User Manual of Product 1:

ASUS AM4 TUF Gaming X570-Plus (Wi-Fi) AM4 Zen 3 Ryzen 5000 & 3rd Gen Ryzen ATX Motherboard with PCIe 4.0, Dual M.2, 12+2 with Dr. MOS Power Stage

User Manual of Product 2:

ASUS VG248QG 24" G-Sync Gaming Monitor 165Hz 1080p 0.5ms Eye Care with DP HDMI DVI, Black

TUF GAMING X570-PLUS

Motherboard

E15235
First Edition V1
May 2019

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Contents

Safety information

Electrical safety

- To prevent electrical shock hazards, 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) 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 (+).

TUF GAMING X570-PLUS specifications summary

CPU	AM4 socket for AMD Ryzen™ 3rd and 2nd Generation/ 2nd and 1st Gen AMD Ryzen™ with Radeon™ Vega Graphics Processors Supports up to 16 cores* * **Due to the CPU limitations, CPU cores supported vary by processor.** ** **Refer to www.asus.com for the AMD CPU support list.**
Chipset	AMD X570 Chipset
Memory	**AMD Ryzen™ 3rd Generation Processors** - 4 x DIMM, max. 128GB, DDR4 4400(O.C.)/3466(O.C.)/3400(O.C.)/3200(O.C.)/3000(O.C.)/2933(O.C.)/2800(O.C.)/2666/2400/2133 MHz, un-buffered memory **AMD Ryzen™ 2nd Generation Processors** - 4 x DIMM, max. 128GB, DDR4 3600(O.C.)/3466(O.C.)/3400(O.C.)/3200(O.C.)/3000(O.C.)/2933(O.C.)/2800(O.C.)/2666/2400/2133 MHz, un-buffered memory **AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors** - 4 x DIMM, max. 128GB, DDR4 3200(O.C.)/3000(O.C.)/2933(O.C.)/2800(O.C.)/2666/2400/2133 MHz, un-buffered memory Dual channel memory architecture ECC Memory (ECC mode) support varies by CPU. * **The maximum memory frequency supported varies by processor. Refer to www.asus.com for the Memory QVL (Qualified Vendors List).**
Expansion slots	**AMD Ryzen™ 3rd Generation Processors** 1 x PCIe 4.0/3.0 x16 slot (at x16 mode) **AMD Ryzen™ 2nd Generation Processors** 1 x PCIe 3.0 x16 slot (at x16 mode) **AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors** 1 x PCIe 3.0/2.0 x16 slot (at x8 mode) **AMD X570 chipset** - 1 x PCIe 4.0 x16 slot (max. at x4 mode) - 3 x PCIe 4.0 x1 slots
Graphics	**Integrated Graphics in the AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics** Multi-VGA output support: HDMI and DisplayPort ports - Supports HDMI 1.4b with max. resolution of 4096 x 2160 @24Hz - Supports DisplayPort with max. resolution of 4096 x 2304 @60Hz
Multi-GPU support	**AMD Ryzen™ 3rd and 2nd Generation / AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors** Supports AMD 2-Way CrossFireX™ Technology
LAN	**Realtek® L8200A** - ASUS Turbo LAN Utility - TUF LANGuard

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TUF GAMING X570-PLUS specifications summary

Storage	**AMD Ryzen™ 3rd Generation Processors** - 1 x M.2_1 socket 3 with M key, type 2242/2260/2280/ 22110 storage devices support (SATA & PCIE 4.0 x 4 mode) **AMD Ryzen™ 2nd Generation / Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors** - 1 x M.2_1 socket 3 with M key, type 2242/2260/2280/ 22110 storage devices support (SATA & PCIE 3.0 x 4 mode) **AMD X570 Chipset:** - 1 x M.2_2 socket 3 with M key, type 2242/2260/2280/22110 storage devices support (SATA & PCIE 4.0 x 4 mode) - 8 x SATA 6Gb/s ports - Supports Raid 0, 1, 10
Audio	**Realtek® S1200A 8-channel High Definition Audio CODEC** - Exclusive DTS Custom for GAMING Headsets - Audio Shielding: Ensures precision analog/digital separation and greatly reduces multi-lateral interference - Dedicated audio PCB layers: Separate layers for left and right channels to guard the quality of the sensitive audio signals - Premium Japanese audio capacitors: Provide warm, natural and immersive sound with exceptional clarity and fidelity - Supports jack-detection and front panel jack-retasking - Audio Cover: Effective shielding preserves the integrity of audio signals to ensure best quality
USB	- 3 x USB 3.2 Gen 2 (up to 10Gbps) ports at back panel (2 x Type-A ports; 1 x Type-C port) - 6 x USB 3.1 Gen 1 ports at mid-board (2 ports at mid-board, 4 ports at back panel) - 4 x USB 2.0 ports at mid-board
ASUS Unique Features	**ASUS TUF PROTECTION** - ASUS SafeSlot - Protect your graphics card Investment - ASUS ESD Guard: Enhanced ESD protection - ASUS LANGuard: Protects against LAN surges, lightning strikes and static-electricity discharges! - ASUS Overvoltage Protection: World-class circuit-protecting power design - ASUS Stainless-Steel Back I/O: 3X corrosion-resistance for greater durability! - ASUS DIGI+ VRM **TUF ENGINE! Power Design** - TUF Components (Choke, Cap.; certified by military-standard) **AURA** - Aura Lighting Control - Aura RGB Strip Headers **ASUS EPU** - EPU

