

**PRIME  
TRX40-  
PRO S**

**ASUS<sup>®</sup>**

**Motherboard**

E16304  
First Edition  
January 2020

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# Contents

Safety information.....	vi
About this guide.....	vii
PRIME TRX40-PRO S specifications summary .....	ix
Package contents.....	xiv
Installation tools and components.....	xv

## Chapter 1: Product Introduction

1.1	Before you proceed .....	1-1
1.2	Motherboard layout.....	1-2
1.3	Central Processing Unit (CPU) .....	1-4
1.4	System memory .....	1-5
1.5	Expansion slots.....	1-7
1.6	Onboard buttons .....	1-9
1.7	Onboard jumpers .....	1-10
1.8	Onboard LEDs .....	1-11
1.9	Internal connectors.....	1-13

## Chapter 2: Basic Installation

2.1	Building your PC system.....	2-1
2.1.1	CPU installation.....	2-1
2.1.2	Cooling system installation.....	2-4
2.1.3	Motherboard installation.....	2-5
2.1.4	DIMM installation.....	2-6
2.1.5	ATX power connection .....	2-7
2.1.6	SATA device connection .....	2-8
2.1.7	Front I/O connector .....	2-9
2.1.8	Expansion card installation .....	2-10
2.1.9	M.2 installation .....	2-11
2.1.10	Fan bracket installation .....	2-14
2.1.11	M.2 Wi-Fi module and antenna installation.....	2-15
2.2	BIOS update utility .....	2-16
2.3	Motherboard rear and audio connections .....	2-17
2.3.1	Rear I/O connection .....	2-17
2.3.2	Audio I/O connections.....	2-19
2.4	Starting up for the first time.....	2-21
2.5	Turning off the computer .....	2-21

## **Chapter 3: BIOS Setup**

<b>3.1</b>	<b>Knowing BIOS</b> .....	<b>3-1</b>
<b>3.2</b>	<b>BIOS setup program</b> .....	<b>3-2</b>
3.2.1	Advanced Mode .....	3-3
3.2.2	EZ Mode .....	3-6
3.2.3	Q-Fan Control .....	3-7
<b>3.3</b>	<b>My Favorites</b> .....	<b>3-9</b>
<b>3.4</b>	<b>Main menu</b> .....	<b>3-11</b>
<b>3.5</b>	<b>Ai Tweaker menu</b> .....	<b>3-11</b>
<b>3.6</b>	<b>Advanced menu</b> .....	<b>3-12</b>
3.6.1	AMD fTPM configuration .....	3-12
3.6.2	CPU Configuration .....	3-12
3.6.3	PCI Subsystem Settings .....	3-13
3.6.4	USB Configuration .....	3-14
3.6.5	HDD/SSD SMART Information .....	3-14
3.6.6	NVMe Configuration .....	3-14
3.6.7	SATA Configuration .....	3-14
3.6.8	Onboard Devices Configuration .....	3-15
3.6.9	APM Configuration .....	3-17
3.6.10	Network Stack Configuration .....	3-17
3.6.11	AMD CBS .....	3-17
3.6.12	AMD PBS .....	3-17
3.6.13	AMD Overclocking .....	3-17
<b>3.7</b>	<b>Monitor menu</b> .....	<b>3-18</b>
<b>3.8</b>	<b>Boot menu</b> .....	<b>3-18</b>
<b>3.9</b>	<b>Tool menu</b> .....	<b>3-20</b>
3.9.1	ASUS EZ Flash 3 Utility .....	3-20
3.9.2	Secure Erase .....	3-21
3.9.3	ASUS User Profile .....	3-22
3.9.4	ASUS SPD Information .....	3-22
3.9.5	ASUS Armoury Crate .....	3-22
<b>3.10</b>	<b>Exit menu</b> .....	<b>3-23</b>
<b>3.11</b>	<b>Updating BIOS</b> .....	<b>3-24</b>
3.11.1	EZ Update .....	3-24
3.11.2	ASUS EZ Flash 3 .....	3-25
3.11.3	ASUS CrashFree BIOS 3 .....	3-26

**Chapter 4: RAID Support**

**4.1 AMD RAID Array configurations..... 4-1**  
    4.1.1 RAID definitions ..... 4-1

**Appendix**

**Q-Code table..... A-1**  
**Notices ..... A-5**  
**ASUS contact information..... A-10**

# 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:

- **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.
- **Chapter 2: Basic Installation**  
This chapter lists the hardware setup procedures that you have to perform when installing system components.
- **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.
- **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](http://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 (+).



## PRIME TRX40-PRO S specifications summary

<b>CPU</b>	<p>AMD Socket sTRX4 for 3rd Gen AMD Ryzen™ Threadripper™ Series Desktop Processors*</p> <p>* The support of these features depends on the CPU types. * Refer to <a href="http://www.asus.com">www.asus.com</a> for CPU support list.</p>
<b>Chipset</b>	AMD TRX40
<b>Memory</b>	<p><b>3rd Gen AMD Ryzen™ Threadripper™ Series Desktop Processors</b></p> <p>8 x DIMM, max. 256GB, DDR4 4400+(O.C) / 4266(O.C) / 4133(O.C) / 4000(O.C) / 3866(O.C) / 3800(O.C) / 3733(O.C) / 3600(O.C) / 3466(O.C) / 3400(O.C) / 3200 / 3000 / 2933 / 2800 / 2666 / 2400 / 2133 MHz ECC and non-ECC, Unbuffered memory**</p> <p>Quad Channel Memory Architecture</p> <p>* Please refer to Memory QVL (Qualified Vendors Lists) on <a href="http://www.asus.com">www.asus.com</a> for details.</p>
<b>Expansion Slots</b>	<p><b>3rd Gen AMD Ryzen™ Threadripper™ Desktop Processors</b></p> <p>- 3 x PCIe 4.0 x16 Safeslots (supports x16/x16/x16 mode)</p> <p><b>AMD TRX40 chipset</b></p> <p>- 1 x PCIe 4.0 x4</p>
<b>Multi-GPU Support</b>	<p>Supports NVIDIA® 2-Way SLI® Technology</p> <p>Supports AMD 2-Way CrossFireX™ Technology</p>
<b>Storage</b>	<p><b>3rd Gen AMD Ryzen™ Threadripper™ Desktop Processors</b></p> <p>- 2 x M.2 Socket 3(M.2_1 and M.2_2) with M key, type 2242/2260/2280/22110 storage devices support (PCIe 4.0 x4 mode)</p> <p><b>AMD TRX40 chipset</b></p> <p>- 1 x M.2_3 Socket 3 with vertical M key, type 2242/2260/2280/22110 storage devices support (both SATA &amp; PCIe 4.0 x4 modes)</p> <p>- 8 x SATA 6Gb/s ports</p> <p>Supports NVMe RAID configurations via onboard M.2 storages.</p>
<b>LAN</b>	<p>Intel® I211AT Gigabit LAN</p> <p>ASUS LAN Guard</p> <p>ASUS Turbo LAN Utility</p>
<b>Wireless &amp; Bluetooth</b>	<p>1 x M.2 Socket (Key E), supports type 2230 PCIe Wi-Fi/BT module*</p> <p>* The Wi-Fi/BT module is purchased separately.</p>

(continued on the next page)

# PRIME TRX40-PRO S specifications summary

<b>Audio</b>	<p><b>Realtek S1220 8-channel high definition audio CODEC featuring Crystal Sound 3</b></p> <ul style="list-style-type: none"><li>- Power pre-regulator reduces power input noise to ensure consistent performance</li><li>- Separate layer for left and right track, ensuring both sound deliver equal quality</li><li>- Impedance sense for front and rear headphone outputs</li><li>- Audio shielding ensures precise analog/digital separation and greatly reduced multi-lateral interference</li><li>- Internal audio Amplifier to enhance the highest quality sound for headphone and speakers</li><li>- Premium Japan-made audio capacitors provides warm, natural, and immersive sound with exceptional clarity and fidelity</li><li>- High quality 120dB SNR stereo playback output (Line-out@back) &amp; 108dB SNR input (Line-in) support</li><li>- DTS:X® Ultra</li><li>- Supports jack-detection, multi-streaming, front panel jack-retasking (MIC)</li><li>- Optical S/PDIF out port at back I/O</li></ul>
<b>USB</b>	<p><b>3rd Gen AMD Ryzen™ Threadripper™ Desktop Processors</b></p> <ul style="list-style-type: none"><li>- 2 x USB 3.2 Gen 2 ports (1 x Type-C™, 1 x Type A at back panel)</li><li>- 2 x USB 3.2 Gen 1 ports at back panel</li></ul> <p><b>AMD TRX40 chipset</b></p> <ul style="list-style-type: none"><li>- 1 x USB 3.2 Gen 2 front panel Type-C™ connector</li><li>- 2 x USB 3.2 Gen 2 ports at back panel, 1 support BIOS FlashBack™</li><li>- 4 x USB 3.2 Gen 1 ports at mid-board</li><li>- 2 x USB 2.0 ports at mid-board</li></ul> <p><b>ASMedia® 1074 USB controller</b></p> <ul style="list-style-type: none"><li>- 4 x USB 3.2 Gen 1 ports at back panel</li></ul> <p><b>GL852G USB 2.0 hub</b></p> <ul style="list-style-type: none"><li>- 2 x USB 2.0 ports at mid-board</li></ul>

*(continued on the next page)*

# PRIME TRX40-PRO S specifications summary

## ASUS Exclusive Features

### <Performance>

#### 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+ Power Control

#### TPU

#### EPU

#### Fan Xpert 4

#### Turbo App

### UEFI BIOS

#### CrashFree BIOS 3

#### EZ Flash 3

#### BIOS FlashBack™

### <Gaming>

#### Armoury Crate

- AURA SYNC
- ASUS NODE: hardware control interface
- Turbo LAN

### <EZ DIY>

#### Pre-mounted I/O Shield

#### FlexKey

#### Q-Design

- ASUS Q-Code
- ASUS Q-Connector
- ASUS Q-DIMM
- ASUS Q-LED (CPU, DRAM, VGA, Boot Device LED)
- ASUS Q-Slot

*(continued on the next page)*

# PRIME TRX40-PRO S specifications summary

<p><b>ASUS Special Features</b></p>	<p><b>Special Features:</b></p> <p><b>ASUS SafeSlot - Protect your graphics card Investment</b></p> <p><b>ASUS 5X Protection III</b></p> <ul style="list-style-type: none"> <li>- ASUS SafeSlot Core - Fortified PCIe with solid soldering</li> <li>- ASUS LANGuard - Protects against LAN surges, lightning strikes and static-electricity discharges!</li> <li>- ASUS Overvoltage Protection - World-class circuit-protecting power design</li> <li>- ASUS DIGI+ VRM -digital power design</li> <li>- ASUS DRAM Overcurrent Protection: Enhanced DRAM overcurrent protection</li> <li>- ASUS Stainless-Steel Back I/O: 3X corrosion-resistance for greater durability!</li> </ul> <ul style="list-style-type: none"> <li>- AI Suite 3</li> <li>- Ai Charger</li> </ul>
<p><b>ASUS Quiet Thermal Solution</b></p>	<p><b>Quiet Thermal Design:</b></p> <ul style="list-style-type: none"> <li>- ASUS Fan Xpert 4</li> <li>- ASUS Stylish MOS &amp; M.2 heatsink, chipset fan with heatsink Design</li> </ul>
<p><b>Back Panel I/O Ports</b></p>	<ul style="list-style-type: none"> <li>1 x BIOS FlashBack™ button</li> <li>1 x Optical S/PDIF out</li> <li>1 x Intel® LAN (RJ45) port</li> <li>4 x USB 3.2 Gen 2 ports (3 x Type-A + 1 x Type-C™)</li> <li>6 x USB 3.2 Gen 1 ports</li> <li>5 x Audio Jacks</li> </ul>

*(continued on the next page)*

## PRIME TRX40-PRO S specifications summary

<b>Internal I/O Ports</b>	<p>1 x USB 3.2 Gen 2 front panel Type-C™ connector</p> <p>2 x USB 3.2 Gen 1 connectors support additional 4 USB ports (19-pin)</p> <p>2 x USB 2.0 connectors support additional 4 USB ports</p> <p>2 x M.2_1 Socket 3 with M key, type 2242/2260/2280/22110 storage devices support (PCIe 4.0 x 4 mode)</p> <p>1 x M.2_2 Socket 3 with vertical M Key, type 2242/2260/2280/22110 storage devices support (both SATA &amp; PCIe 4.0 x 4 mode)</p> <p>8 x SATA 6.0Gb/s connectors</p> <p>1 x 4-Pin W_PUMP+ connector</p> <p>1 x 4-Pin AIO_PUMP fan connector</p> <p>1 x 4-Pin CPU Fan connector</p> <p>1 x 4-Pin CPU_OPT fan connector</p> <p>1 x 3-pin Chipset fan connector</p> <p>3 x 4-Pin Chassis Fan connectors</p> <p>1 x 2-pin Thermal sensor header</p> <p>1 x 24-pin EATX Power connector</p> <p>2 x 8-pin EATX 12V Power connectors</p> <p>2 x Aura Addressable Gen2 headers</p> <p>2 x Aura RGB headers</p> <p>1 x NODE connector</p> <p>1 x Front panel audio connector (AAFP)</p> <p>1 x System panel connector with FlexKey</p> <p>1 x Q Code</p> <p>1 x Clear CMOS header</p> <p>1 x Power-on button</p>
<b>BIOS</b>	1 x 128 Mb Flash ROM, UEFI AMI BIOS, PnP, WfM2.0, SM BIOS 3.2, ACPI 6.2
<b>Manageability</b>	WfM 2.0, WOL by PME, PXE
<b>Software</b>	<p>Drivers</p> <p>ASUS Utilities</p> <p>EZ Update</p> <p>Anti-virus software (OEM version)</p>
<b>Operating System</b>	Windows® 10 64-bit
<b>Form Factors</b>	12" x 9.6" (30.5 cm x 24.4 cm)



- Specifications are subject to change without notice.
- Visit the ASUS website for the software manual.

