ROG STRIX X299-XE GAMING

Motherboard

E13291
First Edition
August 2017

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Contents

Chapter 3: BIOS Setup

Chapter 4: **RAID Support**

Safety information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.

- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.

- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.

- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.

- Ensure that your power supply is set to the correct voltage in your area. If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.

- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.

- Before using the product, ensure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.

- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.

- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.

- Place the product on a stable surface.

- If you encounter technical problems with the product, contact a qualified service technician or your retailer.

About this guide

This user guide contains the information you need when installing and configuring the motherboard.

How this guide is organized

This guide contains the following parts:

1. **Chapter 1: Product Introduction**

    This chapter describes the features of the motherboard and the new technology it supports. It includes description of the switches, jumpers, and connectors on the motherboard.

2. **Chapter 2: Basic Installation**

    This chapter lists the hardware setup procedures that you have to perform when installing system components.

3. **Chapter 3: BIOS Setup**

    This chapter tells how to change system settings through the BIOS Setup menus. Detailed descriptions of the BIOS parameters are also provided.

4. **Chapter 4: RAID Support**

    This chapter describes the RAID configurations.

Where to find more information

Refer to the following sources for additional information and for product and software updates.

1. **ASUS website**

    The ASUS website (www.asus.com) provides updated information on ASUS hardware and software products.

2. **Optional documentation**

    Your product package may include optional documentation, such as warranty flyers that may have been added by your dealer. These documents are not part of the standard package.

Conventions used in this guide

To ensure that you perform certain tasks properly, take note of the following symbols used throughout this manual.

DANGER/WARNING: Information to prevent injury to yourself when trying to complete a task.

CAUTION: Information to prevent damage to the components when trying to complete a task.

IMPORTANT: Instructions that you MUST follow to complete a task.

NOTE: Tips and additional information to help you complete a task.

Typography

Bold text	Indicates a menu or an item to select.
Italics	Used to emphasize a word or a phrase.
<Key>	Keys enclosed in the less-than and greater-than sign means that you must press the enclosed key.
	Example: <Enter> means that you must press the Enter or Return key.
<Key1> + <Key2> + <Key3>	If you must press two or more keys simultaneously, the key names are linked with a plus sign (+).

ROG STRIX X299-XE GAMING specifications summary

CPU	Intel® Core™ X-Series Processor Family on LGA 2066 socket
	Supports 14nm CPU
	Supports Intel® Turbo Boost Max Technology 3.0*
	* **The support of these features depends on the CPU types.**
	* **Refer to www.asus.com for Intel® CPU support list.**
Chipset	Intel® X299 Chipset
Memory	**Intel® Core™ X-series (6-core above) Processors**
	- 8 x DIMM, max. 128GB DDR4 4133(OC)* / 4000(OC)* / 3866(OC)* / 3733(OC)* / 3600(OC)* / 3466(OC)* / 3400(OC)* / 3333(OC)* / 3300(OC)* / 3200(OC)* / 3000(OC)* / 2800(OC)* / 2666 / 2400 / 2133 MHz
	- Quad channel memory architecture
	Intel® Core™ X-series (4-core) Processors
	- 4 x DIMM, max. 64GB DDR4 4133(OC)* / 4000(OC)* / 3866(OC)* / 3733(OC)* / 3600(OC)* / 3466(OC)* / 3400(OC)* / 3333(OC)* / 3300(OC)* / 3200(OC)* / 3000(OC)* / 2800(OC)* / 2666 / 2400 / 2133 MHz Non-ECC, Un-buffered Memory
	- Dual channel memory architecture
	Supports Intel® Extreme Memory Profile (XMP)
	* **Hyper DIMM support is subject to the physical characteristics of individual CPUs. Please refer to Memory QVL (Qualified Vendors Lists) on www.asus.com for details.**
Expansion Slots	3 x PCIe 3.0/2.0 x16 slots (supports x16, x16/x16, x16/x16/x8 mode with 44-LANE CPU; x16, x16/x8, x16/x8/x1 mode with 28-LANE; x16, x8/x8 , x8/x8/x1 mode with 16-LANE)
	1 x PCIe 3.0/2.0 x4 slot (max. at x4 mode) [PCH]*
	1 x PCIe 3.0/2.0 x4 slot (supports x1 mode) [PCH]
	1 x PCIe 3.0/2.0 x1 slot[PCH]**
	* **PCIe 3.0/2.0 x4 slot share with SATA_56 ports and SATA_78 ports when use device in x4 mode. Adjust BIOS settings to use SATA devices.**
	** **PCIe 3.0/2.0 x1 slot share with USB3.1 Gen 2 front panel connector.**
Multi-GPU Support	Supports NVIDIA® 3-Way SLI™ Technology
	Supports AMD® 3-Way CrossFireX™ Technology
Storage	**Intel® X299 Chipset with RAID 0, 1, 5, 10 and Intel Rapid Storage Technology 15 support**
	- 8 x SATA 6Gb/s ports
	- Supports Intel® Smart Response Technology
	- 1 x M.2_1 Socket 3 with M key, type 2242/2260/2280 storage devices support (both SATA & PCIE 3.0 x 4 mode)*
	- 1 x M.2_2 Socket 3 with M key, type 2242/2260/2280/22110 storage devices support (PCIE 3.0 x 4 mode)
	- Ready for Intel® Optane Memory
	* **The M.2_1 socket shares SATA_1 port when use M.2 SATA mode device. Adjust BIOS settings to use a SATA device.**

(continued on the next page)

ROG STRIX X299-XE GAMING specifications summary

LAN	Intel® I219-V Gigabit LAN- Dual interconnect between the integrated Media Access Controller (MAC) and physical layer (PHY)
	Anti-surge LANGuard
	ROG GameFirst technology
Wireless & Bluetooth	Wi-Fi 802.11 a/b/g/n/ac supports dual frequency band 2.4/5 GHz with MU-MIMO support
	Bluetooth V4.2, V4.1, V4.0 LE, V3.0+HS
Audio	**ROG SupremeFX S1220A 8-Channel High Definition Audio CODEC**
	- Supports up to 32-Bit/192kHz playback*
	- Impedance sense for front and rear headphone outputs
	- High quality 120dB SNR stereo playback output and 113dB SNR recording input
	- SupremeFX Shielding Technology
	- Dual Headphone Amplifiers
	- Jack-detection, Multi-streaming, and Front Panel Jack-retasking
	- Optical S/PDIF out port at back panel
	Audio Features
	- Sonic Radar III
	- Sonic Studio III
	* Due to limitations in HDA bandwidth, 32-bit/192kHz is not supported for 8-Channel audio.
USB	**Intel® X299 Chipset**
	- 8 x USB 3.1 Gen 1 ports (4 ports at back panel [blue], 4 ports at mid-board)
	- 4 x USB 2.0 ports (2 ports at back panel, 2 ports at mid-board)
	ASMedia® USB3.1 Gen 2 controller
	- 2 x USB 3.1 Gen 2 ports (1 x Type-A [red] and 1 x Type-C™ ports at back panel)
	- 1 x USB 3.1 Gen 2 front panel connector*
	* The USB 3.1 Gen2 front panel connector shares bandwidth with PCIe 3.0/2.0 x1 slot.
ROG Exclusive Features	ROG RAMCache II
	ROG GameFirst IV*
	ROG CPU-Z
	ROG Overwolf
	ROG Clonedrive
	* ROG GameFirst IV is only available for Windows® 10/8.1 64-bit

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ROG STRIX X299-XE GAMING specifications summary

Special Features	**Performance Optimization**
	
	5-Way Optimization
	- Whole system optimization with a single click! Perfectly consolidates better CPU performance, power saving, digital power control, system cooling and app usages.
	
	Digi+VRM
	
	EPU
	  - EPU
	
	TPU
	  - Auto Tuning
	
	Fan Xpert 4 featuring Fan Auto Tuning function and multiple thermistors selection for optimized system cooling control
	
	Turbo Core App (6-core or above)* / Turbo App (4-core)*
	
	ASUS EZ DIY
	- ASUS CrashFree BIOS 3
	- ASUS EZ Flash 3
	
	ASUS Q-Design
	- Q-Code
	- Q-Shield
	- Q-LED (CPU, DRAM, VGA, Boot Device LED)
	- Q-Slot
	- Q-DIMM
	
	Gamer's Guardian
	- Procool
	- SafeSlot
	- DIGI+ VRM
	- DRAM Overcurrent Protection
	- ESD Guards on VGA, LAN, Audio, USB3.1 Gen 1, and USB3.1 Gen 2 ports
	- Highly Durable Components
	- Stainless Steel Back I/O
	
	ASUS Exclusive Features
	- AURA Lighting Control
	- 3D Printing Friendly design
	- AI Suite 3
	- AI Charger
	
	* Only available on Intel® Core™ X-series processors

(continued on the next page)

ROG STRIX X299-XE GAMING specifications summary

Back I/O Ports	1 x USB BIOS Flashback button
	2 x USB2.0 ports
	4 x USB 3.1 Gen 1 ports [blue]
	2 x USB3.1 Gen 2 ports (1 x Type-A [red] and 1 x Type-C™ ports at back panel)
	1 x Anti-surge LAN (RJ45) port
	1 x ASUS Wi-Fi module (Wi-Fi 802.11 a/b/g/n/ac and Bluetooth v4.2)
	5 x Audio jacks
	1 x Optical S/PDIF out
Internal I/O Ports	1 x USB 3.1 Gen2 front panel connector
	2 x USB 3.1 Gen1 connectors support additional 4 x USB 3.1 Gen1 ports
	1 x USB 2.0 connectors support additional 2 x USB 2.0 ports
	8 x SATA 6Gb/s connectors
	1 x 4-Pin W_PUMP+ connector
	1 x 4-Pin AIO_PUMP fan connector
	1 x 4-Pin CPU fan connector
	1 x 4-Pin CPU_OPT fan connector
	2 x 4-Pin Chassis fan connectors
	1 x 4-Pin M.2 fan connectors
	1 x 5-Pin Extension fan connector
	1 x 24-pin EATX power connector
	1 x 8-pin EATX 12V power connector
	1 x 4-pin EATX 12V power connector
	1 x M.2_1 Socket 3 for M Key, type 2242/2260/2280 storage devices support (Support PCIE and SATA modes)
	1 x M.2_2 Socket 3 for M Key, type 2242/2260/2280/22110 storage devices support (Support PCIE mode only)
	1 x Power-on button
	1 x Front panel audio connector (AAFP)
	1 x COM connector
	2 x RGB Headers
	1 x Addressable Header
	1 x System panel connector
	1 x Thermal sensor connector
	1 x CPU_OV
	1 x Clear CMOS jumper (2-pin)
	1 x VROC HW header
	1 x Q-Code

(continued on the next page)

ROG STRIX X299-XE GAMING specifications summary

BIOS Features	128 Mb Flash ROM, UEFI AMI BIOS, PnP, WfM2.0, SM BIOS 3.0, ACPI 6.0, Multi-language BIOS, ASUS EZ Flash 3, CrashFree BIOS 3, F11 EZ Tuning Wizard, F6 Qfan Control, F3 My Favorites, Last Modified log, F12 PrintScreen, and ASUS DRAM SPD (Serial Presence Detect) memory information.
Manageability	WfM2.0, DMI3.0, WOL by PME, PXE
Software	Drivers
	ASUS Utilities
	EZ Update
	Anti-virus software (OEM version)
Operating System	Windows® 10 64-bit
Form Factors	ATX Form Factor, 12"x 9.6" (30.5cm x 24.4cm)

The specifications are subject to change without notice.

Package contents

Check your motherboard package for the following items:

Motherboard	ROG STRIX X299-XE GAMING
Cables	4 x SATA 6 Gb/s cables 1 x SLI™ HB BRIDGE (2-WAY-M) 1 x RGB LED extension cable 1 x ROG addressable LED strip 1 x Addressable LED extension cable 1 x Thermal sensor cable
Accessories	1 x I/O Shield 1 x ASUS 2x2 dual band Wi-Fi moving antennas (Wi-Fi 802.11a/b/g/n/ac compliant) 1 x ROG cable label 1 x Q-Connector Kit 1 x Cooling kit (fan bracket and 40mm x 40mm fan) 1 x VGA holder 1 x 3D Printing Mount 1 x M.2 Screw Package 1 x M.2 bracket 1 x ROG Strix door hanger 1 x Pack of cable ties 1 x ROG fan label
Application DVD	ROG motherboard support DVD
Documentation	User guide

If any of the above items is damaged or missing, contact your retailer.

Installation tools and components
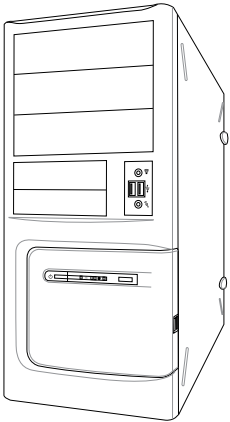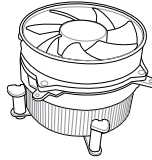
Intel® LGA2066 compatible CPU Fan

Intel® LGA2066 CPU

PC chassis
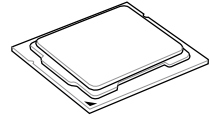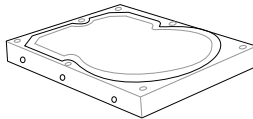
SATA hard disk drive

Philips (cross) screwdriver
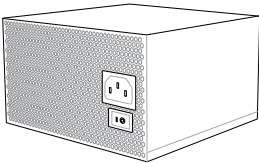
Power supply unit
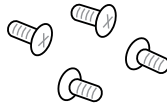
1 bag of screws
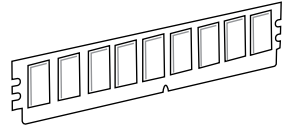
DIMM
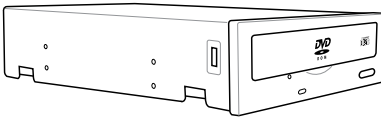
SATA optical disc drive (optional)
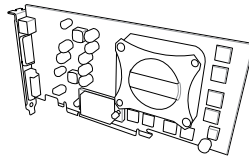
Graphics card

The tools and components in the table above are not included in the motherboard package.

Product Introduction

1

1.1   Motherboard overview

1.1.1   Before you proceed

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

⚠️

- Unplug the power cord from the wall socket before touching any component.

- Before handling components, use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, to avoid damaging them due to static electricity.

- Hold components by the edges to avoid touching the ICs on them.

- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.

- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

1.1.2   Motherboard layout
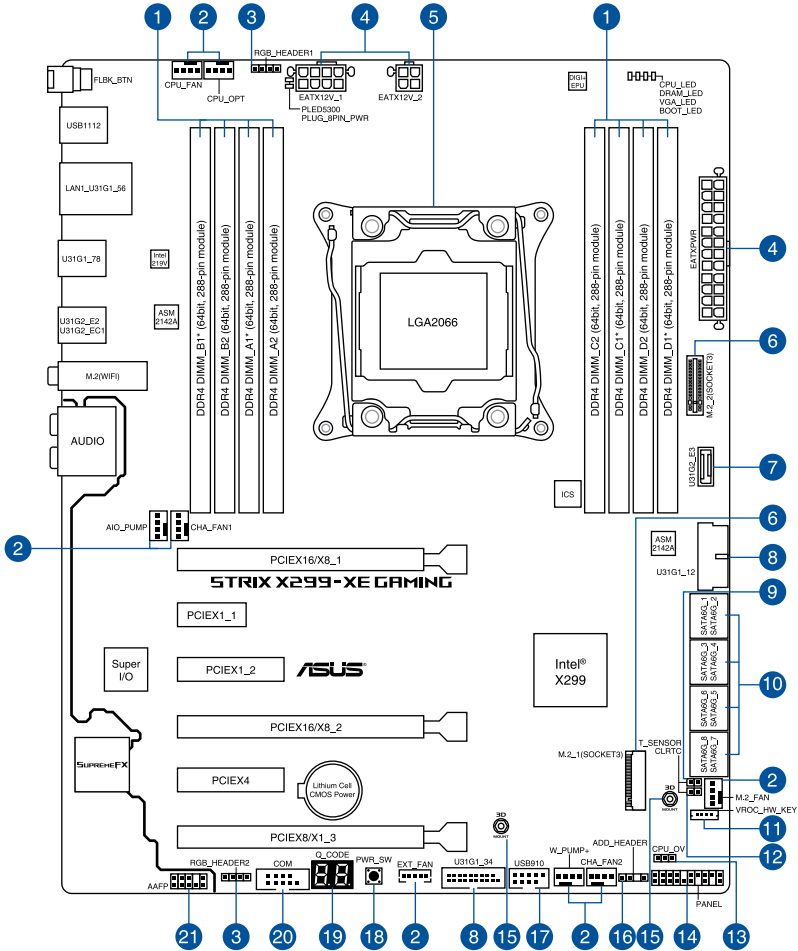
Refer to **1.1.9 Internal connectors** and **2.3.1 Rear I/O connection** for more information about rear panel connectors and internal connectors.

Layout contents

Connectors/Jumpers/Buttons and switches/Slots	Page
1. DDR4 DIMM slots	1-5
2. CPU, CPU optional, M.2, water pump, AIO, extension, and chassis fan connectors (4-pin CPU_FAN; 4-pin CPU_OPT; 4-pin M.2_FAN; 4-pin W_PUMP+; 4-pin AIO_PUMP; 5-pin EXT_FAN; 4-pin CHA_FAN1-2)	1-18
3. AURA RGB header (4-pin RGB_HEADER1, RGB_HEADER2)	1-21
4. ATX power connectors (24-pin EATXPWR; 8-pin EATX12V_1; 4-pin EATX12V_2)	1-19
5. LGA2066 CPU socket	1-4
6. M.2 Socket 3	1-15
7. USB 3.1 Gen 2 front panel connector (U31G2_E3)	1-16
8. USB 3.1 Gen 1 connectors (20-1 pin U31G1_12, U31G1_34)	1-16
9. T_Sensor connector (2-pin T_SENSOR)	1-17
10. Intel® X299 Serial ATA 6Gb/s connectors (7-pin SATA6G_12, SATA6G_34, SATA6G_56, SATA6G_78)	1-14
11. VROC_HW_KEY connector (4-pin VROC_HW_KEY)	1-23
12. Clear RTC RAM jumper (2-pin CLRTC)	1-11
13. CPU Over Voltage jumper (3-pin CPU_OV)	1-12
14. System panel connector (20-3 pin PANEL)	1-20
15. 3D Mount	1-12
16. Addressable header (4-1 pin ADD_HEADER)	1-22
17. USB 2.0 connectors (10-1 pin USB910)	1-17
18. Power-on button	1-10
19. Q-Code LED	1-13
20. Serial port connector (10-1 pin COM)	1-15
21. Front panel audio connector (10-1 pin AAFP)	1-23

Chapter 1

1.1.3   Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA2066 socket designed for Intel® Core™ X-Series Processor Family.
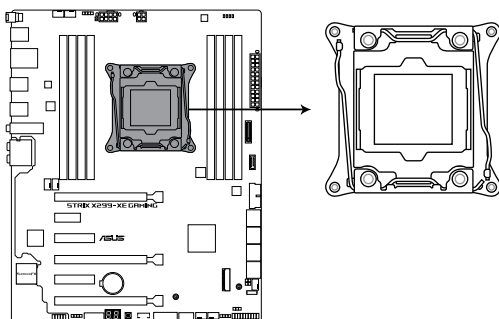
ROG STRIX X299-XE GAMING LGA2066 Socket

- Ensure that all power cables are unplugged before installing the CPU.

- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.

- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA2066 socket.

- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.

1.1.4 System memory

The motherboard comes with eight (8) DDR4 (Double Data Rate 4) Dual Inline Memory Modules (DIMM) slots.

A DDR4 module is notched differently from a DDR, DDR2, or DDR3 module. DO NOT install a DDR, DDR2, or DDR3 memory module to the DDR4 slot.

Ensure to install at least one of the memory modules into the A1*/B1*/C1*/D1* slot under X-Series (6-core above) Processors.
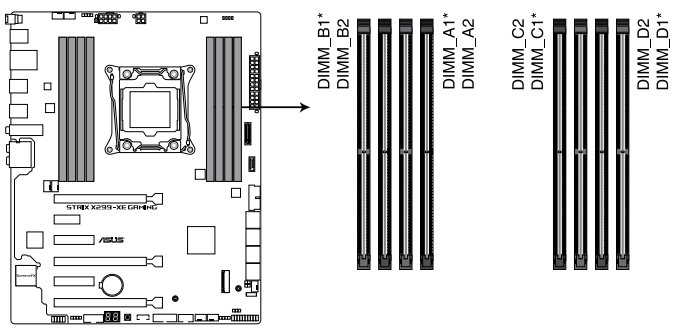
ROG STRIX X299-XE GAMING 288-pin DDR4 DIMM socket

Recommended memory configurations

Intel® Core™ X-Series (6-core above) Processors

Intel® Core™ X-series (4-core) Processors

DIMM_C1

DIMM_C1
DIMM_D1

DIMM_C2
DIMM_C1
DIMM_D2
DIMM_D1
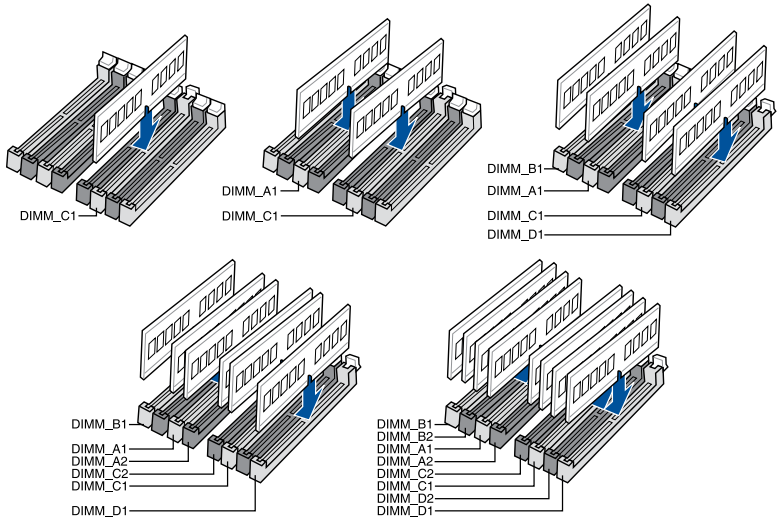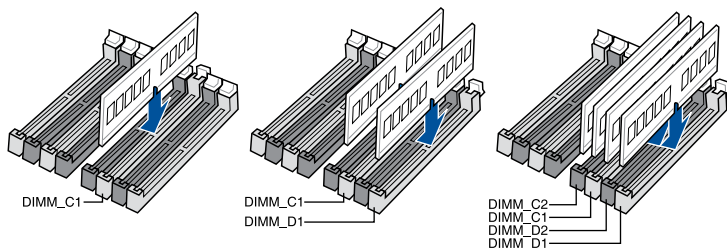
Memory configurations

You may install 2 GB, 4 GB, 8GB and 16 GB unbuffered and non-ECC DDR4 DIMMs into the DIMM sockets.