(continued on the next page)

TUF GAMING X570-PLUS specifications summary

ASUS Unique Features	**ASUS Exclusive Features** - ASUS Ai Charger - ASUS AI Suite 3 **ASUS EZ DIY** - ASUS UEFI BIOS EZ Mode - ASUS CrashFree BIOS 3 - ASUS EZ Flash 3 **ASUS Q-Design** - ASUS Q-DIMM - ASUS Q-Slot - ASUS Q-LED
ASUS Quiet Thermal Solution	- ASUS FAN Xpert 4 - Stylish Design: MOS Heat-sink with dual thermal pads design, PCH Fan, PCH and M.2 Heatsink
Back I/O Ports	1 x PS/2 keyboard/ mouse combo port 1 x HDMI port 1 x DisplayPort port 1 x LAN (RJ-45) port 3 x USB 3.2 Gen 2 ports (2 x Type-A ports; 1 x Type C port) 4 x USB 3.2 Gen 1 ports 5 x Audio jacks + 1 x Optical S/PDIF out
Internal I/O Ports	1 x USB 3.2 Gen 1 connector supports additional 2 USB ports 2 x USB 2.0/1.1 connectors support additional 4 USB ports 8 x SATA 6 Gb/s connectors 1 x M.2_1 socket 3 with M key, type 2242/2260/2280/ 22110 storage devices support (SATA & PCIE 4.0/3.0 x 4 mode) 1 x M.2_2 socket 3 with M key, type 2242/2260/2280/ 22110 storage devices support (SATA & PCIE 4.0 x 4 mode) 1 x Addressable RGB Header 2 x AURA RGB headers 1 x CPU Fan connector (4-pin) for both DC mode and PWM mode 1 x CPU OPT Fan connector (4-pin) 1 x AIO_PUMP connector (4-pin) 3 x Chassis Fan connectors (4-pin) for both 3-pin (DC mode) and 4-pin (PWM mode) coolers control 1 x Front panel audio connector (AAFP) 1 x 24-pin EATX power connector 1 x 8-pin EATX 12V power connector 1 x 4-pin EATX 12V power connector 1 x System panel connector 1 x COM connector 1 x SPI_TPM header (14-1pin) 1 x Clear CMOS jumper (2-pin)

(continued on the next page)

TUF GAMING X570-PLUS specifications summary

BIOS	256Mb Flash ROM, UEFI AMI BIOS, PnP, SM BIOS 3.2, ACPI 6.2, Multi-language BIOS, ASUS EZ Flash 3, CrashFree BIOS 3, F6 Qfan Control, F3 My Favorites, F4 AURA ON/OFF, Last Modified log, F9 Search, F12 PrintScreen, and ASUS DRAM SPD (Serial Presence Detect) memory information
Manageability	WOL by PME, PXE
Support DVD contents	Drivers ASUS Utilities ASUS EZ Update Anti-virus software (OEM version)
Operating System Support	Windows® 10 64-bit
Form Factor	ATX Form Factor, 12”x 9.6” (30.5 cm x 24.4 cm)

Specifications are subject to change without notice.

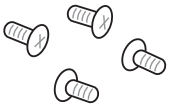
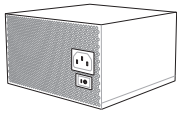
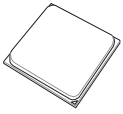
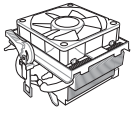
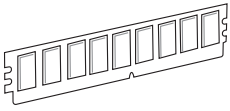
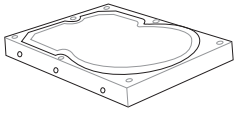
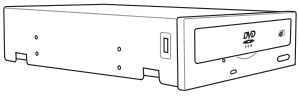
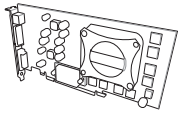
Package contents

Check your motherboard package for the following items.

