / Waterpump Fan Connector (CHA_FAN1/WP) |

1.4 I/O Panel

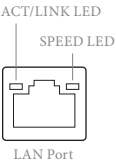


| No. | Description | No. | Description |
|-----|------------------------------------------|-----|---------------------------------------------|
| 1 | PS/2 Mouse/Keyboard Port | 9 | USB 3.2 Gen2 Type-A Ports (USB32G2_1_2)**** |
| 2 | Central / Bass (Orange) | 10 | USB 3.2 Gen1 Ports (USB32G1_3_4) |
| 3 | Rear Speaker (Black) | 11 | Microphone (Pink) |
| 4 | Line In (Light Blue) | 12 | Optical SPDIF Out Port |
| 5 | Front Speaker (Lime)* | 13 | Clear CMOS Button |
| 6 | 2.5G LAN RJ-45 Port (Dragon RTL8125AG)** | 14 | Antenna Ports |
| 7 | 10G LAN RJ-45 Port (AQUANTIA* AQC107)*** | 15 | USB 3.2 Gen1 Ports (USB32G1_1_2) |
| 8 | USB 3.2 Gen2x2 Type-C Port | 16 | BIOS Flashback Button |

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

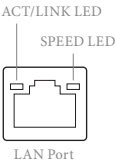
| Audio Output Channels | Front Speaker (No. 5) | Rear Speaker (No. 3) | Central / Bass (No. 2) | Line In (No. 4) |
|-----------------------|-----------------------|----------------------|------------------------|-----------------|
| 2 | V | -- | -- | -- |
| 4 | V | V | -- | -- |
| 6 | V | V | V | -- |
| 8 | V | V | V | V |

****** 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/1Gbps connection |
| On | Link | Green | 2.5Gbps connection |

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



| Activity / Link LED | | Speed LED | |
|---------------------|---------------|-----------|------------------------------|
| Status | Description | Status | Description |
| Off | No Link | Orange | 10Mbps/100Mbps/1Gbps/2.5Gbps |
| Blinking | Data Activity | | /5Gbps connection |
| On | Link | Green | 10Gbps connection |

******** ACPI wake-up function is not supported on USB32G2_1_2 ports.

1.5 WiFi-802.11ax Module and ASRock WiFi 2.4/5 GHz Antenna

WiFi-802.11ax + BT Module

This motherboard comes with an exclusive WiFi 802.11 a/b/g/n/ax + BT v5.0 module (pre-installed on the rear I/O panel) that offers support for WiFi 802.11 a/b/g/n/ax connectivity standards and Bluetooth v5.0. WiFi + BT module is an easy-to-use wireless local area network (WLAN) adapter to support WiFi + BT. Bluetooth v5.0 standard features Smart Ready technology that adds a whole new class of functionality into the mobile devices. BT 5.0 also includes Low Energy Technology and ensures extraordinary low power consumption for PCs. The 2T2R WiFi solution sets a WiFi high speed standard and offers max link rate up to 2.4Gbps.

* The transmission speed may vary according to the environment.

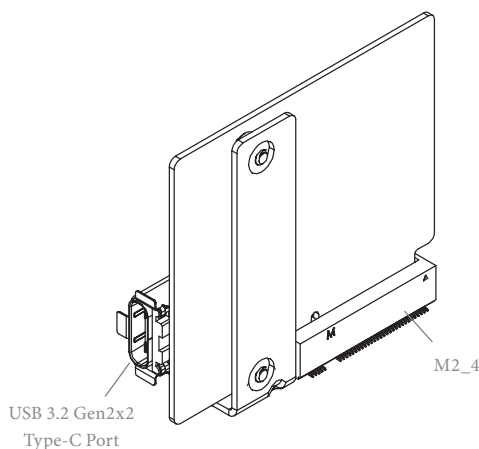


ASRock WiFi 2.4/5 GHz Antenna

1.6 USB 3.2 Gen2 x2 Module

Specifications

| | |
|------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Platform | <ul style="list-style-type: none">• Size: 1.45-in x 1.65-in, 3.7 cm x 4.2 cm |
| Controller | <ul style="list-style-type: none">• ASMedia ASM3242 Controller |
| M.2 | <ul style="list-style-type: none">• Proprietary design for ASRock specific motherboard <p>* Please note that plugging into other M.2 connector may damage the motherboard and this module</p> |
| Connector | <ul style="list-style-type: none">• 1 x USB 3.2 Gen2x2 Type-C Port (Supports ESD Protection (ASRock Full Spike Protection)) <p>*For charging Type-A USB devices, we suggest using the Type-A connectors on your motherboard.</p> <p>*This port supports power outputs up to 5V/3A. For charging Type-C USB devices, the device should support Type-C standards to adjust the current because it will be different in Power On state (3 Amp) and Sleep state (1 Amp).</p> <p>*Some Type-C USB devices may only be charged by its own adapter.</p> |
| OS | <ul style="list-style-type: none">• Microsoft® Windows® 10 64-bit |



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.

2.1 Installing the CPU

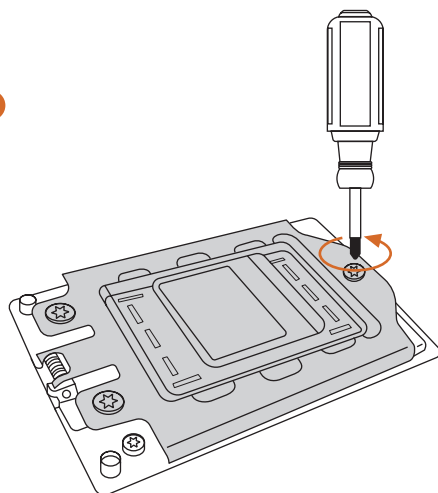


Tutorial Video

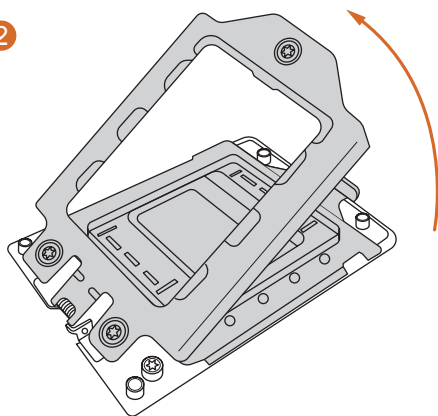


Unplug all power cables before installing the CPU.

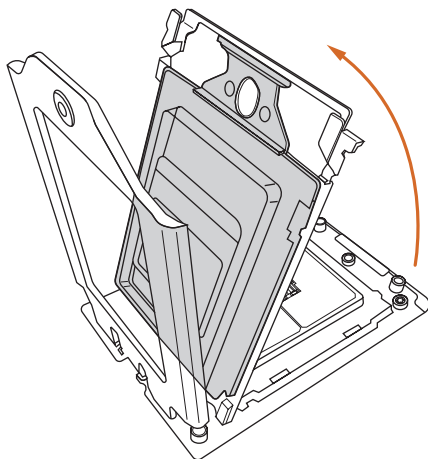
1



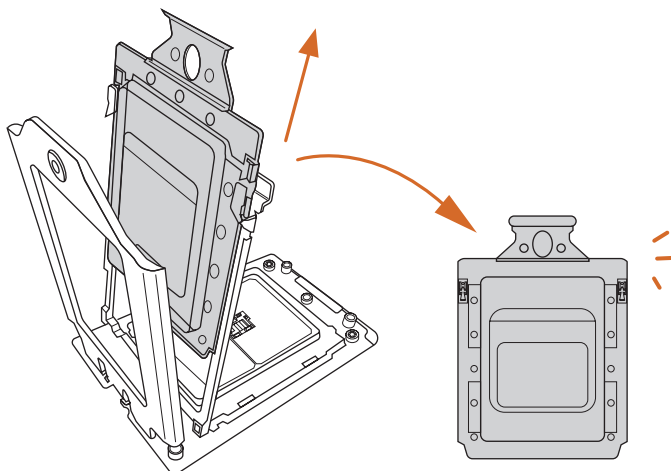
2



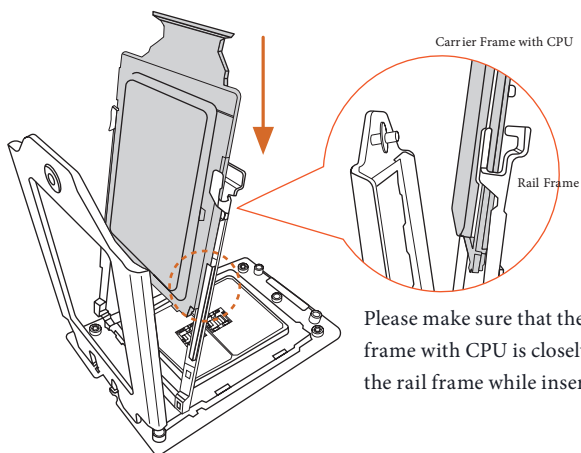
3



4



5

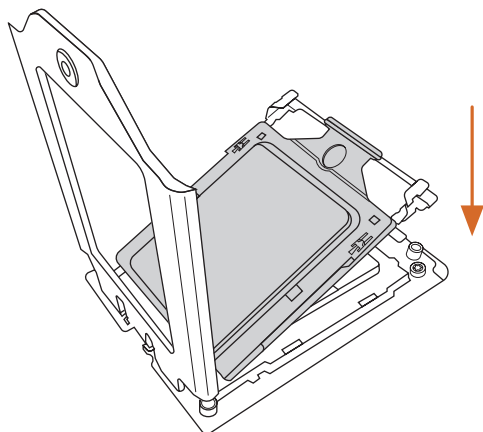


Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

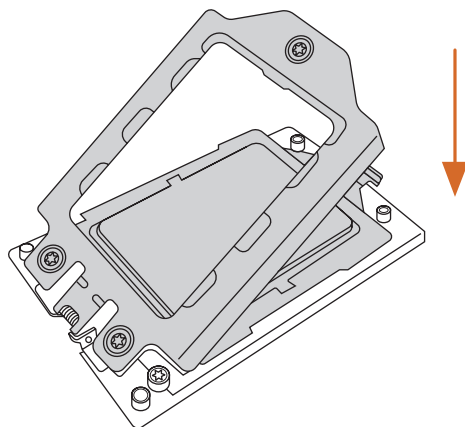


Install the orange carrier frame with CPU. Don't separate them.