## Package contents

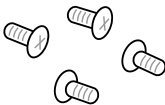


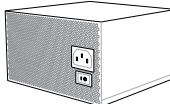

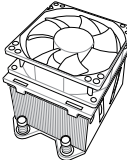
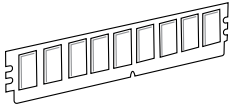
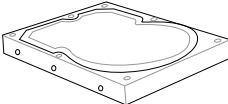
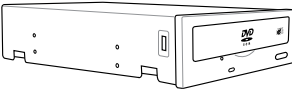
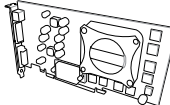
Check your motherboard package for the following items.

Motherboard	1 x PRIME TRX40-PRO S motherboard
Cables	1 x Addressable LED extension cable
	1 x RGB LED extension cable
	4 x SATA 6.0Gb/s cables
Accessories	1 x M.2 Screw package
	1 x M.2 E-key Screw package
	1 x M.2 22110 vertical bracket
	1 x FAN holder
	1 x Q-connector
Application DVD	1 x Motherboard support DVD
Documentation	1 x User guide



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

## Installation tools and components

	
<b>1 Bag of screws</b>	<b>Screwdriver</b>
	
<b>PC chassis</b>	<b>Power supply unit</b>
	
<b>AMD Socket sTRX4 CPU</b>	<b>AMD Socket sTRX4 compatible CPU Fan</b>
	
<b>DDR4 DIMM</b>	<b>SATA hard disk drive</b>
	
<b>SATA optical disc drive (optional)</b>	<b>Graphics card (optional)</b>



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





# Product Introduction

# 1

## 1.1 Before you proceed

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



---

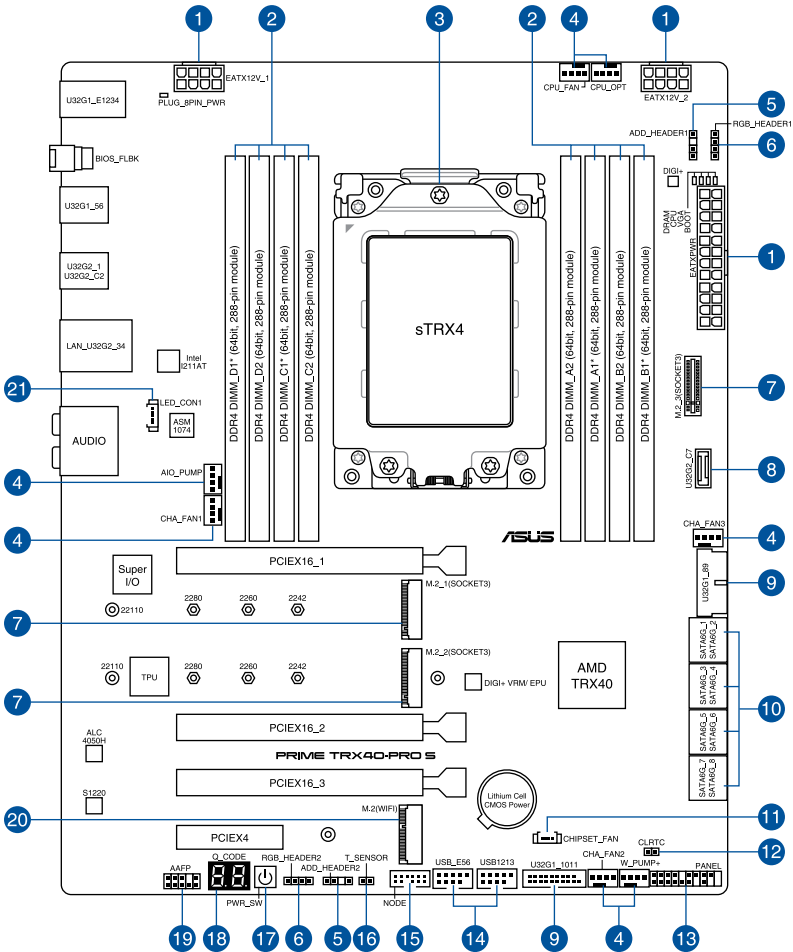
Components shown in this section may require additional purchase. Refer to **Package contents** section for more information about the contents of your motherboard package.

---



- 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.
-

## 1.2 Motherboard layout

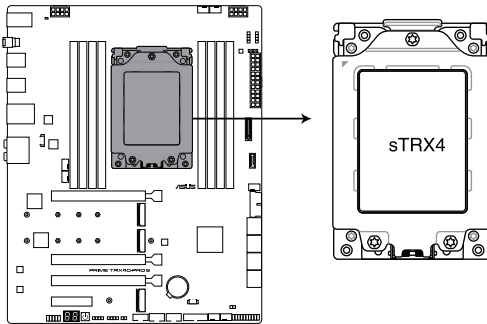


Refer to **Internal connectors** and **Rear I/O connection** for more information about rear panel connectors and internal connectors.

Layout contents	Page
1. Power connectors	1-23
2. DIMM slots	1-5
3. CPU socket	1-4
4. Fan and Pump connectors	1-17
5. Addressable Gen2 LED connector	1-19
6. AURA RGB LED connector	1-20
7. M.2 slot	1-14
8. USB 3.2 Gen 2 connector	1-15
9. USB 3.2 Gen 1 connector	1-15
10. SATA 6Gb/s connector	1-13
11. Chipset Fan connector	1-16
12. Clear RTC RAM jumper	1-10
13. System Panel connector	1-22
14. USB 2.0 connector	1-16
15. Node connector	1-18
16. Thermal Sensor connector	1-18
17. Power button	1-9
18. Q-Code LED	1-11
19. Front Panel Audio connector	1-21
20. M.2 Wi-Fi slot	1-14
21. LED connector	1-21

## 1.3 Central Processing Unit (CPU)

The motherboard comes with an AMD Socket sTRX4 for 3rd Gen AMD Ryzen™ Threadripper™ Series Desktop Processors.



**PRIME TRX40-PRO S CPU sTRX4 Socket**



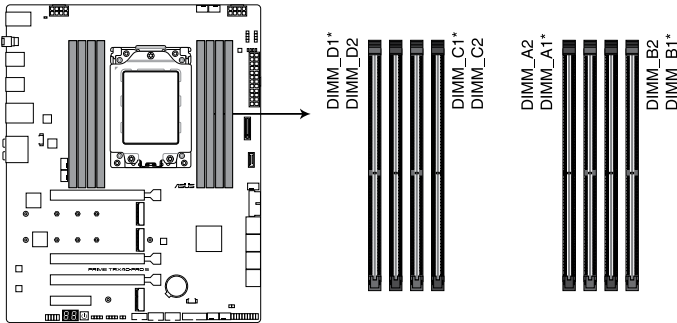
- The Socket sTRX4 has a different pinout design. Ensure that you use a CPU designed for the Socket sTRX4.
- The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the CPU and damaging the CPU.
- Ensure that all power cables are unplugged before installing the CPU.
- Overclocking AMD processors, including without limitation, altering clock frequencies / multipliers or memory timing / voltage, to operate beyond their stock specifications will void any applicable AMD product warranty, even when such overclocking is enabled via AMD hardware and/or software. This may also void warranties offered by the system manufacturer or retailer. Users assume all risks and liabilities that may arise out of overclocking AMD processors, including, without limitation, failure of or damage to hardware, reduced system performance and/or data loss, corruption or vulnerability

## 1.4 System memory

The motherboard comes with Dual Inline Memory Modules (DIMM) slots designed for DDR4 (Double Data Rate 4) memory modules.

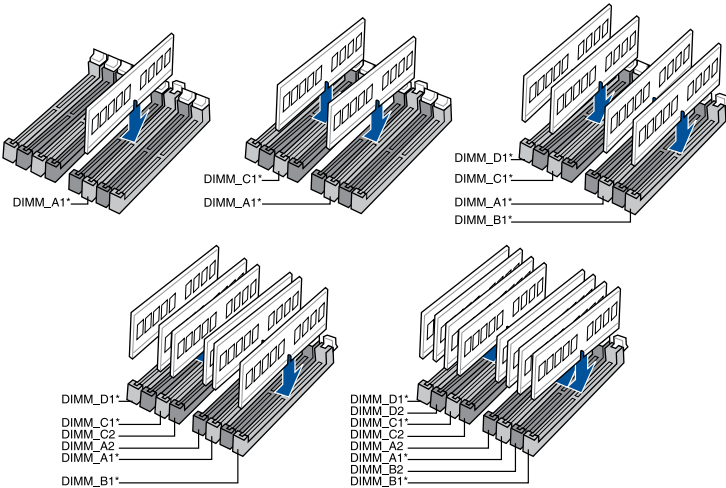


A DDR4 memory module is notched differently from a DDR, DDR2, or DDR3 module. DO NOT install a DDR, DDR2, or DDR3 memory module to the DDR4 slot.



**PRIME TRX40-PRO S 288-pin DDR4 DIMM socket**

### Recommended memory configurations



## Memory configurations

You may install 4 GB, 8 GB, 16 GB, and 32 GB unbuffered ECC and non-ECC DDR4 DIMMs into the DIMM sockets.



---

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.

---

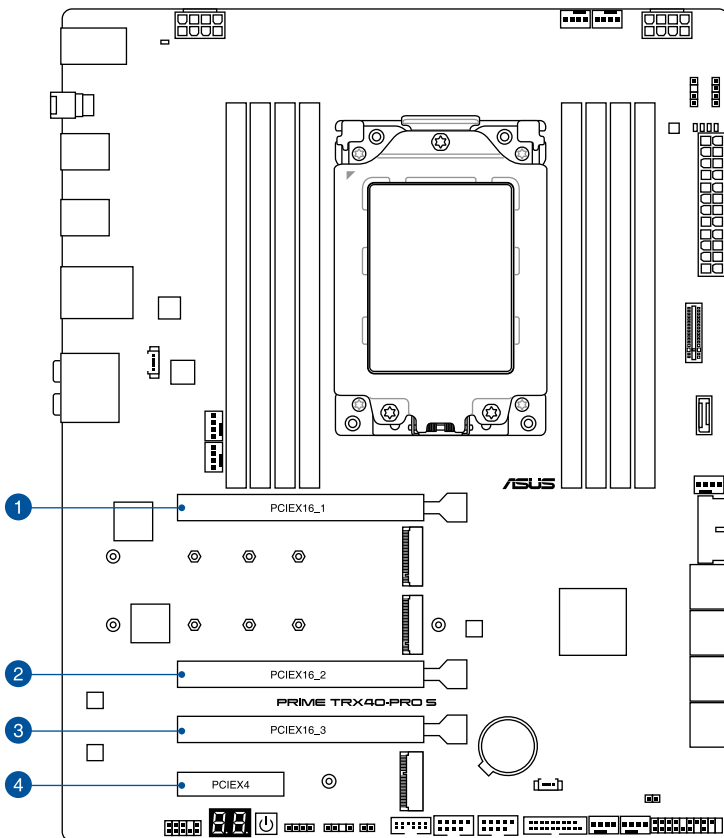


- The default memory operation frequency is dependent on its Serial Presence Detect (SPD), which is the standard way of accessing information from a memory module. Under the default state, some memory modules for overclocking may operate at a lower frequency than the vendor-marked value.
  - For system stability, use a more efficient memory cooling system to support a full memory load 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.
-

## 1.5 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.



## Recommended VGA configuration

### 3rd Gen AMD Ryzen™ Threadripper™ Desktop Processors

Slot Description	Single VGA	SLI®/CFX	
1. PCIe 4.0 x16_1	x16	x16	x16
2. PCIe 4.0 x16_2	-	-	x16
3. PCIe 4.0 x16_3	-	x16	-



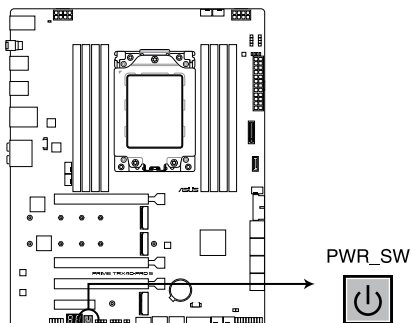
- We recommend that you provide sufficient power when running CrossFireX™ or SLI® mode.
- Ensure to connect both 8-pin power plugs when running CrossFireX™ or SLI® mode.
- Connect a chassis fan to the chassis fan connectors when using multiple graphics cards for better thermal environment.



## 1.6 Onboard buttons

### 1. Power button

Press the Power button to power up the system, or put the system into sleep or soft-off mode (depending on the operating system settings).



**PRIME TRX40-PRO S Power on button**

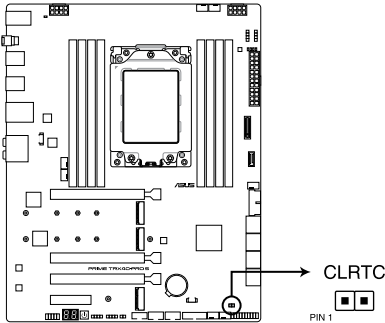


The button also lights up when the system is plugged to a power source, indicating that you should shut down the system and unplug the power cable before removing or installing any motherboard component.

## 1.7 Onboard jumpers

### 1. Clear RTC RAM jumper

The Clear RTC RAM jumper allows you to clear the Real Time Clock (RTC) RAM in the CMOS, which contains the date, time, system passwords, and system setup parameters.



**PRIME TRX40-PRO S Clear RTC RAM jumper**

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 or jumper cap for about 5-10 seconds.
3. Plug the power cord and turn ON the computer.
4. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.



---

DO NOT short-circuit the pins except when clearing the RTC RAM. Short-circuiting or placing a jumper cap will cause system boot failure!