Motherboard	TUF GAMING X570-PLUS
Cables	2 x SATA 6 Gb/s cables
Accessories	1 x I/O shield 1 x M.2 screw package 1 x TUF Gaming Sticker 1 x TUF Certification card
Application DVD	Motherboard support DVD
Documentation	User guide

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

Installation tools and components

	
1 Bag of screws	Phillips (cross) screwdriver
	
PC chassis	Power supply unit
	
AMD AM4 CPU	AMD AM4/AM3 compatible CPU Fan
	
DDR4 DIMM	SATA hard disk drive
	
SATA optical disc drive (optional)	Graphics card (optional)

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

Product Introduction

1

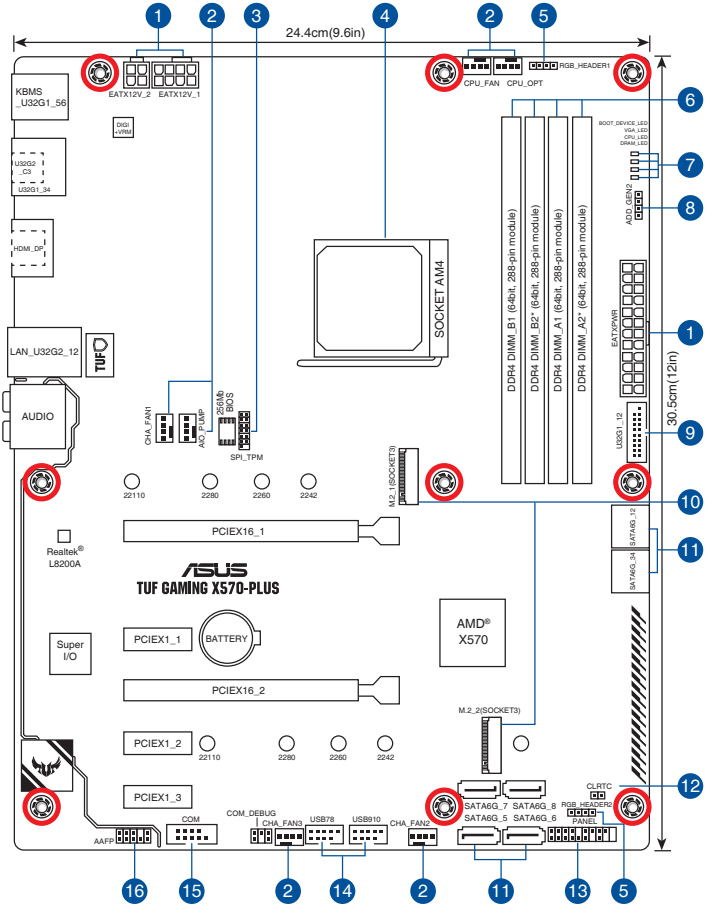
1.1 Motherboard overview

1.1.1 Before you proceed

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

- Unplug the power cord from the wall socket before touching any component.
- Before handling components, use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, to avoid damaging them due to static electricity.
- Hold components by the edges to avoid touching the ICs on them.
- Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
- Before you install or remove any component, ensure that the ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

1.1.2 Motherboard layout



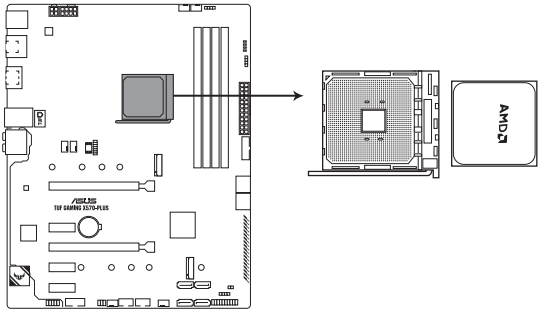
Refer to **1.1.8 Internal connectors** and **2.2.1 Rear I/O connection** for more information about rear panel connectors and internal connectors.

Layout contents

Connectors/Jumpers/Buttons and switches/Slots		Page
1.	ATX power connectors (24-pin EATXPWR; 8-pin EATX12V_1; 4-pin EATX 12V_2)	1-15
2.	CPU, CPU optional, and chassis fan connectors; AIO pump connector (4-pin CPU_FAN, 4-pin CPU_OPT, 4-pin CHA_FAN1-3; 4-pin AIO_PUMP)	1-14
3.	SPI_TPM connector (14-1 pin SPI_TPM)	1-10
4.	AM4 CPU socket	1-4
5.	AURA RGB headers (4-pin RGB_HEADER1/2)	1-17
6.	DDR4 DIMM slots	1-4
7.	Q LEDs	1-8
8.	Addressable Gen 2 header (4-pin ADD_GEN2)	1-18
9.	USB 3.2 Gen 1 connector (20-1 pin U32G1_12)	1-12
10.	M.2 Socket 3	1-16
11.	AMD Serial ATA 6 Gb/s connectors (7-pin SATA6G_1-8)	1-11
12.	Clear RTC RAM jumper (2-pin CLRTC)	1-9
13.	System panel connectors (20-5 pin PANEL)	1-13
14.	USB 2.0 connectors (10-1 pin USB78, USB910)	1-12
15.	Serial port connector (10-1 pin COM)	1-15
16.	Front panel audio connector (10-1 pin AAFP)	1-10

1.1.3 Central Processing Unit (CPU)

The motherboard comes with an AM4 socket designed for AMD Ryzen™ 3rd and 2nd Generation / AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics processors.