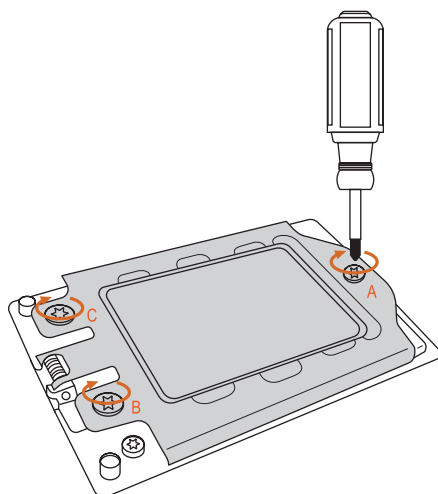
6



7



8



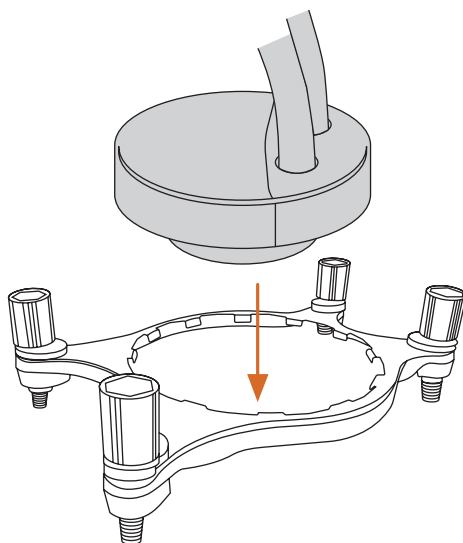
2.2 Installing the CPU Liquid Cooler

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.

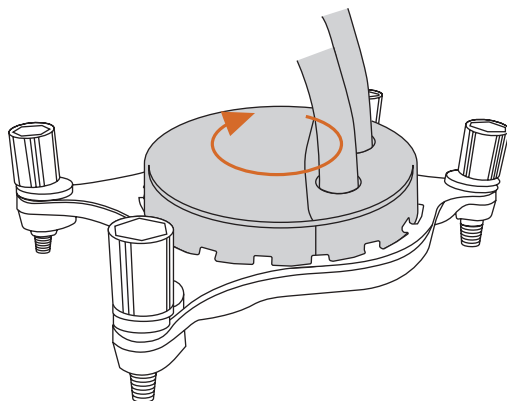


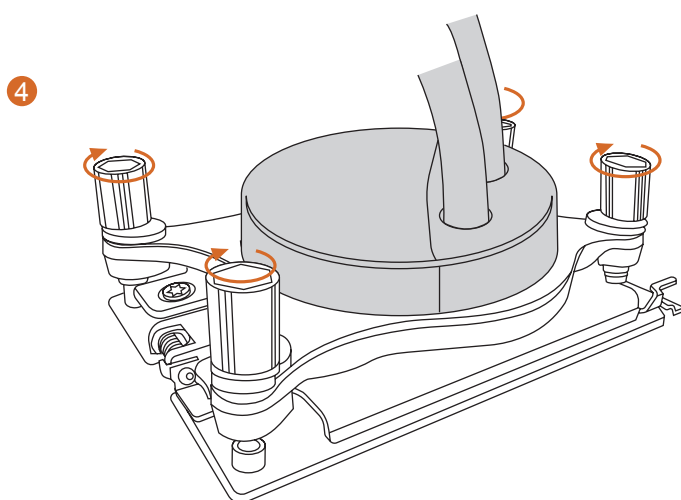
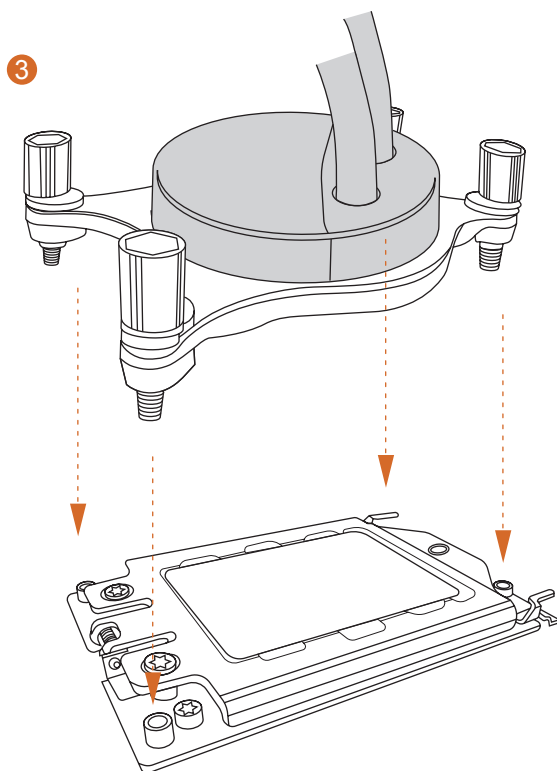
Please turn off the power or remove the power cord before changing a CPU or heatsink.

1



2





2.3 Installation of Memory Modules (DIMM)

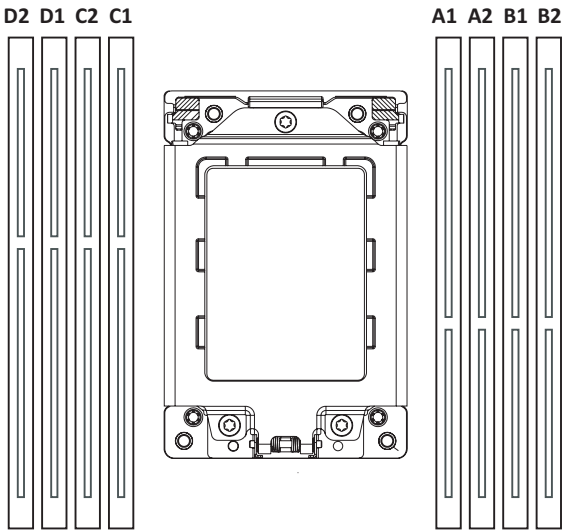
This motherboard provides eight 288-pin DDR4 (Double Data Rate 4) DIMM slots, and supports Quad Channel Memory Technology.



1. For quad channel configuration, you always need to install identical (the same brand, speed, size and chip-type) DDR4 DIMM pairs.
2. 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.
3. 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.

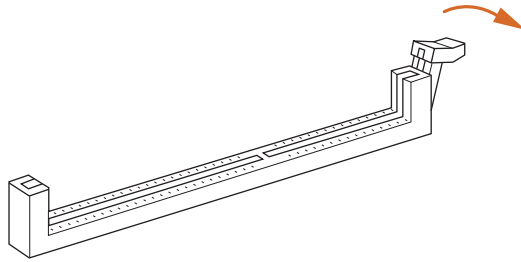
Memory Configuration

| | 2 - DIMM | | 4 - DIMM | 8 - DIMM |
|----------|-----------|-----------|-----------|----------|
| Priority | 1 | 2 | 3 | |
| DDR4_D2 | | Populated | Populated | |
| DDR4_D1 | | | Populated | |
| DDR4_C2 | | Populated | Populated | |
| DDR4_C1 | | | Populated | |
| DDR4_A1 | | | Populated | |
| DDR4_A2 | Populated | Populated | Populated | |
| DDR4_B1 | | | Populated | |
| DDR4_B2 | Populated | Populated | Populated | |

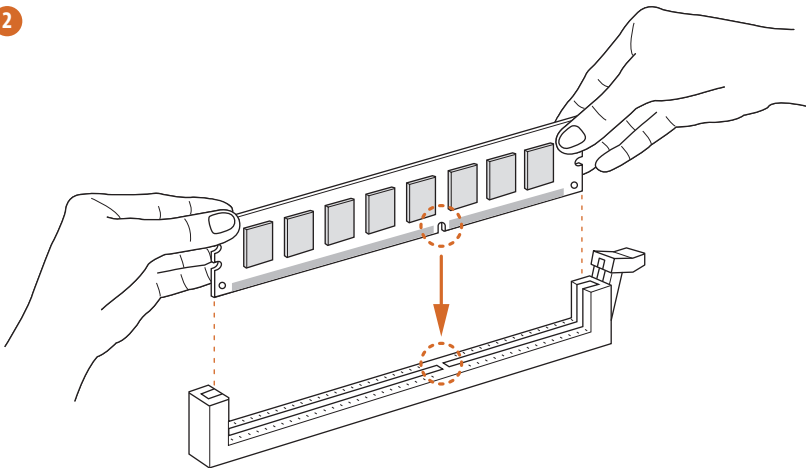


- If only two memory modules are installed in the DDR4 DIMM slots, then Dual Channel Memory Technology is activated. If three memory modules are installed, then Triple Channel Memory Technology is activated. If more than four memory modules are installed in the DDR4 DIMM slots, then Quad Channel Memory Technology is activated.

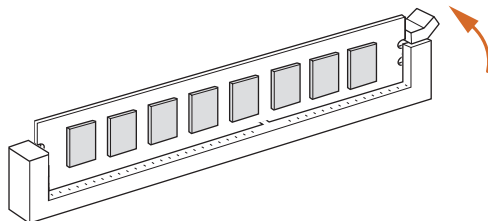
1



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 4.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

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

PCIE4 (PCIe 4.0 x16 slot) is used for PCI Express x8 lane width graphics cards.

PCIe Slot Configurations

| | PCIE1 | PCIE2 | PCIE3 | PCIE4 |
|----------------------------------------------------------------------------------|-------|-------|-------|-------|
| Single Graphics Card | x16 | N/A | N/A | N/A |
| Two Graphics Cards in CrossFireX™ or SLI™ Mode | x16 | N/A | x16 | N/A |
| Three Graphics Cards in 3-Way CrossFireX™ Mode or 3-Way SLI™ Mode | x16 | N/A | x16 | x8 |
| Four Graphics Cards in 4-Way CrossFireX™ Mode or 4-Way SLI™ Mode | x16 | x8 | x16 | x8 |



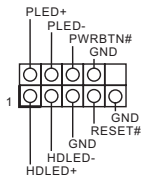
For a better thermal environment, please connect a chassis fan to the motherboard's chassis fan connector (CHA_FAN1/WP, CHA_FAN2/WP or CHA_FAN3/WP) when using multiple graphics cards.

2.5 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. 19)



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.

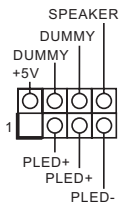
RESET (Reset Button):
Connect to the reset button on the chassis front panel. Press the reset button to restart the computer if the computer freezes and fails to perform a normal restart.

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.

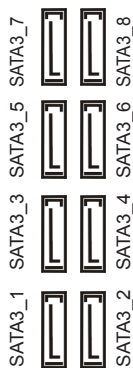
Power LED and Speaker
Header
(7-pin SPK_PLED1)
(see p.7, No. 24)



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

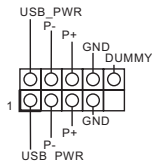
Serial ATA3 Connectors

(SATA3_1_2:
see p.7, No. 17)
(SATA3_3_4:
see p.7, No. 16)
(SATA3_5_6:
see p.7, No. 15)
(SATA3_7_8:
see p.7, No. 14)



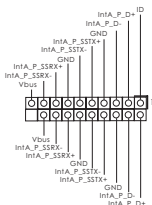
These eight SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

USB 2.0 Header
(9-pin USB_1_2)
(see p.7, No. 23)



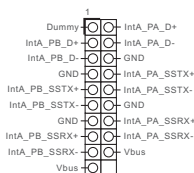
There is one header on this motherboard. This USB 2.0 header can support two ports.