- For Intel® Core™ X-series (4-core) Processors, you may install varying memory sizes in Channel C and Channel D. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.

- For Intel® Core™ X-series (6-core above) Processors, you may install varying memory sizes in Channel A, Channel B, Channel C, and Channel D. The system maps the total size of the lower-sized channel for the quad-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.

- The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value.

- For system stability, use a more efficient memory cooling system to support a full memory load (8 DIMMs) or overclocking condition.

- Always install the DIMMS with the same CAS Latency. For an optimum compatibility, we recommend that you install memory modules of the same version or data code (D/C) from the same vendor. Check with the vendor to get the correct memory modules.

- Visit the ASUS website for the latest QVL.

1.1.5 Expansion slots

Unplug the power cord before adding or removing expansion cards. Failure to do so may cause you physical injury and damage motherboard components.

1	PCIEX16/X8_1
2	PCIEX1_1
3	PCIEX1_2
4	PCIEX16/X8_2
5	PCIEX4
6	PCIEX8/X1_3
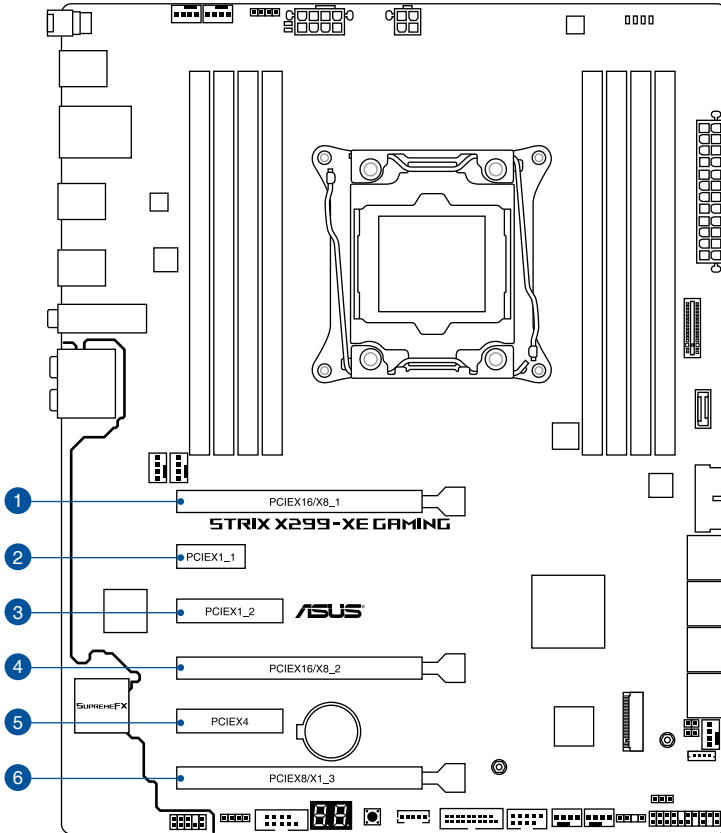
44-LANE CPU	PCI Express 3.0 operating mode		
VGA configuration	PCIEX16/X8_1	PCIEX16/X8_2	PCIEX8/X1_3
Single VGA/PCIe card	x16 (single VGA recommended)	N/A	N/A
Dual VGA/PCIe cards	x16	x16	N/A
Triple VGA/PCIe cards	x16	x16	x8

28-LANE CPU	PCI Express 3.0 operating mode		
VGA configuration	PCIEX16/X8_1	PCIEX16/X8_2	PCIEX8/X1_3
Single VGA/PCIe card	x16 (single VGA recommended)	N/A	N/A
Dual VGA/PCIe cards	x16	x8	N/A
Triple VGA/PCIe cards	x16	x8	x1

16-LANE CPU	PCI Express 3.0 operating mode		
VGA configuration	PCIEX16/X8_1	PCIEX16/X8_2	PCIEX8/X1_3
Single VGA/PCIe card	x16 (single VGA recommended)	N/A	N/A
Dual VGA/PCIe cards	x8	x8	N/A
Triple VGA/PCIe cards	x8	x8	x1

- We recommend that you provide sufficient power when running CrossFireX™ or SLI™ mode.

- Connect a chassis fan to the motherboard connector labeled CHA_FAN1-2 when using multiple graphics cards for better thermal environment.

Chapter 1

1.1.6 Onboard buttons and switches

Onboard buttons and switches allow you to fine-tune performance when working on a bare or open-case system. This is ideal for overclockers and gamers who continually change settings to enhance system performance.

1.   Power-on button

The motherboard comes with a power-on button that allows you to power up or wake up the system.

ROG STRIX X299-XE GAMING Power on button
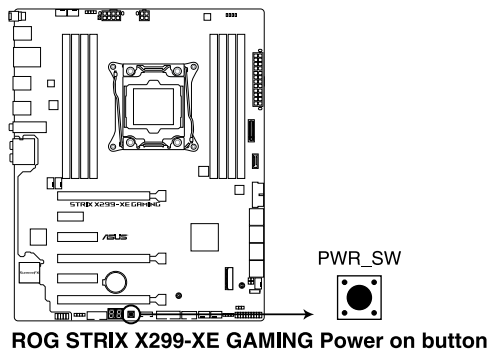
1.1.7   Jumpers and holes

1.   Clear RTC RAM jumper (2-pin CLRTC)

This jumper allows you to clear the Real Time Clock (RTC) RAM in CMOS. You can clear the CMOS memory of date, time, and system setup parameters by erasing the CMOS RTC RAM data. The onboard button cell battery powers the RAM data in CMOS, which includes system setup information such as system passwords.

ROG STRIX X299-XE GAMING CLRTC
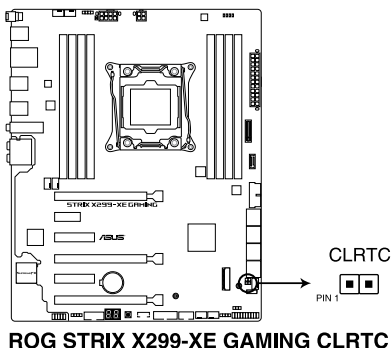
To erase the RTC RAM:

1.   Turn OFF the computer and unplug the power cord.

2.   Short-circuit pin 1-2 with a metal object for about 5-10 seconds.

3.   Plug the power cord and turn ON the computer.

4.   Hold down the <Delete> key during the boot process and enter BIOS setup to re-enter data.

⚠️   Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!

📝
- If the steps above do not help, remove the onboard battery and move the jumper again to clear the CMOS RTC RAM data. After the CMOS clearance, reinstall the battery.

- You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

- Due to the chipset behavior, AC power off is required to enable C.P.R. function. You must turn off and on the power supply or unplug and plug the power cord before rebooting the system.

2. **CPU Over Voltage jumper (3-pin CPU_OV)**

The CPU Over Voltage jumper allows you to set a higher CPU voltage for a flexible overclocking system, depending on the type of the installed CPU. To gain more CPU voltage setting, insert the jumper to pins 2-3. To go back to its default CPU voltage setting, insert the jumper to pins 1-2.
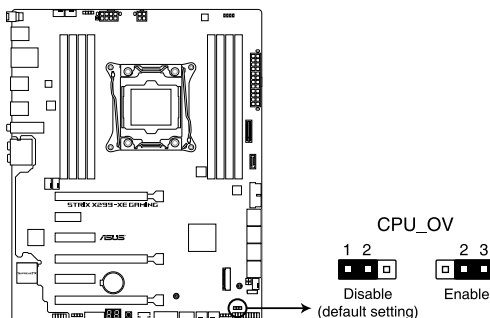
ROG STRIX X299-XE GAMING CPU_OV setting

3. **3D Mount**

Secure 3D printed parts to these 3D Mount holes for a personalized motherboard.
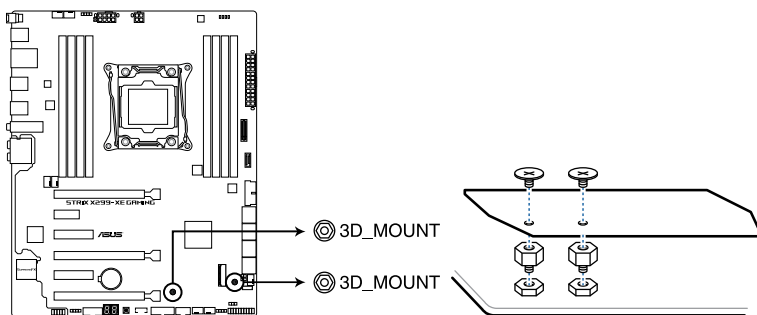
ROG STRIX X299-XE GAMING 3D Mount

• Download 3D source files at http://www.asus.com.

• Use the bundled 3D Mount screws to install the 3D printed parts.

1.1.8   Onboard LEDs

1.   **Q LEDs (CPU, DRAM, VGA, BOOT)**

Q LEDs check key components (CPU, DRAM, VGA card, and booting devices) in sequence during motherboard booting process. If an error is found, the corresponding LED remains lit until the problem is solved. This user-friendly design provides an intuitive way to locate the root problem within seconds.

CPU (RED)
DRAM (YELLOW)
VGA (WHITE)
BOOT (YELLOW GREEN)
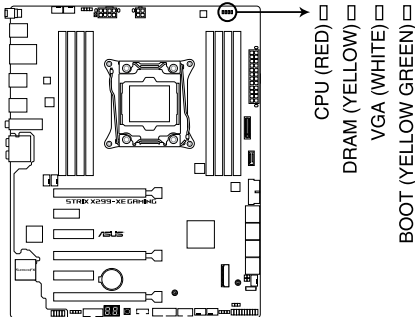
ROG STRIX X299-XE GAMING CPU/ DRAM/ BOOT_DEVICE/ VGA LED

The Q LEDs provide the most probable cause of an error code as a starting point for troubleshooting. The actual cause may vary from case to case.

2.   **Q-Code LED**

The Q-Code LED design provides you with a 2-digit error code that displays the system status.
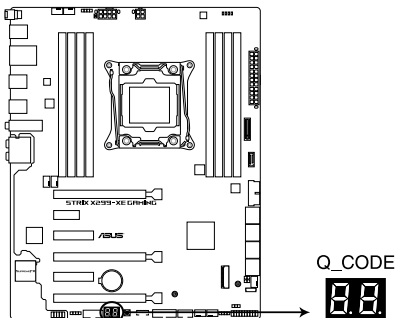
Q_CODE

ROG STRIX X299-XE GAMING Q-Code LED

- The Q-Code LED provides the most probable cause of an error code as a starting point for troubleshooting. The actual cause may vary from case to case.
- Please refer to the Q-Code table in the **Appendix** section for more details.

1.1.9   Internal connectors

1.   **Intel® X299 Serial ATA 6Gb/s connectors (7-pin SATA6G_12, SATA6G_34, SATA6G_56, SATA6G_78)**

These connectors connect to Serial ATA 6Gb/s hard disk drives via Serial ATA 6Gb/s signal cables.

If you installed Serial ATA hard disk drives, you can create a RAID 0, 1, 5, and 10 configuration with the Intel® Rapid Storage Technology through the onboard Intel® X299 chipset.
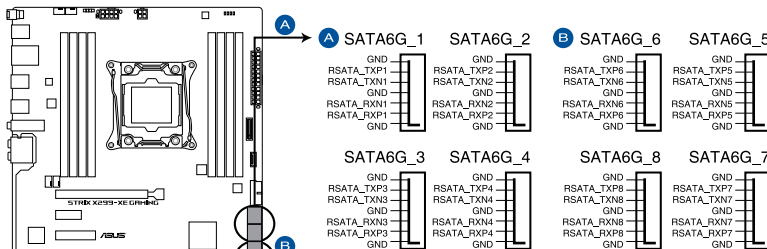
ROG STRIX X299-XE GAMING Intel® Serial ATA 6 Gb/s connectors
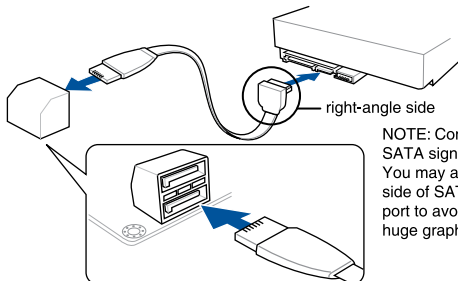
right-angle side

NOTE: Connect the right-angle side of SATA signal cable to SATA device. You may also connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

- These connectors are set to **[AHCI]** by default. If you intend to create a Serial ATA RAID set using these connectors, set the SATA Mode item in the BIOS to **[Intel RST Premium With Intel Optane System Acceleration (RAID)]**.

- Before creating a RAID set, refer to the manual bundled in the motherboard support DVD.

2. M.2 Socket 3

These sockets allow you to install M.2 SSD modules.

A → Ⓐ M.2_2(SOCKET3) Ⓑ M.2_1(SOCKET3)
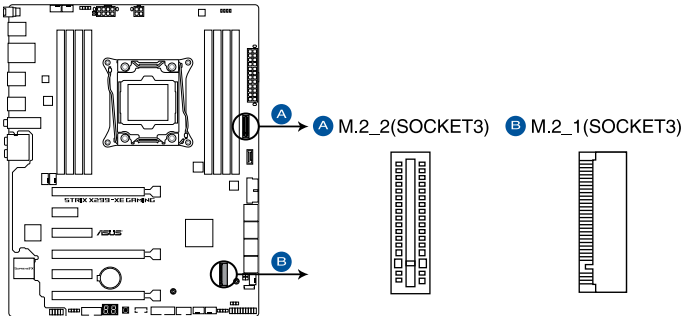
ROG STRIX X299-XE GAMING M.2 sockets

- M.2_1 socket supports PCIe 3.0 x4 and SATA mode M Key design and type 2242 / 2260 / 2280 PCIe and SATA storage devices.
- M.2_2 socket supports PCIe 3.0 x4 M Key design and type 2242 / 2260 / 2280 / 22110 PCIe storage devices.
- These sockets support IRST (Intel® Rapid Storage Technology).

The M.2 SSD module is purchased separately.

3. Serial port connector (10-1 pin COM)

These connectors are for the serial (COM) port. Connect the serial port module cable to one of these connectors, then install the module to a slot opening at the back of the system chassis.

COM

RXD1
DTR1
DSR1
CTS1

PIN 1

DCD1
TXD1
GND
RTS1#
PIN#
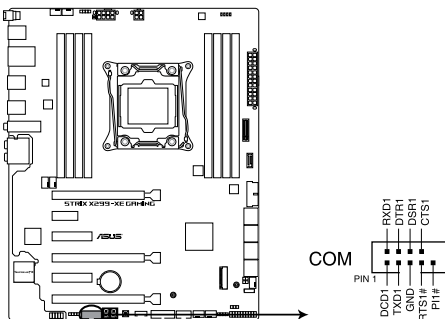
ROG STRIX X299-XE GAMING Serial port connector

4.   **USB 3.1 Gen 2 front panel connector (U31G2_E3)**

This connector allows you to connect a USB 3.1 Gen 2 module for additional USB 3.1 Gen 2 ports. The latest USB 3.1 Gen 2 connectivity provides data transfer speeds of up to 10 Gbps.
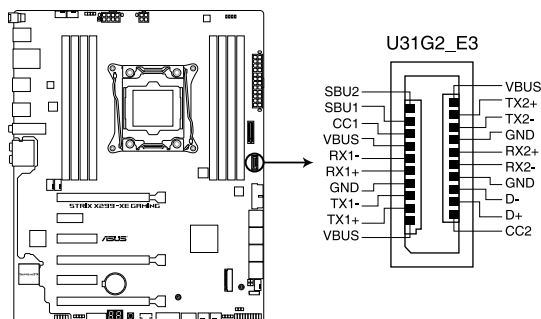
ROG STRIX X299-XE GAMING USB 3.1 Gen 2 front panel connector

5.   **USB 3.1 Gen 1 connectors (20-1 pin U31G1_12, U31G1_34)**

These connectors allow you to connect a USB 3.1 Gen 1 module for additional USB 3.1 Gen 1 front or rear panel ports. With an installed USB 3.1 Gen 1 module, you can enjoy all the benefits of USB 3.1 Gen 1 including faster data transfer speeds of up to 5Gb/s, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.
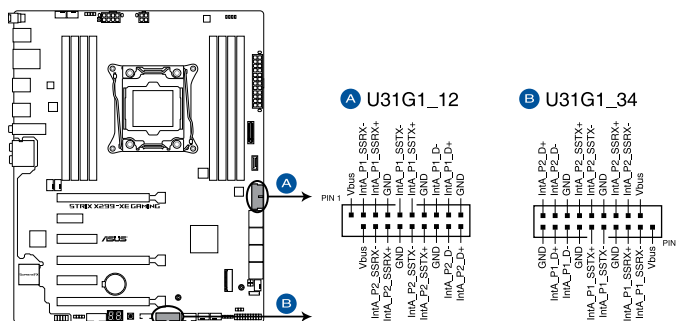
ROG STRIX X299-XE GAMING USB 3.1 Gen 1 connectors

The USB 3.1 Gen 1 module is purchased separately.

The plugged USB 3.1 Gen 1 device may run on xHCI or EHCI mode depending on the operating system's setting.

6.   USB 2.0 connectors (10-1 pin USB910)

These connectors are for USB 2.0 ports. Connect the USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 2.0 specification that supports up to 480Mb/s connection speed.
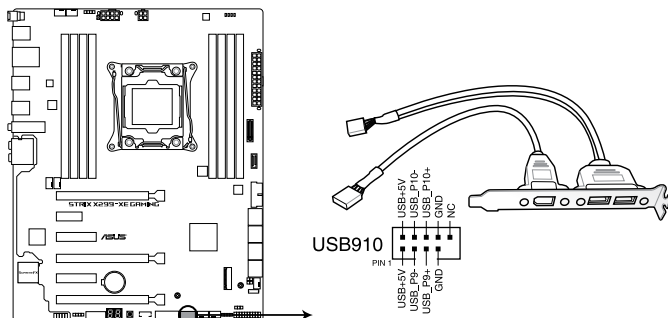
ROG STRIX X299-XE GAMING USB 2.0 connector

DO NOT connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

The USB 2.0 module is purchased separately.

7.   Thermal Sensor connector (2-pin T_SENSOR)

This connector is for the thermistor cable that monitors the temperature of the devices and the critical components inside the motherboard. Connect the thermistor cable and place the sensor on the device or the motherboard's component to detect its temperature.
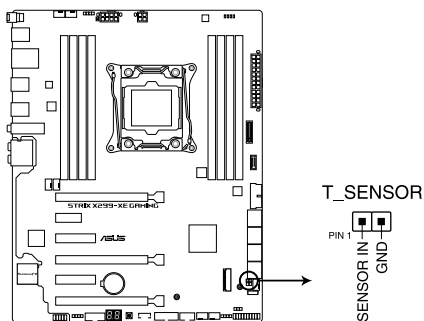
ROG STRIX X299-XE GAMING Thermal sensor connector

8. **CPU, CPU optional, M.2, water pump, AIO, extension, and chassis fan connectors (4-pin CPU_FAN; 4-pin CPU_OPT; 4-pin M.2_FAN; 4-pin W_PUMP+; 4-pin AIO_PUMP; 5-pin EXT_FAN; 4-pin CHA_FAN1-2)**

Connect the fan cables to the fan connectors on the motherboard, ensuring that the black wire of each cable matches the ground pin of the connector.

ROG STRIX X299-XE GAMING
Fan connectors
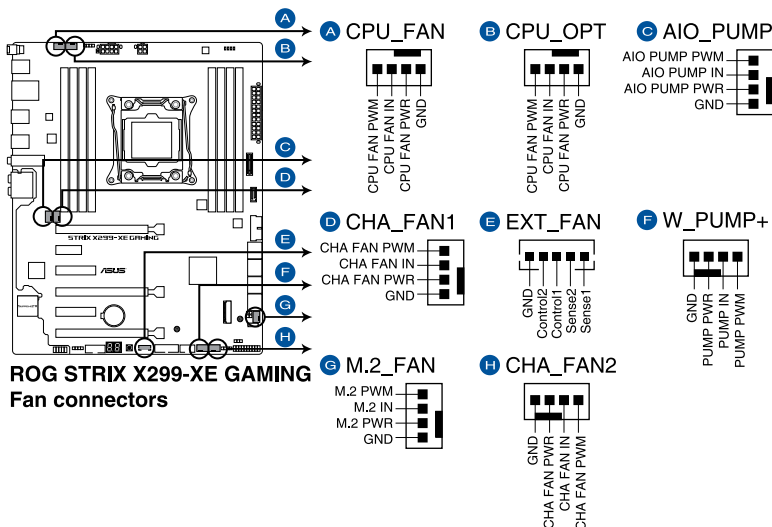
- DO NOT forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

- Ensure that the CPU fan cable is securely installed to the CPU fan connector.

- The CPU_FAN connector supports the CPU fan of maximum 1A (12 W) fan power.

- The EXT_FAN connector supports 2 of 5 thermal sensor sources.

- W_PUMP+ function support depends on water cooling device.

- Connect the fan of your water cooling kit to the AIO_PUMP connector.

9. ATX power connectors (24-pin EATXPWR; 8-pin EATX12V_1; 4-pin EATX12V_2)

These connectors are for ATX power supply plugs. The power supply plugs are designed to fit these connectors in only one orientation. Find the proper orientation and push down firmly until the connectors completely fit.

A EATX12V_1   **C** EATXPWR

EATX12V_1 pins (left to right, top row): +12V DC, +12V DC, +12V DC, +12V DC
bottom row: GND, GND, GND, GND
PIN 1

EATXPWR:
+3 Volts	+3 Volts
-12 Volts	+3 Volts
GND	GND
PSON#	+5 Volts
GND	GND
GND	+5 Volts
GND	GND
floating	Power OK
+5 Volts	+5V Standby
+5 Volts	+12 Volts
+5 Volts	+12 Volts
GND	+3 Volts

PIN 1

B EATX12V_2

EATX12V_2 pins: +12V DC, +12V DC (top), GND, GND (bottom)
PIN 1
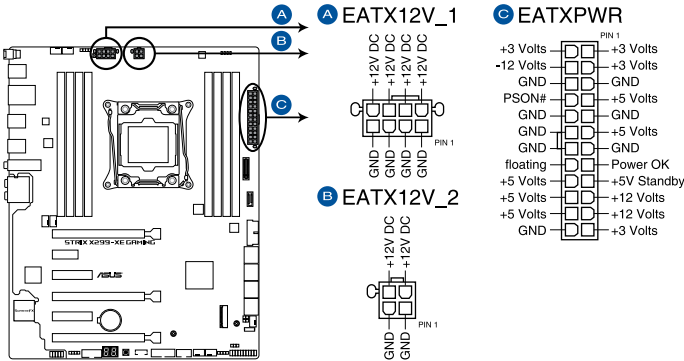
ROG STRIX X299-XE GAMING ATX power connectors

- DO NOT connect the 4-pin power plug only, the motherboard may overheat under heavy usage.