TUF GAMING X570-PLUS CPU socket AM4

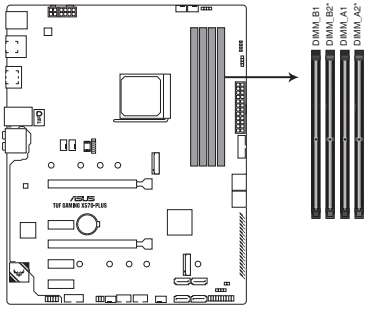
The AM4 socket has a different pinout design. Ensure that you use a CPU designed for the AM4 socket. The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

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

1.1.4 System memory

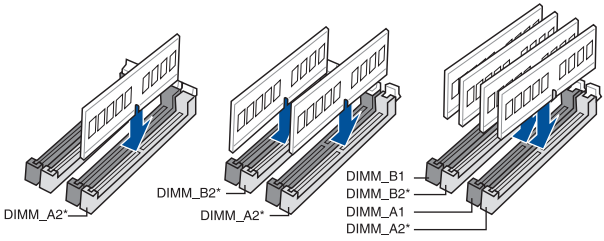
The motherboard comes with four Double Data Rate 4 (DDR4) Dual Inline Memory Modules (DIMM) slots.

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



TUF GAMING X570-PLUS 288-pin DDR4 DIMM sockets

Recommended memory configurations



Memory configurations

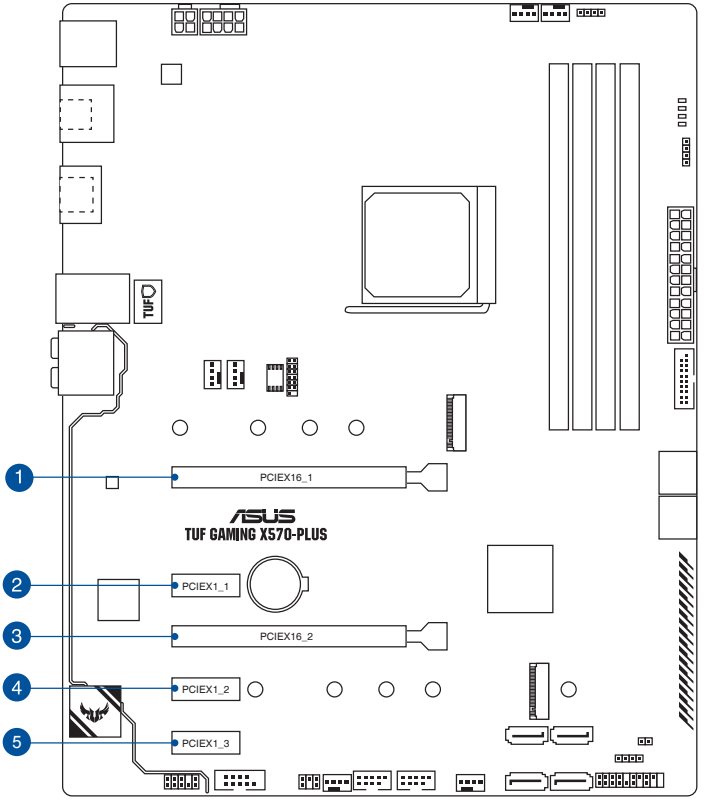
You may install 2 GB, 4 GB, 8 GB,16 GB, and s32 GB, unbuffered DDR4 DIMMs into the DIMM sockets.

- You may install varying memory sizes in Channel A and Channel B. The system maps the total size of the lower-sized channel for the dual-channel configuration. Any excess memory from the higher-sized channel is then mapped for single-channel operation.
- This motherboard does not support DIMMs made up of 512 Mb (64 MB) chips or less (Memory chip capacity counts in Megabit, 8 Megabit/Mb = 1 Megabyte/MB).

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

1.1.5 Expansion slots

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



Slot No.	Slot Description
1	PCIe 4.0/3.0 x16_1 slot
2	PCIe 4.0 x1_1 slot
3	PCIe 4.0 x16_2 slot
4	PCIe 4.0 x1_2 slot
5	PCIe 4.0 x1_3 slot

AMD Ryzen™ 3rd Generation Processors

VGA Configuration	PCIe operating mode	
	PCIe 4.0/3.0 x16_1	PCIe 4.0 x16_2
Single VGA/PCIe card	x16	N/A
Dual VGA/PCIe card	x16	x4

AMD Ryzen™ 2nd Generation Processors

VGA Configuration	PCIe operating mode	
	PCIe 3.0 x16_1	PCIe 4.0 x16_2
Single VGA/PCIe card	x16	N/A
Dual VGA/PCIe card	x16	x4

AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors

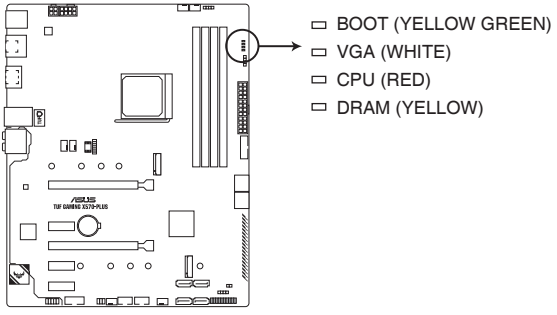
VGA Configuration	PCIe operating mode	
	PCIe 3.0/2.0x16_1	PCIe 4.0 x16_2
Single VGA/PCIe card	x8	N/A
Dual VGA/PCIe card	x8	x4

- We recommend that you provide sufficient power when running CrossFireX™ mode.
- Connect chassis fans to the motherboard chassis fan connectors when using multiple graphics cards for better thermal environment.