USB 3.2 Gen1 Headers
(19-pin USB32G1_5_6)
(see p.7, No. 22)

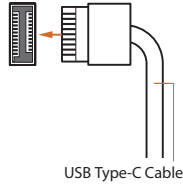


There are two headers on this motherboard. Each USB 3.2 Gen1 header can support two ports.

(19-pin USB32G1_7_8)
(see p.7, No. 13)

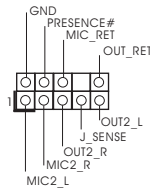


Front Panel Type C USB
3.2 Gen2 Header
(26-pin F_USB32G2_
TC_1)
(see p.7, No. 11)



There is one Front
Panel Type C USB 3.2
Gen2 Header on this
motherboard. This header
is used for connecting a
USB 3.2 Gen2 module for
additional USB 3.2 Gen2
ports.

Front Panel Audio
Headers
(9-pin HD_AUDIO1)
(see p.7, No. 31)
(9-pin HD_AUDIO_RA1)
(see p.7, No. 30)

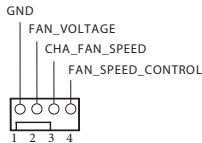


This header is for
connecting audio devices
to the front audio panel.



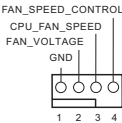
1. High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install your system.
2. If you use an AC'97 audio panel, please install it to the front panel audio header by the 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. 33)
(4-pin CHA_FAN2/WP)
(see p.7, No. 25)
(4-pin CHA_FAN3/WP)
(see p.7, No. 26)



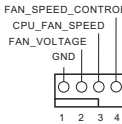
This motherboard
provides three 4-Pin water
cooling chassis fan
connectors. If you plan to
connect a 3-Pin chassis
water cooler fan, please
connect it to Pin 1-3.

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



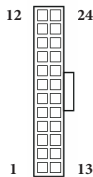
This motherboard provides a 4-Pin CPU fan (Quiet Fan) connector. If you plan to connect a 3-Pin CPU fan, please connect it to Pin 1-3.

CPU Water Pump Fan Connector
(4-pin CPU_FAN2/WP)
(see p.7, No. 32)



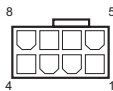
This motherboard provides a 4-Pin water cooling CPU fan connector. If you plan to connect a 3-Pin CPU water cooler fan, please connect it to Pin 1-3.

ATX Power Connector
(24-pin ATXPWR1)
(see p.7, No. 10)



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 Connectors
(8-pin ATX12V1)
(see p.7, No. 8)
(8-pin ATX12V2)
(see p.7, No. 2)



This motherboard provides two 8-pin ATX 12V power connectors. 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.**

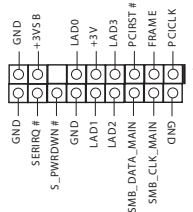
Graphics 12V Power
Connector
(6-pin GFX_12V1)
(see p.7, No. 18)



This motherboard provides a 6-pin Graphics 12V power connector.

* Install the PSU's power cable to this connector when 4 graphics cards are installed.

TPM Header
(17-pin TPMS1)
(see p.7, No. 29)



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.

RGB LED Headers
(4-pin RGB_HEADER1)
(see p.7, No. 27)
(4-pin RGB_HEADER2)
(see p.7, No. 12)

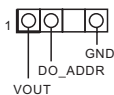


These two RGB headers are used to connect RGB LED extension cable which allows users to choose from various LED lighting effects.

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

*Please refer to page 64 for further instructions on this header.

Addressable LED Headers
(3-pin ADDR_LED1)
(see p.7, No. 28)
(3-pin ADDR_LED2)
(see p.7, No. 9)



These two Addressable LED 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 65 for further instructions on this header.

2.6 Smart Switches

The motherboard has five smart switches: Power Button, Reset Button, Clear CMOS Button, CPU Xtreme OC Switch and BIOS Flashback Button.

Power Button
(PWRBTN1)
(see p.7, No. 20)



Power Button allows users to quickly turn on/off the system.

Reset Button
(RSTBTN1)
(see p.7, No. 21)



Reset Button allows users to quickly reset the system.

Clear CMOS Button
(CLRCBTN1)
(see p.9, No. 13)



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



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

CPU Xtreme OC Switch
(MOS_PROCHOT1)
(see p.7, No. 1)



PROCHOT = ON (default)
(Disable CPU Extreme OC mode)

PROCHOT = OFF (Enable CPU Extreme OC mode)

Warning: Overclocking may cause damage to your CPU and motherboard. It should be done at your own risk and expense.

BIOS Flashback Button
(BIOS_FBI)
(see p.9, No. 16)



BIOS Flashback Button
allows users to flash the
BIOS.

ASRock BIOS Flashback feature allows you to update BIOS without powering on the system, even without CPU.

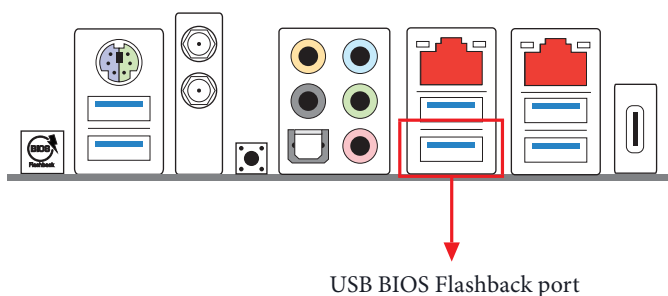
To use the USB BIOS Flashback function, Please follow the steps below.

1. Download the latest BIOS file from ASRock's website : <http://www.asrock.com>.
2. Copy the BIOS file to your USB flash drive. Please make sure the file system of your USB flash drive must be FAT32.
3. Extract BIOS file from the zip file.
4. Rename the file to "creative.rom" and save it to the root directory of X: USB flash drive.
5. Plug the 24 pin power connector to the motherboard. Then turn on the power supply's AC switch.

*There is no need to power on the system.

6. Then plug your USB drive to the USB BIOS Flashback port.
7. Press the BIOS Flashback Button for about three seconds. Then the LED starts to blink.
8. Wait until the LED stops blinking, indicating that BIOS flashing has been completed.

*If the LED light turns solid green, this means that the BIOS Flashback is not operating properly. Please make sure that you plug the USB drive to the USB BIOS Flashback port.



2.7 Dr. Debug

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

| Code | Description |
|------|----------------------|
| 0x10 | PEI_CORE_STARTED |
| 0x11 | PEI_CAR_CPU_INIT |
| 0x15 | PEI_CAR_NB_INIT |
| 0x19 | PEI_CAR_SB_INIT |
| 0x31 | PEI_MEMORY_INSTALLED |
| 0x32 | PEI_CPU_INIT |
| 0x33 | PEI_CPU_CACHE_INIT |
| 0x34 | PEI_CPU_AP_INIT |
| 0x35 | PEI_CPU_BSP_SELECT |
| 0x36 | PEI_CPU_SMM_INIT |
| 0x37 | PEI_MEM_NB_INIT |
| 0x3B | PEI_MEM_SB_INIT |
| 0x4F | PEI_DXE_IPL_STARTED |
| 0x60 | DXE_CORE_STARTED |
| 0x61 | DXE_NVRAM_INIT |
| 0x62 | DXE_SBRUN_INIT |

| | |
|------|-------------------------------|
| 0x63 | DXE_CPU_INIT |
| 0x68 | DXE_NB_HB_INIT |
| 0x69 | DXE_NB_INIT |
| 0x6A | DXE_NB_SMM_INIT |
| 0x70 | DXE_SB_INIT |
| 0x71 | DXE_SB_SMM_INIT |
| 0x72 | DXE_SB_DEVICES_INIT |
| 0x78 | DXE_ACPI_INIT |
| 0x79 | DXE_CSM_INIT |
| 0x90 | DXE_BDS_STARTED |
| 0x91 | DXE_BDS_CONNECT_DRIVERS |
| 0x92 | DXE_PCI_BUS_BEGIN |
| 0x93 | DXE_PCI_BUS_HPC_INIT |
| 0x94 | DXE_PCI_BUS_ENUM |
| 0x95 | DXE_PCI_BUS_REQUEST_RESOURCES |
| 0x96 | DXE_PCI_BUS_ASSIGN_RESOURCES |
| 0x97 | DXE_CON_OUT_CONNECT |
| 0x98 | DXE_CON_IN_CONNECT |

| | |
|------|------------------------------|
| 0x99 | DXE_SIO_INIT |
| 0x9A | DXE_USB_BEGIN |
| 0x9B | DXE_USB_RESET |
| 0x9C | DXE_USB_DETECT |
| 0x9D | DXE_USB_ENABLE |
| 0xA0 | DXE_IDE_BEGIN |
| 0xA1 | DXE_IDE_RESET |
| 0xA2 | DXE_IDE_DETECT |
| 0xA3 | DXE_IDE_ENABLE |
| 0xA4 | DXE_SCSI_BEGIN |
| 0xA5 | DXE_SCSI_RESET |
| 0xA6 | DXE_SCSI_DETECT |
| 0xA7 | DXE_SCSI_ENABLE |
| 0xA8 | DXE_SETUP_VERIFYING_PASSWORD |
| 0xA9 | DXE_SETUP_START |
| 0xAB | DXE_SETUP_INPUT_WAIT |
| 0xAD | DXE_READY_TO_BOOT |
| 0xAE | DXE_LEGACY_BOOT |

| | |
|------|----------------------------------|
| 0xAF | DXE_EXIT_BOOT_SERVICES |
| 0xB0 | RT_SET_VIRTUAL_ADDRESS_MAP_BEGIN |
| 0xB1 | RT_SET_VIRTUAL_ADDRESS_MAP_END |
| 0xB2 | DXE_LEGACY_OPROM_INIT |
| 0xB3 | DXE_RESET_SYSTEM |
| 0xB4 | DXE_USB_HOTPLUG |
| 0xB5 | DXE_PCI_BUS_HOTPLUG |
| 0xB6 | DXE_NVRAM_CLEANUP |
| 0xB7 | DXE_CONFIGURATION_RESET |
| 0xF0 | PEI_RECOVERY_AUTO |
| 0xF1 | PEI_RECOVERY_USER |
| 0xF2 | PEI_RECOVERY_STARTED |
| 0xF3 | PEI_RECOVERY_CAPSULE_FOUND |
| 0xF4 | PEI_RECOVERY_CAPSULE_LOADED |
| 0xE0 | PEI_S3_STARTED |
| 0xE1 | PEI_S3_BOOT_SCRIPT |
| 0xE2 | PEI_S3_VIDEO_REPOST |

| | |
|------|---------------------------------|
| 0xE3 | PEI_S3_OS_WAKE |
| 0x50 | PEI_MEMORY_INVALID_TYPE |
| 0x53 | PEI_MEMORY_NOT_DETECTED |
| 0x55 | PEI_MEMORY_NOT_INSTALLED |
| 0x57 | PEI_CPU_MISMATCH |
| 0x58 | PEI_CPU_SELF_TEST_FAILED |
| 0x59 | PEI_CPU_NO_MICROCODE |
| 0x5A | PEI_CPU_ERROR |
| 0x5B | PEI_RESET_NOT_AVAILABLE |
| 0xD0 | DXE_CPU_ERROR |
| 0xD1 | DXE_NB_ERROR |
| 0xD2 | DXE_SB_ERROR |
| 0xD3 | DXE_ARCH_PROTOCOL_NOT_AVAILABLE |
| 0xD4 | DXE_PCI_BUS_OUT_OF_RESOURCES |
| 0xD5 | DXE_LEGACY_OPROM_NO_SPACE |
| 0xD6 | DXE_NO_CON_OUT |
| 0xD7 | DXE_NO_CON_IN |

| | |
|------|-----------------------------|
| 0xD8 | DXE_INVALID_PASSWORD |
| 0xD9 | DXE_BOOT_OPTION_LOAD_ERROR |
| 0xDA | DXE_BOOT_OPTION_FAILED |
| 0xDB | DXE_FLASH_UPDATE_FAILED |
| 0xDC | DXE_RESET_NOT_AVAILABLE |
| 0xE8 | PEI_MEMORY_S3_RESUME_FAILED |
| 0xE9 | PEI_S3_RESUME_PPI_NOT_FOUND |
| 0xEA | PEI_S3_BOOT_SCRIPT_ERROR |
| 0xEB | PEI_S3_OS_WAKE_ERROR |