- Ensure to connect the 8-pin power plug, or connect both the 8-pin and 4-pin power plugs. A red LED located to the right of the 8-pin power plug will light up if the 8-pin power plug is not connected.

- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12V Specification 2.0 (or later version) and provides a minimum power of 350W.

- We recommend that you use a PSU with a higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

- If you want to use two or more high-end PCI Express x16 cards, use a PSU with 1000W power or above to ensure the system stability.

10. System panel connector (20-3 pin PANEL)

This connector supports several chassis-mounted functions.
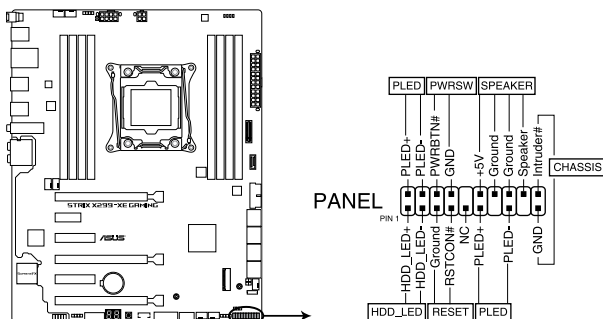
ROG STRIX X299-XE GAMING System panel connector

- **System power LED (2-pin or 3-1 pin PLED)**

  The 2-pin or 3-1 pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

- **Hard disk drive activity LED (2-pin HDD_LED)**

  This 2-pin connector is for the HDD Activity LED. Connect the HDD Activity LED cable to this connector. The HDD LED lights up or flashes when data is read from or written to the HDD.

- **System warning speaker (4-pin SPEAKER)**

  This 4-pin connector is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.

- **ATX power button/soft-off button (2-pin PWRSW)**

  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the operating system settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

- **Reset button (2-pin RESET)**

  This 2-pin connector is for the chassis-mounted reset button for system reboot without turning off the system power.

- **Chassis intrusion connector (2-pin CHASSIS)**

  This connector is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal is then generated as a chassis intrusion event.

11. AURA RGB header (4-pin RGB_HEADER1, RGB_HEADER2)

These connectors are for RGB LED strips.

ROG STRIX X299-XE GAMING RGB header
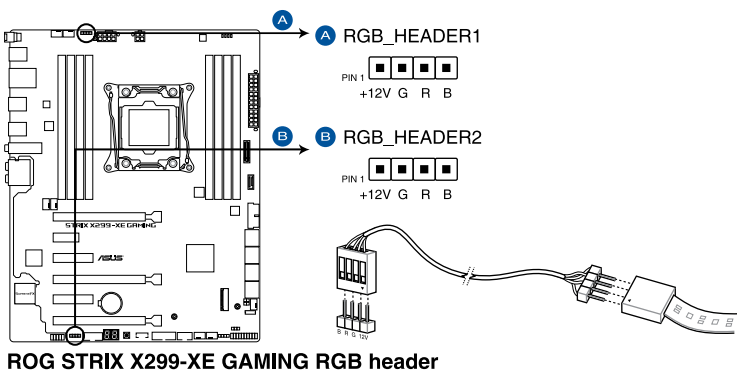
- The RGB header supports 5050 multi-color LED strips (+12V/G/R/B), with a maximum power rating of 3A (12V), and no longer than 3 m.

- Ensure that the RGB LED extension cable and the RGB LED strip is connected in the correct orientation, and the +12V connector is aligned with the +12V header on the motherboard.

Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

- Actual lighting and color will vary with LED strip.

- The lighting effects may be customized with the help of AURA software.

- If your LED strip does not light up, check if the RGB LED extension cable and the RGB LED strip is connected in the correct orientation, and the 12V connector is aligned with the 12V header on the motherboard.

- The LED strip will only light up when the system is operating.

- The LED strips are purchased separately.

Chapter 1

12. Addressable header (4-1 pin ADD_HEADER)

This connector is for individually addressable RGB WS2812B LED strips with embedded WS2811 LED driver ICs.

ADD_HEADER

PIN 1
+5V
Data
Ground

ROG STRIX X299-XE GAMING ADD header
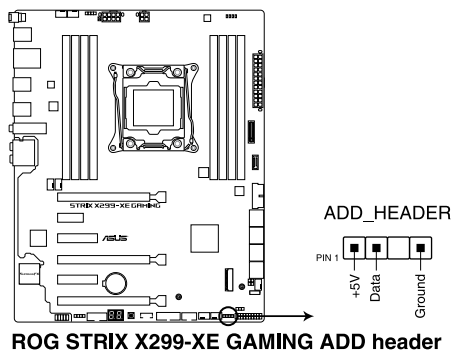
> The addressable RGB header supports WS2812B addressable RGB LED strips (5V/Data/Ground), with a maximum power rating of 3A (5V) and a maximum of 60 LEDs.

> Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

> • Actual lighting and color will vary with LED strip.
>
> • If your LED strip does not light up, check if the addressable RGB LED strip is connected in the correct orientation, and the 5V connector is aligned with the 5V header on the motherboard.
>
> • The addressable RGB LED strip will only light up under the operating system.
>
> • The addressable RGB LED strip is purchased separately.

13. VROC_HW_KEY connector (4-pin VROC_HW_KEY)

This connector allows you to connect a KEY module to enable CPU RAID functions with Intel® CPU RSTe.

ROG STRIX X299-XE GAMING VROC_HW_KEY
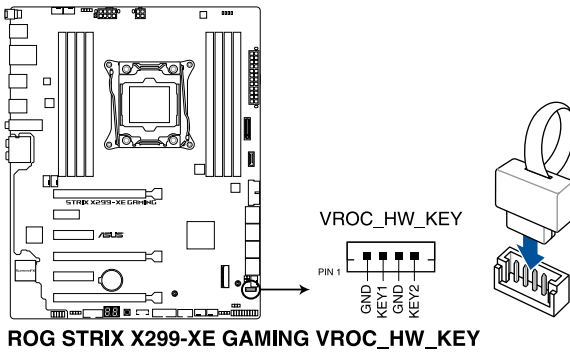
The KEY module is purchased separately.

14. Front panel audio connector (10-1 pin AAFP)

This connector is for a chassis-mounted front panel audio I/O module that supports HD Audio. Connect one end of the front panel audio I/O module cable to this connector.

ROG STRIX X299-XE GAMING Front panel audio connector
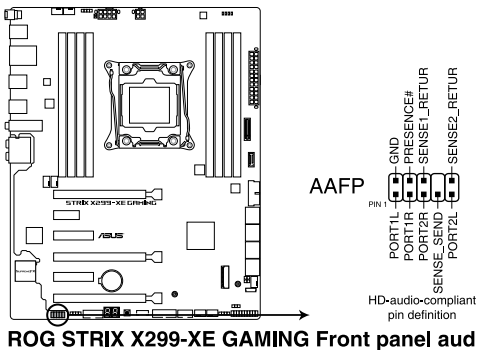
We recommend that you connect a high-definition front panel audio module to this connector to avail of the motherboard's high-definition audio capability.

Basic Installation

2

2.1   Building your PC system

The diagrams in this section are for references only. The motherboard layout may vary with models, but the installation steps are the same for all models.

2.1.1   CPU installation

Please note the order in opening/closing the double latch. Follow the instructions printed on the metal sealing hatch or the illustrations shown below in this manual. The plastic cap will pop up automatically once the CPU is in place and the hatch properly sealed down.

5

Triangle mark

Triangle mark

6

7

B

A

8

9

B

A
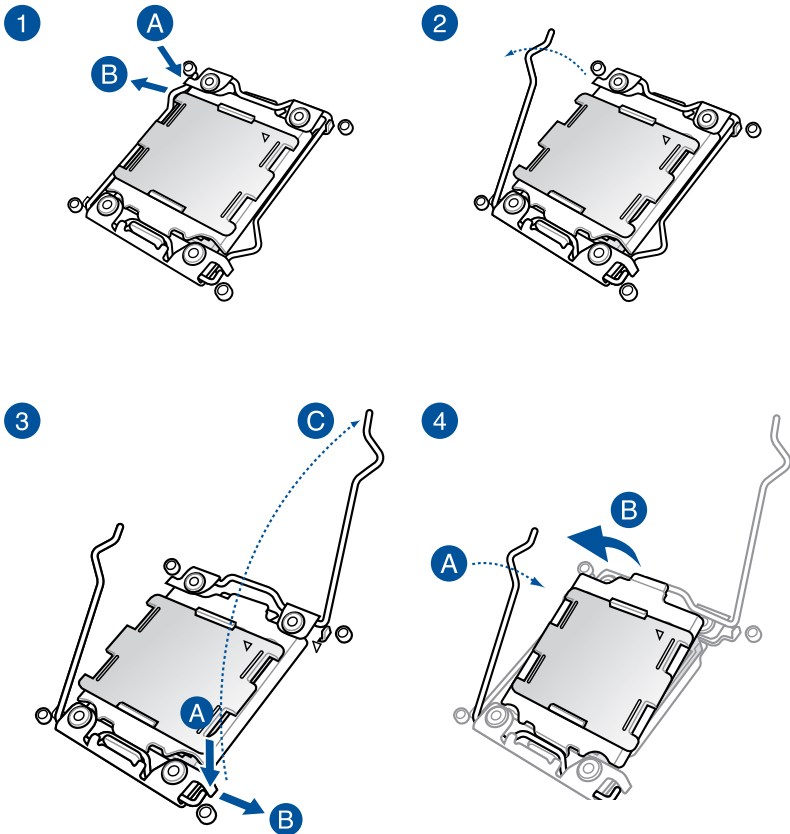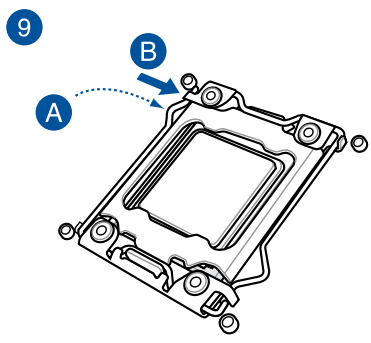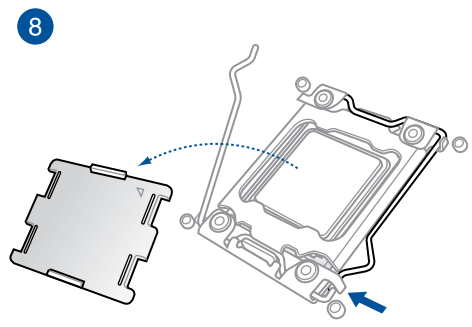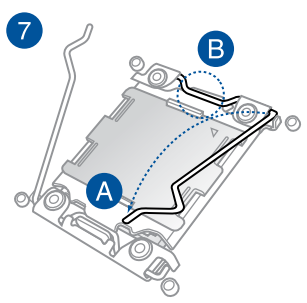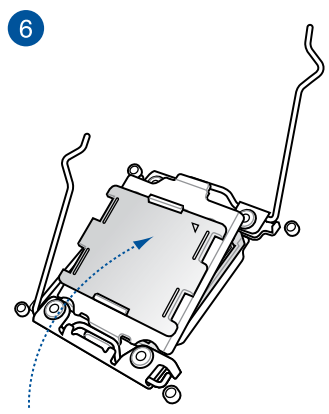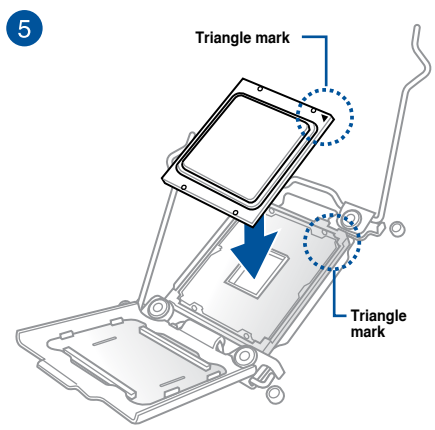
2.1.2   CPU heatsink and fan assembly installation
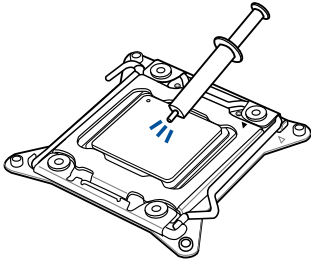
Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan, if necessary.

To install the CPU heatsink and fan assembly:
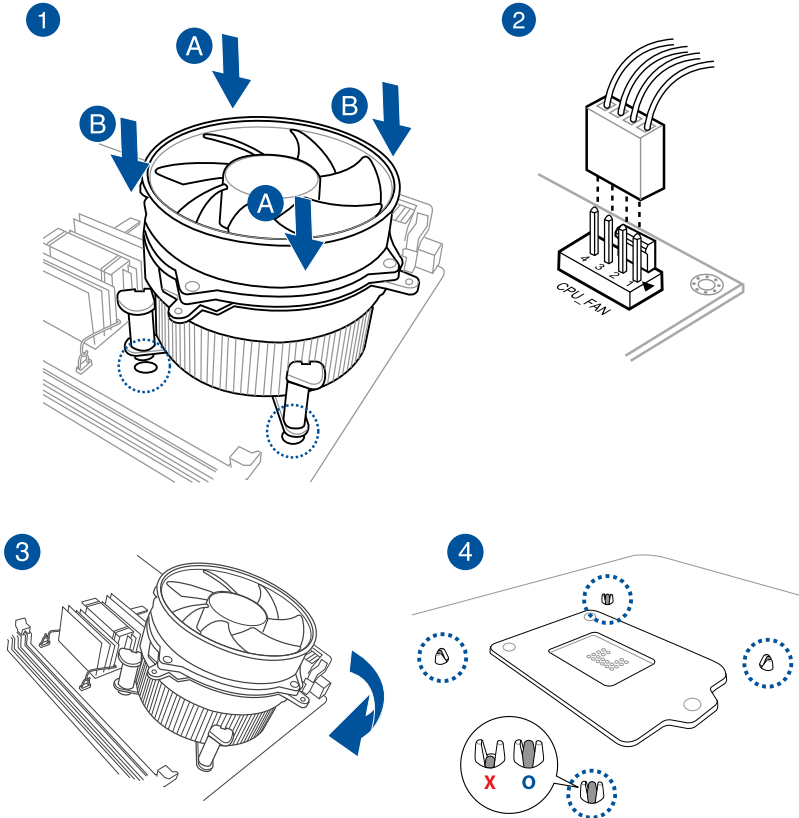
To uninstall the CPU heatsink and fan assembly
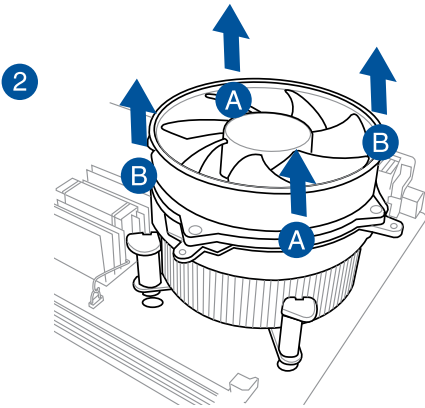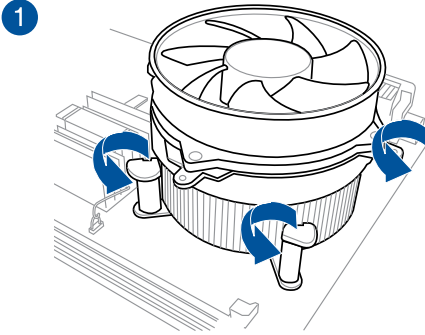
2.1.3   Motherboard installation

1.   Install the ASUS Q-Shield to the chassis rear I/O panel.
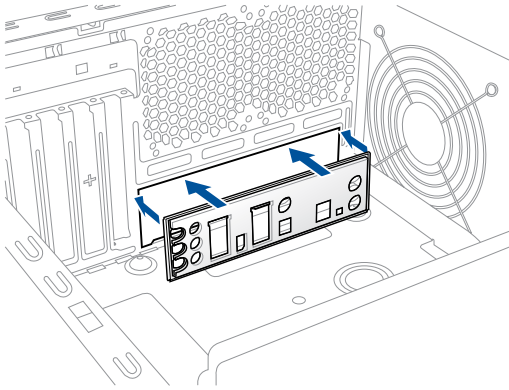
2.   Place the motherboard into the chassis, ensuring that its rear I/O ports are aligned to the chassis' rear I/O panel.
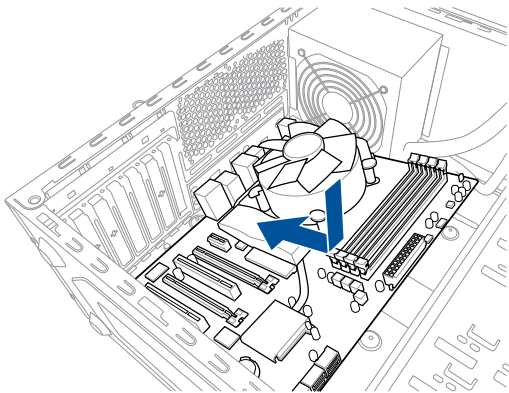
3.   Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis.

STRIX X299-XE GAMING

/ISUS

SupremeFX
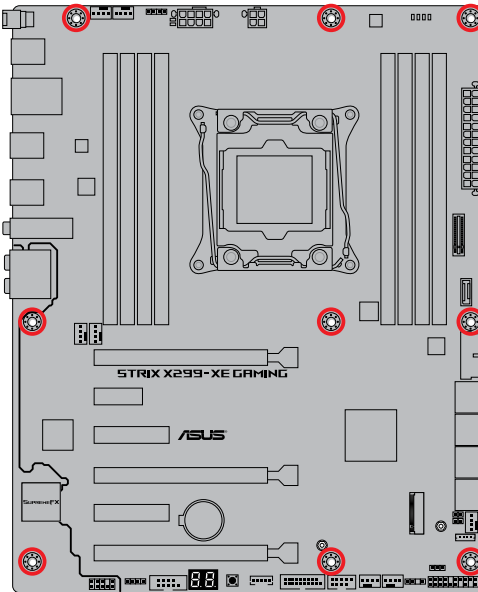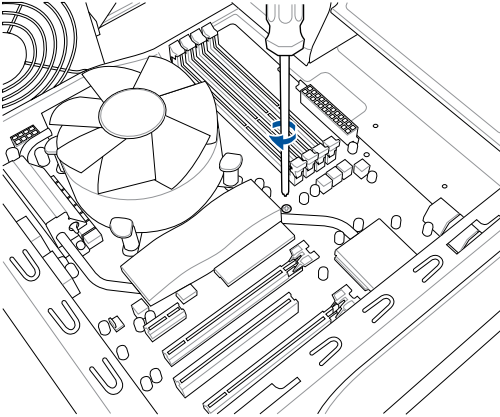
DO NOT overtighten the screws! Doing so can damage the motherboard.

2.1.4   DIMM installation

Ensure to install at least one of the memory modules into the A1*/B1*/C1*/D1* slot.
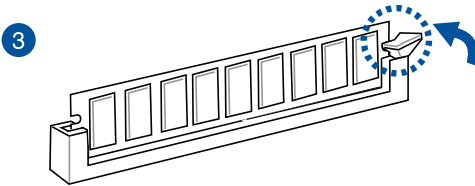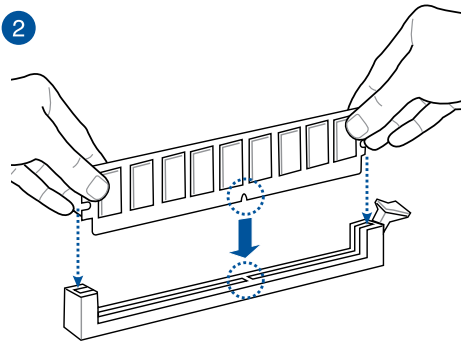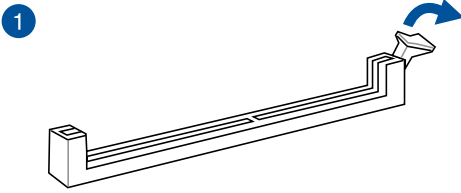
To remove a DIMM
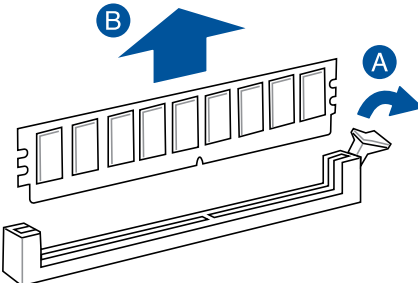
2.1.5   ATX Power connection
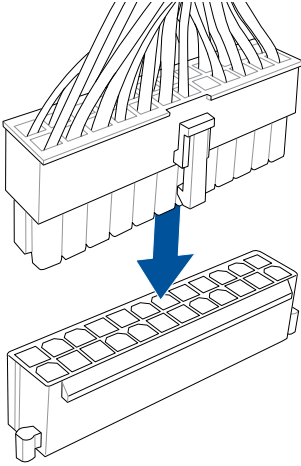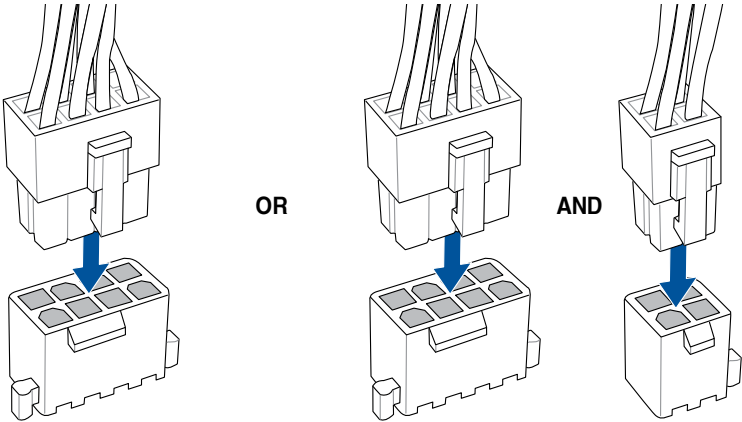
OR   AND

⚠️ • DO NOT connect the 4-pin power plug only, the motherboard may overheat under heavy usage.

• Ensure to connect the 8-pin power plug, or connect both 8-pin and 4-pin power plugs.