---



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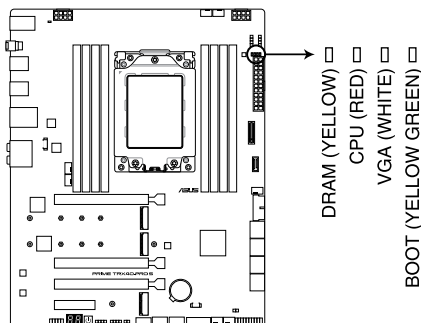
If the steps above do not help, remove the onboard button cell battery and move the jumper again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the button cell battery.

---

## 1.8 Onboard LEDs

### 1. Q LEDs

The Q LEDs check key components (CPU, DRAM, VGA, and booting devices) during the motherboard booting process. If an error is found, the critical component's LED stays lit up until the problem is solved.



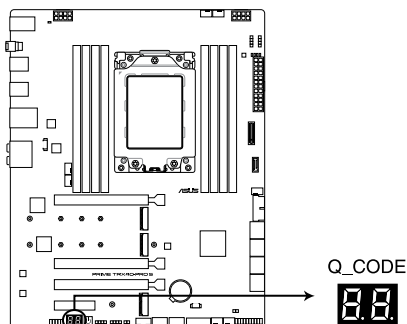
**PRIME TRX40-PRO S Q LEDs**



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.



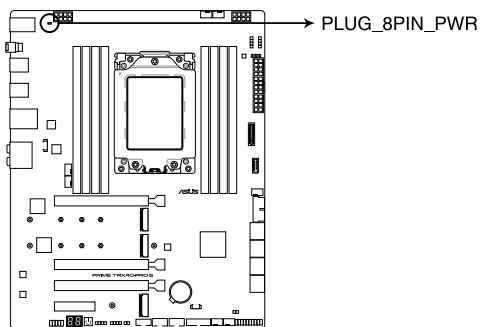
**PRIME TRX40-PRO S Q-Code LED**



- The Q-Code 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.
- Please refer to the Q-Code table in the **Appendix** section for more details.

### 3. 8-pin Power Plug LED

The 8-pin Power Plug LED lights up to indicate that the 8-pin power plug is not connected.



#### PRIME TRX40-PRO S 8-pin Power Plug LED

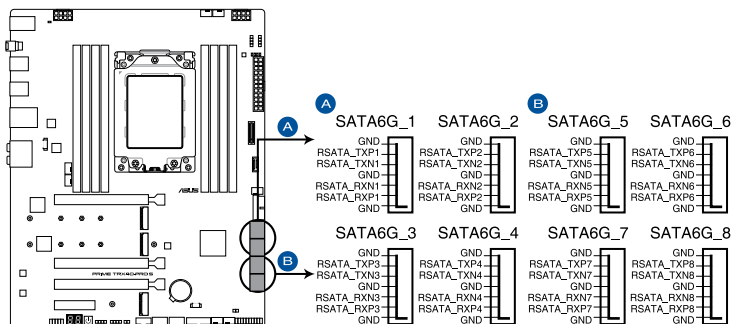


- Ensure to connect both 8-pin power plugs.
- Due to the CPU minimum power consumption requirement, we recommend using a PSU with 850W or above.

## 1.9 Internal connectors

### 1. SATA 6Gb/s connector

The SATA 6Gb/s connector allows you to connect SATA devices such as optical disc drives and hard disk drives via a SATA cable.



**PRIME TRX40-PRO S SATA 6 Gb/s connector**



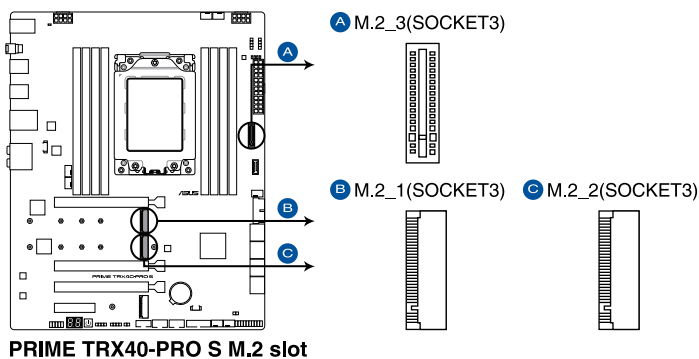
If you installed SATA storage devices, you can create a RAID 0, 1, and 10 configuration through the onboard AMD TRX40 chipset.



- These connectors are set to **[AHCI]** by default. If you intend to create a SATA RAID set using these connectors, set the SATA Mode Selection item in the BIOS to **[RAID]**.
- Before creating a RAID set, refer to the **RAID Configuration Guide**. You can download the **RAID Configuration Guide** from the ASUS website.

## 2. M.2 slot

The M.2 slot allows you to install M.2 devices such as M.2 SSD modules.



**PRIME TRX40-PRO S M.2 slot**



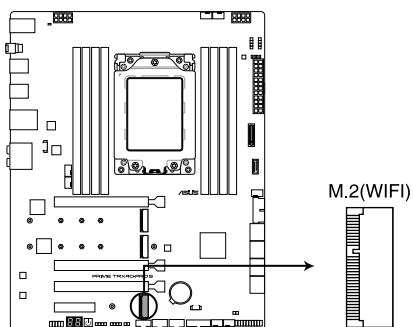
- M.2\_1 and M.2\_2 sockets support PCIe 4.0 x4 M Key design and type 2242 / 2260 / 2280 / 22110 storage devices.
- M.2\_3 socket supports PCIe 4.0 x4 and SATA modes vertical M Key design and type 2242 / 2260 / 2280 / 22110 storage devices.



- The M.2 SSD module is purchased separately.
- Use the bundled bracket to install a vertical M.2 SSD module to the M.2\_3 socket, refer to the **M.2 Installation** section for more details.

## 3. M.2 Wi-Fi slot

The M.2 Wi-Fi slot allows you to install an M.2 Wi-Fi module (E-key, type 2230).



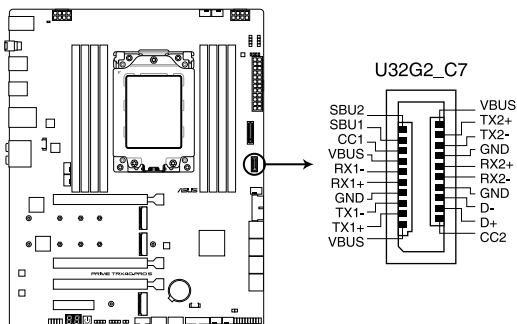
**PRIME TRX40-PRO S M.2(WIFI) slot**



- The M.2 Wi-Fi module is purchased separately.

#### 4. USB 3.2 Gen 2 connector

The USB 3.2 Gen 2 connector allows you to connect a USB 3.2 Gen 2 module for additional USB 3.2 Gen 2 ports. The USB 3.2 Gen 2 connector provides data transfer speeds of up to 10 Gb/s.



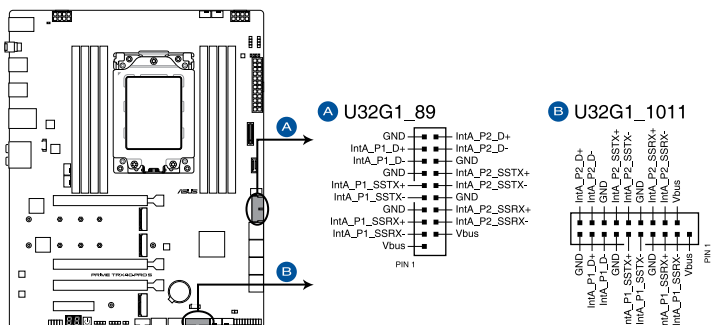
**PRIME TRX40-PRO S USB 3.2 Gen 2 connector**



The USB 3.2 Gen 2 module is purchased separately.

#### 5. USB 3.2 Gen 1 connector

The USB 3.2 Gen 1 connector allows you to connect a USB 3.2 Gen 1 module for additional USB 3.2 Gen 1 ports. The USB 3.2 Gen 1 connector provides data transfer speeds of up to 5 Gb/s.



**PRIME TRX40-PRO S USB 3.2 Gen 1 connector**



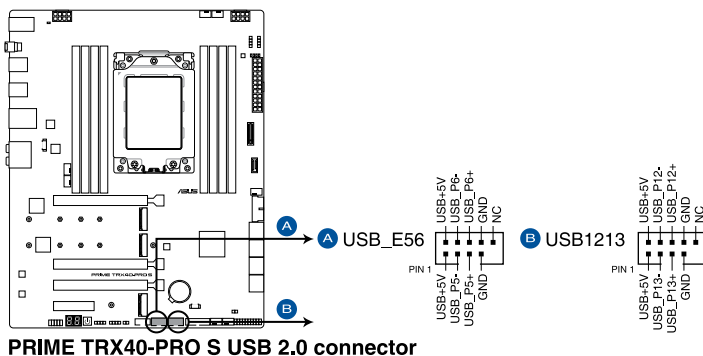
The USB 3.2 Gen 1 module is purchased separately.



The plugged USB 3.2 Gen 1 device may run on xHCI or EHCI mode depending on the operating system's setting.

## 6. USB 2.0 connector

The USB 2.0 connector allows you to connect a USB module for additional USB 2.0 ports. The USB 2.0 connector provides data transfer speeds of up to 480 MB/s connection speed.



**PRIME TRX40-PRO S USB 2.0 connector**



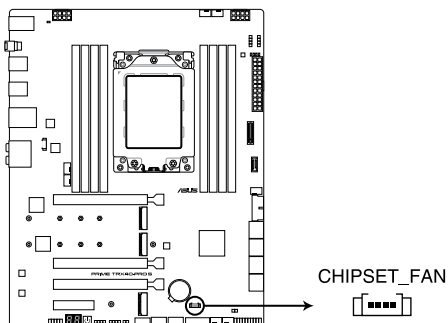
DO NOT connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!



The USB 2.0 module is purchased separately.

## 7. Chipset Fan connector

The Chipset Fan connector is for connecting the chipset fan on the integrated heatsink.

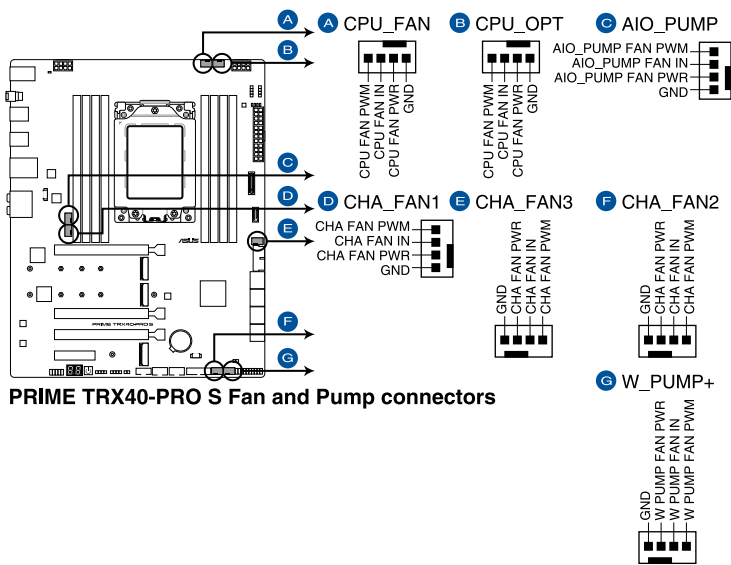


**PRIME TRX40-PRO S CHIPSET FAN connector**



## 8. Fan and Pump connectors

The Fan and Pump connectors allow you to connect fans or pumps to cool the system.



- 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 the cable is fully inserted into the connector.

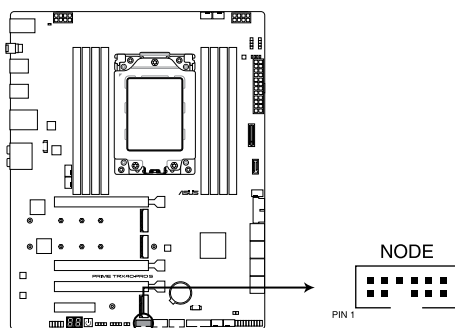


For water cooling kits, connect the pump connector to the **W\_PUMP+** connector, then connect the fan connectors to the **CPU\_FAN** and **CPU\_OPT** connectors.

Header	Max. Current	Max. Power	Default Speed	Shared Control
CPU_FAN	1A	12W	Q-Fan Controlled	A
CPU_OPT	1A	12W	Q-Fan Controlled	A
CHA_FAN1	1A	12W	Q-Fan Controlled	-
CHA_FAN2	1A	12W	Q-Fan Controlled	-
CHA_FAN3	1A	12W	Q-Fan Controlled	-
CHIPSET_FAN	1A	12W	Q-Fan Controlled	-
AIO_PUMP	1A	12W	Full-Speed	-
W_PUMP+	3A	36W	Full-Speed	-

## 9. Node connector

The Node connector allows you to connect a compatible PSU or control a compatible fan extension card.



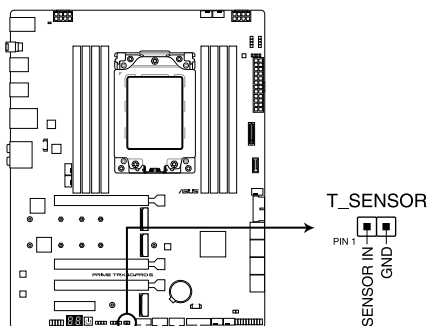
**PRIME TRX40-PRO S Node connector**



Visit [www.asus.com](http://www.asus.com) for more information about the devices and the latest compatibility list.

## 10. Thermal Sensor connector

The Thermal Sensor connector allows you to connect a sensor to monitor the temperature of the devices and the critical components inside the motherboard. Connect the thermal sensor and place it on the device or the motherboard's component to detect its temperature.