1.1.6 Onboard LEDs

1. Q LEDs (BOOT_LED, VGA_LED, DRAM_LED, CPU_LED)

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



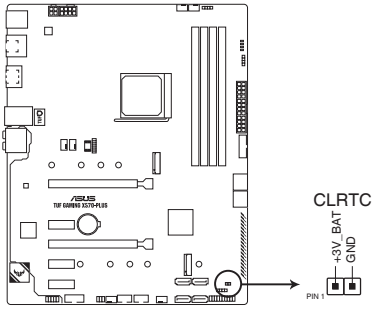
TUF GAMING X570-PLUS
CPU/ DRAM/ BOOT_DEVICE/ VGA LED

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

1.1.7 Jumpers

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

This jumper allows you to clear the CMOS RTC RAM data of the system setup information such as date, time, and system passwords.



TUF GAMING X570-PLUS Clear RTC RAM

To erase the RTC RAM:

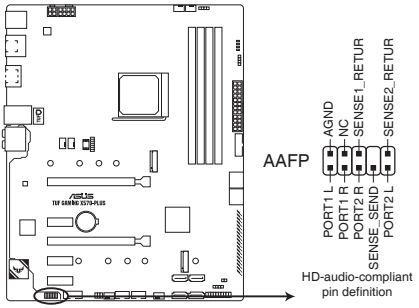
1. Turn OFF the computer and unplug the power cord.
2. Use a metal object such as a screwdriver to short the two pins.
3. Plug the power cord and turn ON the computer.
4. Hold down the <**Del**> key during the boot process and enter BIOS setup to re-enter data.

If the steps above do not help, remove the onboard battery and short the two pins again to clear the CMOS RTC RAM data. After clearing the CMOS, reinstall the battery.

1.1.8 Internal connectors

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

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

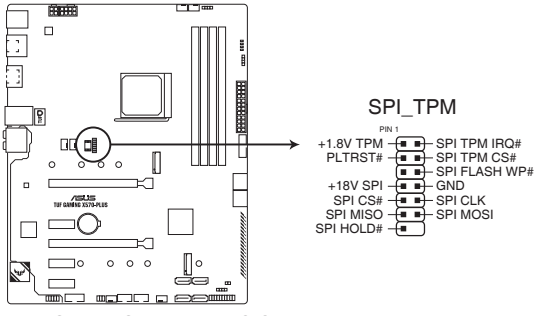


TUF GAMING X570-PLUS Front panel connector

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.

2. SPI_TPM connector (14-1 pin SPI_TPM)

This connector supports a Trusted Platform Module (TPM) system with a Serial Peripheral Interface (SPI), allowing you to securely store keys, digital certificates, passwords and data. A TPM system also enhances network security, protects digital identities, and ensures platform integrity.



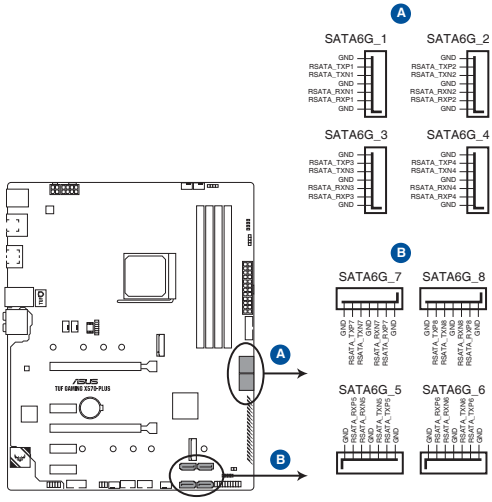
TUF GAMING X570-PLUS SPI_TPM connector

The SPI_TPM module is purchased separately.

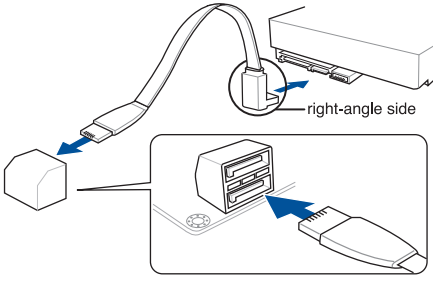
3. AMD Serial ATA 6 Gb/s connectors (7-pin SATA6G_1-8)

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

If you installed Serial ATA hard disk drives, you can create a RAID 0, RAID 1, and RAID 10 configuration through the onboard AMD X570 chipset.