2.8 SLI™, 3-Way SLI™ and 4-Way SLI™ Operation Guide

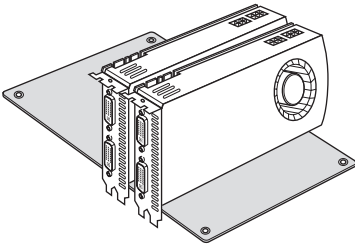
This motherboard supports NVIDIA® SLI™, 3-way SLI™ and 4-way SLI™ (Scalable Link Interface) technology that allows you to install up to four identical PCI Express x16 graphics cards.



Requirements

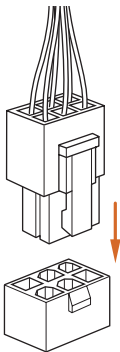
1. You should only use identical SLI™-ready graphics cards that are NVIDIA® certified.
2. Make sure that your graphics card driver supports NVIDIA® SLI™ technology. Download the drivers from the NVIDIA® website: www.nvidia.com
3. Make sure that your power supply unit (PSU) can provide at least the minimum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

2.8.1 Installing Two SLI™-Ready Graphics Cards



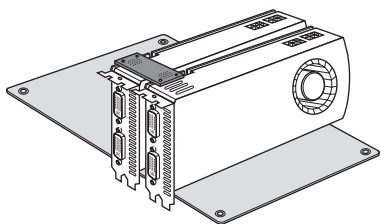
Step 1

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.



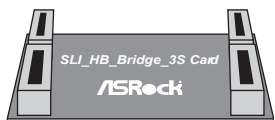
Step 2

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

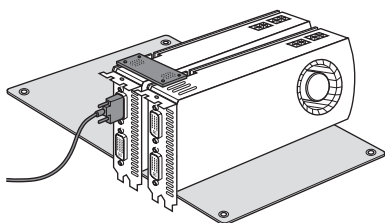


Step 3

Align and insert the ASRock SLI_HB_Bridge_3S Card (if you install NVIDIA® high-bandwidth graphics cards) to the goldfingers on each graphics card. Make sure the ASRock SLI_HB_Bridge_3S Card is in place.



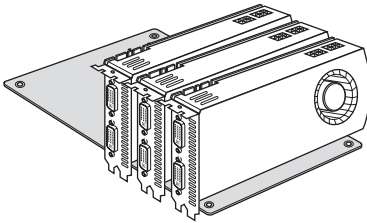
ASRock SLI_HB_Bridge_3S Card
(For NVIDIA® high-bandwidth graphics cards)



Step 4

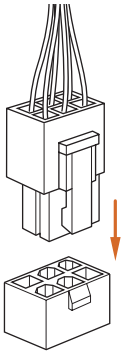
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.8.2 Installing Three SLI™-Ready Graphics Cards



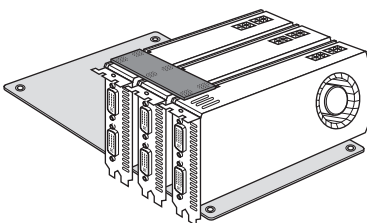
Step 1

Insert one graphics card into PCIe1 slot, another graphics card to PCIe3 slot, and the other graphics card to PCIe4 slot. Make sure that the cards are properly seated on the slots.



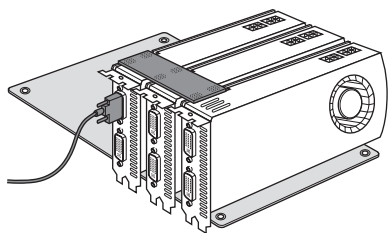
Step 2

Connect the auxiliary power source to the PCI Express graphics card. Please make sure that both power connectors on the PCI Express graphics card are connected. Repeat this step on the three graphics cards.



Step 3

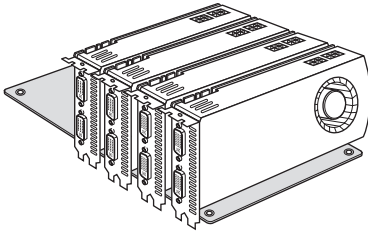
Align and insert the bridge card to the goldfingers on each graphics card. Make sure the bridge card is firmly in place.



Step 4

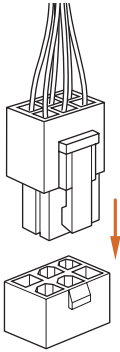
Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

2.8.3 Installing Four SLI™-Ready Graphics Cards



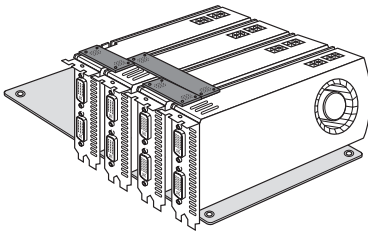
Step 1

Insert one graphics card into the PCIE1 slot, another graphics card into the PCIE2 slot, the third graphics card into the PCIE3 slot and the last graphics card into the PCIE4 slot. Make sure that the cards are properly seated on the slots.



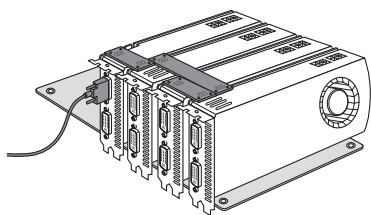
Step 2

Connect the auxiliary power source to the PCI Express graphics card. Please make sure that both power connectors on the PCI Express graphics card are connected. Repeat this step on the three graphics cards.



Step 3

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



Step 4

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIE1 slot.

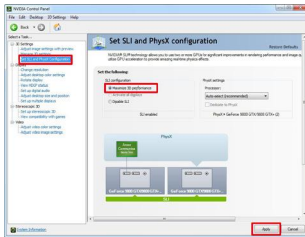
2.8.4 Driver Installation and Setup

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



Step 1

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



Step 2

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

Step 3

Reboot your system.

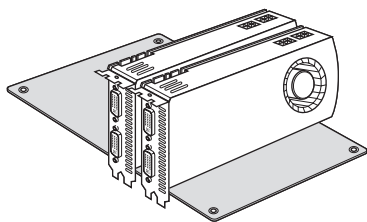
2.9 CrossFireX™, 3-Way CrossFireX™ and 4-Way CrossFireX™ Operation Guide

This motherboard supports CrossFireX™, 3-way CrossFireX™ and 4-way CrossFireX™ that allows you to install up to four 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.

2.9.1 Installing Two CrossFireX™-Ready Graphics Cards



Step 1

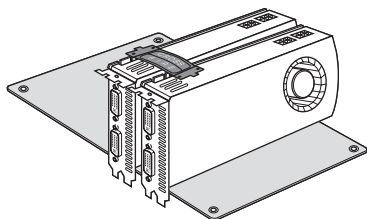
Insert one graphics card into PCIE1 slot and the other graphics card to PCIE3 slot. Make sure that the cards are properly seated on the slots.

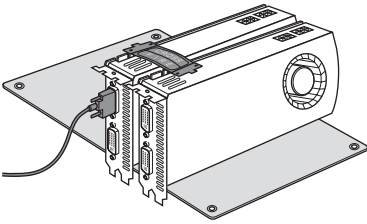


CrossFire Bridge

Step 2

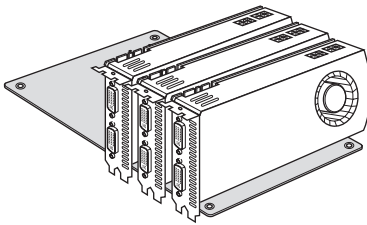
Connect two graphics cards by installing a CrossFire Bridge on the CrossFire Bridge Interconnects on the top of the graphics cards. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)



**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.

2.9.2 Installing Three CrossFire™-Ready Graphics Cards

**Step 1**

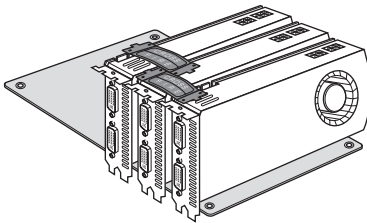
Insert one graphics card into PCIe1 slot, another graphics card to PCIe3 slot, and the other graphics card to PCIe4 slot. Make sure that the cards are properly seated on the slots.



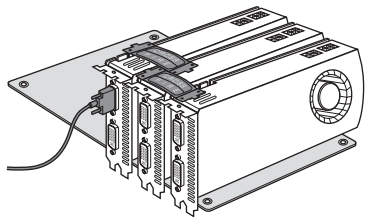
CrossFire Bridge

Step 2

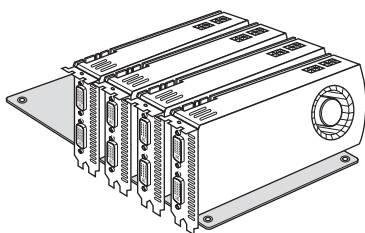
Use one CrossFire Bridge to connect the graphics cards on PCIe1 and PCIe3 slots, and use the other CrossFire Bridge to connect the graphics cards on PCIe3 and PCIe4 slots. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)

**Step 3**

Connect a VGA cable or a DVI cable to the monitor connector or the DVI connector of the graphics card that is inserted to PCIe1 slot.

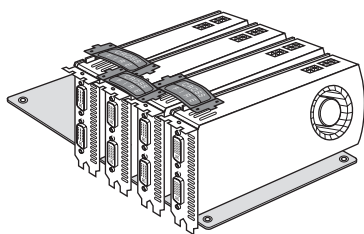


2.9.3 Installing Four CrossFire™-Ready Graphics Cards



Step 1

Insert one graphics card into PCIE1 slot, another graphics card into PCIE2 slot, the third graphics card into PCIE3 slot and the last graphics card into PCIE4 slot. Make sure that the cards are properly seated on the slots.