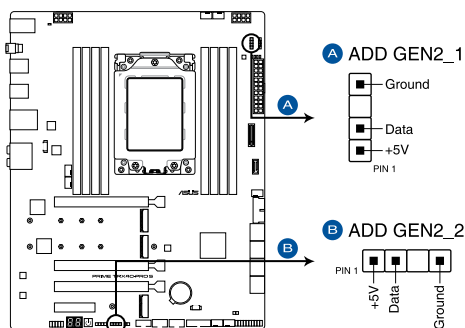
**PRIME TRX40-PRO S Thermal Sensor connector**



The thermal sensor is purchased separately.

## 11. Addressable Gen2 LED connector

The Addressable Gen2 LED connector allows you to connect individually addressable RGB WS2812B LED strips or WS2812B based LED strips.



### PRIME TRX40-PRO S Addressable RGB LED connector



The Addressable Gen2 LED connector supports WS2812B addressable RGB LED strips (5V/Data/Ground), with a maximum power rating of 3A (5V) and a maximum of 120 LEDs.



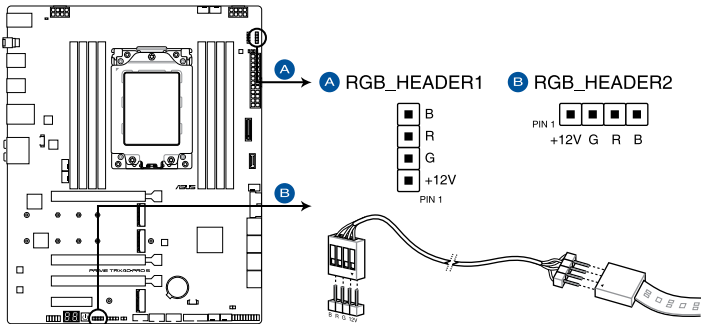
Before you install or remove any component, ensure that the power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.



- 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 when the system is powered on.
- The addressable RGB LED strip is purchased separately.

## 12. AURA RGB LED connector

The AURA RGB LED connector allows you to connect RGB LED strips.



**PRIME TRX40-PRO S AURA RGB LED connector**



The AURA RGB LED connector supports 5050 RGB multi-color LED strips (12V/G/R/B), with a maximum power rating of 3A (12V).



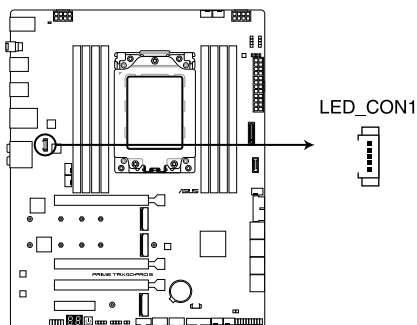
Before you install or remove any component, ensure that the power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.



- Actual lighting and color will vary with LED strip.
- If your LED strip does not light up, check if the 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 powered on.
- The LED strip is purchased separately.

### 13. LED connector

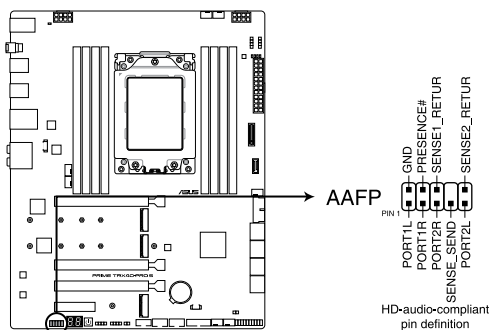
The LED connector is for connecting the LED PCB on your I/O cover.



**PRIME TRX40-PRO S Rear I/O Cover LED connector**

### 14. Front Panel Audio connector

The front panel audio 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.



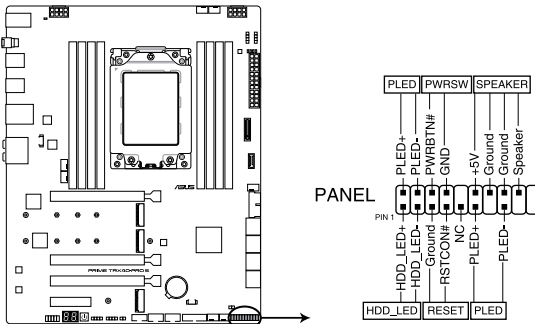
**PRIME TRX40-PRO S Front Panel Audio connector**



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.

## 15. System Panel connector

The System Panel connector supports several chassis-mounted functions.



**PRIME TRX40-PRO S System panel connector**

- **System Power LED connector (PLED)**

The 2-pin connector allows you to connect the System Power LED. The System Power LED lights up when the system is connected to a power source, or when you turn on the system power, and blinks when the system is in sleep mode.

- **Storage Device Activity LED connector (HLED)**

The 2-pin connector allows you to connect the Storage Device Activity LED. The Storage Device Activity LED lights up or blinks when data is read from or written to the storage device or storage device add-on card.

- **System Warning Speaker connector (SPEAKER)**

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

- **Power Button/Soft-off Button connector (PWRBTN)**

The 3-1 pin connector allows you to connect the system power button. Press the power button to power up the system, or put the system into sleep or soft-off mode (depending on the operating system settings).

- **FlexKey button connector (RESET)**

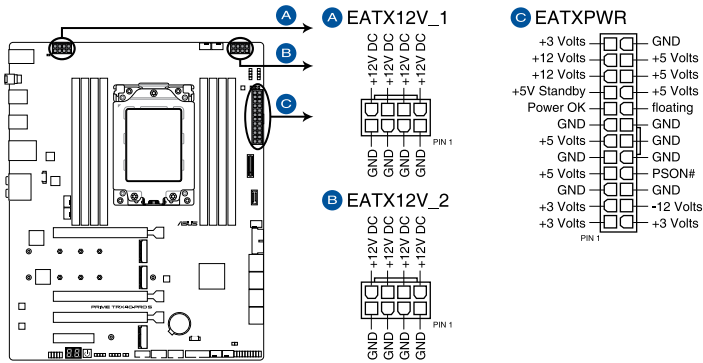
The 2-pin connector allows you to connect the chassis-mounted FlexKey button (RESET). Press the FlexKey button to reboot the system.



The button will be set to **[Reset]** by default. You can assign a different function to this button in the BIOS settings.

## 16. Power connectors

These Power connectors allow you to connect your motherboard to a power supply. The power supply plugs are designed to fit in only one orientation, find the proper orientation and push down firmly until the power supply plugs are fully inserted.



**PRIME TRX40-PRO S Power connectors**



- Ensure to connect both 8-pin power plugs.
- Due to the CPU minimum power consumption requirement, we recommend using a PSU with 850W or above.





# Basic Installation

# 2

## 2.1 Building your PC system



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

### 2.1.1 CPU installation

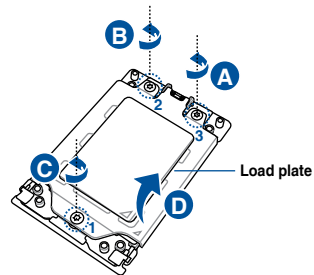


The AMD Socket sTRX4 is compatible with 3rd Gen AMD Ryzen™ Threadripper™ Desktop Processors. Ensure you use a CPU designed for the Socket sTRX4. The CPU fits in only one correct orientation. **DO NOT** force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

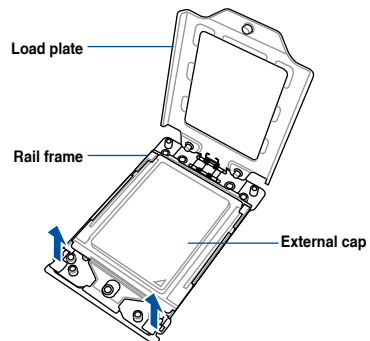


Unplug all power cables before installing the CPU.

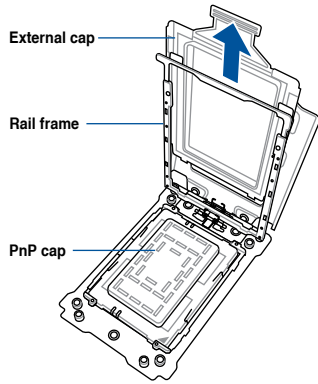
- 1 Use the bundled Torx screwdriver to remove the load plate screws in sequence 3>2>1, then lift the load plate.



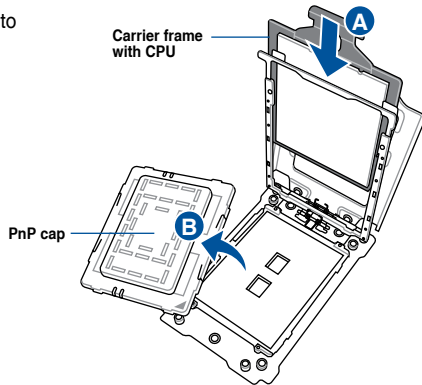
- 2 Use your fingers to pull up the tabs on both sides of the rail frame to release the rail frame, then lift the rail frame to its fully open position.



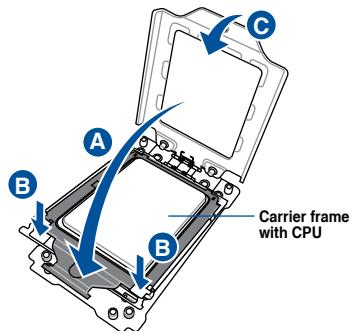
- 3 Remove the external cap.



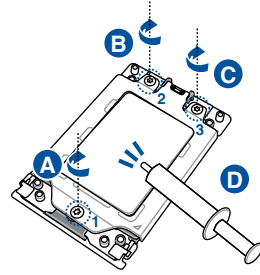
- 4 Slide the carrier frame with CPU into the rail frame until you hear a click sound, then remove the PnP cap.



- 5 Gently press down the rail frame until it latches to the socket housing, then press down the load plate.



- 6 Drive the three screws slightly into the holes in sequence 1>2>3, just enough to attach the load plate to the socket. When the three screws are attached, tighten them in sequence 1>2>3 to completely secure the load plate. Then apply the Thermal Interface Material to the CPU.



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The load plate screws are Torx T20 models. A torque value of 12 inch-lbf is recommended.

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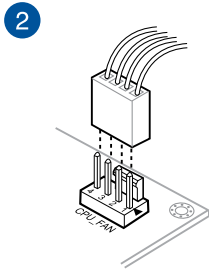
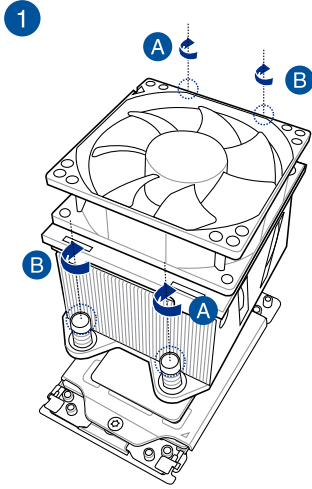
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Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

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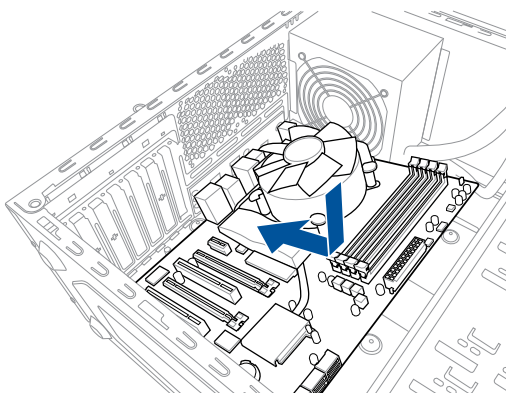
## 2.1.2 Cooling system installation

To install the CPU heatsink and fan assembly:

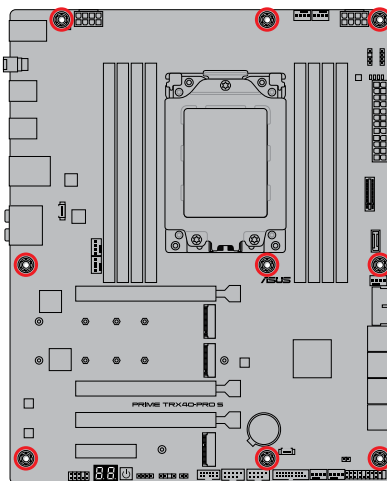
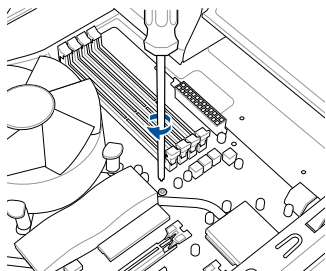


## 2.1.3 Motherboard installation

1. Place the motherboard into the chassis, ensuring that its rear I/O ports are aligned to the chassis' rear I/O panel.

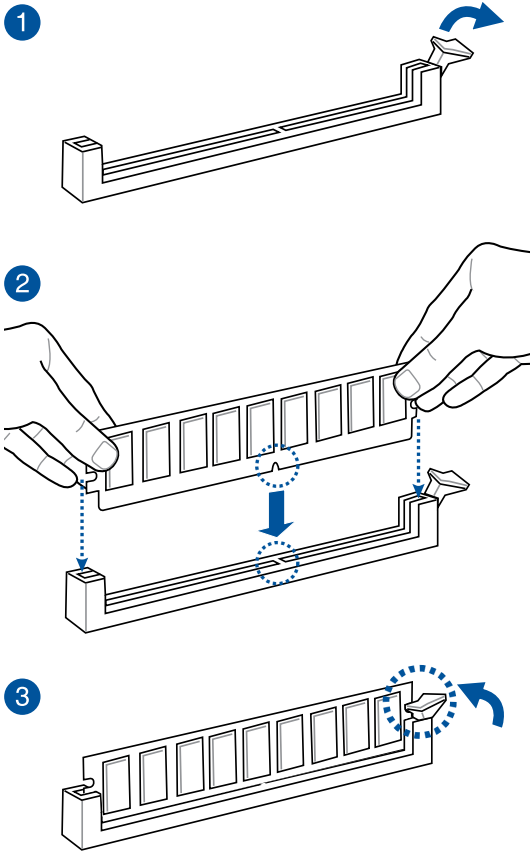


2. Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.