2.1.6 SATA device connection

OR

OR
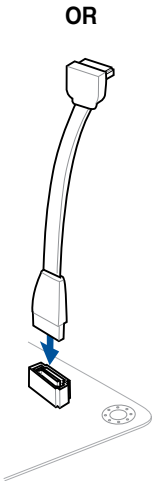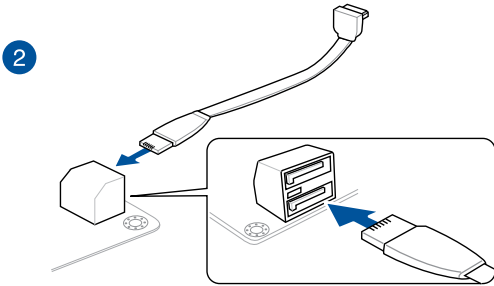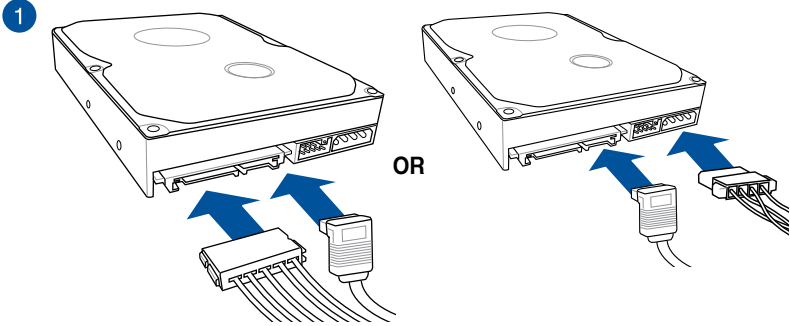
2.1.7 Front I/O connector

To install ASUS Q-Connector
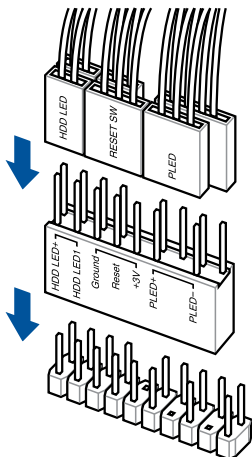
To install USB 3.1 Gen 2 connector
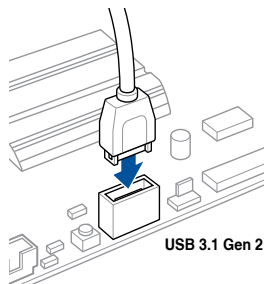
USB 3.1 Gen 2

This connector will only fit in one orientation. Push the connector until it clicks into place.

To install USB 3.1 Gen 1 connector

USB 3.1 Gen 1
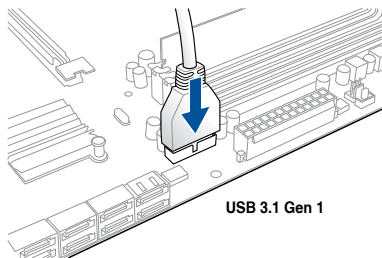
To install USB 2.0 connector

USB 2.0
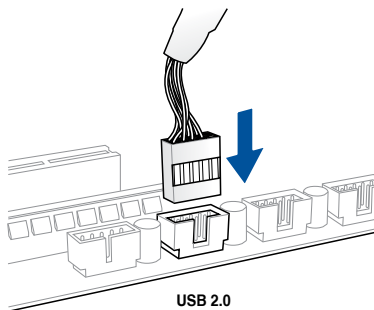
To install front panel audio connector

AAFP
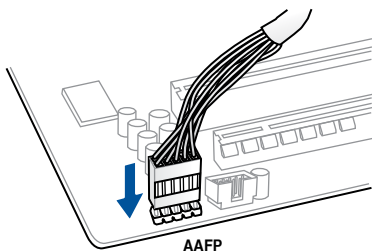
2.1.8   Expansion Card installation

To install PCIe x16 cards
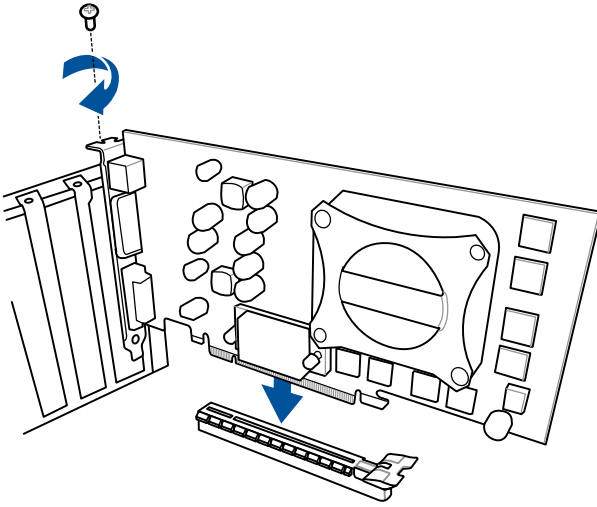
To install PCIe x1 cards
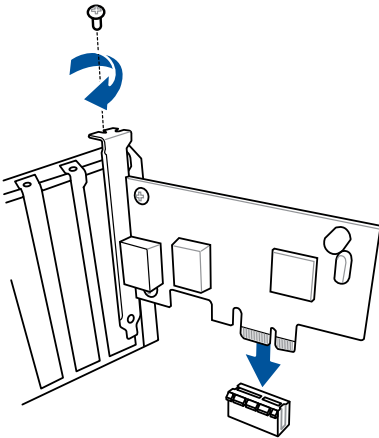
To install FAN EXTENSION CARD
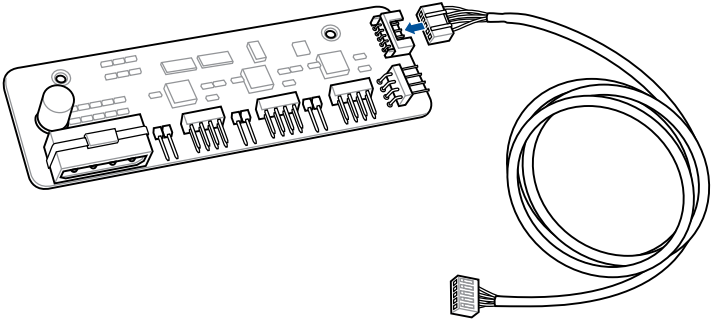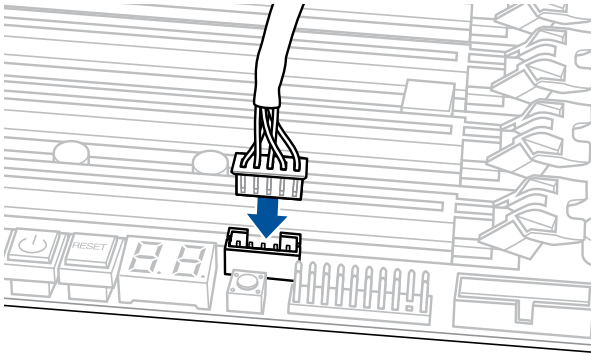
> • The illustrations in this section are for reference only. The motherboard layout may vary with models, but the installation steps are the same for all models.
>
> • The FAN Extension card is purchased separately.

2.1.9   M.2 installation
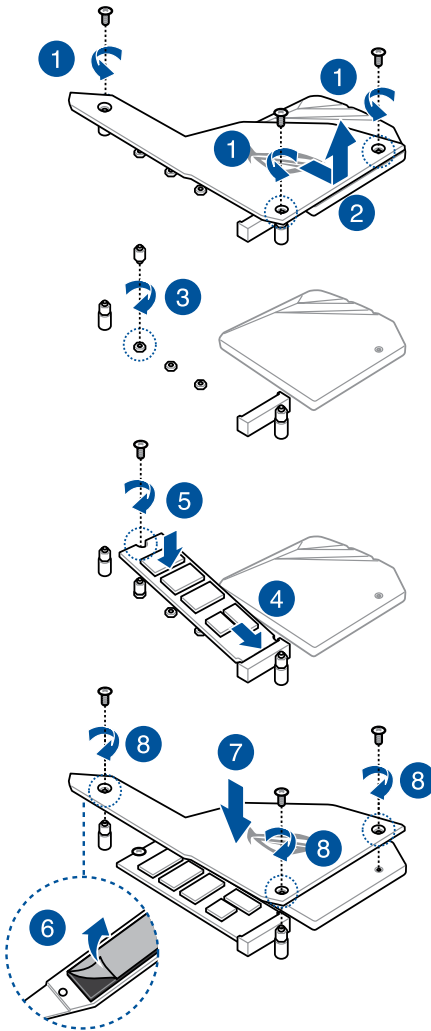
> • Please remove the plastic film from the thermal pad before use.
>
> • Use the bundled M.2 screws to secure the M.2.
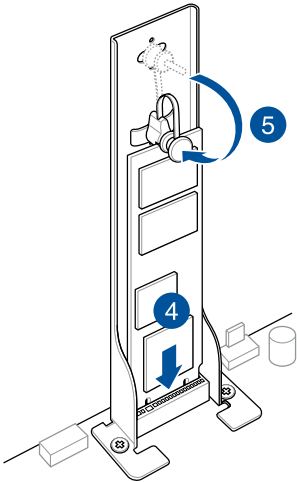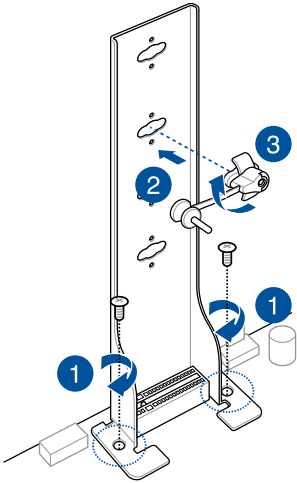
Supported M.2 type varies per motherboard.

Use the bundled M.2 screws to secure the M.2.

2.1.10   Fan bracket installation

To install the MOS FAN bracket and fan
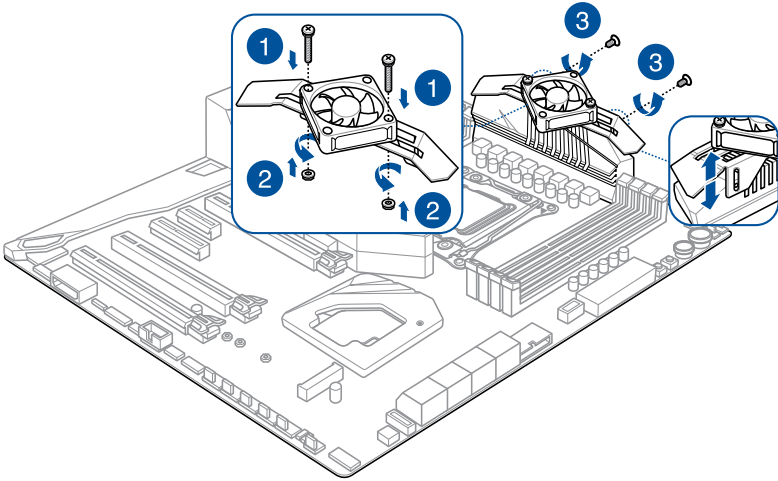
> ⚠️ When using high performance settings whilst overclocking, ensure to install the MOS FAN bracket for additional fan(s).

2.1.11 Wi-Fi antenna installation

Installing the ASUS 2x2 dual band W-Fi antenna

Connect the bundled ASUS 2x2 dual band Wi-Fi antenna connector to the Wi-Fi ports at the back of the chassis.
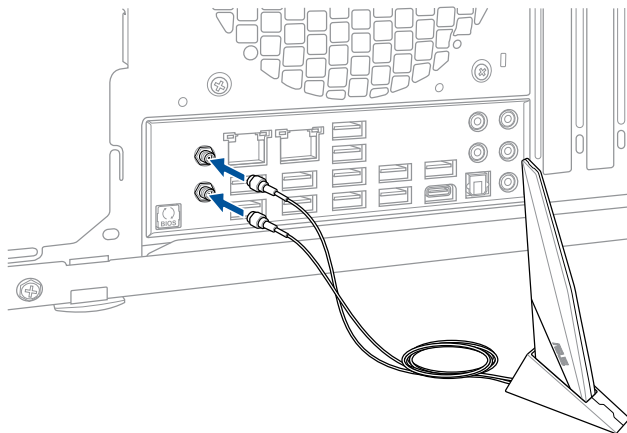
- Ensure that the ASUS 2x2 dual band Wi-Fi antenna is securely installed to the Wi-Fi ports.

- Ensure that the antenna is at least 20 cm away from all persons.

The illustration above is for reference only. The I/O port layout may vary with models, but the Wi-Fi antenna installation procedure is the same for all models.

Chapter 2

2.2 BIOS update utility

USB BIOS Flashback

USB BIOS Flashback allows you to easily update the BIOS without entering the existing BIOS or operating system. Simply insert a USB storage device to the USB port (the USB port hole marked in green on the I/O shield) then press the USB BIOS Flashback button for three seconds to automatically update the BIOS.

To use USB BIOS Flashback:

1. Insert a USB storage device to the USB Flashback port.

> We recommend you to use a USB 2.0 storage device to save the latest BIOS version for better compatibility and stability.

2. Visit https://www.asus.com/support/ and download the latest BIOS version for this motherboard.

3. Rename the file as **X299SXE.CAP**, then copy it to your USB storage device.

4. Shut down your computer.

5. Press the BIOS Flashback button for three seconds until the Flashback LED blinks three times, indicating that the BIOS Flashback function is enabled.

BIOS Flashback button   **USB BIOS Flashback port**

6. Wait until the light goes out, indicating that the BIOS updating process is completed.

> For more BIOS update utilities in BIOS setup, refer to the section **3.11 Updating BIOS** in Chapter 3.

> - Do not unplug portable disk, power system, or press the CLR_CMOS button while BIOS update is ongoing, otherwise update will be interrupted. In case of interruption, please follow the steps again.
>
> - If the light flashes for five seconds and turns into a solid light, this means that the BIOS Flashback is not operating properly. This may be caused by improper installation of the USB storage device and filename/file format error. If this scenario happens, please restart the system to turn off the light.
>
> - Updating BIOS may have risks. If the BIOS program is damaged during the process and results to the system's failure to boot up, please contact your local ASUS Service Center.

2.3 Motherboard rear and audio connections

2.3.1 Rear I/O connection
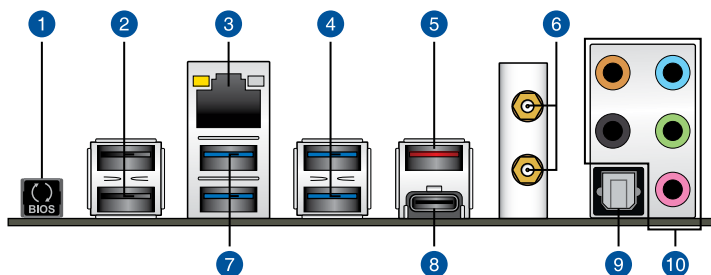
Rear panel connectors			
1.	USB BIOS Flashback button	6.	Wi-Fi 802.11 a/b/g/n/ac, Bluetooth V4.2
2.	USB 2.0 ports 1112 (Bottom port supports USB BIOS Flashback)	7.	USB 3.1 Gen 1 ports 56
3.	Intel® LAN port*	8.	USB 3.1 Gen 2 Type-C™ port EC2
4.	USB 3.1 Gen 1 ports 78	9.	Optical S/PDIF Out port
5.	USB 3.1 Gen 2 Type-A port EA2	10.	Audio I/O ports**

* and **: Refer to the tables on the next page for LAN port LEDs and audio port definitions.

- USB 3.1 Gen 1/Gen 2 devices can only be used as data storage only.

- We strongly recommend that you connect your devices to ports with matching data transfer rate. Please connect your USB 3.1 Gen 1 devices to USB 3.1 Gen 1 ports and your USB 3.1 Gen 2 devices to USB 3.1 Gen 2 ports for faster and better performance for your devices.

* LAN ports LED indications

Activity Link LED		Speed LED	
Status	**Description**	**Status**	**Description**
Off	No link	Off	10 Mbps connection
Orange	Linked	Orange	100 Mbps connection
Orange (Blinking)	Data activity	Green	1 Gbps connection
Orange (Blinking then steady)	Ready to wake up from S5 mode		

ACT/LINK LED   SPEED LED
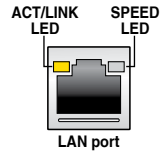
LAN port

You can disable the LAN controllers in BIOS. Due to hardware design, the LAN port's LEDs may continue to blink even when disabled.

** Audio 2, 4, 6, or 8-channel configuration

Port	Headset 2-channel	4-channel	6-channel	8-channel
Light Blue	Line In	Line In	Line In	Side Speaker Out
Lime	Front Speaker Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink	Mic In	Mic In	Mic In	Mic In
Orange	–	–	Center/Subwoofer	Center/Subwoofer
Black	–	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out

2.3.2 Audio I/O connections

Audio I/O ports

orange
black

light blue
lime
pink
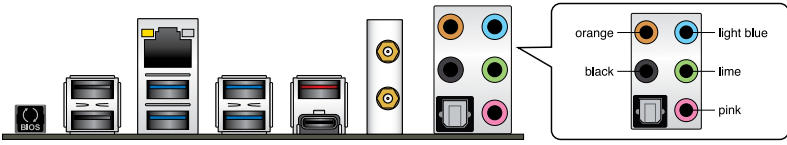
Connect to Headphone and Mic

Connect to Stereo Speakers
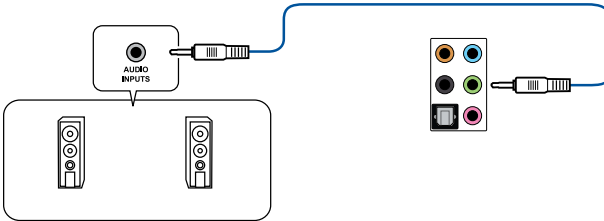
Connect to 2 channel Speakers
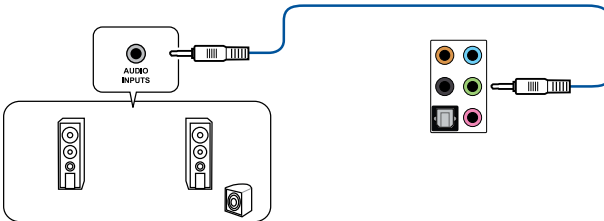
Connect to 4 channel Speakers
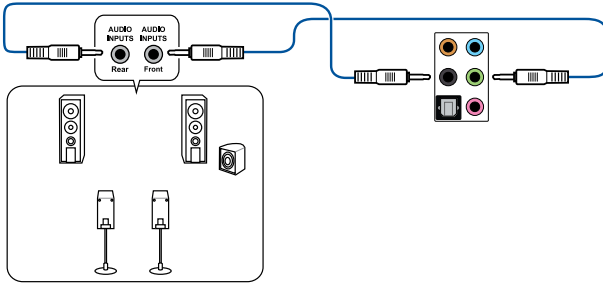
Connect to 6 channel Speakers
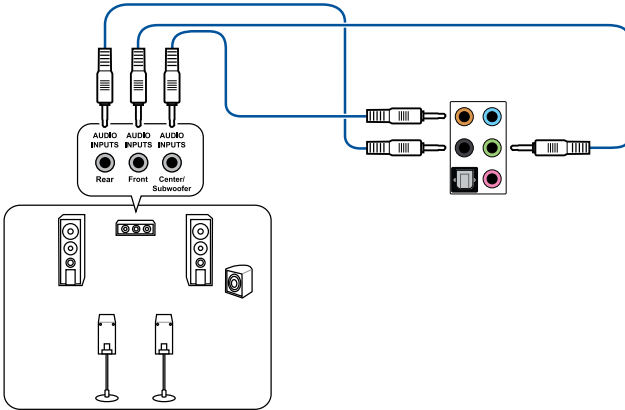
Connect to 8 Speakers
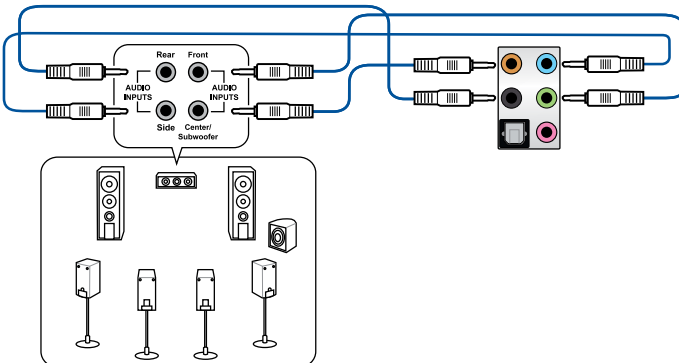
2.4　Starting up for the first time

1.　After making all the connections, replace the system case cover.

2.　Ensure that all switches are off.

3.　Connect the power cord to the power connector at the back of the system chassis.

4.　Connect the power cord to a power outlet that is equipped with a surge protector.

5.　Turn on the devices in the following order:

　　a.　Monitor

　　b.　External SCSI devices (starting with the last device on the chain)

　　c.　System power

6.　After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with the "green" standards or if it has a "power standby" feature, the monitor LED may light up or change from orange to green after the system LED turns on.

　　The system then runs the power-on self tests (POST). While the tests are running, the BIOS beeps (refer to the BIOS beep codes table) or additional messages appear on the screen. If you do not see anything within 30 seconds from the time you turned on the power, the system may have failed a power-on test. Check the jumper settings and connections or call your retailer for assistance.

BIOS Beep	Description
One short beep	VGA detected
	Quick boot set to disabled
	No keyboard detected
One continuous beep followed by two short beeps then a pause (repeated)	No memory detected
One continuous beep followed by three short beeps	No VGA detected
One continuous beep followed by four short beeps	Hardware component failure

7.　At power on, hold down the <Delete> key to enter the BIOS Setup. Follow the instructions in Chapter 3.

2.5　Turning off the computer

While the system is ON, press the power button for less than four seconds to put the system on sleep mode or soft-off mode, depending on the BIOS setting. Press the power switch for more than four seconds to let the system enter the soft-off mode regardless of the BIOS setting.

BIOS Setup

3

3.1 Knowing BIOS

The new ASUS UEFI BIOS is a Unified Extensible Interface that complies with UEFI architecture, offering a user-friendly interface that goes beyond the traditional keyboard-only BIOS controls to enable a more flexible and convenient mouse input. You can easily navigate the new UEFI BIOS with the same smoothness as your operating system. The term "BIOS" in this user manual refers to "UEFI BIOS" unless otherwise specified.

BIOS (Basic Input and Output System) stores system hardware settings such as storage device configuration, overclocking settings, advanced power management, and boot device configuration that are needed for system startup in the motherboard CMOS. In normal circumstances, the default BIOS settings apply to most conditions to ensure optimal performance. **DO NOT change the default BIOS settings** except in the following circumstances:

- An error message appears on the screen during the system bootup and requests you to run the BIOS Setup.

- You have installed a new system component that requires further BIOS settings or update.

Inappropriate BIOS settings may result to instability or boot failure. **We strongly recommend that you change the BIOS settings only with the help of a trained service personnel**.

When downloading or updating the BIOS file, rename it as **X299SXE.CAP** for this motherboard.

3.2 BIOS setup program

Use the BIOS Setup to update the BIOS or configure its parameters. The BIOS screen include navigation keys and brief onscreen help to guide you in using the BIOS Setup program.

Entering BIOS at startup

To enter BIOS Setup at startup, press <Delete> or <F2> during the Power-On Self Test (POST). If you do not press <Delete> or <F2>, POST continues with its routines.

Entering BIOS Setup after POST

To enter BIOS Setup after POST:

• Press <Ctrl>+<Alt>+<Delete> simultaneously.

• Press the reset button on the system chassis.

• Press the power button to turn the system off then back on. Do this option only if you failed to enter BIOS Setup using the first two options.

After doing either of the three options, press <Delete> key to enter BIOS.