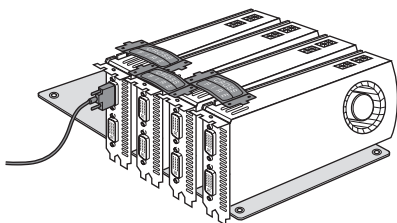


Step 2

Use one CrossFire Bridge to connect the graphics cards on PCIE1 and PCIE2 slots, another CrossFire Bridge to connect the graphics cards on PCIE2 and PCIE3 slots, and use the third CrossFire Bridge to connect the Radeon graphics cards on PCIE3 and PCIE4 slots. (The CrossFire Bridge is provided with the graphics card you purchase, not bundled with this motherboard. Please refer to your graphics card vendor for details.)



CrossFire Bridge



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.

2.9.4 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

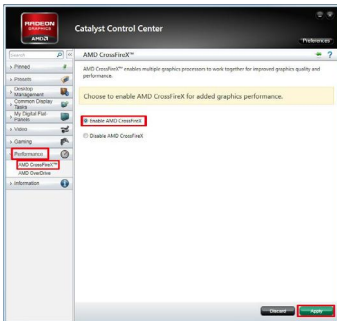
Install the required drivers and CATALYST Control Center then restart your computer. Please check AMD's website for details.



AMD Catalyst Control Center

Step 4

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



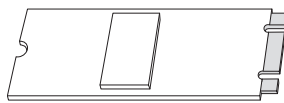
Step 5

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**.

2.10 M.2_SSD (NGFF) Module Installation Guide (M2_1 and M2_2)

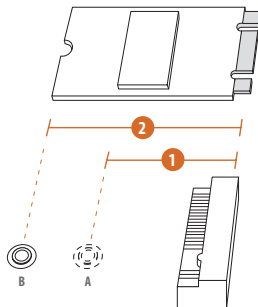
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Hyper M.2 Sockets (M2_1 and M2_2) support M Key type 2260/2280 M.2 PCI Express module up to Gen4x4 (64 Gb/s).

Installing the M.2_SSD (NGFF) Module



Step 1

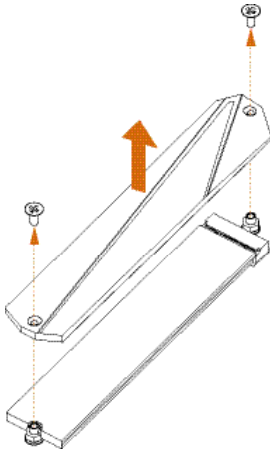
This motherboard supports M.2_SSD (NGFF) module type 2260 and 2280 only. Prepare a proper PCB length of module, the screw and the standoff.



Step 2

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

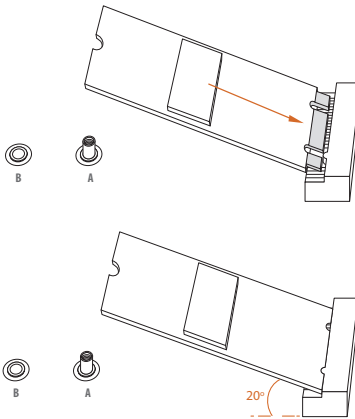
| No. | 1 | 2 |
|--------------|----------|-----------|
| Nut Location | A | B |
| PCB Length | 6cm | 8cm |
| Module Type | Type2260 | Type 2280 |



Step 3

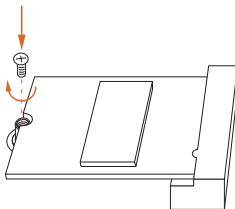
Before installing a M.2 (NGFF) SSD module, please loosen the screws to remove the M.2 heatsink.

*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

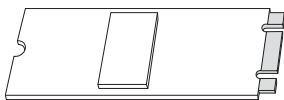
| Vendor | Interface | P/N |
|----------|-----------|--------------------------------------|
| SanDisk | PCIe | SanDisk-SD6PP4M-128G(Gen2 x2) |
| Intel | PCIe | INTEL 6000P-SSDPEKKF256G7 (nvme) |
| Intel | PCIe | INTEL 6000P-SSDPEKKF512G7 (nvme) |
| Intel | PCIe | SSDPEKKF512G7 NVME / 512GB |
| Kingston | PCIe | Kingston SHPM2280P2 / 240G (Gen2 x4) |
| Samsung | PCIe | Samsung XP941-MZHPU512HCGL(Gen2x4) |
| Samsung | PCIe | SM951 (NVME) / 512GB |
| Samsung | PCIe | SM951 (MZHPV512HDGL) / 512GB |
| ADATA | PCIe | ASX8000NP-512GM-C / 512GB |
| ADATA | PCIe | ASX7000NP-512GT-C / 512GB |
| Kingston | PCIe | SKC1000/480G |
| Kingston | PCIe | SKC1000/960GB NVME |
| PLEXTOR | PCIe | PX-512M8PeG/ 512GB |
| WD | PCIe | WDS512G1X0C-00ENX0 (NVME) / 512GB |

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

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

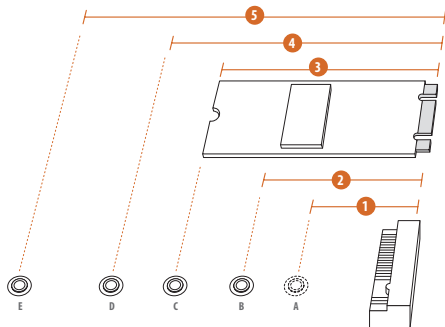
The M.2, also known as the Next Generation Form Factor (NGFF), is a small size and versatile card edge connector that aims to replace mPCIe and mSATA. The Hyper M.2 Socket (M2_3) supports M Key type 2230/2242/2260/2280/22110 M.2 SATA3 6.0 Gb/s module and M.2 PCI Express module up to Gen4x4 (64 Gb/s).

Installing the M.2_SSD (NGFF) Module



Step 1

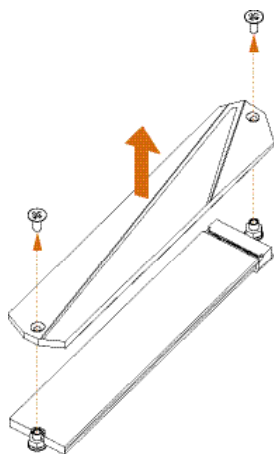
Prepare a M.2_SSD (NGFF) module and the screw.



Step 2

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

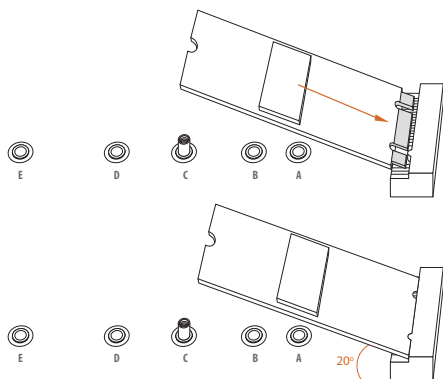
| No. | 1 | 2 | 3 | 4 | 5 |
|--------------|----------|-----------|----------|-----------|------------|
| Nut Location | A | B | C | D | E |
| PCB Length | 3cm | 4.2cm | 6cm | 8cm | 11cm |
| Module Type | Type2230 | Type 2242 | Type2260 | Type 2280 | Type 22110 |



Step 3

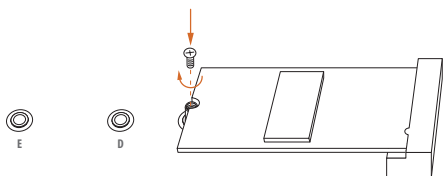
Before installing a M.2 (NGFF) SSD module, please loosen the screws to remove the M.2 heatsink.

*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) |
| Intel | PCIe | SSDPEKKF512G7 NVME / 512GB |
| Intel | SATA | 540S-SSDSCKKW240H6 / 240GB |
| Kingston | PCIe | Kingston SHPM2280P2 / 240G (Gen2 x4) |
| Samsung | PCIe | Samsung XP941-MZHPU512HCGL(Gen2x4) |
| Samsung | PCIe | SM951 (NVME) / 512GB |
| Samsung | PCIe | SM951 (MZHPV512HDGL) / 512GB |
| ADATA | SATA | ADATA - AXNS381E-128GM-B |
| ADATA | PCIe | ASX8000NP-512GM-C / 512GB |
| ADATA | PCIe | ASX7000NP-512GT-C / 512GB |
| ADATA | SATA | ASU800NS38-512GT-C / 512GB |
| 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 |
| Kingston | PCIe | SKC1000/480G |
| Kingston | PCIe | SKC1000/960GB NVME |
| LITEON | SATA | LITEON LJH-256V2G-256GB (2260) |
| PLEXTOR | SATA | PLEXTOR PX-128M6G-2260-128GB |
| PLEXTOR | SATA | PLEXTOR PX-128M7VG-128GB |
| PLEXTOR | PCIe | PX-512M8PeG/ 512GB |
| SanDisk | SATA | SanDisk X400-SD8SN8U-128G |
| SanDisk | SATA | Sandisk Z400s-SD8SNAT-128G-1122 |
| SanDisk | SATA | SanDisk-SD6SN1M-128G |
| Transcend | SATA | Transcend TS256GMTS800-256GB |
| Transcend | SATA | TS512GMTS800 / 512GB |
| V-Color | SATA | V-Color 120G |
| V-Color | SATA | V-Color 240G |
| WD | SATA | WD GREEN WDS240G1G0B-00RC30 |
| WD | PCIe | WDS512G1X0C-00ENX0 (NVME) / 512GB |

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 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)

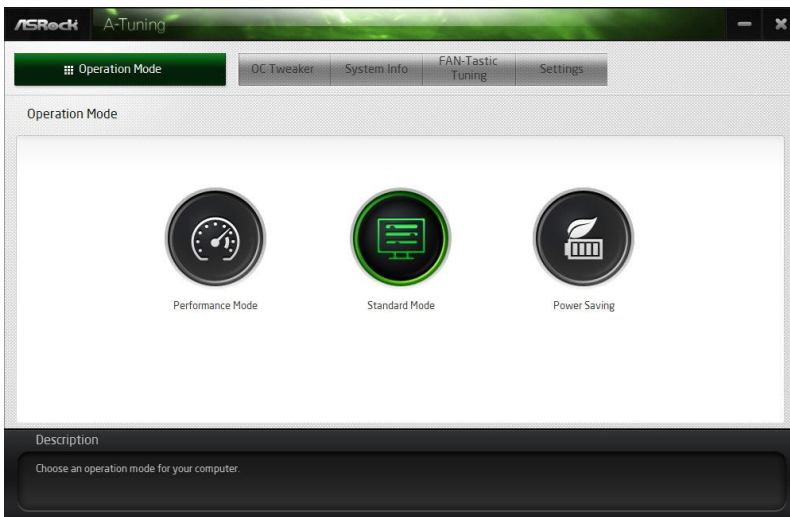
ASRock Motherboard Utility (A-Tuning) can be downloaded from ASRock Live Update & APP Shop. After the installation, you will find the icon "ASRock Motherboard Utility (A-Tuning)" on your desktop. Double-click the "ASRock Motherboard Utility (A-Tuning)"  icon, ASRock Motherboard Utility (A-Tuning) main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

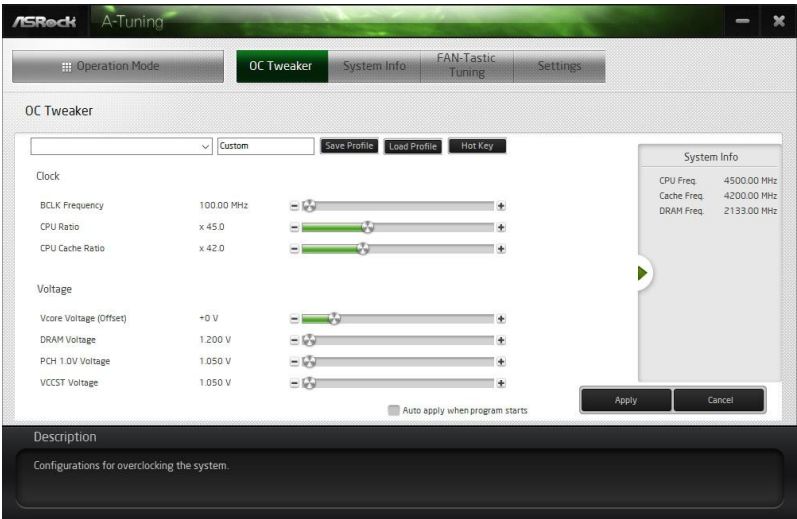
Operation Mode

Choose an operation mode for your computer.