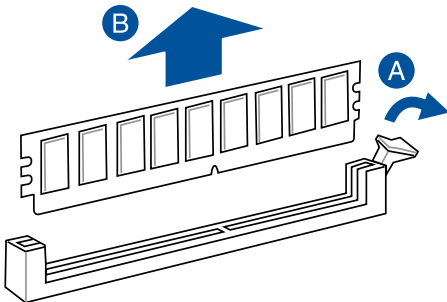


- DO NOT over tighten the screws! Doing so can damage the motherboard.
- Ensure that the space above the installed motherboard is at least 8cm to prevent the MOS heatsink from interfering with the radiator or chassis fans.
- We recommend using an E-ATX chassis when installing this motherboard.

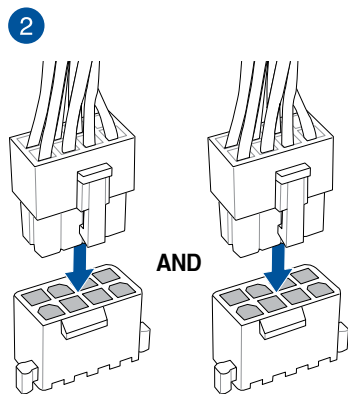
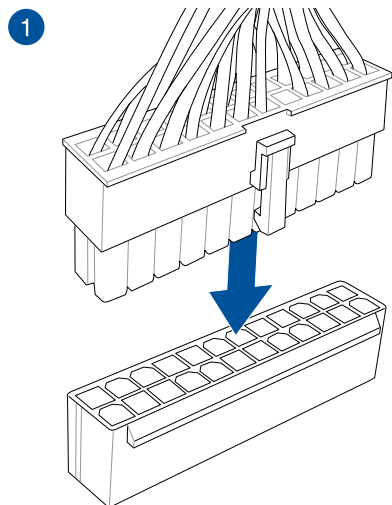
## 2.1.4 DIMM installation



To remove a DIMM

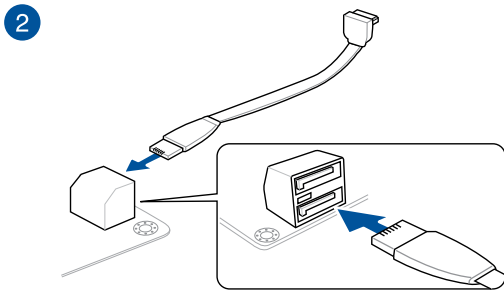
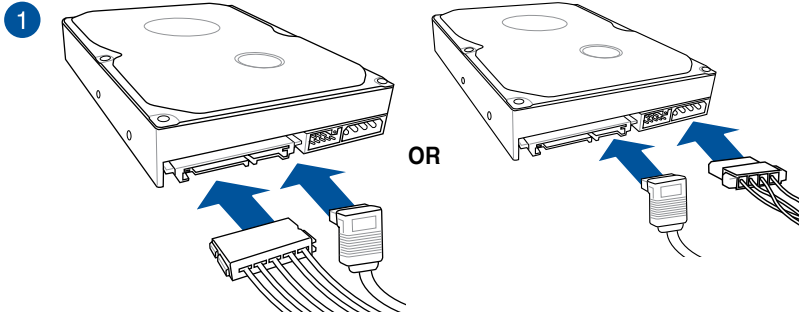


## 2.1.5 ATX power connection



Ensure to connect the two 8-pin power plugs.

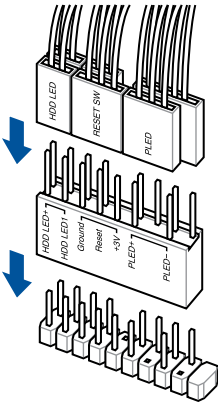
## 2.1.6 SATA device connection



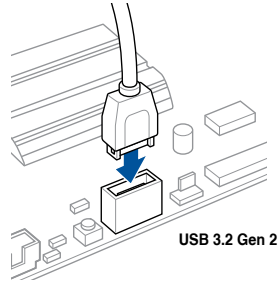


## 2.1.7 Front I/O connector

### To install ASUS Q-Connector

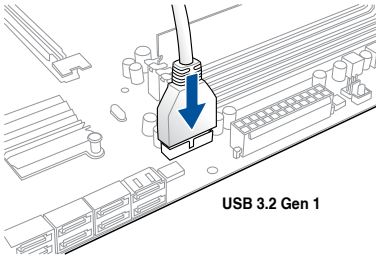


### To install USB 3.2 Gen 2 connector

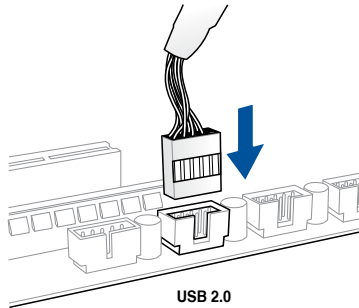


This connector will only fit in one orientation. Push the connector until it clicks into place.

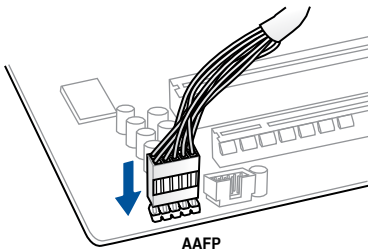
### To install USB 3.2 Gen 1 connector



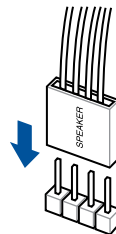
### To install USB 2.0 connector



### To install front panel audio connector

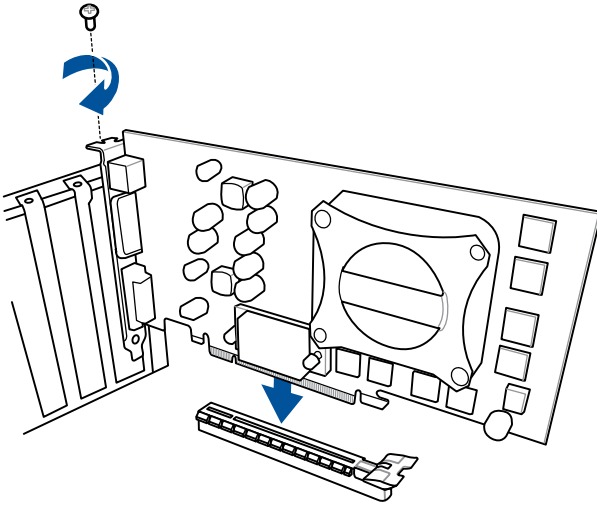


### To install system speaker connector

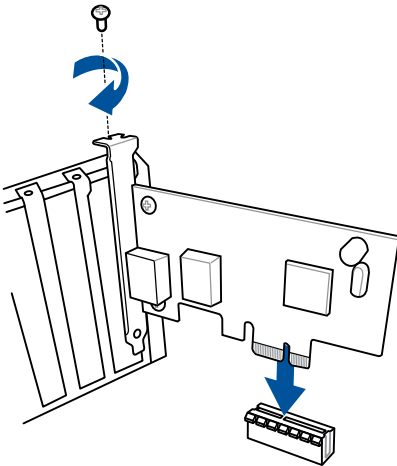


## 2.1.8 Expansion card installation

To install PCIe x16 cards



To install PCIe x4 cards

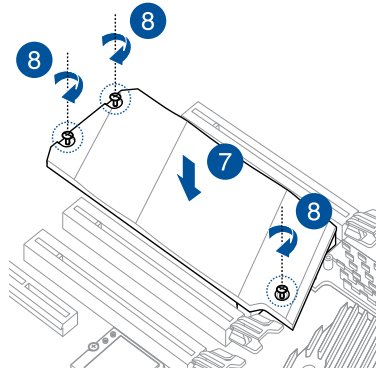
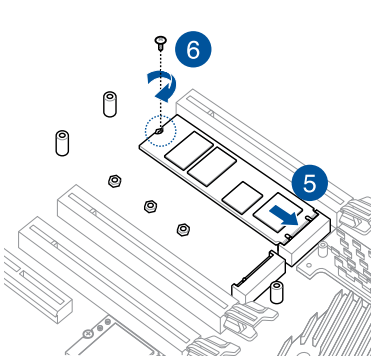
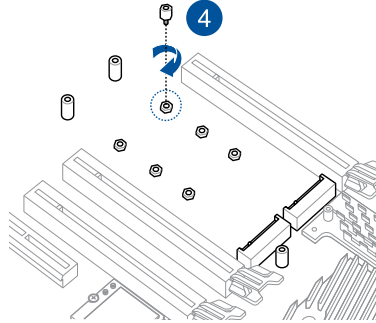
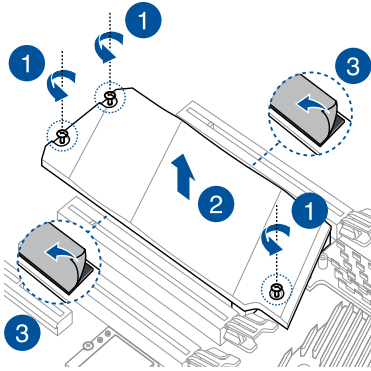


## 2.1.9 M.2 installation

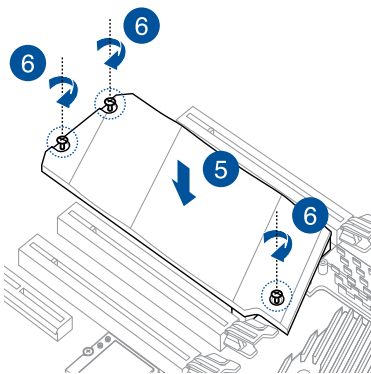
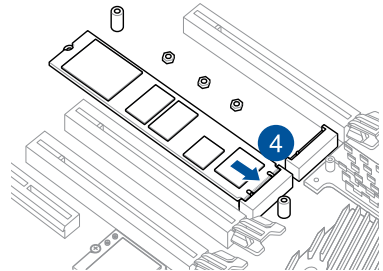
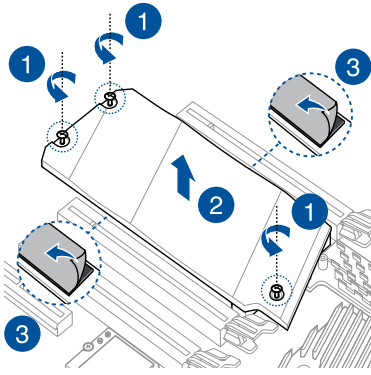


Supported M.2 type varies per motherboard.

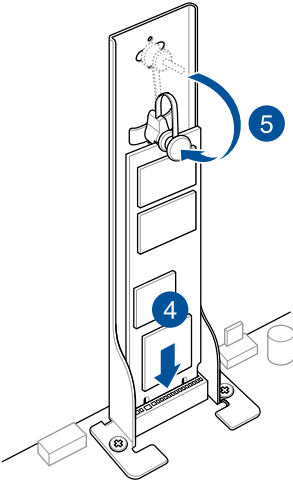
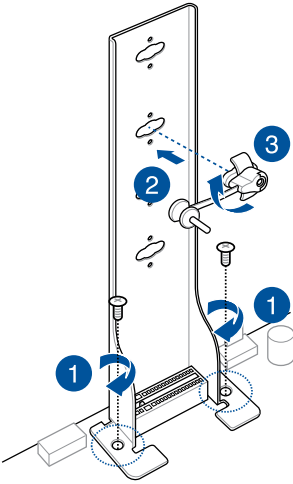
For M.2\_1 and M.2\_2 (Type 2242 / 2260 / 2280 M.2)



For M.2\_1 and M.2\_2 (Type 22110 M.2)

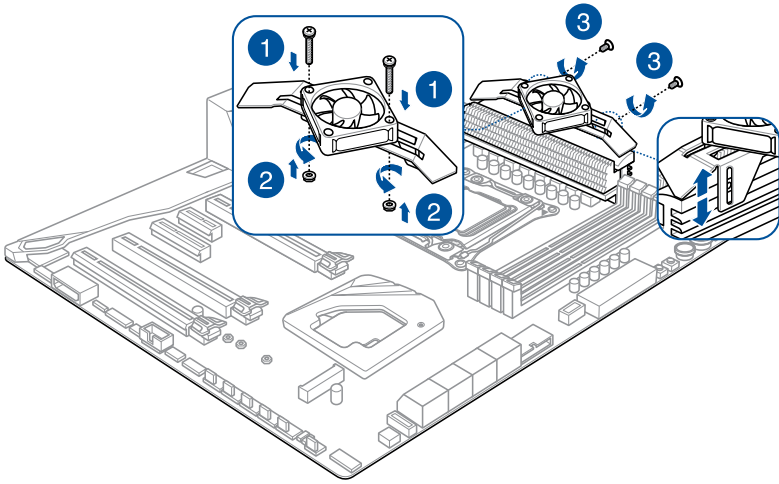


For M.2\_3 (Type 2242 / 2260 / 2280 / 22110 M.2)



## 2.1.10 Fan bracket installation

To install the MOS FAN bracket and fan



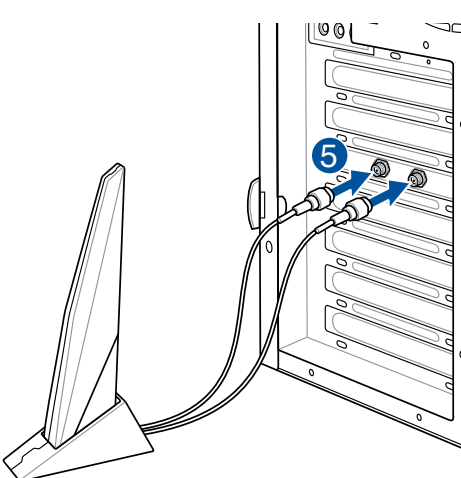
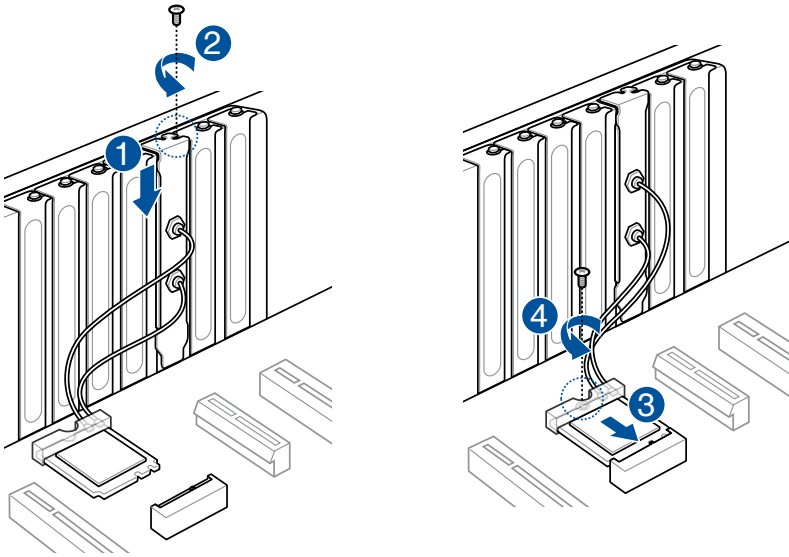
When using high performance settings whilst overclocking, ensure to install the MOS FAN bracket for additional fan(s).