• The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

• Ensure that a USB mouse is connected to your motherboard if you want to use the mouse to control the BIOS setup program.

• If the system becomes unstable after changing any BIOS setting, load the default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** item under the **Exit** menu or press hotkey **<F5>**. See section **3.10 Exit Menu** for details.

• If the system fails to boot after changing any BIOS setting, try to clear the CMOS and reset the motherboard to the default value. See section **1.1.7 Jumpers** for information on how to erase the RTC RAM via the Clear CMOS jumper.

• The BIOS setup program does not support the Bluetooth devices.

Please visit ASUS website for the detailed BIOS content manual.

BIOS menu screen

The BIOS Setup program can be used under two modes: **EZ Mode** and **Advanced Mode**. You can change modes from **Setup Mode** in **Boot menu** or by pressing the <F7> hotkey.

3.2.1   Advanced Mode

The Advanced Mode provides advanced options for experienced end-users to configure the BIOS settings. The figure below shows an example of the Advanced Mode. Refer to the following sections for the detailed configurations.

> The default screen for entering the BIOS setup program can be changed. Refer to the **Setup Mode** item in section **Boot menu** for details.

Menu bar

The menu bar on top of the screen has the following main items:

My Favorites	For saving the frequently-used system settings and configuration.
Main	For changing the basic system configuration
Ai Tweaker	For changing the overclocking settings
Advanced	For changing the advanced system settings
Monitor	For displaying the system temperature, power status, and changing the fan settings.
Boot	For changing the system boot configuration
Tool	For configuring options for special functions
Exit	For selecting the exit options and loading default settings

Menu items

The highlighted item on the menu bar displays the specific items for that menu. For example, selecting **Main** shows the Main menu items.

The other items (My Favorites, Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit) on the menu bar have their respective menu items.

Submenu items

A greater than sign (>) before each item on any menu screen means that the item has a submenu. To display the submenu, select the item and press <Enter>.

Language

This button above the menu bar contains the languages that you can select for your BIOS. Click this button to select the language that you want to display in your BIOS screen.

My Favorites(F3)

This button above the menu bar shows all BIOS items in a Tree Map setup. Select frequently-used BIOS settings and save it to MyFavorites menu.

Refer to section **3.3 My Favorites** for more information.

Q-Fan Control(F6)

This button above the menu bar displays the current settings of your fans. Use this button to manually tweak the fans to your desired settings.

Refer to section **3.2.3 QFan Control** for more information.

EZ Tuning Wizard(F11)

This button above the menu bar allows you to view and tweak the overclocking settings of your system. It also allows you to change the motherboard's SATA mode from AHCI to RAID mode.

Refer to section **3.2.4 EZ Tuning Wizard** for more information.

Search on FAQ

Move your mouse over this button to show a QR code, scan this QR code on your mobile device to connect to the BIOS FAQ web page of the ASUS support website. You can also scan the following QR code:

Hot keys

This button above the menu bar contains the navigation keys for the BIOS setup program. Use the navigation keys to select items in the menu and change the settings.

Scroll bar

A scroll bar appears on the right side of a menu screen when there are items that do not fit on the screen. Press the Up/Down arrow keys or <Page Up> / <Page Down> keys to display the other items on the screen.

General help

At the bottom of the menu screen is a brief description of the selected item. Use <F12> key to capture the BIOS screen and save it to the removable storage device.

Configuration fields

These fields show the values for the menu items. If an item is user-configurable, you can change the value of the field opposite the item. You cannot select an item that is not user-configurable.

A configurable field is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

Last Modified button

This button shows the items that you last modified and saved in BIOS Setup.

Chapter 3

3.2.2 EZ Mode

The EZ Mode provides you an overview of the basic system information, and allows you to select the display language, system performance, mode and boot device priority. To access the Advanced Mode, select **Advanced Mode** or press the <F7> hotkey for the advanced BIOS settings.

To switch from Advanced Mode to EZ Mode, click **EZ Mode(F7)** or press the <F7> hotkey.

Displays the system properties of the selected mode.
Click < or > to switch EZ System Tuning modes

Displays the CPU/motherboard temperature, CPU voltage output, CPU/chassis/power fan speed, and SATA information

Selects the display language of the BIOS setup program

Creates storage RAID and configures system overclocking

Enables or disables the SATA RAID mode for Intel Rapid Storage Technology

Displays the CPU Fan's speed. Click the button to manually tune the fans

Loads optimized default settings

Saves the changes and resets the system

Click to go to Advanced mode

Search on the FAQ

Click to display boot devices

Selects the boot device priority

The boot device options vary depending on the devices you installed to the system.

3.2.3   QFan Control

The QFan Control allows you to set a fan profile or manually configure the operating speed of your CPU and chassis fans.

Click to select a fan to be configured

Click to activate PWM Mode

Click to activate DC Mode

Q-Fan Control
Select your target fan and then move the slider to select any of these profiles: Standard, Silent, Turbo and Full Speed. You can also move the slider to Manual and manually configure the fan's operating speed.

PWM   DC

Optimize All

CPU FAN
CHA1 FAN
CHA2 FAN
M.2 FAN
W_PUMP+
AIO PUMP
EXT FAN1
EXT FAN2
EXT FAN3

%
100

50

0   30   70   100   °C

Standard   Silent   Turbo   Full Speed   Manual

Undo   Apply   Exit (ESC)

Click to apply the fan setting

Select a profile to apply to your fans

Click to undo the changes

Click to go back to main menu

Select to manually configure your fans

Configuring fans manually

Select **Manual** from the list of profiles to manually configure your fans' operating speed.
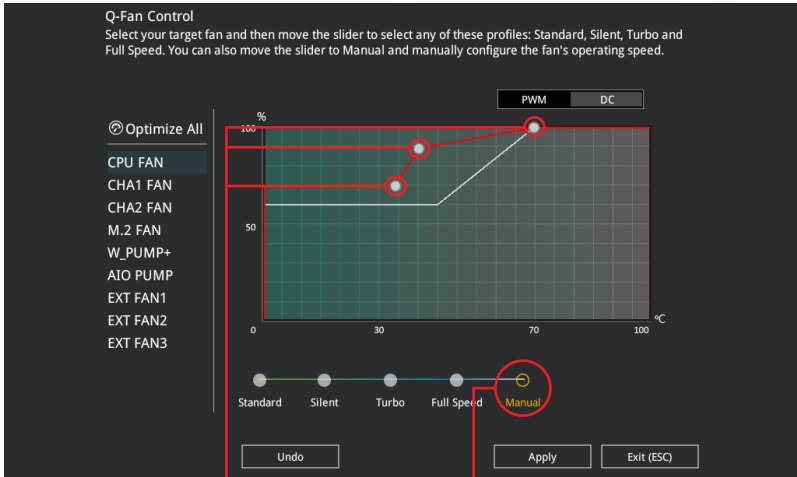
Speed points   **Select to manually configure your fans**

To configure your fans:
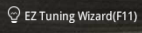
1.   Select the fan that you want to configure and to view its current status.

2.   Click and drag the speed points to adjust the fans' operating speed.

3.   Click **Apply** to save the changes then click **Exit (ESC)**.

3.2.4   EZ Tuning Wizard

EZ Tuning Wizard allows you to easily set RAID in your system using this feature.

Creating RAID

To create RAID:

1.   Press <F11> on your keyboard or click from the BIOS screen to open EZ Tuning Wizard screen.

2.   2.   Click **Yes** to enable RAID.

- • Ensure that your HDDs have no existing RAID volumes.

- • Ensure to connect your HDDs to Intel® SATA connectors.

3.   Select the port that you want to set to [RAID] mode, **PCIE** or **SATA**, then click **Next**.
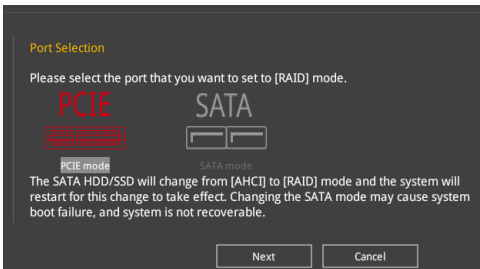
4. Select the type of storage for your RAID, **Easy Backup** or **Super Speed**, then click **Next**.
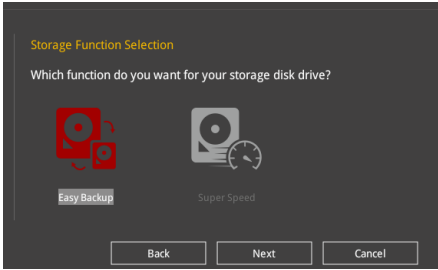
a. For Easy Backup, click **Next** then select from **Easy Backup (RAID 1)** or **Easy Backup (RAID 10)**.
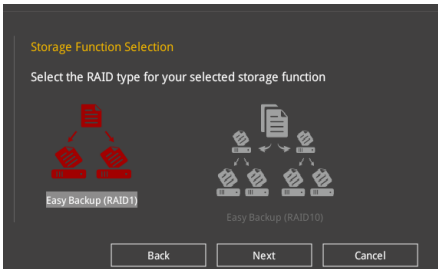
You can only select Easy Backup (RAID 10) if you connect four (4) HDDs.

b. For Super Speed, click **Next** then select from **Super Speed (RAID 0)** or **Super Speed (RAID 5)**.
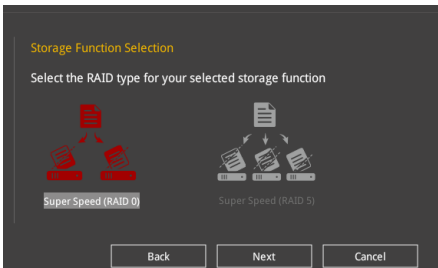
5. After selecting the type of RAID, click **Next** then click **Yes** to continue the RAID setup.

6. After the RAID setup is done, click **Yes** to exit the setup then click **OK** to reset your system.

3.3 My Favorites
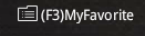
My Favorites is your personal space where you can easily save and access your favorite BIOS items.

My Favorites comes with several performance, power saving, and fast boot related items by default. You can personalize this screen by adding or removing items.

Adding items to My Favorites

To add BIOS items:

1. Press <F3> on your keyboard or click [(F3)MyFavorite] from the BIOS screen to open Setup Tree Map screen.

2. On the Setup Tree Map screen, select the BIOS items that you want to save in My Favorites screen.

Main menu panel

Submenu panel

Selected shortcut items

Delete all favorite items

Recover to default favorite items
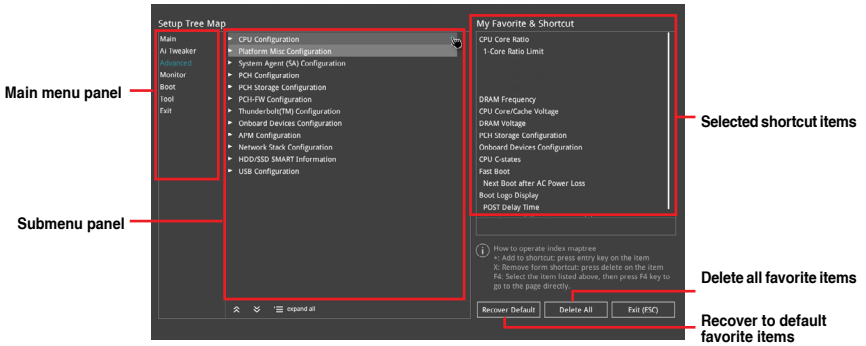
3. Select an item from main menu panel, then click the submenu that you want to save as favorite from the submenu panel and click [+] or press <Enter> on your keyboard.

> You cannot add the following items to My Favorite items:
>
> • Items with submenu options
>
> • User-managed items such as language and boot order
>
> • Configuration items such as Memory SPD Information, system time and date.

4. Click **Exit (ESC)** or press <Esc> key to close Setup Tree Map screen.

5. Go to My Favorites menu to view the saved BIOS items.

Chapter 3

3.4   Main menu

The Main menu screen appears when you enter the Advanced Mode of the BIOS Setup program. The Main menu provides you an overview of the basic system information, and allows you to set the system date, time, language, and security settings.

Security

The Security menu items allow you to change the system security settings.

> • If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password. See section **1.1.7 Jumpers** for information on how to erase the RTC RAM via the Clear CMOS jumper.
>
> • The Administrator or User Password items on top of the screen show the default **[Not Installed]**. After you set a password, these items show **[Installed]**.

3.5   Ai Tweaker menu

The Ai Tweaker menu items allow you to configure overclocking-related items.

> Be cautious when changing the settings of the Ai Tweaker menu items. Incorrect field values can cause the system to malfunction

> The configuration options for this section vary depending on the CPU and DIMM model you installed on the motherboard.

Ai Overclock Tuner

Allows you to select the CPU overclocking options to achieve the desired CPU internal frequency. Configuration options:

[Auto]   Loads the optimal settings for the system.

[Manual]   Allows you to individually set overclocking parameters.

[X.M.P.]   If you install memory modules supporting the eXtreme Memory Profile (X.M.P.) Technology, choose this item to set the profiles supported by your memory modules for optimizing the system performance.

> The [X.M.P.] configuration option appears only when you install memory modules supporting the eXtreme Memory Profile(X.M.P.) Technology.

> The following item appears only when you set the Ai Overclocking Tuner to **[Manual]**.

BCLK Frequency

This item allows you to set the BCLK (base clock) frequency to enhance the system performance. Use the <+> or <-> to adjust the value. The values range from 40.0 MHz to 650.0 MHz.

> We recommend you to set the value based on the CPU specification, as high BCLK frequencies may damage the CPU permanently.

ASUS MultiCore Enhancement

[Auto]   This item allows you to maximize the oveclocking performance optimized by ASUS core ratio settings.

[Disabled]   This item allows you to set to default core ratio settings.

CPU Core Ratio

This item allows you to set the CPU core ratios.

Configuration options: [Auto] [Sync All Cores] [By Core Usage]

BCLK Frequency : DRAM Frequency Ratio

[Auto]   The BCLK frequency to DRAM frequency ratio will be set to the optimized setting.

[100:133]   The BCLK frequency to DRAM frequency ratio will be set to 100:133.

[100:100]   The BCLK frequency to DRAM frequency ratio will be set to 100:100.

DRAM Frequency

This item allows you to set the memory operating frequency. The configurable options vary with the BCLK (base clock) frequency setting. Select the auto mode to apply the optimized setting.

Configuration options: [Auto] [DDR4-800MHz] - [DDR4-4266MHz]

TPU

This item allows you to automatically overclock the CPU and DRAM frequencies and voltage for an enhanced system performance.

[Keep Current Settings]   Keep the current settings without changing anything.

[TPU I]   Applies air cooling overclocking conditions.

[TPU II]   Applies water cooling overclocking conditions.

> Ensure to use water cooling device before selecting **[TPU II].**

Internal CPU Power Management

The subitems in this menu allow you to set the CPU ratio and features.

Intel(R) SpeedStep(tm)

Allows the operating system to dynamically adjust the processor voltage and cores frequency to decrease the average power consumption and decrease average heat production.
Configuration options: [Auto] [Disabled] [Enabled]

Turbo Mode

Allows you to enable your processor cores to run faster than the base operating frequency when it is below power, current and specification limit.
Configuration options: [Disabled] [Enabled]

3.6 Advanced menu

The Advanced menu items allow you to change the settings for the CPU and other system devices.

⚠ Be cautious when changing the settings of the Advanced menu items. Incorrect field values can cause the system to malfunction.

3.6.1 CPU Configuration

The items in this menu show the CPU-related information that the BIOS automatically detects.

✎ The items in this menu may vary based on the CPU installed.

Hyper-threading

This item allows a hyper-threading processor to appear as two logical processors, allowing the operating system to schedule two threads or processors simultaneously.

Configuration options: [Disabled] [Enabled]

CPU - Power Management Control

This item allows you to manage and configure the CPU's power.

Intel(R) SpeedStep(tm)

This item allows more than two frequency to be supported.
Configuration options: [Auto] [Disabled] [Enabled]

Turbo Mode

This item allows you to automatically set the CPU cores to run faster than the base operating frequency when it is below the operating power, current and temperature specification limit.
Configuration options: [Disabled] [Enabled]

CPU C states

This item allows you to set the power saving of the CPU states.
Configuration options: [Auto] [Disabled] [Enabled]

3.6.2 Platform Misc Configuration

The items in this menu allow you to change the ASPM for PCH and SA PCI Express.

3.6.3 System Agent (SA) Configuration

The items in this menu allow you to adjust the Link Speed for PEG Port and Multi-Monitor.

3.6.4   PCH Configuration

The items in this menu allow you to adjust the PCH PCI Express speed.

PCI Express Configuration

This item allows you to configure the PCI Express slots.

PCIe Speed

This item allows your system to automatically select the PCI Express port speed.
Configuration options: [Auto] [Gen1 (2.5 GT/s)] [Gen2] (5 GT/s) [Gen3 (8 GT/s)]

3.6.5   PCH Storage Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The
SATA Port items show **Not Present** if no SATA device is installed to the corresponding SATA
port.

SATA Controller(s)

This item allows you to enable or disable the SATA Device.

Configuration options: [Enabled] [Disabled]

SATA Mode Selection

This item allows you to set the SATA configuration.

[AHCI]	Set to [AHCI] when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.
[Intel RST Premium With Intel Optane System Acceleration(RAID)]	Set to [Intel RST Premium With Intel Optane System Acceleration(RAID)] when you want to create a RAID configuration from the SATA hard disk drives.

S.M.A.R.T. Status Check

SMART (Self-Monitoring, Analysis and Reporting Technology) is a monitoring system that
shows a warning message during POST (Power-on Self Test) when an error occurs in the
hard disks.

Configuration options: [On] [Off]

SATA6G_1 - SATA6G_8

SATA6G_1 - SATA6G_8

This item allows you to enable or disable the selected SATA port.
Configuration options: [Disabled] [Enabled]

Hot Plug

These items appears only when the SATA Mode Selection is set to [**AHCI**] and allows
you to enable or disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled]

3.6.6   CPU Storage Configuration

The items in this menu allow you to configure CPU storage configurations.

- This menu will appear only when an Intel® Core™ X-series Processors (6-core or above) is installed.

- Due to CPU behavior, CPU RAID functions with Intel® CPU RSTe only supports Intel® Core™ X-series Processors (6-core or above) and Intel® SSD modules.

3.6.7   Onboard Devices Configuration

The items in this menu allow you to switch between PCIe Lanes and configure onboard devices.

HD Audio Controller

This item allows you to use the Azalia High Definition Audio Controller

Configuration options: [Disabled] [Enabled]

PCIEX16_3 and PCIEX4_1 Switch Function

[TYPE-C]   If a device is detected in PCIEX16_3, PCIEX16_3 will be enabled and PCIEX4_1 will be disabled.

[PCIEX4_1]   Enable PCIEX4_1 and disable PCIEX16_3.

TYPE-C and PCIEX1_1 switch

[TYPE-C]   Enable TYPE-C and disable PCIEX1_1.

[PCIEX1_1]   Enable PCIEX1_1 and disable TYPE-C.

USB Type C Power Switch

[Auto]   The system will automatically detect your USB Type C devices and provide suitable power if needed.

[Enabled]   The USB Type C port will always provide power to your devices.

RGB LED lighting

When system is in working state

This item allows you to turn the RGB LED lighting on or off when the system is in the working state.
Configuration options: [On] [Off]

When system is in sleep, hibernate or soft off states

This item allows you to turn the RGB LED lighting on or off when the system is in the sleep, hibernate or soft off states.
Configuration options: [On] [Off]

Intel LAN Controller

This item allows you to enable or disable the Intel LAN controllers.

Configuration options: [Disabled] [Enabled]

Wi-Fi 802.11ac Controller

This item allows you to enable or disable the Intel Wi-Fi 802.11ac controller.

Configuration options: [Disabled] [Enabled]

Intel LAN Controller

This item allows you to enable or disable the Intel(R) LAN controller.

Configuration options: [Disabled] [Enabled]

3.6.8   APM Configuration

The items in this menu allow you to set system wake and sleep settings.

ErP Ready

This item allows you to switch off some power at S4+S5 or S5 to get the system ready for ErP requirement. When set to **[Enabled]**, all other PME options are switched off.

Configuration options: [Disabled] [Enable(S4+S5)] [Enable(S5)]

3.6.9   Network Stack Configuration

The items in this menu allow you to configure Ipv4 / Ipv6 PXE support.

3.6.10   HDD/SSD SMART Information

This menu displays the SMART information of the connected devices.

> NVM Express devices do not support SMART information.

3.6.11   USB Configuration

The items in this menu allow you to change the USB-related features.

> The **Mass Storage Devices** item shows the auto-detected values. If no USB device is detected, the item shows **None**.

USB Single Port Control

This item allows you to enable or disable the individual USB ports.

> Refer to section **1.1.2 Motherboard layout** for the location of the USB ports.

3.6.12   PCH-FW Configuration

This item allows you to configure the firmware TPM.

3.7   Monitor menu

The Monitor menu displays the system temperature/power status, and allows you to change the fan settings.

Qfan Configuration

Qfan Tuning

Click this item to automatically detect the lowest speed and configure the minimum duty cycle for each fan.

AIO PUMP/W_PUMP+ Control

[Disabled]	Disable the Water Pump control feature.
[Auto]	Detects the type of water pump installed and automatically switches the control modes.
[DC mode]	Enable the Water Pump control in DC mode for 3-pin chassis fan.
[PWM mode]	Enable the Water Pump control in PWM mode for 4-pin chassis fan.

3.8   Boot menu

The Boot menu items allow you to change the system boot options.

Fast Boot

[Disabled]   Allows your system to go back to its normal boot speed.

[Enabled]   Allows your system to accelerate the boot speed.

> The following items appear only when you set the Fast Boot to **[Enabled]**.

Next Boot after AC Power Loss

[Normal Boot]   Returns to normal boot on the next boot after an AC power loss.

[Fast Boot]   Accelerates the boot speed on the next boot after an AC power loss.

Boot Configuration

Setup Mode

[Advanced Mode]   This item allows you to go to Advanced Mode of the BIOS after POST.
[EZ Mode]   This item allows you to go to EZ Mode of the BIOS after POST.

CSM (Compatibility Support Module)

This item allows you to configure the CSM (Compatibility Support Module) items to fully support the various VGA, bootable devices and add-on devices for better compatibility.

Launch CSM

[Auto]   The system automatically detects the bootable devices and the add-on devices.

[Enabled]   For better compatibility, enable the CSM to fully support the non-UEFI driver add-on devices or the Windows® UEFI mode.

[Disabled]   Disable the CSM to fully support the non-UEFI driver add-on devices or the Windows® UEFI mode.

The following items appear only when you set the Launch CSM to **[Enabled]**.

Boot Devices Control
This item allows you to select the type of devices that you want to boot.

Configuration options: [UEFI and Legacy OPROM] [Legacy OPROM only] [UEFI only]

Boot from Network Devices
This item allows you to select the type of network devices that you want to launch.

Configuration options: [Ignore] [Legacy only] [UEFI driver first]

Boot from Storage Devices
This item allows you to select the type of storage devices that you want to launch.