OC Tweaker

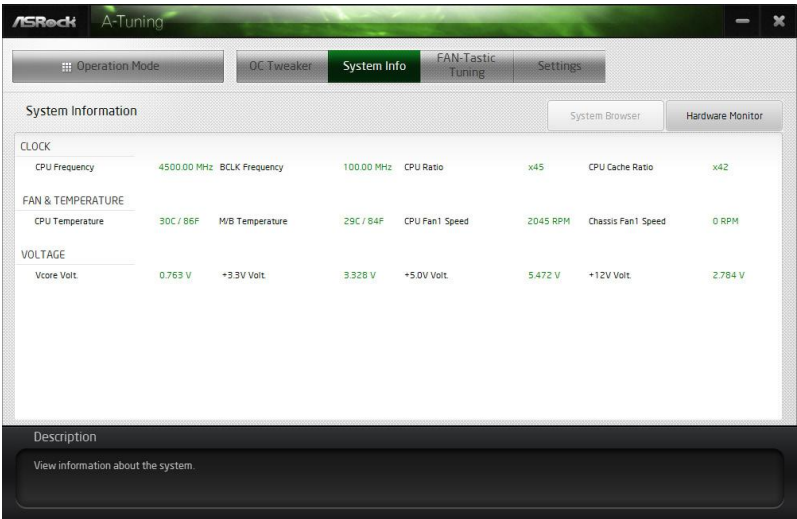
Configurations for overclocking the system.



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.

FAN-Tastic Tuning

CPU FAN1

Start FAN Test

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

☐ Auto apply when program starts

Apply Cancel

Description

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

Settings

Configure ASRock 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.

Settings

☐ Auto run at Windows Startup


Version: 3.0.93

Description

Configure ASRock A-Tuning.

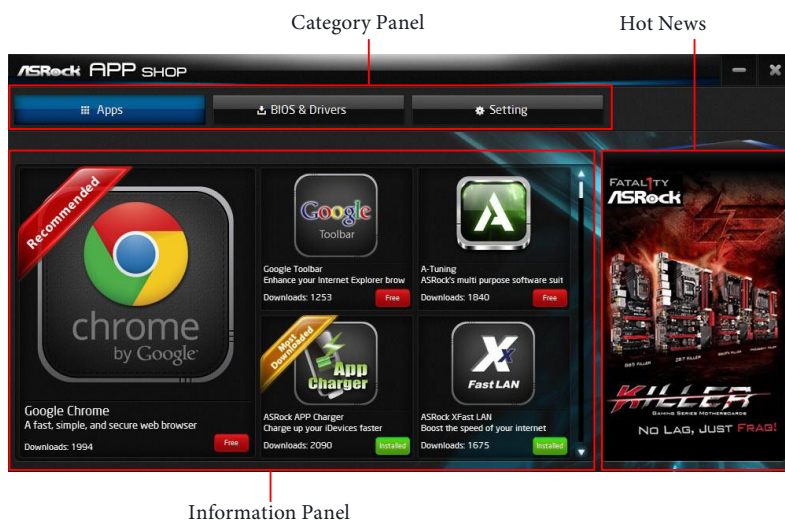
3.3 ASRock Live Update & APP Shop

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

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

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

3.3.1 UI Overview



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

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

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

3.3.2 Apps

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

Installing an App

Step 1

Find the app you want to install.



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

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



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



- 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.

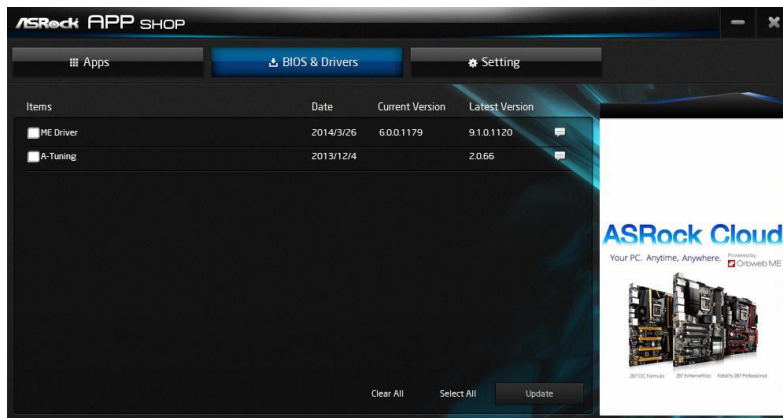
Step 2

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

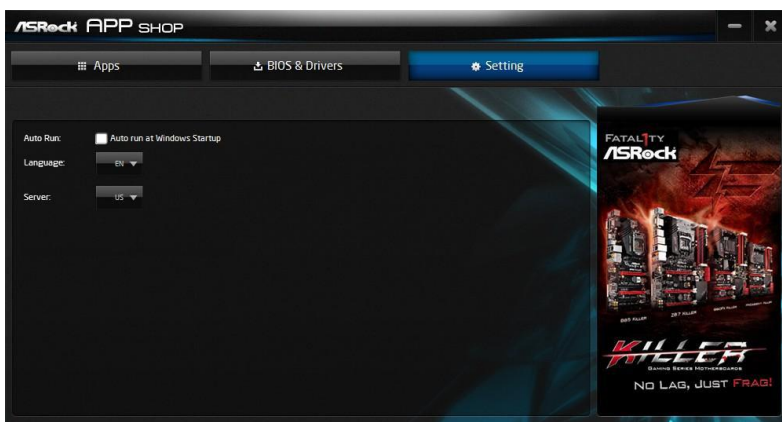
Click to select one or more items you want to update.

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.

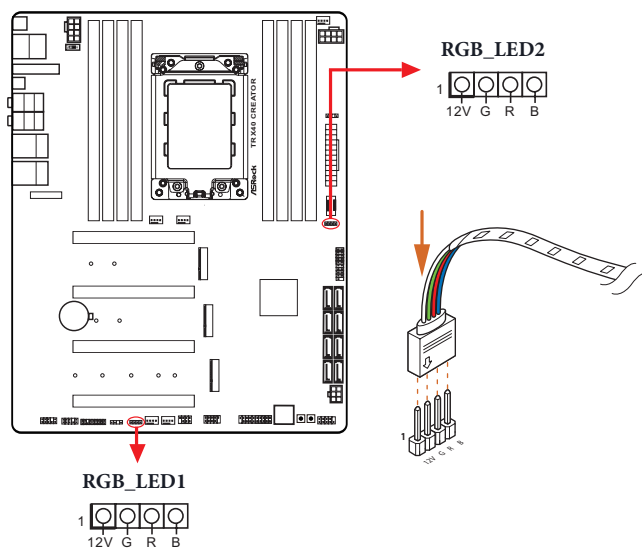


3.4 ASRock Polychrome SYNC

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.



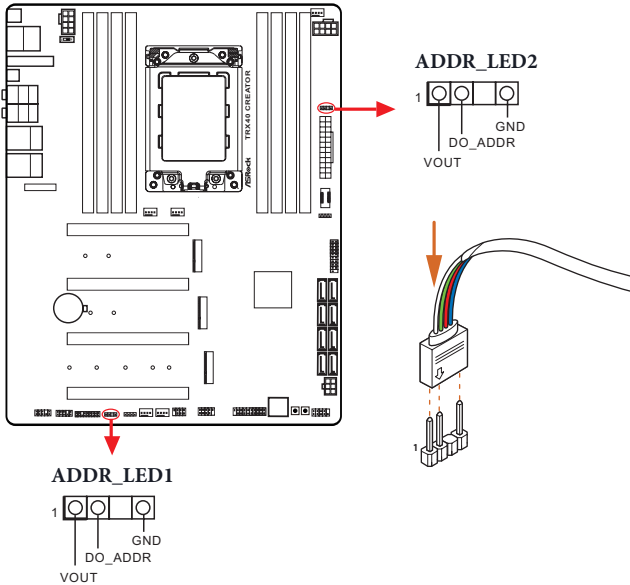
1. Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.
2. Before installing or removing your RGB LED cable, please power off your system and unplug the power cord from the power supply. Failure to do so may cause damages to motherboard components.



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 strip to the **Addressable LED Headers (ADDR_LED1, ADDR_LED2)** on the motherboard.



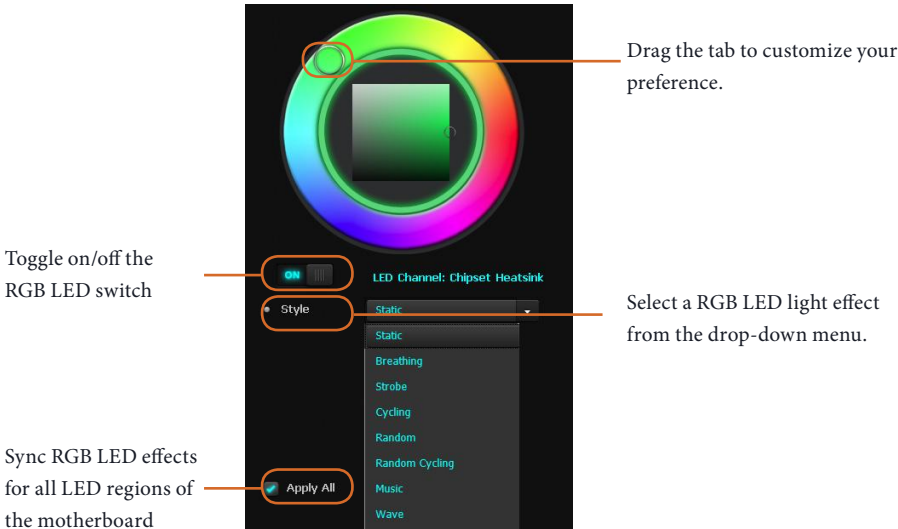
1. Never install the RGB LED cable in the wrong orientation; otherwise, the cable may be damaged.
2. Before installing or removing your RGB LED cable, please power off your system and unplug the power cord from the power supply. Failure to do so may cause damages to motherboard components.