- You may install 12V (1A, 12W), 40mm x 40mm fans.
- The fan is purchased separately.

## 2.1.11 M.2 Wi-Fi module and antenna installation

### Installing the M.2 W-Fi Module



- 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 to the left 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.
- The M.2 Wi-Fi module is purchased separately.

## 2.2 BIOS update utility

### BIOS FlashBack™

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 BIOS FlashBack™ button for three seconds to automatically update the BIOS.

#### To use BIOS FlashBack™:

1. Insert a USB storage device to the BIOS FlashBack™ port.



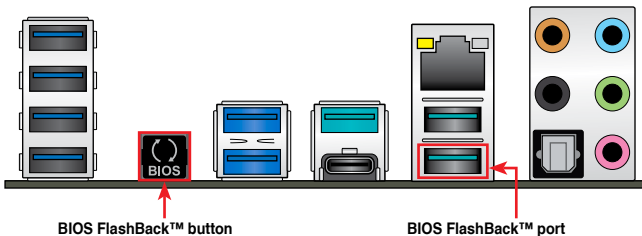
We recommend you to use a USB 2.0 storage device to save the latest BIOS version for better compatibility and stability.

2. Visit <https://www.asus.com/support/> and download the latest BIOS version for this motherboard.
3. Manually rename the file as **PTRX40PS.CAP**, or launch the **BIOSRenamer.exe** application to automatically rename the file, then copy it to your USB storage device.



The **BIOSRenamer.exe** application is zipped together with your BIOS file when you download a BIOS file for a BIOS FlashBack™ compatible motherboard.

4. Shut down your computer.
5. Press the BIOS FlashBack™ button for three seconds until the BIOS FlashBack™ LED blinks three times, indicating that the BIOS FlashBack™ function is enabled.



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 **Updating BIOS** in Chapter 3.

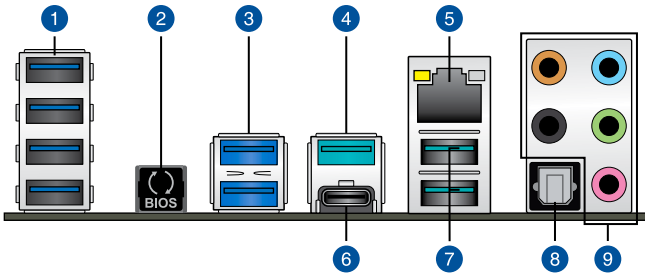


- Do not unplug portable disk, power system, or short the CLR\_CMOS jumper while BIOS update is ongoing, otherwise update will be interrupted. In case of interruption, please follow the steps again.
- If the light flashes for five seconds and turns into a solid light, this means that the BIOS FlashBack™ 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

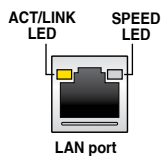


Rear panel connectors	
1.	USB 3.2 Gen 1 ports E1234
2.	BIOS FlashBack™ button
3.	USB 3.2 Gen 1 ports 56
4.	USB 3.2 Gen 2 port 1
5.	LAN (RJ-45) port*
6.	USB 3.2 Gen 2 Type-C™ port C2
7.	USB 3.2 Gen 2 ports 34. Lower port supports BIOS FlashBack™ function.
8.	Optical S/PDIF OUT port
9.	Audio I/O ports**

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

**\* 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		

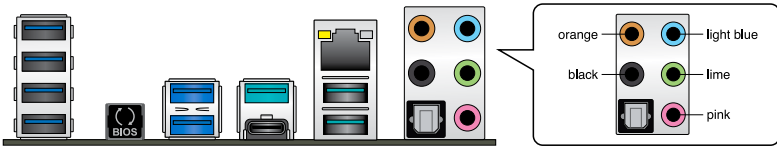


**\*\* Audio 2, 4, 5.1 or 7.1-channel configuration**

Port	Headset 2-channel	4-channel	5.1-channel	7.1-channel
Light Blue	Line In	Line In	Line In	Side Speaker Out
Lime	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Red	Mic In	Mic In	Mic In	Mic In
Orange	–	–	Center/Sub woofer	Center/Sub woofer
White	–	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out

## 2.3.2 Audio I/O connections

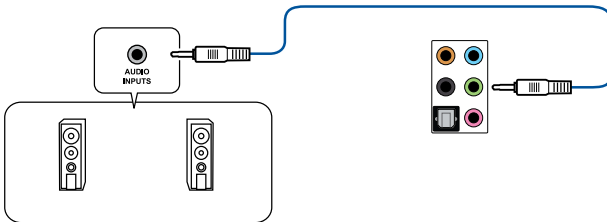
### Audio I/O ports



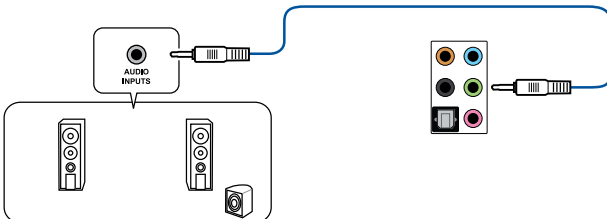
### Connect to Headphone and Mic



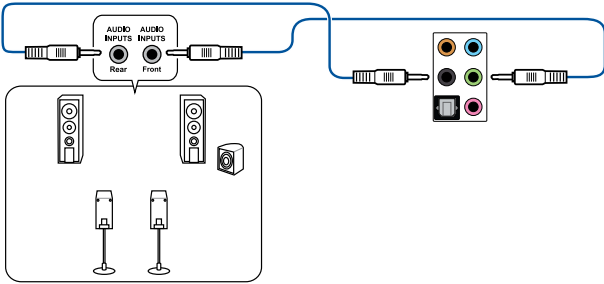
### Connect to Stereo Speakers



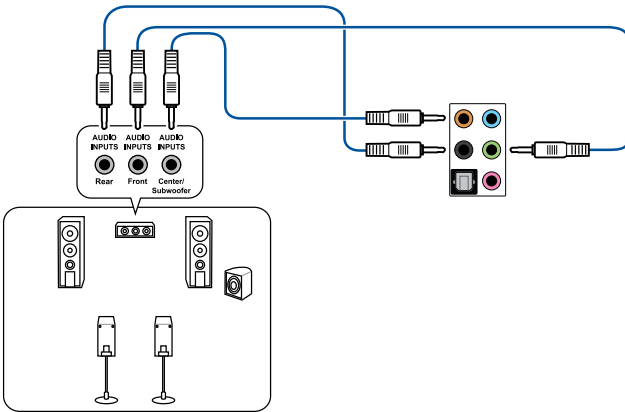
### Connect to 2-channel Speakers



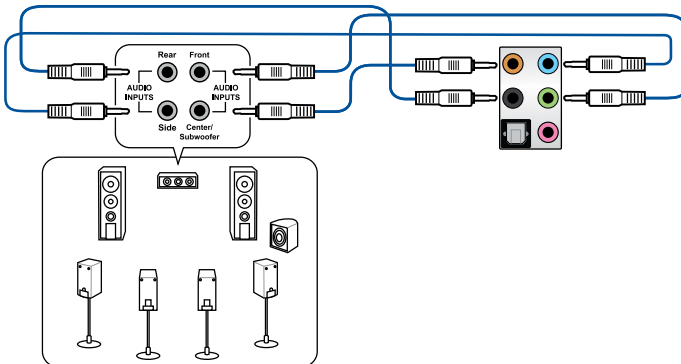
## Connect to 4 channel Speakers



## 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 storage 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 button for more than four seconds to let the system enter the soft-off mode regardless of the BIOS setting.



# BIOS Setup

## 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 **PTRX40PS.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 **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 **Onboard jumpers** in your user manual for the location of the Clear CMOS jumper to clear RTC RAM.
  - 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.

The screenshot shows the ASUS UEFI BIOS Utility in Advanced Mode. The interface includes a top menu bar with options like My Favorites, Main, Ai Tweaker, Advanced, Monitor, Boot, Tool, and Exit. A search function (F9) is available at the top right. The main area displays various configuration fields such as Target CPU Speed, AI Overdock Tuner, Performance Enhancer, Memory Frequency, FCLK Frequency, Core Performance Boost, CPU Core Ratio, CPU Core Ratio (Per CCX), EPU Power Saving Mode, and TPU. A Hardware Monitor panel on the right shows system status including CPU frequency, temperature, BCLK, core voltage, memory frequency, and voltage levels. A pop-up menu is shown for the AI Overdock Tuner, with options for Default, Auto, Manual, and D.O.C.P. Standard. A scroll bar is visible on the right side of the main configuration area. At the bottom, there are menu items, general help, last modified settings, hot keys, and a search on FAQ option. A note at the bottom explains that manual mode allows for manual assignment of BCLK frequency.

**Configuration fields**  
**Pop-up Menu**  
**Menu bar** Language MyFavorite(F3) Qfan Control(F6) Search(F9) AURA ON/OFF(F4) Scroll bar

**Menu items** General help Last modified settings Hot Keys Search on the FAQ

**Displays a quick overview of the system status and prediction**

## Menu bar

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

<b>My Favorites</b>	For saving the frequently-used system settings and configuration.
<b>Main</b>	For changing the basic system configuration
<b>Ai Tweaker</b>	For changing the overclocking settings
<b>Advanced</b>	For changing the advanced system settings
<b>Monitor</b>	For displaying the system temperature, power status, and changing the fan settings.
<b>Boot</b>	For changing the system boot configuration
<b>Tool</b>	For configuring options for special functions
<b>Exit</b>	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, Extreme 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 **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 **Q-Fan Control** for more information.

---

### Search (F9)

This button allows you to search for BIOS items by entering its name, enter the item name to find the related item listing.

## AURA (F4)

This button allows you to turn the RGB LED lighting or functional LED on or off.

[All On]: All LEDs (Aura or Functional) will be enabled.

[Aura Only]: Aura LEDs will be enabled and functional LEDs will be disabled.

[Aura Off]: Aura LEDs will be disabled, however functional LEDs will still be enabled.

[Stealth Mode]: All LEDs (Aura and Functional) will be disabled.

## 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.

### 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 a quick overview of the system status

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

The screenshot shows the ASUS UEFI BIOS Utility in EZ Mode. The interface is dark-themed with blue accents. At the top, it displays the date and time (10/01/2019, 10:05), language (English), and search functionality (Search(F9)). The main area is divided into several sections: Information (system model, BIOS version, speed, memory), CPU Temperature (43°C), CPU Core Voltage (1.416 V), and Motherboard Temperature (33°C). There are also sections for DRAM Status, Storage Information, CPU Fan speed (4313 RPM), and a CPU Fan graph. The bottom right features an EZ System Tuning section with a gauge set to 'Normal' and a Boot Priority section with a 'Switch all' button. At the bottom, navigation options include Default(F5), Save & Exit(F10), Advanced Mode(F7), and Search on FAQ.