TUF GAMING X570-PLUS SATA 6 Gb/s connectors

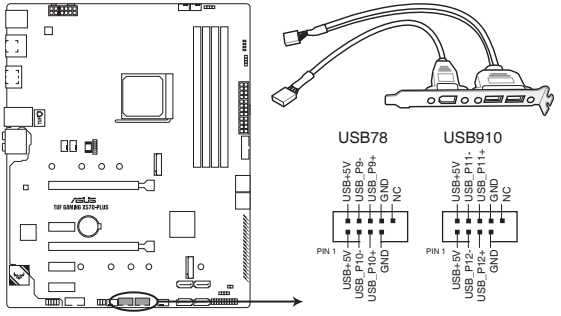


NOTE: Connect the right-angle side of SATA signal cable to SATA device. You may also connect the right-angle side of SATA cable to the onboard SATA port to avoid mechanical conflict with huge graphics cards.

- These connectors are set to **[AHCI]** by default. If you intend to create a Serial ATA RAID set using these connectors, set the SATA Mode Selection item in the BIOS to **[RAID]**.
- Before creating a RAID set, refer to section **RAID configurations** or the manual bundled in the motherboard support DVD.
- When using NCQ, set the SATA Mode in the BIOS to [**AHCI**]. Refer to section **SATA Configuration** for details.

4. USB 2.0 connectors (10-1 pin USB78; USB910)

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

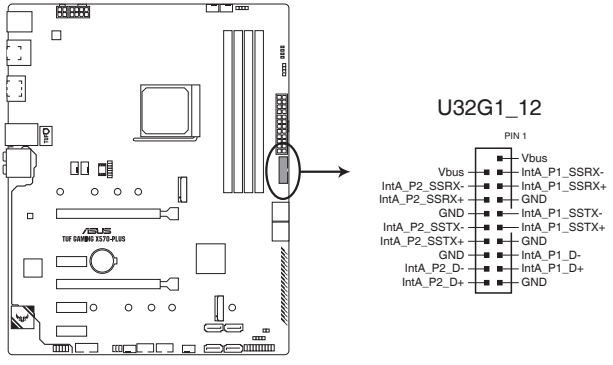


TUF GAMING X570-PLUS USB 2.0 connectors

Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

5. USB 3.2 Gen 1 connector (20-1 pin U32G1_12)

This connector allows you to connect a USB 3.2 Gen 1 module for additional USB 3.2 Gen 1 front or rear panel ports. With an installed USB 3.2 Gen 1 module, you can enjoy all the benefits of USB 3.2 Gen 1 including faster data transfer speeds of up to 5 Gb/s, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.



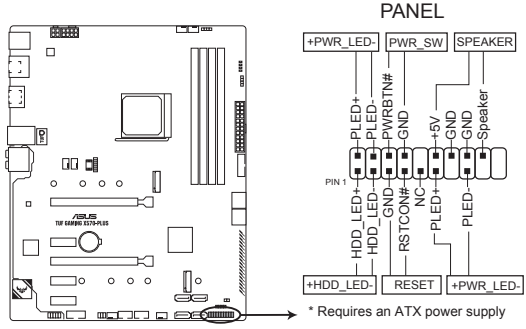
TUF GAMING X570-PLUS USB 3.2 Gen 1 connector

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. System panel connector (20-5 pin PANEL)

This connector supports several chassis-mounted functions.



TUF GAMING X570-PLUS System panel connector

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

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

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

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

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

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

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

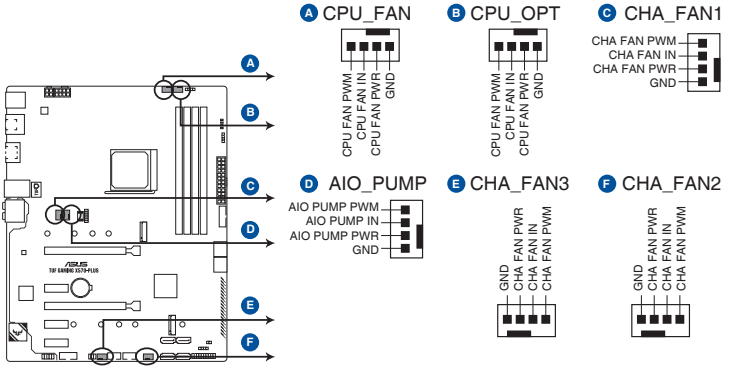
  This connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the operating system settings. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

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

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

7. CPU, CPU optional, and chassis fan connectors; AIO pump connectors (4-pin CPU_FAN, 4-pin CPU_OPT, CHA_FAN1-3; 4-pin AIO_PUMP)

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



TUF GAMING X570-PLUS Fan connectors

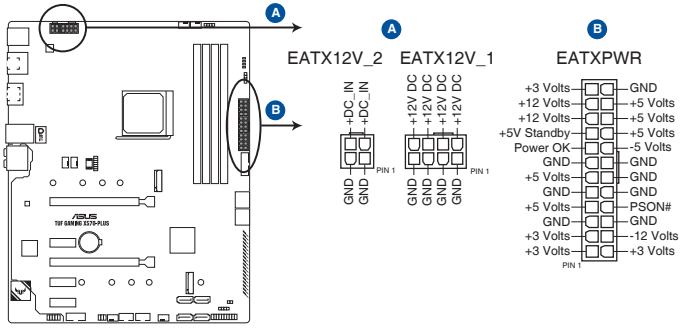
- DO NOT forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!
- Ensure to fully insert the 4-pin CPU fan cable to the CPU fan connector.