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 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 |

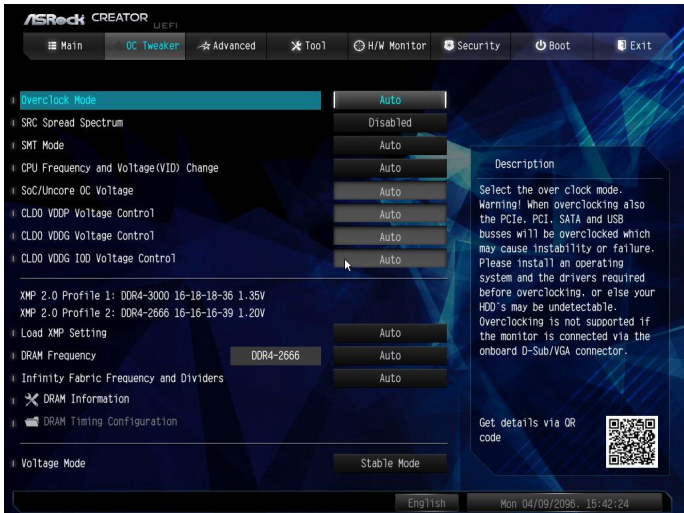
4.2 Main Screen

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.

*Do not use SATA HDD when you overclock BCLK.

SRC Spread Spectrum

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

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.

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.

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.

CLDO VDDP Voltage Control

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.

CLDO 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.

CLDO VDDG IOD 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.

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).

DRAM Information

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

DRAM Timing Configuration

Voltage Configuration

CPU Vcore Voltage

Configure the voltage for the CPU Vcore.

CPU Vcore 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.

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_AB Voltage

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

DRAM_CD Voltage

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

VTT_DDR_AB Offset Voltage (mV)

Configure the voltage for the VPPM_AB.

Configure the VTT_DDR_AB offset voltage. The default value is [Auto].

VTT_DDR_CD Offset Voltage (mV)

Configure the voltage for the VPPM_CD.

Configure the VTT_DDR_CD offset voltage. The default value is [Auto].

VPPM_AB

Configure the voltage for the VPPM_AB.

VPPM_CD

Configure the voltage for the VPPM_CD.

VDDCR_SOC_S5

Configure the voltage for the VDDCR_SOC_S5.

CPU VDD +1.8 V

Configure the voltage for the CPU VDD 1.8 PROM.

+1.8VSB Voltage

Configure the voltage for the +1.8VSB.

PREM VDD_CLDO Voltage

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

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

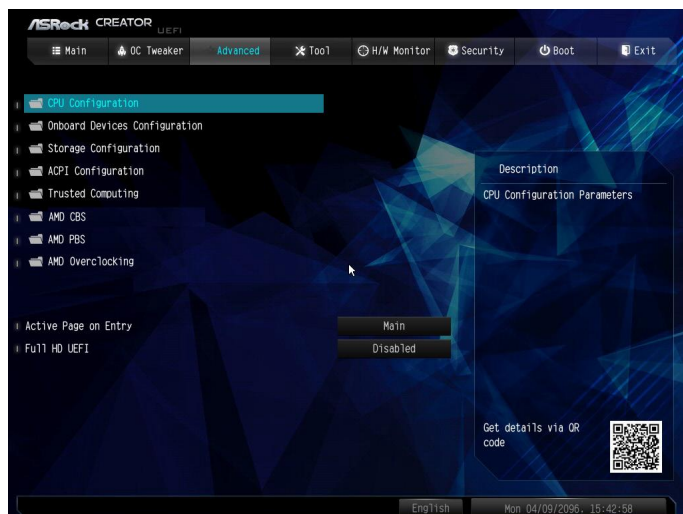
Save current UEFI settings as an user default profile to disk.

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, Trusted Computing, AMD CBS, AMD PBS and AMD Overclocking.



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

UEFI Configuration

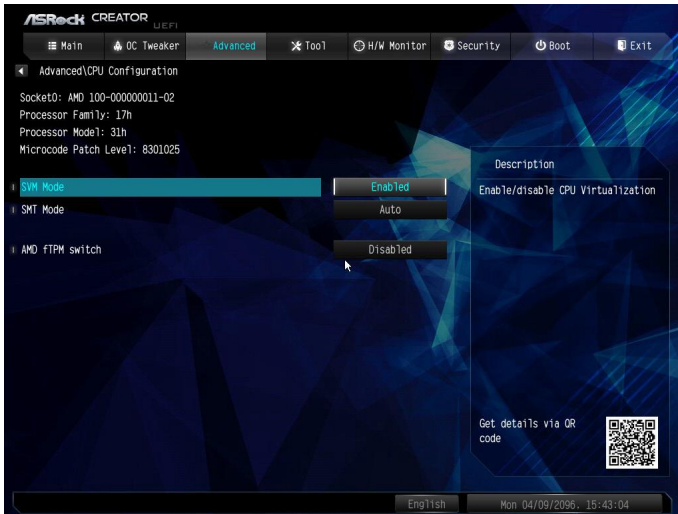
Active Page on Entry

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



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/off the 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.

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.

Equalization Setting (TX)

Configure the equalization setting.

Flat Gain Setting (TX)

Configure the Flat Gain setting.

Swing Setting (TX)

Configure the Swing setting.

Equalization Setting (RX)

Configure the equalization setting.

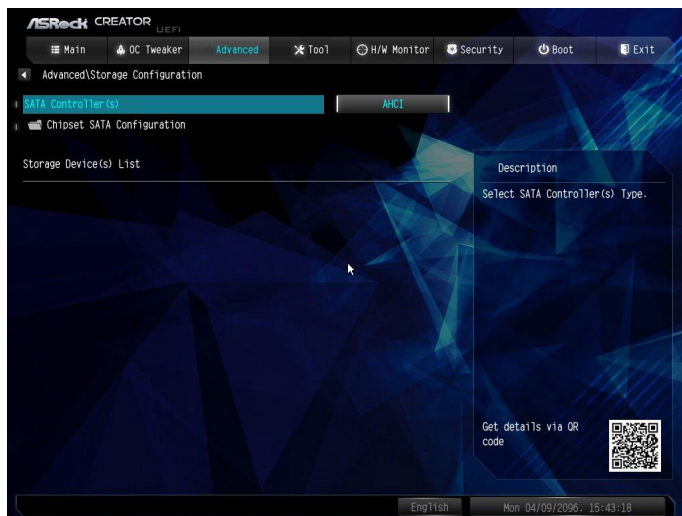
Flat Gain Setting (RX)

Configure the Flat Gain setting.

Swing Setting (RX)

Configure the Swing setting.

4.4.3 Storage Configuration

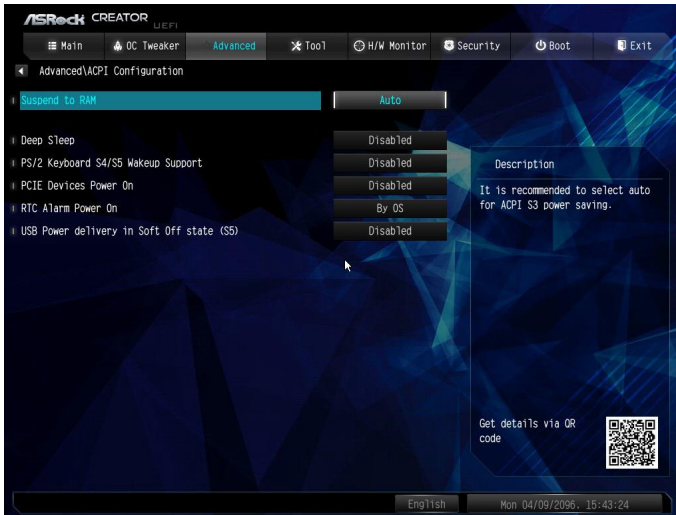


SATA Controller(s)

AHCI: Supports new features that improve performance.

RAID: Combine multiple disk drives into a logical unit.

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.

PCIe Devices Power On

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

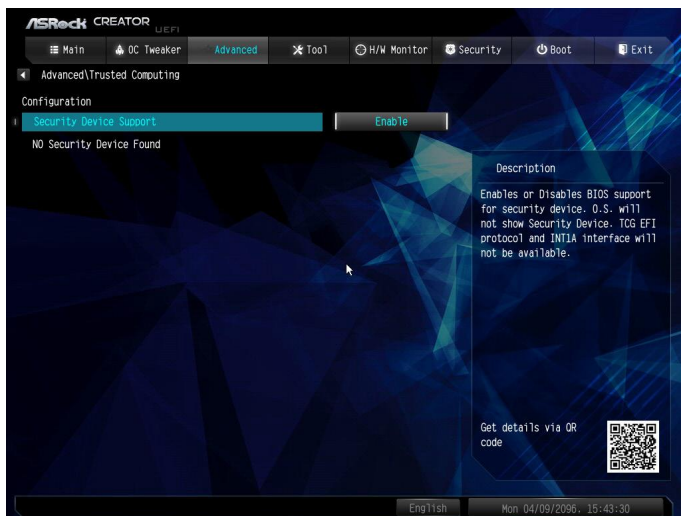
RTC Alarm Power On

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.

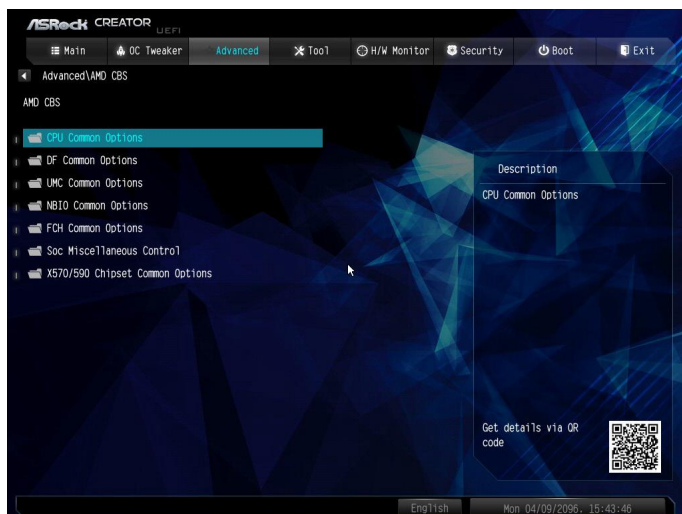
4.4.5 Trusted Computing



Security Device Support

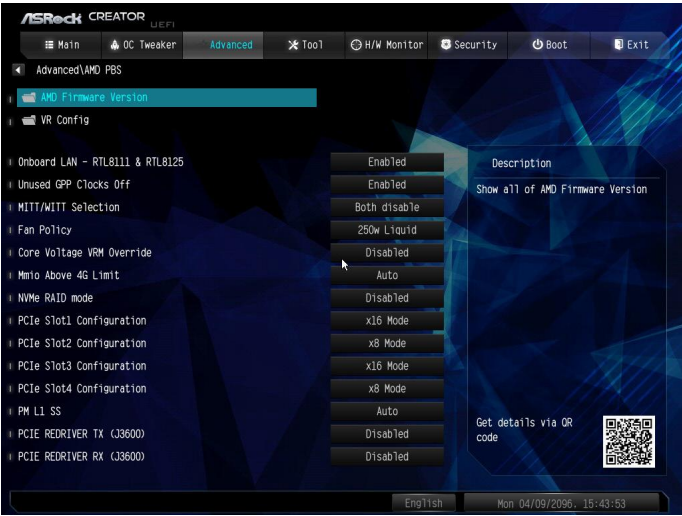
Enable or disable BIOS support for security device.