Selects the display language of the BIOS setup program

Search(F9)

AURA ON/OFF(F4)

Information  
PRIME TRX40-PRO BIOS Ver. 0209  
AMD 100-000000011-11  
Speed: 3600 MHz  
Memory: 4096 MB (DDR4 2133MHz)

DRAM Status  
DIMM\_A1: Apacer 4096MB 2133MHz  
DIMM\_A2: N/A  
DIMM\_B1: N/A  
DIMM\_B2: N/A  
DIMM\_C1: N/A  
DIMM\_C2: N/A  
DIMM\_D1: N/A  
DIMM\_D2: N/A  
D.O.C.P. Disabled

CPU Temperature  
43°C

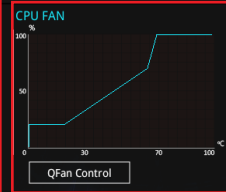
CPU Core Voltage  
1.416 V  
Motherboard Temperature  
33°C

EZ System Tuning  
Click the icon to specify your preferred system settings for an improved system performance or a power-saving system environment

Normal

Boot Priority  
Choose one and drag the items. Switch all

FAN Profile  
CPU FAN 4313 RPM  
CHA2 FAN N/A  
W\_PUMP+ N/A  
CHIPSET FAN N/A  
CHA1 FAN N/A  
CHA3 FAN N/A  
AIO PUMP N/A  
NODE PSU FAN N/A



Boot Menu(F8)

Default(F5) | Save & Exit(F10) | Advanced Mode(F7) | Search on FAQ

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 Q-Fan Control

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

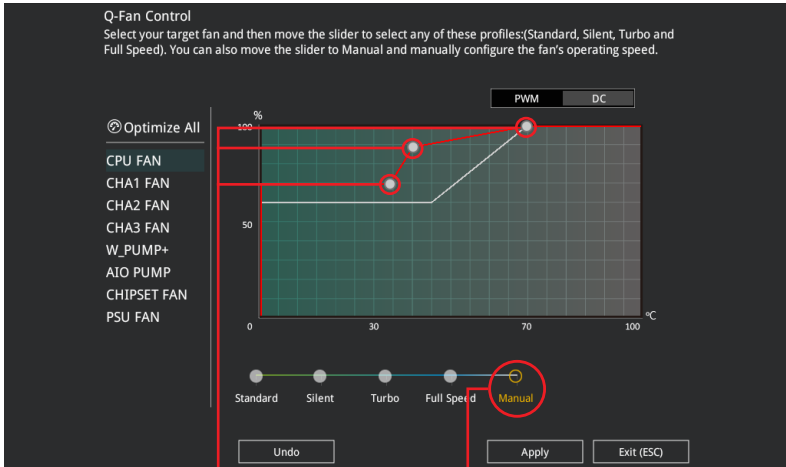
The screenshot shows the Q-Fan Control utility interface. At the top, it says "Q-Fan Control" and "Select your target fan and then move the slider to select any of these profiles: Standard, Silent, Turbo and Full Speed.) You can also move the slider to Manual and manually configure the fan's operating speed." Below this is a fan selection list on the left, a graph in the center, and a profile selection slider at the bottom. A mode selector (PWM/DC) is at the top right. Annotations with red lines point to various elements:

- Click to select a fan to be configured**: Points to the fan selection list.
- Click to activate PWM Mode**: Points to the "PWM" button in the mode selector.
- Click to activate DC Mode**: Points to the "DC" button in the mode selector.
- Select a profile to apply to your fans**: Points to the "Standard" profile in the slider.
- Click to apply the fan setting**: Points to the "Apply" button.
- Click to go back to main menu**: Points to the "Exit (ESC)" button.
- Click to undo the changes**: Points to the "Undo" button.
- Select to manually configure your fans**: Points to the "Manual" profile in the slider.

Temperature (°C)	Fan Speed (%)
0	20
30	20
40	30
50	40
60	50
70	70
80	100
100	100

## Configuring fans manually

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



Speed points

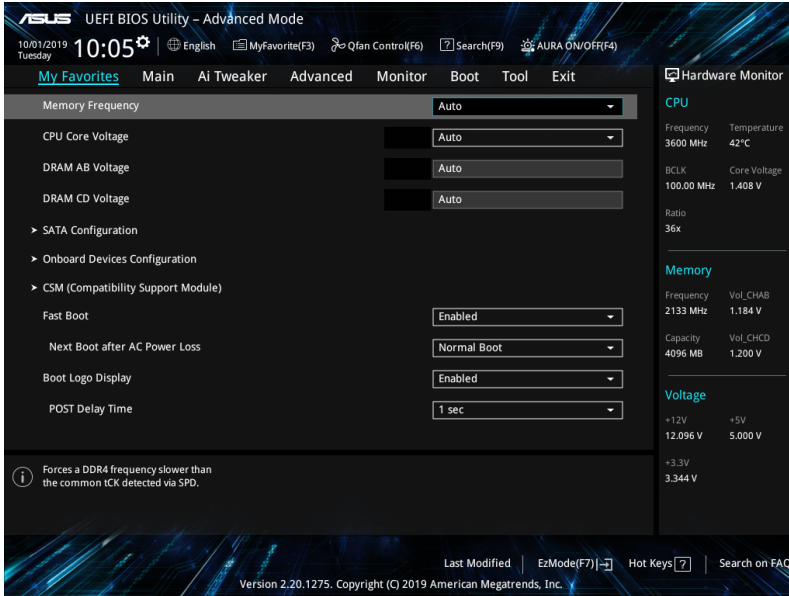
Select to manually  
configure your fans

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)**.

### 3.3 My Favorites

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

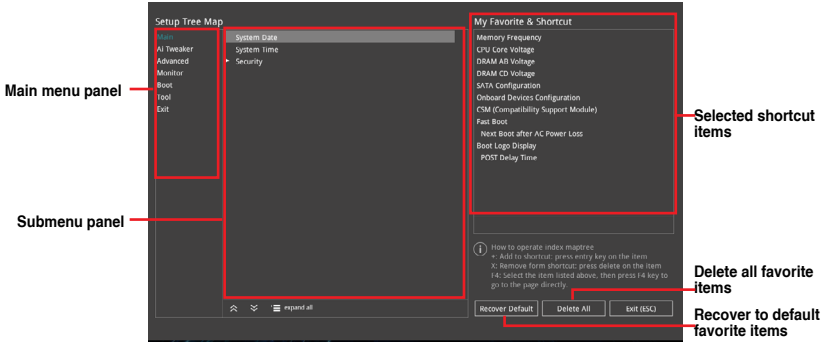


My Favorites comes with several performance, power saving, and fast boot related items by default. You can personalize this screen by adding or removing items.

## Adding items to My Favorites

To add BIOS items:

1. Press <F3> on your keyboard or click **MyFavorite(F3)** 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.



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.



## 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 **Onboard jumpers** for the location of the Clear CMOS jumper to clear RTC RAM.
- 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.

[Auto]	Loads the optimal settings for the system.
[Default]	Loads the default settings of the system.
[Manual]	Allows you to individually set overclocking parameters.
[D.O.C.P. Standard]	Allows you to select a DRAM O.C. profile, and the related parameters will be adjusted automatically.



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

#### BCLK Frequency

This item allows you to set the BCLK frequency to enhance the system performance. Use the <+> or <-> to adjust the value.



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

## CPU Core Ratio

This item allows you to set the CPU core ratios.

Configuration options: [Auto] [Sync All Cores] [Per Core] [By Specific Core]

## 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].

---

## 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 AMD fTPM configuration

The items in this menu show the AMD fTPM configuration options.

#### AMD CPU fTPM

This item allows you to enable or disable AMD CPU fTPM.

Configuration options: [Enable] [Disable]



---

When AMD CPU fTPM is set to disabled all saved data on it will be lost.

---

### 3.6.2 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.

---

#### PSS Support

This item allows you enable or disable the generation of ACPI\_PPC, \_PSS, and \_PCT objects.

Configuration options: [Disabled] [Enabled] [Auto]

### **NX Mode**

This item allows you enable or disable no-execute page protection function.  
Configuration options: [Disabled] [Enabled]

### **SVM Mode**

This item allows you enable or disable CPU Virtualization.  
Configuration options: [Disabled] [Enabled]

### **SMT Mode**

This item allows you enable or disable Simultaneous multithreading.  
Configuration options: [Auto] [Disabled]



---

S3 is not supported on systems where cores/threads have been removed/disabled.

---

## **3.6.3 PCI Subsystem Settings**

Allows you to configure PCI, PCI-X, and PCI Express Settings.

### **Above 4G Decoding**

Allows you to enable or disable 64-bit capable devices to be decoded in above 4G address space. It only works if the system supports 64-bit PCI decoding.  
Configuration options: [On] [Off]

### **SR-IOV Support**

This option enables or disables Single Root IO Virtualization Support if the system has SRIOV capable PCIe devices.  
Configuration options: [On] [Off]

### **BME DMA Mitigation**

Allows you to re-enable Bus Master Attribute disabled during Pci enumeration for PCI Bridges after SMM Locked.  
Configuration options: [On] [Off]



---

Changing PCI Device(s) settings may have unwanted side effects! System may HANG!  
Proceed with caution.

---

## 3.6.4 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**.

---

### Legacy USB Support

- [Enabled] Your system supports the USB devices in legacy operating systems.
- [Disabled] Your USB devices can be used for BIOS setup only and cannot be recognized in the boot devices list.
- [Auto] Your system automatically detects the presence of USB devices at startup. If any USB devices are detected, the legacy USB support is enabled.

### XHCI Hand-off

- [Enabled] Enables the support for operating systems without an XHCI hand-off feature.
- [Disabled] Disables the XHCI Hand-off support.

### USB Single Port Control

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



---

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

---

## 3.6.5 HDD/SSD SMART Information

This menu displays the SMART information of the connected devices.



---

NVM Express devices do not support SMART information.

---

## 3.6.6 NVMe Configuration

You may view the NVMe controller and Drive information if an NVMe device is connected.

## 3.6.7 SATA 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 Port Enable

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



---

The following items appear only when **SATA Port Enable** is set to **[Enabled]**.

---

### SATA Mode

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 SATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.
- [RAID] Set to [RAID] when you want to create a RAID configuration from the SATA hard disk drives.

### NVMe RAID Mode

This item allows you to enable or disable the NVMe RAID mode.

Configuration options: [Disabled] [Enabled]

### SMART Self Test

S.M.A.R.T. (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(Gray) - SATA6G\_8(Gray)

#### SATA6G\_1(Gray) - SATA6G\_8(Gray)

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** is set to **[AHCI]** and allows you to enable or disable SATA Hot Plug Support.

Configuration options: [Disabled] [Enabled]

### M.2\_3(Gray)

#### M.2\_3(Gray)

This item allows you to rename the AMD APU M.2 ports.

## 3.6.8 Onboard Devices Configuration

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

## PCIEX16\_1 Bandwidth

- [X16 Mode] The PCIe x16\_1 slot runs at x16 mode.
- [PCIe RAID Mode] The four PCIe x16 slots run at x4+x4+x4+x4 mode, which allows you to create a RAID array for up to 4 PCIe devices.



---

Use PCIe RAID Mode when installing the Hyper M.2 x16 card or other M.2 adapter cards. Installing other devices when using PCIe RAID Mode may cause your PC to fail to boot up.

---

## PCIEX16\_2 Bandwidth

- [X8 Mode] The PCIe x16\_2 slot runs at x8 mode.
- [PCIe RAID Mode] The PCIe x16 slots run at x4+x4 mode, which allows you to create a RAID array for up to 2 PCIe devices.



---

Use PCIe RAID Mode when installing the Hyper M.2 x16 card or other M.2 adapter cards. Installing other devices when using PCIe RAID Mode may cause your PC to fail to boot up.

---

## PCIEX16\_3 Bandwidth

- [X16 Mode] The PCIe x16\_3 slot runs at x16 mode.
- [PCIe RAID Mode] The four PCIe x16 slots run at x4+x4+x4+x4 mode, which allows you to create a RAID array for up to 4 PCIe devices.



---

Use PCIe RAID Mode when installing the Hyper M.2 x16 card or other M.2 adapter cards. Installing other devices when using PCIe RAID Mode may cause your PC to fail to boot up.

---

## HD Audio Controller

This item allows you to use the Azalia High Definition Audio Controller.  
Configuration options: [Disabled] [Enabled]

## ASM1074 Controller (Back)

- [Disabled] Disables the controller.
- [Enabled] Enables the rear USB 3.2 controller.

## 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]

### Q-Code LED Function

- [Disabled] Disable the Q-Code LED function.
- [POST Code Only] Show POST (Power-On Self-Test) code on Q-Code LED.
- [Auto] Automatically display POST (Power-On Self-Test) code and CPU temperature on Q-Code LED.

### **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]

## **3.6.9 APM Configuration**

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

### **Restore On AC Power Loss**

This item allows your system to go to ON state, OFF state, or both states after an AC power loss. When setting your system to **[Last State]**, it goes to the previous state before the AC power loss.

Configuration options: [Power On] [Power Off] [Last State]

### **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)]

### **Power On By PCI-E**

This item allows you to enable or disable the Wake-on-LAN function of the onboard LAN controller or other installed PCI-E LAN cards.

Configuration options: [Disabled] [Enabled]

### **Power On By RTC**

This item allows you to enable or disable the RTC (Real-Time Clock) to generate a wake event and configure the RTC alarm date. When enabled, you can set the days, hours, minutes, or seconds to schedule an RTC alarm date.

Configuration options: [Disabled] [Enabled]

## **3.6.10 Network Stack Configuration**

The items in this menu allow you to enable or disable the UEFI network stack

### **3.6.11 AMD CBS**

The items in this menu shows the AMD Common BIOS Specifications.

### **3.6.12 AMD PBS**

The items in this menu shows the AMD PBS Setup Page.

### **3.6.13 AMD Overclocking**

The items in this menu shows the AMD Overclocking Setup Page.

## 3.7 Monitor menu

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

Scroll down to display the other BIOS items.

### Q-fan Configuration

#### Qfan Tuning

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

#### WATER 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.

#### AIO PUMP Control

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

### Boot Configuration

#### 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 item appears 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 Logo Display

- [Auto] Sets the boot logo to display during POST.
- [Full Screen] Sets the boot logo display in full screen during POST.
- [Disabled] Disables the boot logo display during POST.



### 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 **Launch CSM** is set to **[Enabled]**.

---

#### ***Boot Device 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.

## AMI Native NVMe Driver Support

This item allows you to enable or disable all NVMe device native OpROM.

Configuration options: [On] [Off]

## 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: [Disabled] [Enabled]

### 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 **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 > SATA Configuration > SATA Mode > AHCI**.

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



Secure Erase is only supported on selected SATA SSDs, and cannot erase NVMe storage devices.



- 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 AMD® SATA port. For more information about AMD SATA ports, refer to section **Motherboard layout** of this manual.