Connect the pump cable from the all-in-one cooler (AIO cooler) to the AIO_PUMP header, and connect the fan cable to the CPU fan connector.

Header	Max. Current	Max. Power	Default Speed
CPU_FAN	1A	12W	Q-Fan Controlled
CPU_OPT	1A	12W	Q-Fan Controlled
CHA_FAN1	1A	12W	Q-Fan Controlled
CHA_FAN2	1A	12W	Q-Fan Controlled
CHA_FAN3	1A	12W	Q-Fan Controlled
AIO_PUMP	1A	12W	Full Speed

8. ATX power connectors (24-pin EATXPWR; 8-pin EATX12V; 4-pin EATX12V)

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



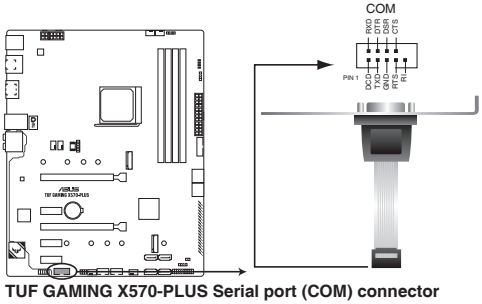
TUF GAMING X570-PLUS ATX power connectors

- DO NOT connect the 4-pin power plug only, the motherboard may overheat under heavy usage.
- Ensure to connect the 8-pin power plug, or both the 8-pin and 4-pin power plugs.

- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 350 W.
- We recommend that you use a PSU with a higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- If you want to use two or more high-end PCIe x16 cards, use a PSU with 1000W power or above to ensure the system stability.

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

This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

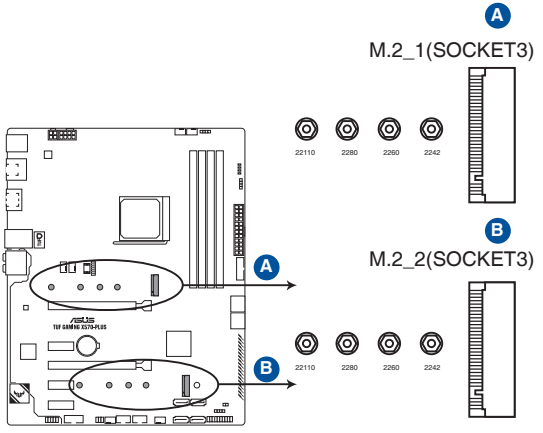


TUF GAMING X570-PLUS Serial port (COM) connector

The COM module is purchased separately.

10. M.2 sockets (M.2_1; M.2_2)

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



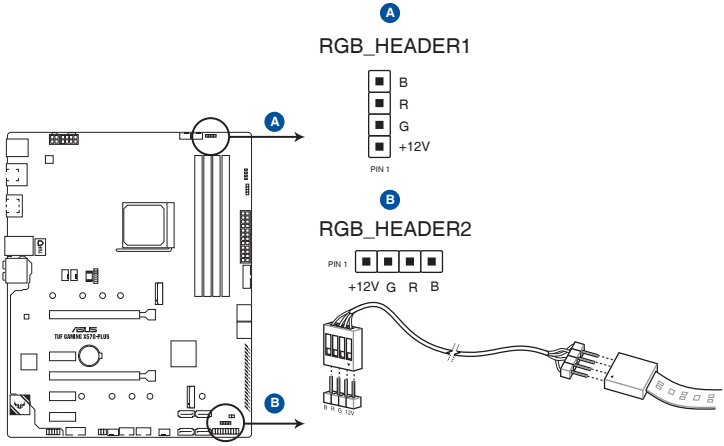
TUF GAMING X570-PLUS M.2 sockets

- For AMD Ryzen™ 3rd Generation Processors, the M.2_1 socket supports PCIe 4.0 x4 mode and SATA mode M Key design and type 2242 / 2260 / 2280 / 22110 storage devices.
- For AMD Ryzen™ 2nd Generation / Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors, the M.2_1 socket supports PCIe 3.0 x4 mode and SATA mode M Key design and type 2242 / 2260 / 2280 / 22110 storage devices.
- The M.2_2 socket supports PCIe 4.0 x4 mode and SATA mode M Key design and type 2242/ 2260/ 2280/ 22110 storage devices.

The M.2 SSD module is purchased separately.

11. AURA RGB headers (4-pin RGB_HEADER1/2)

These connectors are for RGB LED strips.



TUF GAMING X570-PLUS RGB Header

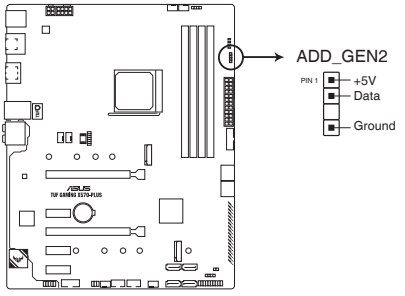
The RGB header supports 5050 RGB multi-color LED strips (12V/G/R/B), with a maximum power rating of 3A (12V), and no longer than 3 m.