Configuration options: [Ignore] [Legacy only] [UEFI driver first]

Boot from PCI-E/PCI Expansion Devices
This item allows you to select the type of PCI-E/PCI expansion devices that you want to launch.

Configuration options: [Legacy only] [UEFI driver first]

Secure Boot

This item allows you to configure the Windows® Secure Boot settings and manage its keys to protect the system from unauthorized access and malwares during POST.

Boot Option Priorities

These items specify the boot device priority sequence from the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system.

> • To access Windows® OS in Safe Mode, press <F8> after POST (Windows® 8 not supported).
>
> • To select the boot device during system startup, press <F8> when the ASUS Logo appears.

Boot Override

These items displays the available devices. The number of device items that appears on the screen depends on the number of devices installed in the system. Click an item to start booting from the selected device.

3.9   Tool menu

The Tool menu items allow you to configure options for special functions. Select an item then press <Enter> to display the submenu.

Setup Animator

This item allows you to enable or disable the Setup animator.

Configuration options: [Enabled] [Disabled]

3.9.1   ASUS EZ Flash 3 Utility

This item allows you to run ASUS EZ Flash 3. When you press <Enter>, a confirmation message appears. Use the left/right arrow key to select between [Yes] or [No], then press <Enter> to confirm your choice.

> For more details, refer to section **3.11.2 ASUS EZ Flash 3**.

3.9.2 Secure Erase

SSD speeds may lower over time as with any storage medium due to data processing. Secure Erase completely and safely cleans your SSD, restoring it to factory performance levels.

> Secure Erase is only available in AHCI mode. Ensure to set the SATA mode to AHCI. Click **Advanced > PCH Storage Configuration > SATA Mode Selection > AHCI.**

To launch Secure Erase, click **Tool > Secure Erase** on the Advanced mode menu.

> Check the ASUS support site for a full list of SSDs tested with Secure Erase. The drive may become unstable if you run Secure Erase on an incompatible SSD.

> • The time to erase the contents of your SSD may take a while depending on its size. Do not turn off the system during the process.
>
> • Secure Erase is only supported on Intel SATA port. For more information about Intel SATA ports, refer to section **1.1.2 Motherboard layout** of this manual.

Displays the available SSDs

Status definition:

• **Frozen.** The frozen state is the result of a BIOS protective measure. The BIOS guards drives that do not have password protection by freezing them prior to booting. If the drive is frozen, a power off or hard reset of your PC must be performed to proceed with the Secure Erase.

• **Locked.** SSDs might be locked if the Secure Erase process is either incomplete or was stopped. This may be due to a third party software that uses a different password defined by ASUS. You have to unlock the SSD in the software before proceeding with Secure Erase.

Chapter 3

3.9.3　ASUS Overclocking Profile

This item allows you to store or load multiple BIOS settings.

Load Profile

This item allows you to load the previous BIOS settings saved in the BIOS Flash. Key in the profile number that saved your BIOS settings, press <Enter>, and then select **Yes**.

> • DO NOT shut down or reset the system while updating the BIOS to prevent the system boot failure!
>
> • We recommend that you update the BIOS file only coming from the same memory/ CPU configuration and BIOS version.

Profile Name

This item allows you to key in a profile name.

Save to Profile

This item allows you to save the current BIOS settings to the BIOS Flash, and create a profile. Key in a profile number from one to eight, press <Enter>, and then select **Yes**.

Load/Save Profile from/to USB Drive

This item allows you to load or save profile from your USB drive, load and save profile to your USB drive.

3.9.4　ASUS SPD Information

This item allows you to view the DRAM SPD information.

3.9.5　Graphics Card Information

This item displays the information about the graphics card installed in your system.

GPU Post

This item displays the information and recommended configuration for the PCIE slots that the graphics card is installed in your system.

> This feature is only supported on selected ASUS graphics cards.

Bus Interface

This item allows you to select the bus interface.

Configuration options: [PCIEX16_1]

3.10 Exit menu

The Exit menu items allow you to load the optimal default values for the BIOS items, and save or discard your changes to the BIOS items. You can access the EZ Mode from the Exit menu.

Load Optimized Defaults

This option allows you to load the default values for each of the parameters on the Setup menus. When you select this option or if you press <F5>, a confirmation window appears. Select **OK** to load the default values.

Save Changes & Reset

Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved. When you select this option or if you press <F10>, a confirmation window appears. Select **OK** to save changes and exit.

Discard Changes and Exit

This option allows you to exit the Setup program without saving your changes. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to discard changes and exit.

Launch EFI Shell from USB drives

This item allows you to attempt to launch the EFI Shell application (shellx64.efi) from one of the available filesystem devices.

3.11   Updating BIOS

The ASUS website publishes the latest BIOS versions to provide enhancements on system stability, compatibility,and performance. However, BIOS updating is potentially risky. If there is no problem using the current version of BIOS, DO NOT manually update the BIOS. Inappropriate BIOS updating may result to system's failure to boot. Carefully follow the instructions in this chapter to update your BIOS when necessary.

Visit http://www.asus.com to download the latest BIOS file for this motherboard.

The following utilities allow you to manage and update the motherboard BIOS setup program.

1.   EZ Update: Updates the BIOS in Windows® environment.

2.   ASUS EZ Flash 3: Updates the BIOS using a USB flash drive.

3.   ASUS CrashFree BIOS 3: Restores the BIOS using the motherboard support DVD or a USB flash drive when the BIOS file fails or gets corrupted.

3.11.1   EZ Update

The EZ Update is a utility that allows you to update the motherboard BIOS in Windows® environment.

- EZ Update requires an Internet connection either through a network or an ISP (Internet Service Provider).

- This utility is available in the support DVD that comes with the motherboard package.

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3.11.2   ASUS EZ Flash 3

ASUS EZ Flash 3 allows you to download and update to the latest BIOS through the Internet without having to use a bootable floppy disk or an OS-based utility.

Updating through the Internet varies per region and Internet conditions. Check your local Internet connection before updating through the Internet.

To update the BIOS by USB:

1.   Enter the Advanced Mode of the BIOS setup program. Go to the Tool menu to select **ASUS EZ Flash 3 Utility** and press <Enter>.

2.   Insert the USB flash disk that contains the latest BIOS file to the USB port.

3.   Select **by USB.**
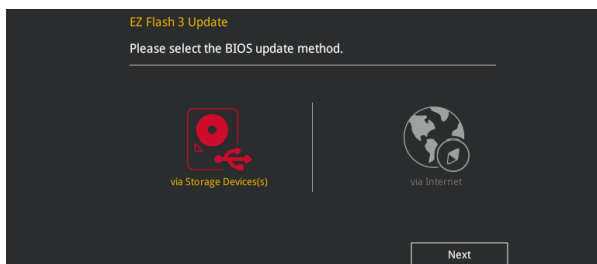
4.   Press <Tab> to switch to the Drive field.

5.   Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.

6.   Press <Tab> to switch to the Folder Info field.

7.   Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process. Reboot the system when the update process is done.
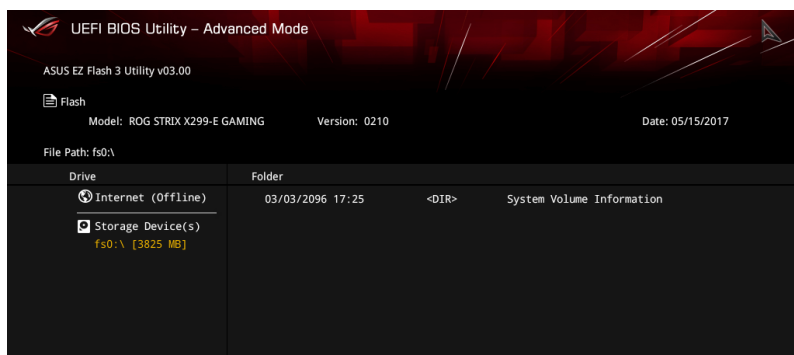
- This function can support devices such as a USB flash disk with FAT 32/16 format and single partition only.

- DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. See section **3.10 Exit Menu** for details.

To update the BIOS by Internet:

1. Enter the Advanced Mode of the BIOS setup program. Go to the Tool menu to select **ASUS EZ Flash 3 Utility** and press <Enter>.

2. Select **by Internet.**
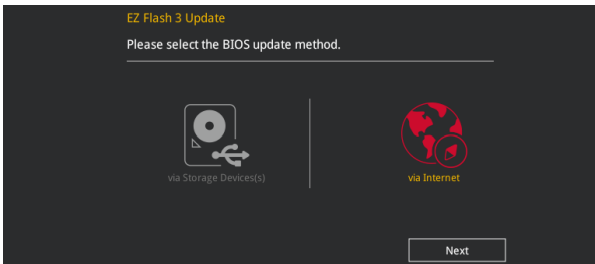
3. Press the Left/Right arrow keys to select an Internet connection method, and then press <Enter>.
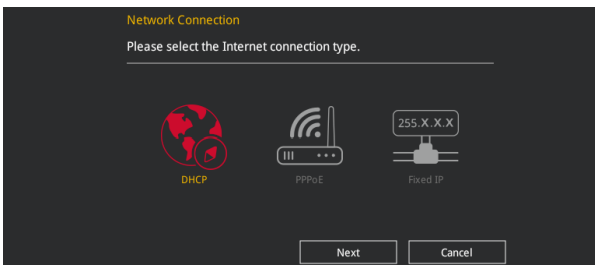
4. Follow the onscreen instructions to complete the update.

5. Reboot the system when the update process is done.

Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. See section **3.10 Exit Menu** for details.

3.11.3   ASUS CrashFree BIOS 3

The ASUS CrashFree BIOS 3 utility is an auto recovery tool that allows you to restore the BIOS file when it fails or gets corrupted during the updating process. You can restore a corrupted BIOS file using the motherboard support DVD or a USB flash drive that contains the BIOS file.

> The BIOS file in the motherboard support DVD may be older than the BIOS file published on the ASUS official website. If you want to use the newer BIOS file, download the file at https://www.asus.com/support/ and save it to a USB flash drive.

Recovering the BIOS

To recover the BIOS:

1.   Turn on the system.

2.   Insert the motherboard support DVD to the optical drive, or the USB flash drive containing the BIOS file to the USB port.

3.   The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and enters ASUS EZ Flash 3 automatically.

4.   The system requires you to enter BIOS Setup to recover the BIOS setting. To ensure system compatibility and stability, we recommend that you press <F5> to load default BIOS values.

> DO NOT shut down or reset the system while updating the BIOS! Doing so can cause system boot failure!

Chapter 3

RAID Support

4

4.1 RAID configurations

The motherboard supports Intel® Rapid Storage Technology with RAID 0, RAID 1, RAID 10, and RAID 5 solution.

> If you want to install a Windows® operating system to a hard disk drive included in a RAID set, you have to create a RAID driver disk and load the RAID driver during OS installation. Refer to section **4.2 Creating a RAID driver disk** for details.

4.1.1 RAID definitions

RAID 0 (Data striping) optimizes two identical hard disk drives to read and write data in parallel, interleaved stacks. Two hard disks perform the same work as a single drive but at a sustained data transfer rate, double that of a single disk alone, thus improving data access and storage. Use of two new identical hard disk drives is required for this setup.

RAID 1 (Data mirroring) copies and maintains an identical image of data from one drive to a second drive. If one drive fails, the disk array management software directs all applications to the surviving drive as it contains a complete copy of the data in the other drive. This RAID configuration provides data protection and increases fault tolerance to the entire system. Use two new drives or use an existing drive and a new drive for this setup. The new drive must be of the same size or larger than the existing drive.

RAID 5 strips both data and parity information across three or more hard disk drives. Among the advantages of RAID 5 configuration include better HDD performance, fault tolerance, and higher storage capacity. The RAID 5 configuration is best suited for transaction processing, relational database applications, enterprise resource planning, and other business systems. Use a minimum of three identical hard disk drives for this setup.

RAID 10 is data striping and data mirroring combined without parity (redundancy data) having to be calculated and written. With the RAID 10 configuration you get all the benefits of both RAID 0 and RAID 1 configurations. Use four new hard disk drives or use an existing drive and three new drives for this setup.

4.1.2   Installing Serial ATA hard disks

The motherboard supports Serial ATA hard disk drives. For optimal performance, install identical drives of the same model and capacity when creating a disk array.

To install the SATA hard disks for a RAID configuration:

1.   Install the SATA hard disks into the drive bays.

2.   Connect the SATA signal cables.

3.   Connect a SATA power cable to the power connector on each drive.

4.1.3   Intel® Rapid Storage Technology in UEFI BIOS

To enter the Intel® Rapid Storage Technology in UEFI BIOS:

1.   Enter the BIOS Setup during POST.

2.   Go to the **Advanced** menu **> PCH Storage Configuration**, then press <Enter>.

3.   Set the SATA Controller Mode Selection item to **[RAID Mode]**.

4.   Go to the **Boot** menu > **CSM (Compatibility Support Module)** > **Launch CSM**, then set the item to **[Disabled]**.

5.   Save your changes and exit the BIOS Setup, then enter the BIOS Setup again.

6.   Go to the **Advanced** menu **> Intel(R) Rapid Storage Technology**, then press <Enter> to display the Intel® Rapid Storage Technology menu.

> Refer to Chapter 3 for details on entering and navigating through the BIOS Setup.

> Due to chipset limitation, when SATA ports are set to RAID mode, all SATA ports run at RAID mode together.
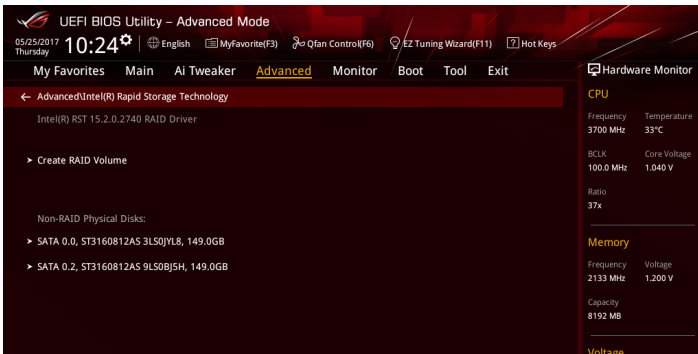
Creating a RAID set

To create a RAID set:

1.   From the Intel(R) Rapid Storage Technology menu, select **Create RAID Volume** and press <Enter>. The following screen appears:
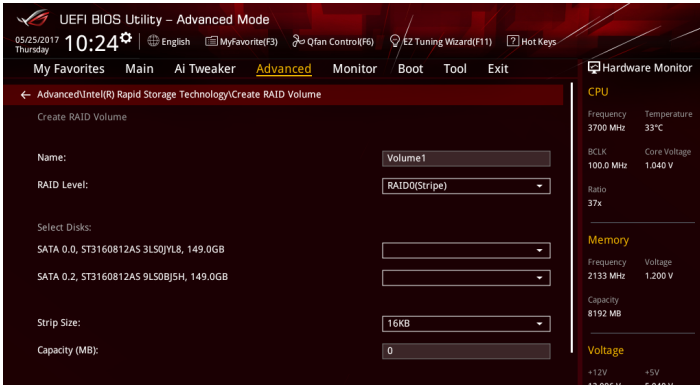
2.   When the Name item is selected, enter a name for the RAID set and press <Enter>.

3.   When the RAID Level item is selected, press <Enter> to select the RAID level to create, and then press <Enter>.

4.   Under Select Disks, press <Enter> and select **X** for the disks you want to include in the RAID set.

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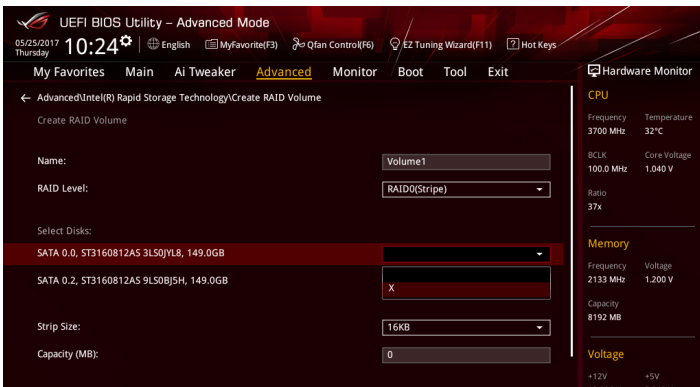
5. When the Strip Size item is selected, press <Enter> to select strip size for the RAID array (for RAID 0, 10 and 5 only), and then press <Enter>. The available strip size values range from 4 KB to 128 KB. The following are typical values:

- RAID 0: 128 KB

- RAID 10: 64 KB

- RAID 5: 64 KB

We recommend a lower strip size for server systems, and a higher strip size for multimedia computer systems used mainly for audio and video editing.
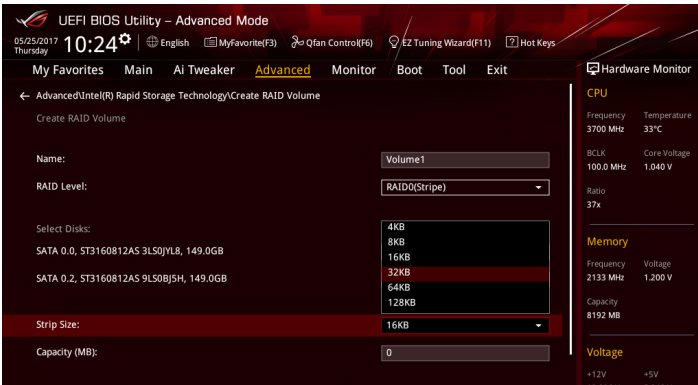
6. When the **Capacity (MB)** item is selected, enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum allowed capacity.

7. When the **Create Volume** item is selected, press <Enter> to create the RAID volume and return to the Intel(R) Rapid Storage Technology menu.
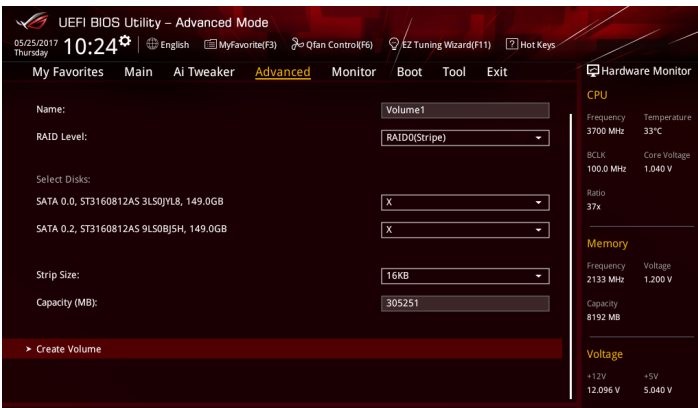
Deleting a RAID set

⚠️ Be cautious when deleting a RAID set. You will lose all data on the hard disk drives when you delete a RAID set.

To delete a RAID set:

1.   From the Intel(R) Rapid Storage Technology menu, select the RAID volume you want to delete and press <Enter>. The following screen appears:
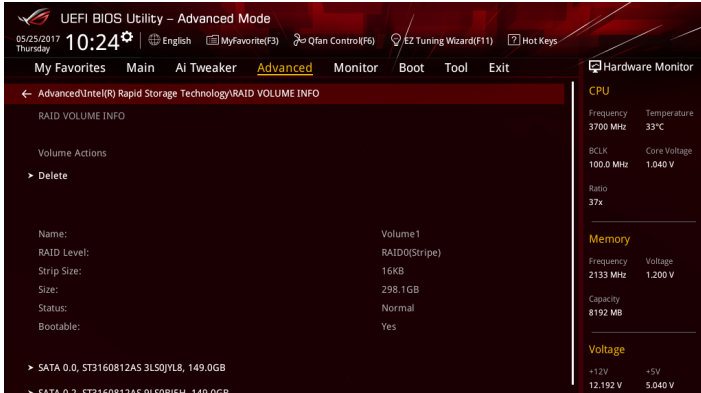
2.   When the **Delete** item is selected, press <Enter>, then select **Yes** to delete the RAID volume and return to the Intel(R) Rapid Storage Technology menu, or select **No** to cancel.

Chapter 4
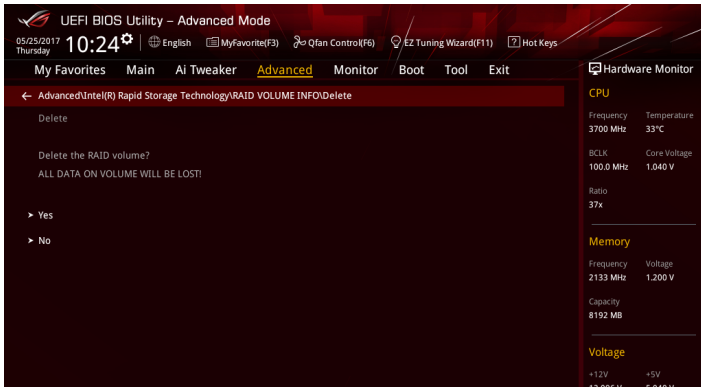
4.1.4   Intel® Virtual Raid on CPU in UEFI BIOS

This feature requires a KEY module to enable CPU RAID functions with Intel® CPU RSTe.

- The KEY module is purchased separately.

- Due to chipset behavior, CPU RAID functions with Intel® CPU RSTe only supports Intel® Core™ X-series Processors (6-core or above) and Intel® SSD modules.

- Refer to section **1.1.9 Internal connectors** for the location of the VROC_HW_KEY connector.

Due to hardware design, your motherboard does not support CPU RAID configurations as OS drives.

To enter the Intel® Virtual Raid on CPU in UEFI BIOS:

1.   Enter the BIOS Setup during POST.

2.   Go to the **Advanced** menu > **PCH Storage Configuration**, then press <Enter>.

3.   Set the SATA Mode Selection item to **[Intel RST Premium With Intel Optane System Acceleration (RAID)]**.

4.   Go to the **Boot** menu > **CSM (Compatibility Support Module)** > **Launch CSM**, then set the item to **[Disabled]**.

5.   Go to the **Advanced** menu > **CPU Storage Configuration**, then set the PCIE slot(s) that you have installed the Hyper M.2 X16 Card(s) to **Hyper M.2 X16**.

6.   Save your changes and exit the BIOS Setup, then enter the BIOS Setup again.

7.   Go to the **Advanced** menu > **Intel(R) Virtual Raid on CPU** > **All Intel VMD Controllers**, then press <Enter> to display the Intel® Virtual Raid on CPU menu.

Refer to Chapter 3 for details on entering and navigating through the BIOS Setup.