Displays the available SSDs

Port #	SSD Name	Status	Total Capacity
P2	ADATA 5096 Turbo	Frozen	14.068

SSD Speed performance may degrade over time due to accumulated files and frequent data-writing. Secure Erase completely cleans your SSD and restores it to its factory settings.  
Warning: Ensure that you run Secure Erase on a compatible SSD. Running Secure Erase on an incompatible SSD will render the SSD totally unusable.  
NOTE: For the list of Secure Erase-compatible SSDs, visit the ASUS Support site at [www.asus.com/support](http://www.asus.com/support)



### 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.

### 3.9.3 ASUS User Profile

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

#### Load from 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 ASUS Armoury Crate

This item allows you to enable or disable the ASUS Armoury Crate. The ASUS Armoury Crate is a fixed Advanced Configuration and Power Interface (ACPI) table that provides Windows with a platform binary that the operating system can execute.

## 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.

### 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 & 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 USB 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.



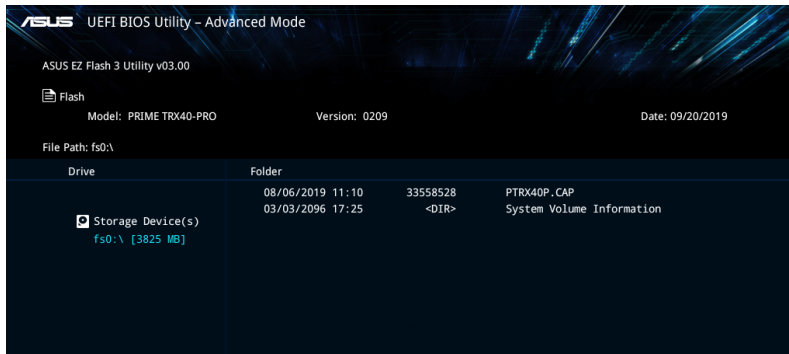
- 
- EZ Update requires an Internet connection either through a network or an ISP (Internet Service Provider).
  - This utility is available in the support USB drive that comes with the motherboard package.
-

### 3.11.2 ASUS EZ Flash 3

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

#### To update the BIOS by USB:

1. Insert the USB flash disk that contains the latest BIOS file to the USB port.
2. Enter the Advanced Mode of the BIOS setup program. Go to the Tool menu to select **ASUS EZ Flash 3 Utility** and press <Enter>.
3. 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.

### 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 USB drive that contains the BIOS file.



---

The BIOS file in the motherboard support USB drive 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, support USB drive, or a 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!

---



# RAID Support

# 4

## 4.1 AMD RAID Array configurations

The motherboard comes with the RaidXpert2 Configuration Utility that supports Volume, RAIDABLE, RAID 0, RAID 1, and RAID 10 (depends on system licensing) configurations.



---

For more information on configuring your RAID sets, please refer to the **RAID Configuration Guide** which you can find at <https://www.asus.com/support>.

---

### 4.1.1 RAID definitions

**Volume** provides the ability to link-together storage from one or several disks, regardless of the size of the space on those disks. This configuration is useful in scavenging space on disks unused by other disks in the array. This configuration does not provide performance benefits or data redundancy, disk failure will result in data loss.

**RAIDABLE** arrays (also known as RAID Ready) are a special type of Volume (JBOD) that allows the user to add more storage space or create a redundant array after a system is installed. RAIDABLE arrays are created using Option ROM, UEFI, or roadm.



---

The ability to create RAIDABLE arrays may vary per system.

---

**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 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.



# 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

*(continued on the next page)*

## Q-Code table

Code	Description
E0	S3 Resume is started (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

*(continued on the next page)*

## 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

*(continued on the next page)*

## 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

### ACPI/ASL Checkpoints (under OS)

Code	Description
0x01	System is entering S1 sleep state
0x02	System is entering S2 sleep state
0x03	System is entering S3 sleep state
0x04	System is entering S4 sleep state
0x05	System is entering S5 sleep state
0x10	System is waking up from the S1 sleep state
0x20	System is waking up from the S2 sleep state
0x30	System is waking up from the S3 sleep state
0x40	System is waking up from the S4 sleep state
0xAC	System has transitioned into ACPI mode. Interrupt controller is in PIC mode.
0xAA	System has transitioned into ACPI mode. Interrupt controller is in APIC mode.

## Notices

### FCC Compliance Information

Responsible Party: Asus Computer International

Address: 48720 Kato Rd., Fremont, CA 94538, USA

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

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

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

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

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

This device complies with Innovation, Science and Economic Development Canada licence 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.

CAN ICES-3(B)/NMB-3(B)

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

Le présent appareil est conforme aux CNR d'Innovation, Sciences et Développement économique Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

CAN ICES-3(B)/NMB-3(B)

## 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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## Declaration of compliance for product environmental regulation

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

Please refer to <http://csr.asus.com/Compliance.htm> for information disclosure based on regulation requirements ASUS is complied with:

### EU REACH and Article 33

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>.

### EU RoHS

This product complies with the EU RoHS Directive. For more details, see <http://csr.asus.com/english/article.aspx?id=35>

### India RoHS

This product complies with the “India E-Waste (Management) Rules, 2016” and prohibits use of lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenyl ethers (PBDEs) in concentrations exceeding 0.1% by weight in homogenous materials and 0.01% by weight in homogenous materials for cadmium, except for the exemptions listed in Schedule II of the Rule.

### Vietnam RoHS

ASUS products sold in Vietnam, on or after September 23, 2011, meet the requirements of the Vietnam Circular 30/2011/TT-BCT.

Các sản phẩm ASUS bán tại Việt Nam, vào ngày 23 tháng 9 năm 2011 trở về sau, đều phải đáp ứng các yêu cầu của Thông tư 30/2011/TT-BCT của Việt Nam.

### Turkey RoHS

AEEE Yönetmeliğine Uygundur

## 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.



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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.

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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.

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## Regional notice for California



### WARNING

Cancer and Reproductive Harm -  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

**English** ASUSTeK Computer Inc. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related Directives. Full text of EU declaration of conformity is available at: [www.asus.com/support](http://www.asus.com/support)

**Français** ASUSTeK Computer Inc. déclare par la présente que cet appareil est conforme aux critères essentiels et autres clauses pertinentes des directives concernées. La déclaration de conformité de l'UE peut être téléchargée à partir du site Internet suivant : [www.asus.com/support](http://www.asus.com/support)

**Deutsch** ASUSTeK Computer Inc. erklärt hiermit, dass dieses Gerät mit den wesentlichen Anforderungen und anderen relevanten Bestimmungen der zugehörigen Richtlinien übereinstimmt. Der gesamte Text der EU-Konformitätserklärung ist verfügbar unter: [www.asus.com/support](http://www.asus.com/support)

**Italiano** ASUSTeK Computer Inc. con la presente dichiara che questo dispositivo è conforme ai requisiti essenziali e alle altre disposizioni pertinenti con le direttive correlate. Il testo completo della dichiarazione di conformità UE è disponibile all'indirizzo: [www.asus.com/support](http://www.asus.com/support)

**Русский** Компания ASUS заявляет, что это устройство соответствует основным требованиям и другим соответствующим условиям соответствующих директив. Подробную информацию, пожалуйста, смотрите на [www.asus.com/support](http://www.asus.com/support)

**Български** С настоящото ASUSTeK Computer Inc. декларира, че това устройство е в съответствие със съществуващите условия на приложими постановления на свързаните директиви. Пълният текст на декларацията за съответствие на ЕС е достъпен на адрес: [www.asus.com/support](http://www.asus.com/support)

**Hrvatski** ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj sukladan s bitnim zahtjevima i ostalim odgovarajućim odredbama vezanih direktiva. Cijeli tekst EU izjave o sukladnosti dostupan je na: [www.asus.com/support](http://www.asus.com/support)

**Čeština** Společnost ASUSTeK Computer Inc. tímto prohlašuje, že toto zařízení splňuje základní požadavky a další příslušná ustanovení souvisejících směrnic. Plné znění prohlášení o shodě EU je k dispozici na adrese: [www.asus.com/support](http://www.asus.com/support)

**Dansk** ASUSTeK Computer Inc. erklærer hermed, at denne enhed er i overensstemmelse med hovedkravene og andre relevante bestemmelser i de relaterede direktiver. Hele EU-overensstemmelseserklæringen kan findes på: [www.asus.com/support](http://www.asus.com/support)

**Nederlands** ASUSTeK Computer Inc. verklaart hierbij dat dit apparaat voldoet aan de essentiële vereisten en andere relevante bepalingen van de verwante richtlijnen. De volledige tekst van de EU-verklaring van conformiteit is beschikbaar op: [www.asus.com/support](http://www.asus.com/support)

**Eesti** Käesolevaga kinnitab ASUSTeK Computer Inc, et see seade vastab asjakohaste direktiivide oluliste nõuetele ja teisteles asjaspepuutavatele sätetele. EL vastavusdeklaratsiooni täielik tekst on saadaval järgmisel aadressil: [www.asus.com/support](http://www.asus.com/support)

**Suomi** ASUSTeK Computer Inc ilmoittaa täten, että tämä laite on asiaankuuluvien direktiivien olennaisten vaatimusten ja muiden täitä koskevien säästösten mukainen. EU-yhdenmukaisuusilmoituksen koko teksti on luettavissa osoitteessa: [www.asus.com/support](http://www.asus.com/support)

**Ελληνικά** Με το παρόν, η ASUSTeK Computer Inc. δηλώνει ότι αυτή η συσκευή συμμορφώνεται με τις θεμελιώδεις απαιτήσεις και άλλες σχετικές διατάξεις των Οδηγιών της ΕΕ. Το πλήρες κείμενο της δήλωσης συμμορφότητας είναι διαθέσιμο στη διεύθυνση: [www.asus.com/support](http://www.asus.com/support)

**Magyar** Az ASUSTeK Computer Inc. ezennel kijelenti, hogy ez az eszköz megfelel a kapcsolódó irányelvek lényeges követelményeinek és egyéb vonatkozó rendelkezéseinek. Az EU megfeleléségi nyilatkozat teljes szövege innen letölthető: [www.asus.com/support](http://www.asus.com/support)

**Latviski** ASUSTeK Computer Inc. ar šo paziņo, ka šī ierīce atbilst saistīto Direktīvu būtiskajām prasībām un citiem citiem saistošajiem nosacījumiem. Pilns ES atbilstības paziņojuma teksts pieejams šeit: [www.asus.com/support](http://www.asus.com/support)

**Lietuviai** „ASUSTeK Computer Inc.“ šiuo tvirtina, kad šis įrenginys atitinka pagrindinius reikalavimus ir kitas svarbias susijusių direktyvų nuostatas. Visą ES atitikties deklaracijos tekstą galima rasti: [www.asus.com/support](http://www.asus.com/support)

**Norsk** ASUSTeK Computer Inc. erklærer herved at denne enheten er i samsvar med hovedsaklige krav og andre relevante forskrifter i relaterede direktiver. Fullstendig tekst for EU-samsvarserklæringen finnes på: [www.asus.com/support](http://www.asus.com/support)

**Polski** Firma ASUSTeK Computer Inc. niniejszym oświadcza, że urządzenie to jest zgodne z zasadniczymi wymogami i innymi właściwymi postanowieniami powiązanych dyrektyw. Pełny tekst deklaracji zgodności UE jest dostępny pod adresem: [www.asus.com/support](http://www.asus.com/support)

**Português** A ASUSTeK Computer Inc. declara que este dispositivo está em conformidade com os requisitos essenciais e outras disposições relevantes das Diretivas relacionadas. Texto integral da declaração da UE disponível em: [www.asus.com/support](http://www.asus.com/support)

**Română** ASUSTeK Computer Inc. declară că acest dispozitiv se conformează cerințelor esențiale și altor prevederi relevante ale directivelor conexe. Textul complet al declarației de conformitate a Uniunii Europene se găsește la: [www.asus.com/support](http://www.asus.com/support)

**Srpski** ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj u saglasnosti sa osnovnim zahtevima i drugim relevantnim odredbama povezanih Direktiva. Pun tekst EU deklaracije o usaglasenosti je dostupan da adresi: [www.asus.com/support](http://www.asus.com/support)

**Slovensky** Spoločnosť ASUSTeK Computer Inc. týmto vyhlasuje, že toto zariadenie vyhovuje základným požiadavkám a ostatným príslušným ustanoveniam príslušných smerníc. Celý text vyhlásenia o zhode pre štáty EÚ je dostupný na adrese: [www.asus.com/support](http://www.asus.com/support)

**Slovenščina** ASUSTeK Computer Inc. izjavlja, da je ta naprava skladna s bistvenimi zahtevami in drugimi ustreznimi določbami povezanih direktiv. Celotno besedilo EU-izjave o skladnosti je na voljo na spletnem mestu: [www.asus.com/support](http://www.asus.com/support)

**Español** Por la presente, ASUSTeK Computer Inc. declara que este dispositivo cumple los requisitos básicos y otras disposiciones pertinentes de las directivas relacionadas. El texto completo de la declaración de la UE de conformidad está disponible en: [www.asus.com/support](http://www.asus.com/support)

**Svenska** ASUSTeK Computer Inc. förklarar härmed att denna enhet överensstämmer med de grundläggande kraven och andra relevanta föreskrifter i relaterade direktiv. Fulltext av EU-försäkran om överensstämmelse finns på: [www.asus.com/support](http://www.asus.com/support)

**Українська** ASUSTeK Computer Inc. заявляє, що цей пристрій відповідає основним вимогам та іншим відповідним положенням відповідних Директив. Повний текст декларації відповідності стандартам ЄС доступний на: [www.asus.com/support](http://www.asus.com/support)

**Türkçe** ASUSTeK Computer Inc., bu aygıtın temel gereksinimlerle ve ilgili Yönergeleerin diğer ilgili koşullarına uyumlu olduğunu beyan eder. AB uygunluk bildiriminin tam metni şu adreste bulunabilir: [www.asus.com/support](http://www.asus.com/support)

**Bosanski** ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj uskladen sa bitnim zahtjevima i ostalim odgovarajućim odredbama vezanih direktiva. Cijeli tekst EU izjave o sukladnosti dostupan je na: [www.asus.com/support](http://www.asus.com/support)

## ASUS contact information

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