4.4.6 AMD CBS



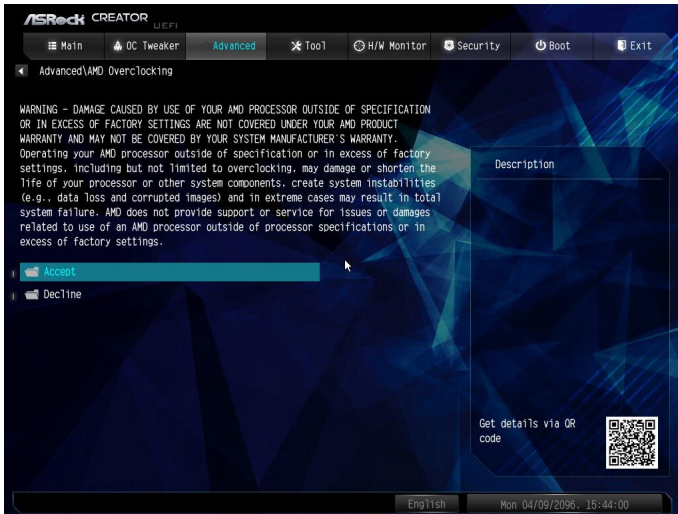
The AMD CBS menu accesses AMD specific features.

4.4.7 AMD PBS



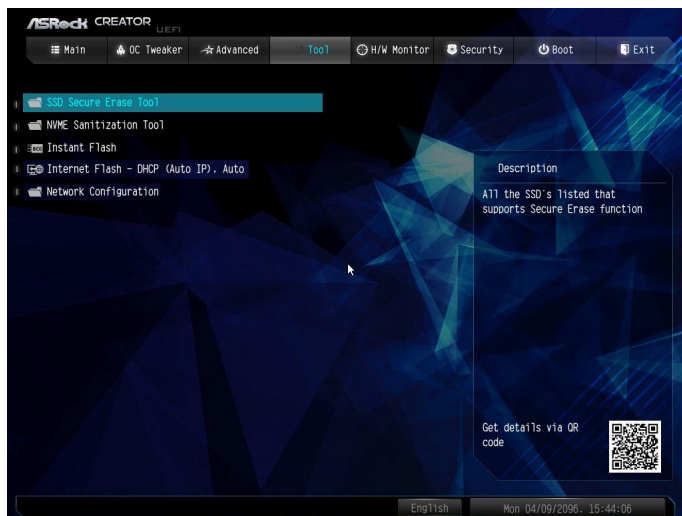
The AMD PBS menu accesses AMD specific features.

4.4.8 AMD Overclocking



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

4.5 Tools



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.

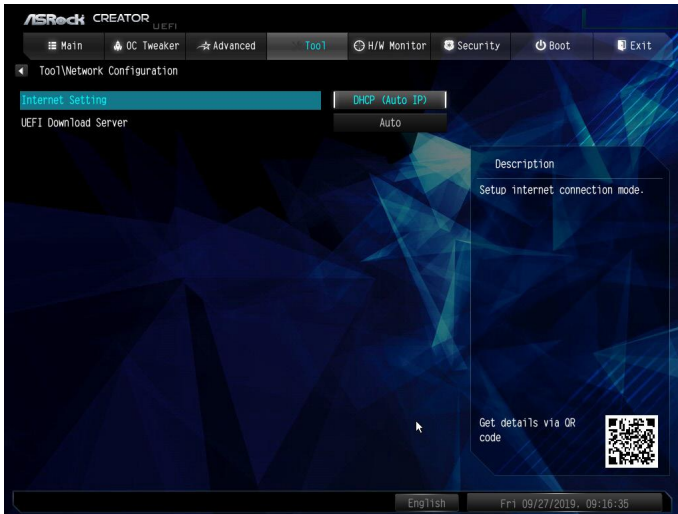
Internet Flash - DHCP (Auto IP), Auto

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

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

Network Configuration

Use this to configure internet connection settings for Internet Flash.



Internet Setting

Enable or disable sound effects in the setup utility.

UEFI Download Server

Select a server to download the UEFI firmware.

4.6 Hardware Health Event Monitoring Screen

This section allows you to monitor the status of the hardware on your system, including the parameters of the CPU temperature, motherboard temperature, fan speed and voltage.



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.

FAN Configuration

CPU_FAN2 / W_Pump 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/FAN3 / WP Switch

Select CHA_FAN2/FAN3 or Water Pump mode.

Chassis Fan 2/Fan 3 Control Mode

Select PWM mode or DC mode for Chassis Fan 2/Fan 3.

Chassis Fan 2/Fan 3 Setting

Select a fan mode for Chassis Fan 2/Fan 3, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Chassis Fan 2/Fan 3 Temp Source

Select a fan temperature source for Chassis Fan 2/Fan 3.

MOS_FAN1 Setting

Select a fan mode for MOS_FAN1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

MOS_FAN1 Temp Source

Select a fan temperature source for MOS_FAN1.

SB_FAN1 Setting

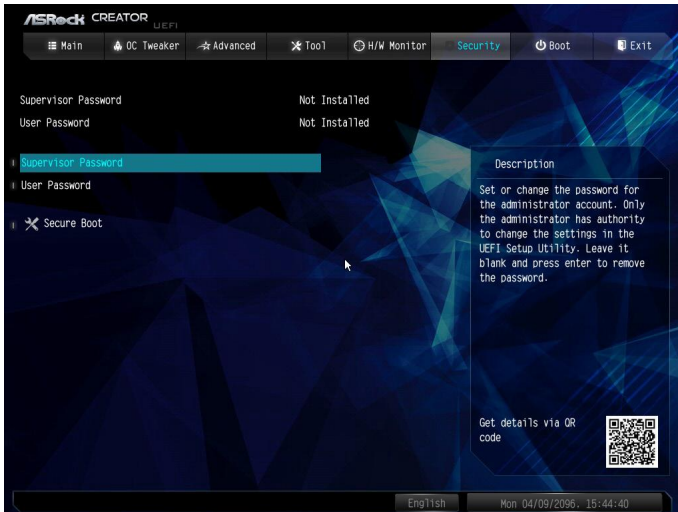
Select a fan mode for SB_FAN1, or choose Customize to set 5 CPU temperatures and assign a respective fan speed for each temperature.

Over Temperature Protection

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

4.7 Security Screen

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



Supervisor Password

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

User Password

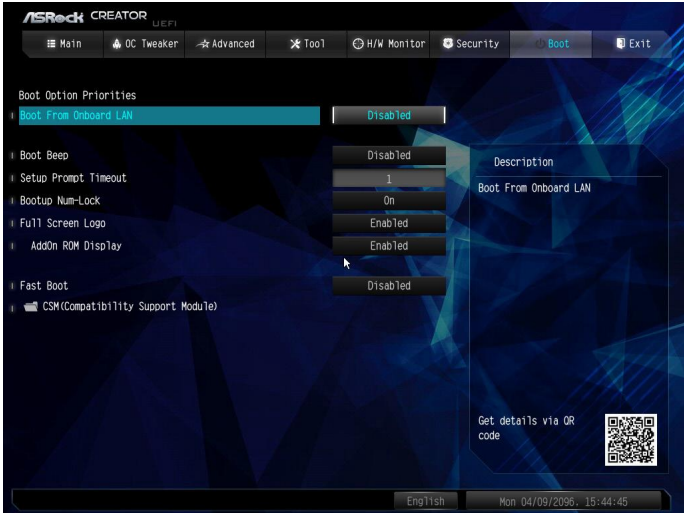
Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Enable to support Secure Boot.

4.8 Boot Screen

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



Boot From Onboard LAN

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

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.

Setup Prompt Timeout

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

Bootup Num-Lock

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

Full Screen Logo

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

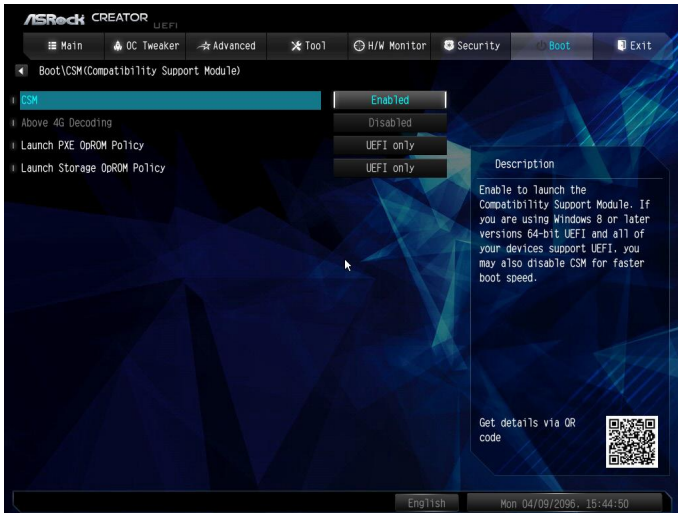
AddOn ROM Display

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

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.

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).

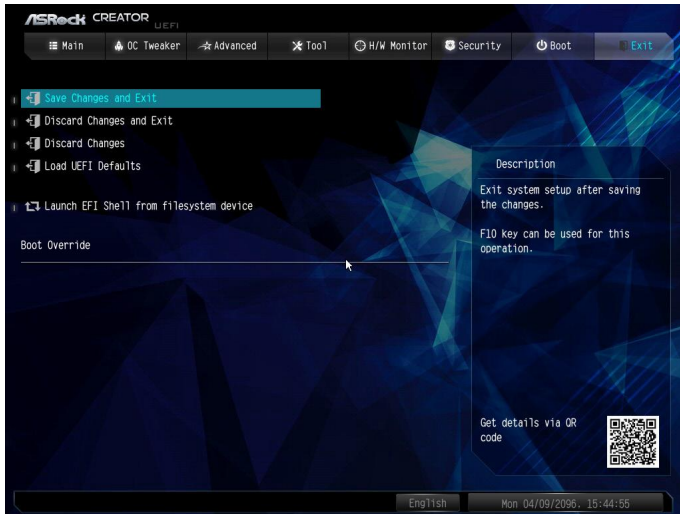
Launch PXE OpROM Policy

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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