Due to chipset limitation, when SATA ports are set to RAID mode, all SATA ports run at RAID mode together.
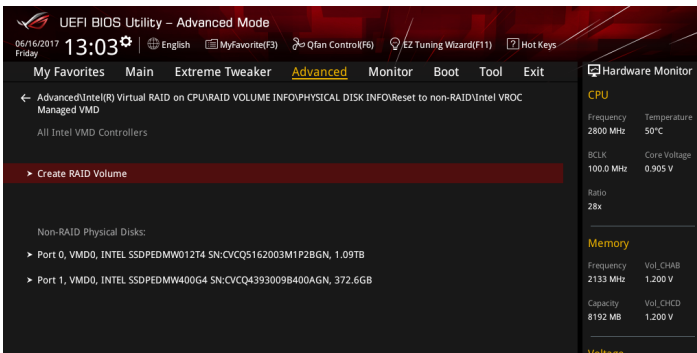
Creating a RAID set

To create a RAID set:

1. From the Intel® Virtual Raid on CPU menu, select **Create RAID Volume** and press <Enter>. The following screen appears:
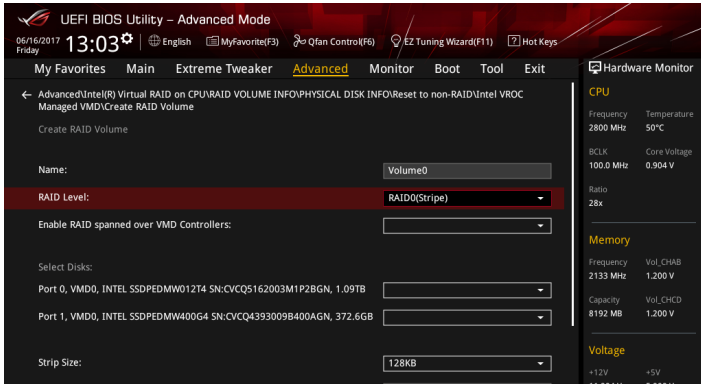
2. When the **Name** item is selected, enter a name for the RAID set and press <Enter>.

3. When the **RAID Level** item is selected, press <Enter> to select the RAID level to create, and then press <Enter>.

4. When the **Enable RAID spanned over VMD Controllers** item is selected, press <Enter> and select **X** to enable this function.

5. Under Select Disks, press <Enter> and select **X** for the disks you want to include in the RAID set.

Chapter 4

6. When the **Strip Size** item is selected, press <Enter> to select strip size for the RAID array (for RAID 0, 10 and 5 only), and then press <Enter>. The available strip size values range from 4 KB to 128 KB. The following are typical values:

    - RAID 0: 128 KB

    - RAID 10: 64 KB

    - RAID 5: 64 KB

We recommend a lower strip size for server systems, and a higher strip size for multimedia computer systems used mainly for audio and video editing.

7. When the **Capacity (MB)** item is selected, enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum allowed capacity.

8. When the **Create Volume** item is selected, press <Enter> to create the RAID volume and return to the Intel® Rapid Storage Technology menu.
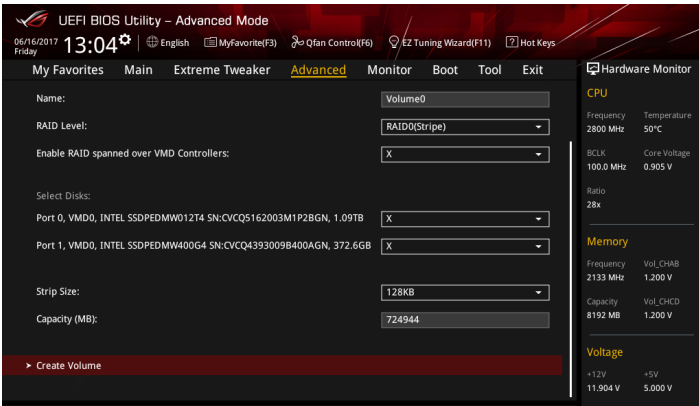
Deleting a RAID set

<table>
<tr>
<td>⚠️</td>
<td>Be cautious when deleting a RAID set. You will lose all data on the hard disk drives when you delete a RAID set.</td>
</tr>
</table>

To delete a RAID set:

1. From the Intel® Virtual Raid on CPU menu, select the RAID volume you want to delete and press <Enter>. The following screen appears:
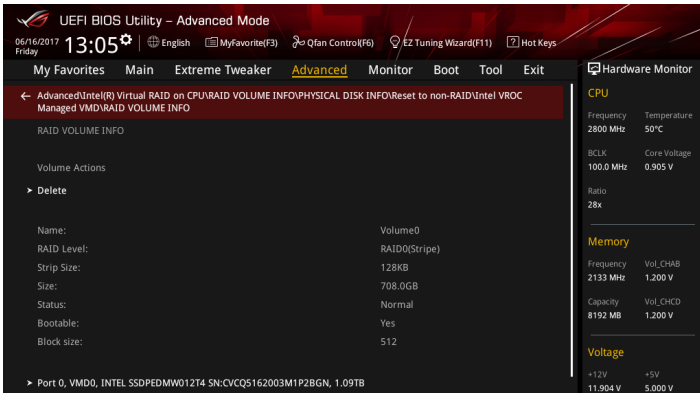
2. When the **Delete** item is selected, press <Enter>, then select **Yes** to delete the RAID volume and return to the Intel® Virtual Raid on CPU menu, or select **No** to cancel.
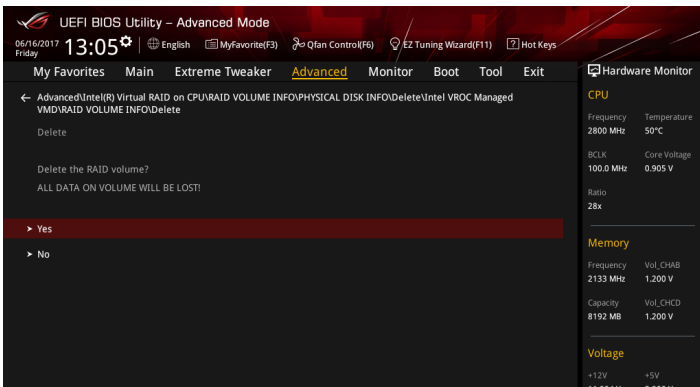
Installing the RAID controller driver during Windows® 10 OS installation

After creating the RAID sets, you are now ready to install an operating system to the independent drives or bootable array. This part provides the instructions on how to install the RAID controller drivers during OS installation.

To install the RAID controller driver when installing Windows® 10 OS:

1.   Boot the computer using the Windows® 10 OS installation disc. Follow the screen instructions to start installing Windows® 10.

2.   When prompted to choose a type of installation, click **Custom: Install Windows only (advanced)**.
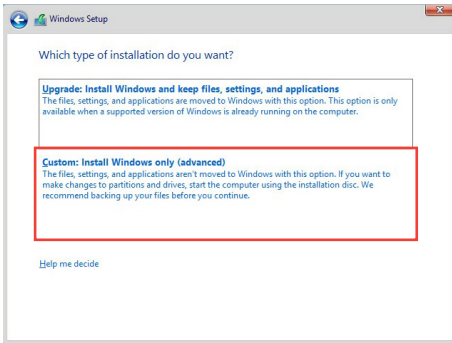
3.   Click **Load Driver**.
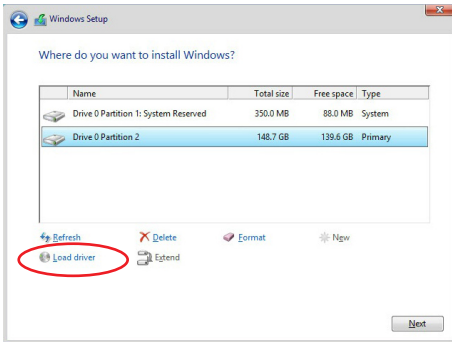
4.   A message appears, reminding you to insert the installation media containing the driver of the RAID controller driver. If you have only one optical drive installed in your system, eject the Windows OS installation disc and replace with the motherboard Support DVD into the optical drive. Click **Browse** to continue.

5.   Locate the driver in the corresponding folder of the support DVD then click **OK** to continue.

6.   Select the RAID controller driver you need from the list and click **Next**.

7.   When the system finishes loading the RAID driver, replace the motherboard Support DVD with the Windows Server installation disc. Select the drive to install Windows and click **Next**.
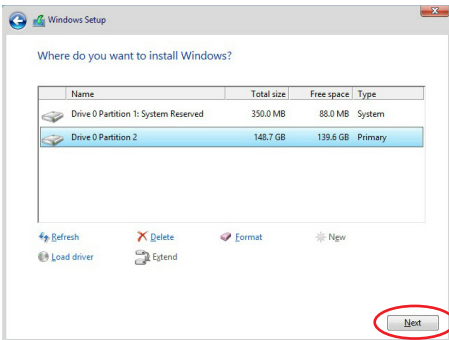
8.   Setup then proceeds with the OS installation. Follow screen instructions to continue.

4.1.5 Intel® Rapid Storage Technology Option ROM utility

To enter the Intel® Rapid Storage Technology Option ROM utility:

1. Turn on the system.

2. During POST, press <Ctrl> + <I> to display the utility main menu.

```
        Intel(R) Rapid Storage Technology - Option - v10.5.1.1070
        Copyright(C) 2003-14 Intel Corporation. All Rights Reserved.

================================[ MAIN MENU ]================================

    1.  Create RAID Volume         4.  Recovery Volume Options
    2.  Delete RAID Volume         5.  Acceleration Options
    3.  Reset Disks to Non-RAID    6.  Exit

=========================[ DISK/VOLUME INFORMATION ]=========================
  RAID Volumes:
  None defined.

  Physical Devices:
  Port   Device Model   Serial #      Size      Type/Status(Vol ID)
  0      ST3160812AS    9LS0HJA4      149.0GB   Non-RAID Disk
  1      ST3160812AS    9LS0F4HL      149.0GB   Non-RAID Disk
  2      ST3160812AS    3LS0JYL8      149.0GB   Non-RAID Disk
  3      ST3160812AS    9LS0BJ5H      149.0GB   Non-RAID Disk


[↑↓]-Select               [ESC]-Exit          [ENTER]-Select Menu
```

The navigation keys at the bottom of the screen allow you to move through the menus and select the menu options.

The RAID BIOS setup screens shown in this section are for reference only and may not exactly match the items on your screen.

The utility supports maximum four hard disk drives for RAID configuration.

Creating a RAID set

To create a RAID set:

1. From the utility main menu, select **1. Create RAID Volume** and press <Enter>. The following screen appears:

```
            Intel(R) Rapid Storage Technology - Option - v10.5.1.1070
            Copyright(C) 2003-14 Intel Corporation. All Rights Reserved.


                            ═══[CREATE VOLUME MENU]═══
                        Name:    Volume 0
                  RAID Level:
                       Disks:
                  Strip Size:
                    Capacity:
                        Sync:
                         Create volume



                               ═══[HELP]═══


            Enter a unique volume name that has no special characters
            and is 16 characters or less.




   [↑↓]-Select              [ESC]-Exit           [ENTER]-Select Menu
```
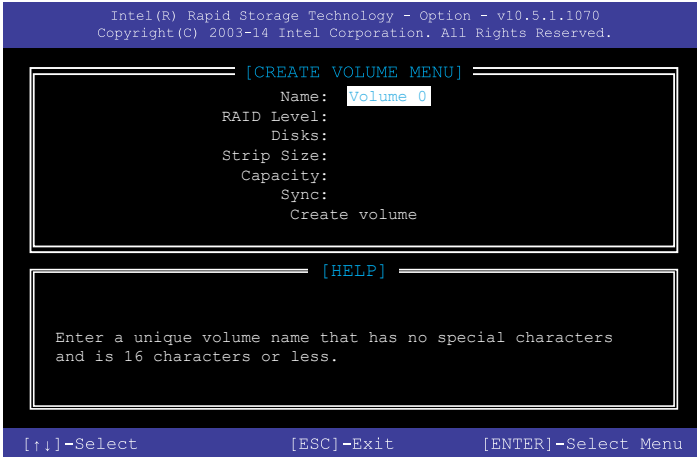
2. Enter a name for the RAID set and press <Enter>.

3. When the RAID Level item is selected, press the up/down arrow key to select a RAID level to create, and then press <Enter>.

4. When the Disks item is selected, press <Enter> to select the hard disk drives you want to include in the RAID set. The SELECT DISKS screen appears:

```
                            ═══[SELECT DISKS]═══

   Port    Device Model    Serial #       Size       Status
   0       ST3160812AS     9LS0HJA4       149.0GB    Non-RAID Disk
   1       ST3160812AS     9LS0F4HL       149.0GB    Non-RAID Disk
   2       ST3160812AS     3LS0JYL8       149.0GB    Non-RAID Disk
   3       ST3160812AS     9LS0BJ5H       149.0GB    Non-RAID Disk

         Select 2 to 6 to use in creating the volume.


   ═══[↑↓]-Prev/Next   [SPACE]-SelectDisk   [ENTER]-Done ═══
```
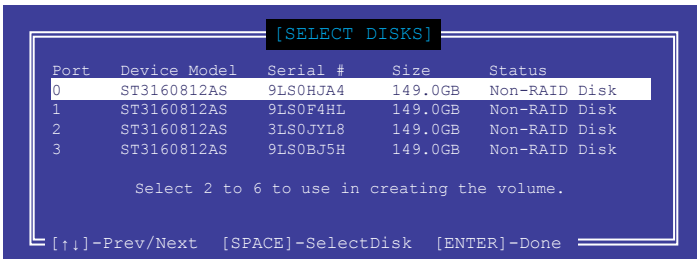
5. Use the up/down arrow key to select a drive, and then press <Space> to select. A small triangle marks the selected drive. Press <Enter> after completing your selection.

6. Use the up/down arrow key to select the strip size for the RAID array (for RAID 0, 10 and 5 only), and then press <Enter>. The available strip size values range from 4 KB to 128 KB. The following are typical values:

   - RAID 0: 128 KB

   - RAID 10: 64 KB

   - RAID 5: 64 KB

   We recommend a lower strip size for server systems, and a higher strip size for multimedia computer systems used mainly for audio and video editing.

7. When the **Capacity** item is selected, enter the RAID volume capacity that you want and press <Enter>. The default value indicates the maximum allowed capacity.

8. When the **Create Volume** item is selected, press <Enter>. The following warning message appears:

```
WARNING:  ALL DATA ON SELECTED DISKS WILL BE LOST.
Are you sure you want to create this volume? (Y/N)
```

9. Press <Y> to create the RAID volume and return to the main menu, or <N> to go back to the CREATE VOLUME menu.

Deleting a RAID set

⚠️ Be cautious when deleting a RAID set. You will lose all data on the hard disk drives when you delete a RAID set.

To delete a RAID set:

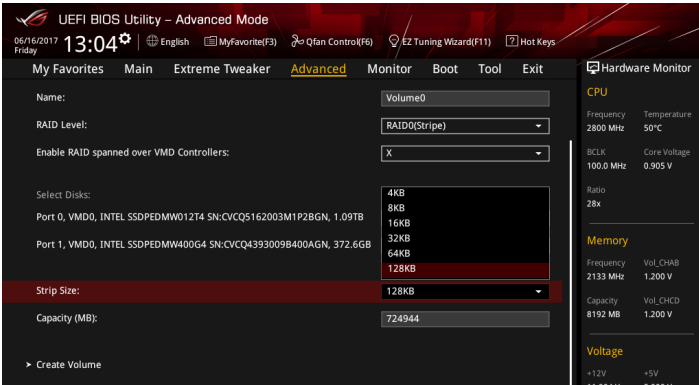1. From the utility main menu, select **2. Delete RAID Volume** and press <Enter>. The following screen appears:

```
═══════════════ [DELETE VOLUME MENU] ═══════════════
Name        Level         Drives   Capacity   Status   Bootable
Volume0     RAID0 (Stripe)  2       298.0GB     Normal     Yes




═══════════════════ [HELP] ═══════════════════

    Deleting a volume will reset the disks to non-RAID.

        WARNING:  ALL DISK DATA WILL BE DELETED.
        (This does not apply to Recovery volumes)




    [↑↓]-Select   [ESC]-Previous Menu   [DEL]-Delete Volume
```
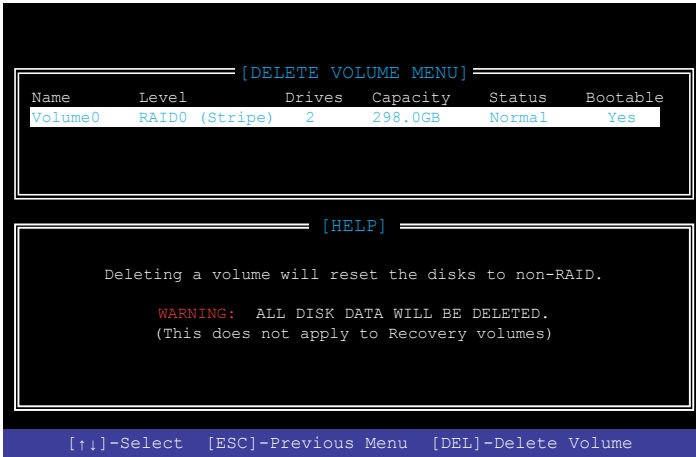
2. Use the up/down arrow key to select the RAID set you want to delete, and then press <Delete>. The following warning message appears:

```
═══════ [DELETE VOLUME VERIFICATION] ═══════
        ALL DATA IN THE VOLUME WILL BE LOST!
        (This does not apply to Recovery volumes)

    Are you sure you want to delete "Volume0"? (Y/N):
```
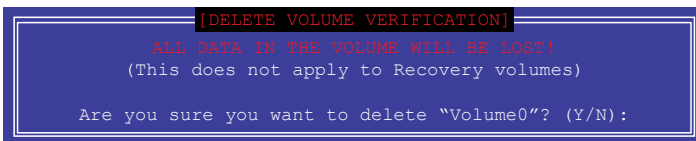
3. Press <Y> to delete the RAID set and return to the utility main menu, or press <N> to return to the DELETE VOLUME menu.

Chapter 4

Exiting the Intel® Rapid Storage Technology Option ROM utility

To exit the utility:

1. From the utility main menu, select **6. Exit**, then press <Enter>. The following warning message appears:

```
                        [CONFIRM EXIT]
          Are you sure you want to exit? (Y/N):
```
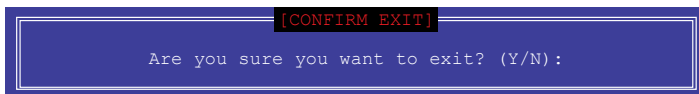
2. Press <Y> to exit or press <N> to return to the utility main menu.

4.2   Creating a RAID driver disk

4.2.1   Creating a RAID driver disk in Windows®

To install the RAID driver for Windows® OS:

1. During the OS installation, click **Load Driver** to allow you to select the installation media containing the RAID driver.

2. Insert the USB flash drive with RAID driver into the USB port or the support DVD into the optical drive, and then click **Browse**.

3. Click the name of the device you have inserted, and go to **Drivers** > **RAID**, then select the RAID driver for the corresponding OS version. Click **OK**.

4. Follow the succeeding screen instructions to complete the installation.

> Before loading the RAID driver from a USB flash drive, you have to use another computer to copy the RAID driver from the support DVD to the USB flash drive.

> To set up a Windows® UEFI operating system under RAID mode, ensure to load the UEFI driver for your optical drive.

Appendix

Q-Code table

Code	Description
00	Not used
01	Power on. Reset type detection (soft/hard).
02	AP initialization before microcode loading
03	System Agent initialization before microcode loading
04	PCH initialization before microcode loading
06	Microcode loading
07	AP initialization after microcode loading
08	System Agent initialization after microcode loading
09	PCH initialization after microcode loading
0B	Cache initialization
0C – 0D	Reserved for future AMI SEC error codes
0E	Microcode not found
0F	Microcode not loaded
10	PEI Core is started
11 – 14	Pre-memory CPU initialization is started
15 – 18	Pre-memory System Agent initialization is started
19 – 1C	Pre-memory PCH initialization is started
2B – 2F	Memory initialization
30	Reserved for ASL (see ASL Status Codes section below)
31	Memory Installed
32 – 36	CPU post-memory initialization
37 – 3A	Post-Memory System Agent initialization is started
3B – 3E	Post-Memory PCH initialization is started
4F	DXE IPL is started
50 – 53	Memory initialization error. Invalid memory type or incompatible memory speed
54	Unspecified memory initialization error
55	Memory not installed
56	Invalid CPU type or Speed
57	CPU mismatch
58	CPU self test failed or possible CPU cache error
59	CPU micro-code is not found or micro-code update is failed
5A	Internal CPU error
5B	Reset PPI is not available
5C – 5F	Reserved for future AMI error codes

Q-Code table

Code	Description
E0	S3 Resume is stared (S3 Resume PPI is called by the DXE IPL)
E1	S3 Boot Script execution
E2	Video repost
E3	OS S3 wake vector call
E4 – E7	Reserved for future AMI progress codes
E8	S3 Resume Failed
E9	S3 Resume PPI not Found
EA	S3 Resume Boot Script Error
EB	S3 OS Wake Error
EC – EF	Reserved for future AMI error codes
F0	Recovery condition triggered by firmware (Auto recovery)
F1	Recovery condition triggered by user (Forced recovery)
F2	Recovery process started
F3	Recovery firmware image is found
F4	Recovery firmware image is loaded
F5 – F7	Reserved for future AMI progress codes
F8	Recovery PPI is not available
F9	Recovery capsule is not found
FA	Invalid recovery capsule
FB – FF	Reserved for future AMI error codes
60	DXE Core is started
61	NVRAM initialization
62	Installation of the PCH Runtime Services
63 – 67	CPU DXE initialization is started
68	PCI host bridge initialization
69	System Agent DXE initialization is started
6A	System Agent DXE SMM initialization is started
6B – 6F	System Agent DXE initialization (System Agent module specific)
70	PCH DXE initialization is started
71	PCH DXE SMM initialization is started
72	PCH devices initialization
73 – 77	PCH DXE Initialization (PCH module specific)
78	ACPI module initialization
79	CSM initialization
7A – 7F	Reserved for future AMI DXE codes

Q-Code table

Code	Description
90	Boot Device Selection (BDS) phase is started
91	Driver connecting is started
92	PCI Bus initialization is started
93	PCI Bus Hot Plug Controller Initialization
94	PCI Bus Enumeration
95	PCI Bus Request Resources
96	PCI Bus Assign Resources
97	Console Output devices connect
98	Console input devices connect
99	Super IO Initialization
9A	USB initialization is started
9B	USB Reset
9C	USB Detect
9D	USB Enable
9E – 9F	Reserved for future AMI codes
A0	IDE initialization is started
A1	IDE Reset
A2	IDE Detect
A3	IDE Enable
A4	SCSI initialization is started
A5	SCSI Reset
A6	SCSI Detect
A7	SCSI Enable
A8	Setup Verifying Password
A9	Start of Setup
AA	Reserved for ASL (see ASL Status Codes section below)
AB	Setup Input Wait
AC	Reserved for ASL (see ASL Status Codes section below)
AD	Ready To Boot event
AE	Legacy Boot event
AF	Exit Boot Services event
B0	Runtime Set Virtual Address MAP Begin
B1	Runtime Set Virtual Address MAP End
B2	Legacy Option ROM Initialization
B3	System Reset

Appendix

Q-Code table

Code	Description
B4	USB hot plug
B5	PCI bus hot plug
B6	Clean-up of NVRAM
B7	Configuration Reset (reset of NVRAM settings)
B8– BF	Reserved for future AMI codes
D0	CPU initialization error
D1	System Agent initialization error
D2	PCH initialization error
D3	Some of the Architectural Protocols are not available
D4	PCI resource allocation error. Out of Resources
D5	No Space for Legacy Option ROM
D6	No Console Output Devices are found
D7	No Console Input Devices are found
D8	Invalid password
D9	Error loading Boot Option (LoadImage returned error)
DA	Boot Option is failed (StartImage returned error)
DB	Flash update is failed
DC	Reset protocol is not available

Notices

Federal Communications Commission Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received including interference that may cause undesired operation.

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

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

The use of shielded cables for connection of the monitor to the graphics card is required to assure compliance with FCC regulations. Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Compliance Statement of Innovation, Science and Economic Development Canada (ISED)

This Class B digital apparatus complies with Canadian ICES-003, RSS-210, and CAN ICES-3(B)/NMB-3(B).

This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Déclaration de conformité de Innovation, Sciences et Développement économique Canada (ISED)

Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003, RSS-210 et CAN ICES-3(B)/NMB-3(B).

Cet appareil est conforme aux normes CNR exemptes de licence d'Industrie Canada. Le fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas provoquer d'interférences et (2) cet appareil doit accepter toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité de l'appareil.

VCCI: Japan Compliance Statement

Class B ITE

この装置は、クラスB情報技術装置です。この装置は、家庭環境で使用することを目的としていますが、この装置がラジオやテレビジョン受信機に近接して使用されると、受信障害を引き起こすことがあります。

取扱説明書に従って正しい取り扱いをして下さい。

VCCI-B

KC: Korea Warning Statement

B급 기기 (가정용 방송통신기자재)
이 기기는 가정용(B급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며, 모든 지역에서 사용할 수 있습니다.

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REACH

Complying with the REACH (Registration, Evaluation, Authorisation, and Restriction of Chemicals) regulatory framework, we published the chemical substances in our products at ASUS REACH website at http://csr.asus.com/english/REACH.htm.

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

DO NOT throw the mercury-containing button cell battery in municipal waste. This symbol of the crossed out wheeled bin indicates that the battery should not be placed in municipal waste.

ASUS Recycling/Takeback Services

ASUS recycling and takeback programs come from our commitment to the highest standards for protecting our environment. We believe in providing solutions for you to be able to responsibly recycle our products, batteries, other components as well as the packaging materials. Please go to http://csr.asus.com/english/Takeback.htm for detailed recycling information in different regions.

Regional notice for California

⚠ **WARNING**

Cancer and Reproductive Harm - www.P65Warnings.ca.gov

RF exposure warning

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provide with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

FCC Bluetooth Wireless Compliance

The antenna used with this transmitter must not be co-located or operated in conjunction with any other antenna or transmitter subject to the conditions of the FCC Grant.

Bluetooth Industry Canada Statement

This Class B device meets all requirements of the Canadian interference-causing equipment regulations.

Déclaration d'Industrie Canada relative aux modules sans fil Bluetooth

Cet appareil numérique de la classe B respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

NCC: Taiwan Wireless Statement

無線設備的警告聲明
經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更射頻、加
大功率或變更原設計之特性及功能。低功率射頻電機之使用不得影響飛航安全及干擾合法通信；
經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信指依電信
法規定作業之無線通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電
機設備之干擾。

於 5.25GHz 至 5.35GHz 區域內操作之
無線設備的警告聲明
工作頻率 5.250 ～ 5.350GHz 該頻段限於室內使用。

Japan RF Equipment Statement

屋外での使用について

本製品は、5GHz帯域での通信に対応しています。電波法の定めにより5.2GHz、5.3GHz帯域の電波は屋外で使用が禁じられています。

法律および規制遵守

本製品は電波法及びこれに基づく命令の定めるところに従い使用してください。日本国外では、その国の法律または規制により、本製品の使用ができないことがあります。このような国では、本製品を運用した結果、罰せられることがありますが、当社は一切責任を負いかねますのでご了承ください。

Précautions d'emploi de l'appareil :

a.   Soyez particulièrement vigilant quant à votre sécurité lors de l'utilisation de cet appareil dans certains lieux (les avions, les aéroports, les hôpitaux, les stations-service et les garages professionnels).

b.   Évitez d'utiliser cet appareil à proximité de dispositifs médicaux implantés. Si vous portez un implant électronique (stimulateurs cardiaques, pompes à insuline, neurostimulateurs…), veuillez impérativement respecter une distance minimale de 15 centimètres entre cet appareil et l'implant pour réduire les risques d'interférence.

c.   Utilisez cet appareil dans de bonnes conditions de réception pour minimiser le niveau de rayonnement. Ce n'est pas toujours le cas dans certaines zones ou situations, notamment dans les parkings souterrains, dans les ascenseurs, en train ou en voiture ou tout simplement dans un secteur mal couvert par le réseau.

d.   Tenez cet appareil à distance du ventre des femmes enceintes et du bas-ventre des adolescents.

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Appendix

Simplified EU Declaration of Conformity

ASUSTeK Computer Inc. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU. Full text of EU declaration of conformity is available at https://www.asus.com/support/

The WiFi operating in the band 5150-5350MHz shall be restricted to indoor use for countries listed in the table below:

Déclaration simplifiée de conformité de l'UE

ASUSTek Computer Inc. déclare par la présente que cet appareil est conforme aux critères essentiels et autres clauses pertinentes de la directive 2014/53/EU. La déclaration de conformité de l'UE peut être téléchargée à partir du site internet suivant : https://www.asus.com/support/

Dans la plage de fréquence 5150-5350 MHz, le Wi-Fi est restreint à une utilisation en intérieur dans les pays listés dans le tableau ci-dessous:

Vereinfachte EU-Konformitätserklärung

ASUSTek COMPUTER INC erklärt hiermit, dass dieses Gerät mit den grundlegenden Anforderungen und anderen relevanten Bestimmungen der Richtlinie 2014/53/EU übereinstimmt. Der gesamte Text der EU-Konformitätserklärung ist verfügbar unter: https://www.asus.com/support/

Der WLAN-Betrieb im Band von 5150-5350 MHz ist für die in der unteren Tabelle aufgeführten Länder auf den Innenbereich beschränkt:

Dichiarazione di conformità UE semplificata

ASUSTek Computer Inc. con la presente dichiara che questo dispositivo è conforme ai requisiti essenziali e alle altre disposizioni pertinenti con la direttiva 2014/53/EU. Il testo completo della dichiarazione di conformità UE è disponibile all'indirizzo: https://www.asus.com/support/

L'utilizzo della rete Wi-Fi con frequenza compresa nell'intervallo 5150-5350MHz deve essere limitato all'interno degli edifici per i paesi presenti nella seguente tabella:

Упрощенное заявление о соответствии европейской директиве

ASUSTek Computer Inc. заявляет, что устройство соответствует основным требованиям и другим соответствующим условиям директивы 2014/53/EU. Полный текст декларации соответствия ЕС доступен на https://www.asus.com/support/

Работа WiFi в диапазоне частот 5150-5350 должна быть ограничена использованием в помещениях для стран, перечисленных в таблице ниже:

<div dir="rtl">

إعلان التوافق المبسّط الصادر عن الاتحاد الأوروبي

تقر شركة ASUSTek Computer أن هذا الجهاز يتوافق مع المتطلبات الأساسية والأحكام الأخرى ذات الصلة الخاصة بتوجيه 2014/53/EU. يتوفر النص الكامل لإعلان التوافق الصادر عن الاتحاد الأوروبي على: https://www.asus.com/support/

يجب حصر استخدام WiFi العاملة بـ 5150-5350 ميجا هرتز على الاستخدام المنزلي للبلدان المدرجة بالجدول.

</div>

Опростена декларация за съответствие на ЕС

С настоящото ASUSTek Computer Inc. декларира, че това устройство е в съответствие със съществените изисквания и другите приложими постановления на свързаната Директива 2014/53/EC. Пълният текст на ЕС декларация за съвместимост е достъпен на адрес https://www.asus.com/support/

WiFi, работеща в диапазон 5150-5350MHz, трябва да се ограничи до употреба във закрито за страните, посочени в таблицата по-долу:

Declaração de Conformidade UE Simplificada

ASUSTek Computer Inc. declara que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes relacionadas às diretivas 2014/53/UE. O texto completo da declaração de conformidade CE está disponível em https://www.asus.com/support/

O WiFi operando na banda 5150-5350MHz deve ser restrito para uso interno para os países listados na tabela abaixo:

Pojednostavljena EU Izjava o sukladnosti

ASUSTek Computer Inc. ovim izjavljuje da je ovaj uređaj sukladan s bitnim zahtjevima i ostalim odgovarajućim odredbama direktive 2014/53/EU. Cijeli tekst EU izjave o sukladnosti dostupan je na https://www.asus.com/support/

WiFi koji radi na opsegu frekvencija 5150-5350 MHz bit će ograničen na upotrebu u zatvorenom prostoru u zemljama na donjem popisu:

Zjednodušené prohlášení o shodě EU

Společnost ASUSTek Computer Inc. tímto prohlašuje, že toto zařízení splňuje základní požadavky a další příslušná ustanovení směrnice 2014/53/ EU. Plné znění prohlášení o shodě EU je k dispozici na adrese https://www.asus.com/support/

V zemích uvedených v tabulce je provoz Wi-Fi ve frekvenčním rozsahu 5 150 - 5 350 MHz povolen pouze ve vnitřních prostorech:

Forenklet EU-overensstemmelseserklæring

ASUSTeK Computer Inc. erklærer hermed at denne enhed er i overensstemmelse med hovedkravene og øvrige relevante bestemmelser i direktivet 2014/53/EU. Hele EU-overensstemmelseserklæringen kan findes på https://www.asus.com/support/

Wi-Fi, der bruger 5150-5350 MHz skal begrænses til indendørs brug i lande, der er anført i tabellen:

Vereenvoudigd EU-conformiteitsverklaring

ASUSTeK Computer Inc. verklaart hierbij dat dit apparaat voldoet aan de essentiële vereisten en andere relevante bepalingen van Richtlijn 2014/53/ EU. De volledige tekst van de EU-conformiteitsverklaring is beschikbaar op https://www.asus.com/support/

De WiFi op 5150-5350MHz zal beperkt zijn tot binnengebruik voor in de tabel vermelde landen:

Lihtsustatud EÜ vastavusdeklaratsioon

Käesolevaga kinnitab ASUSTek Computer Inc, et seade vastab direktiivi 2014/53/EÜ olulistele nõuetele ja teistele asjakohastele sätetele. EL vastavusdeklaratsiooni täistekst on saadaval veebisaidil https://www.asus.com/support/

Sagedusvahemikus 5150-5350 MHz töötava WiFi kasutamine on järgmistes riikides lubatud ainult siseruumides:

Eurooppa - EY:n vaatimustenmukaisuusvakuutus

ASUSTeK Computer Inc. ilmoittaa täten, että tämä laite on direktiivin 2014/53/ EU olennaisten vaatimusten ja muiden asiaankuuluvien lisäysten mukainen. Koko EY:n vaatimustenmukaisuusvakuutuksen teksti on luettavissa osoitteessa https://www.asus.com/support/

5 150 - 5 350 MHz:in taajuudella toimiva WiFi on rajoitettu sisäkäyttöön taulukossa luetelluissa maissa:

<div dir="rtl">

تبعیت از نسخه ساده شده بیانیه اتحادیه اروپا

ASUSTek Computer Inc. در اینجا اعلام می کند که این دستگاه با نیازهای اساسی و سایر مقررات مربوط به بیانیه 2014/53/EU. مطابقت دارد. متن کامل پیروی از این بیانیه اتحادیه اروپا در این آدرس موجود است: https://www.asus.com/support/

عملکرد 5150-5350 مگاهرتز برای WiFi باید برای استفاده در فضای داخل ساختمان برای کشورهای فهرست شده در جدول، محدود شود.

</div>

Απλοποιημένη Δήλωση Συμμόρφωσης EE

Διά του παρόντος η ASUSTek Computer Inc. δηλώνει ότι αυτή η συσκευή είναι σύμμορφη με τις βασικές προϋποθέσεις και άλλες σχετικές διατάξεις της Οδηγίας 2014/53/ΕΕ. Το πλήρες κείμενο της δήλωσης συμμόρφωσης της EE είναι διαθέσιμο στη διεύθυνση https://www.asus.com/support/

Το WiFi που λειτουργεί στη ζώνη 5150-5350MHz περιορίζεται για χρήση σε εσωτερικούς χώρους για τις χώρες που αναφέρονται στον παρακάτω πίνακα:

<div dir="rtl">

הצהרת תאימות רגולטורית מקוצרת עבור האיחוד אירופי

ASUSTek Computer Inc. מצהירה בזאת כי מכשיר זה תואם את הדרישות החיוניות ולשאר הסעיפים הרלוונטיים של תקנה 2014/53/EU. ניתן לקרוא את הנוסח המלא של הצהרת התאימות הרגולטורית עבור האיחוד האירופי בכתובת: https://www.asus.com/support/

יש להגביל רשתות Wi-Fi הפועלות ברצועת התדרים 5150-5350MHz לשימוש בתוך מבנים סגורים בארצות המפורטות ברשימה הבאה:

</div>

Egyszerűsített EU megfelelőségi nyilatkozat

Az ASUSTek Computer Inc. ezennel kijelenti, hogy ez az eszköz megfelel az 2014/53/EU sz. irányelv alapvető követelményeinek és egyéb vonatkozó rendelkezéseinek. Az EU megfelelőségi nyilatkozat teljes szövegét a következő weboldalon tekintheti meg: https://www.asus.com/support/

Az 5150-5350 MHz-es sávban működő Wi-Fi-t beltéri használatra kell korlátozni az alábbi táblázatban felsorolt országokban:

Pernyataan Kesesuaian UE yang Disederhanakan

ASUSTeK Computer Inc. dengan ini menyatakan bahwa perangkat ini memenuhi persyaratan utama dan ketentuan relevan lainnya yang terdapat pada Petunjuk 2014/53/EU. Teks lengkap pernyataan kesesuaian EU tersedia di: https://www.asus.com/support/

WiFi yang Beroperasi pada 5150-5350 MHz akan terbatas untuk penggunaan dalam ruangan di negara yang tercantum dalam tabel

Vienkāršota ES atbilstības paziņojums

ASUSTeK Computer Inc. ar šo paziņo, ka šī ierīce atbilst Direktīvas 2014/53/ES būtiskajām prasībām un citiem citiem saistošajiem nosacījumiem. Pilns ES atbilstības paziņojuma teksts pieejams šeit: https://www.asus.com/support/

Wi-Fi darbība 5150–5350 MHz ir jāierobežo lietošanai telpās valstīs, kuras norādītas tālāk.

Supaprastinta ES atitikties deklaracija

Šiame dokumente bendrovė „ASUSTek Computer Inc." pareiškia, kad šis prietaisas atitinka pagrindinius reikalavimus ir kitas susijusias Direktyvos 2014/53/ES nuostatas. Visas ES atitikties deklaracijos tekstas pateikiamas čia: https://www.asus.com/support/

Toliau nurodytose šalyse „WiFi" ryšiu, veikiančiu 5 150–5 350 MHz dažnio juostoje, galima naudotis tik patalpose:

Forenklet EU-samsvarserklæring

ASUSTek Computer Inc. erklærer herved at denne enheten er i samsvar med hovedsaklige krav og andre relevante forskrifter i direktivet 2014/53/EU. Fullstendig tekst for EU-samsvarserklæringen finnes på: https://www.asus.com/support/

Wi-Fi-området 5150–5350 MHz skal begrenses til innendørs bruk for landene som er oppført i tabellen:

Uproszczona deklaracja zgodności UE

Firma ASUSTek Computer Inc. niniejszym oświadcza, że urządzenie to jest zgodne z zasadniczymi wymogami i innymi właściwymi postanowieniami dyrektywy 2014/53/UE. Pełny tekst deklaracji zgodności UE jest dostępny pod adresem https://www.asus.com/support/

W krajach wymienionych w tabeli działanie sieci Wi-Fi w paśmie 5150–5350 MHz powinno być ograniczone wyłącznie do pomieszczeń:

Declaração de Conformidade Simplificada da UE

A ASUSTek Computer Inc. declara que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes da Diretiva 2014/53/UE. O texto integral da declaração de conformidade da UE está disponível em https://www.asus.com/support/

A utilização das frequências WiFi de 5150 a 5350MHz está restrita a ambientes interiores nos países apresentados na tabela:

Declarație de conformitate UE, versiune simplificată

Prin prezenta, ASUSTek Computer Inc. declară că acest dispozitiv este în conformitate cu reglementările esențiale și cu celelalte prevederi relevante ale Directivei 2014/53/UE. Textul complet al declarației de conformitate UE este disponibil la adresa https://www.asus.com/support/

Pentru țările listate în tabelul de mai jos, rețelele WiFi care funcționează în banda de frecvență de 5.150-5.350 MHz trebuie utilizate doar în interior:

Pojednostavljena Deklaracija o usaglašenosti EU

ASUSTek Computer Inc. ovim izjavljuje da je ovaj uređaj usaglašen sa osnovnim zahtevima i drugim relevantnim odredbama Direktive 2014/53/EU. Ceo tekst Deklaracije o usaglašenosti EU dostupan je na lokaciji https://www.asus.com/support/

WiFi koji radi u frekventnom opsegu od 5150 MHz do 5350 MHz ograničen je isključivo na upotrebu u zatvorenom prostoru za zemlje navedene u tabeli ispod:

Zjednodušené vyhlásenie o zhode platné pre EÚ

Spoločnosť ASUSTek Computer Inc. týmto vyhlasuje, že toto zariadenie je v súlade so základnými požiadavkami a ďalšími príslušnými ustanoveniami smernice č. 2014/53/EÚ. Plné znenie vyhlásenia o zhode pre EÚ je k dispozícii na lokalite https://www.asus.com/support/

Činnosť WiFi v pásme 5150 - 5350 MHz bude obmedzená na použitie vo vnútornom prostredí pre krajiny uvedené v tabuľke nižšie:

Poenostavljena izjava EU o skladnosti

ASUSTek Computer Inc. tukaj izjavlja, da je ta naprava skladna s temeljnimi zahtevami in drugimi relevantnimii določili Direktive 2014/53/EU. Polno besedilo izjave EU o skladnosti je na voljo na https://www.asus.com/support/

WiFi, ki deluje v pasovnem območju 5150–5350 MHz, mora biti v državah, navedenih v spodnjem seznamu, omejen na notranjo uporabo:

Declaración de conformidad simplificada para la UE

Por la presente, ASUSTek Computer Inc. declara que este dispositivo cumple los requisitos básicos y otras disposiciones pertinentes de la directiva 2014/53/EU. En https://www.asus.com/support/ está disponible el texto completo de la declaración de conformidad para la UE.

La conexión WiFi con una frecuencia de funcionamiento de 5150-5350 MHz se restringirá al uso en interiores para los países enumerados en la tabla:

Förenklad EU-försäkran om överensstämmelse

ASUSTek Computer Inc. deklarerar härmed att denna enhet överensstämmer med de grundläggande kraven och andra relevanta bestämmelser i direktiv 2014/53/EU. Fullständig text av EU-försäkran om överensstämmelse finns på https://www.asus.com/support/

WiFi som använder 5150-5350 MHz kommer att begränsas för användning inomhus i de länder som anges i tabellen:

ประกาศเกี่ยวกับความสอดคล้องของสหภาพยุโรปแบบย่อ

ASUSTek Computer Inc.
ขอประกาศในที่นี้ว่าอุปกรณ์นี้มีความสอดคล้องกับความ
ต้องการที่จำเป็นและเงื่อนไขที่เกี่ยวข้องอื่น ๆ ของออบบัญญัติคิขอกำหนด
2014/53/EU เนื้อหาที่สมบูรณ์ของประกาศความสอดคล้องกับ EU มีอยู่ที่
https://www.asus.com/support/
การทำงานของ WiFi ที่ 5150-5350MHz
ถูกจำกัดให้ใช้ในอาคารสำหรับประเทศที่แสดงในตาราง

Basitleştirilmiş AB Uyumluluk Bildirimi

ASUSTek Computer Inc., bu aygıtın 2014/53/EU Yönergesinin temel gereksinimlerine ve diğer ilgili hükümlerine uygun olduğunu bildirir. AB uygunluk bildiriminin tam metni şu adreste bulunabilir: https://www.asus.com/support/

5150-5350 MHz arasındaki WiFi çalışması, tabloda listelenen ülkeler için iç mekân kullanımıyla kısıtlanacaktır.

Спрощена декларація про відповідність нормам ЄС

ASUSTek Computer Inc. заявляє, що цей пристрій відповідає основним вимогам та іншим відповідним вимогам Директиви 2014 / 53 / EU. Повний текст декларації відповідності нормам ЄС доступний на https://www.asus.com/support/

Робота Wi-Fi на частоті 5150-5350 МГц обмежується використанням у приміщенні для країн, поданих у таблиці нижче:

ϵ €

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

RTL8822BE output power table:

Function	Frequency	Maximum Output Power (EIRP)
WiFi	2412-2472 MHz	19 dBm
	5150-5350 MHz	19 dBm
	5470-5725 MHz	20 dBm
Bluetooth	2402-2480 MHz	8 dBm

ASUS contact information

ASUSTeK COMPUTER INC.

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Telephone   +886-2-2894-3447
Fax   +886-2-2890-7798
Web site   www.asus.com

Technical Support

Telephone   +86-21-38429911
Fax   +86-21-5866-8722, ext. 9101#
Online support   http://qr.asus.com/techserv

ASUS COMPUTER INTERNATIONAL (America)

Address   800 Corporate Way, Fremont, CA 94539, USA
Telephone   +1-510-739-3777
Fax   +1-510-608-4555
Web site   http://www.asus.com/us/

Technical Support

Support fax   +1-812-284-0883
Telephone   +1-812-282-2787
Online support   http://qr.asus.com/techserv

ASUS COMPUTER GmbH (Germany and Austria)

Address   Harkort Str. 21-23, 40880 Ratingen, Germany
Fax   +49-2102-959931
Web site   http://www.asus.com/de
Online contact   http://eu-rma.asus.com/sales

Technical Support

Telephone   +49-2102-5789555
Support Fax   +49-2102-959911
Online support   http://qr.asus.com/techserv

DECLARATION OF CONFORMITY

Per FCC Part 2 Section 2. 1077(a)

FC

Responsible Party Name: **Asus Computer International**

Address: **800 Corporate Way, Fremont, CA 94539.**

Phone/Fax No: **(510)739-3777/(510)608-4555**

hereby declares that the product

Product Name : Motherboard

Model Number : ROG STRIX X299-XE GAMING

Conforms to the following specifications:

⊠   FCC Part 15, Subpart B, Unintentional Radiators

Supplementary Information:

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.

Representative Person's Name :   **Steve Chang / President**

Signature :

Date :   **Aug. 11, 2017**

Ver. 170324