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

- Actual lighting and color will vary with LED strip.
- If your LED strip does not light up, check if the RGB LED extension cable and the RGB LED strip is connected in the correct orientation, and the 12V connector is aligned with the 12V header on the motherboard.
- The LED strip will only light up when the system is operating.
- The LED strip is purchased separately.

12. Addressable RGB Gen 2 header (3-pin ADD_GEN2)

This connector is for individually addressable RGB WS2812B LED strips or WS2812B based LED strips.



TUF GAMING X570-PLUS ADD header

The addressable gen 2 RGB header 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 ATX power supply is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, or components

- Actual lighting and color will vary with LED strip.
- If your LED strip does not light up, check if the RGB LED extension cable and the RGB LED strip are 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 while the system is operational.
- The LED strip is purchased separately.

Basic Installation

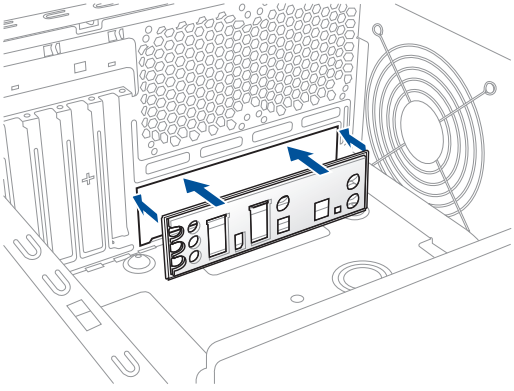
2

2.1 Building your PC system

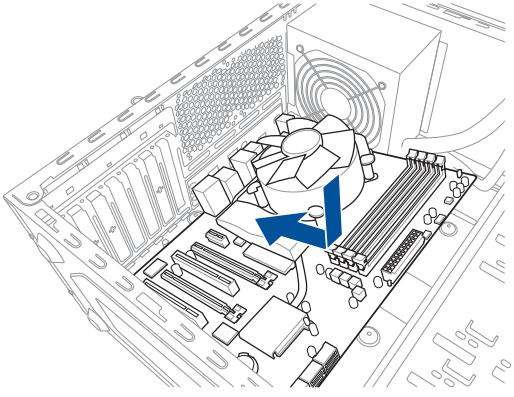
The diagrams in this section are for reference only. The motherboard layout may vary with models, but the installation steps are the same for all models.

2.1.1 Motherboard installation

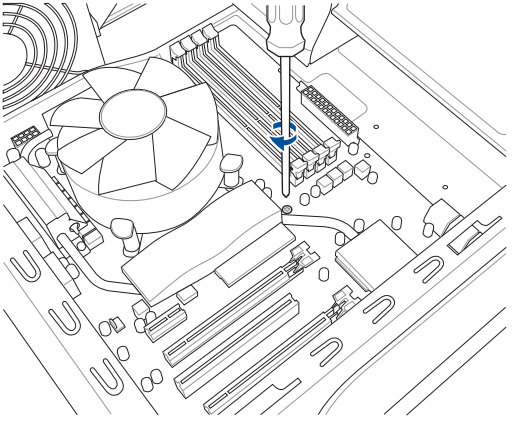
1. Install the ASUS I/O Shield to the chassis rear I/O panel.

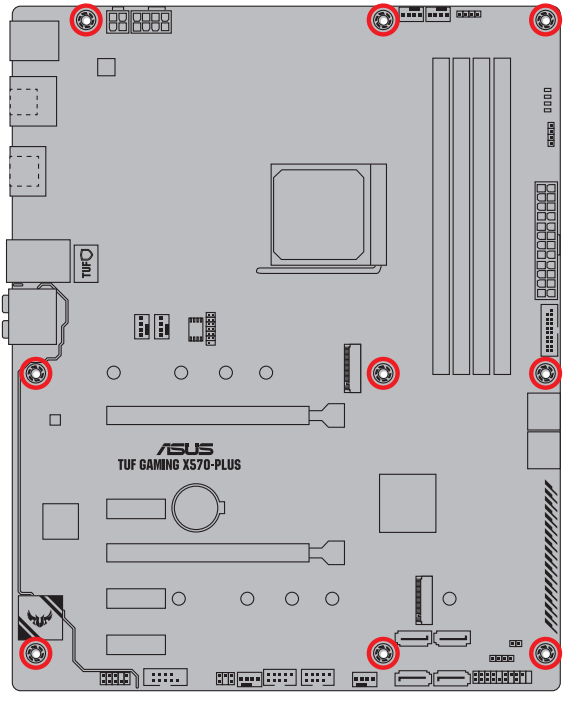


2. Place the motherboard into the chassis, ensuring that its rear I/O ports are aligned to the chassis' rear I/O panel.



3. Place nine (9) screws into the holes indicated by circles to secure the motherboard to the chassis.

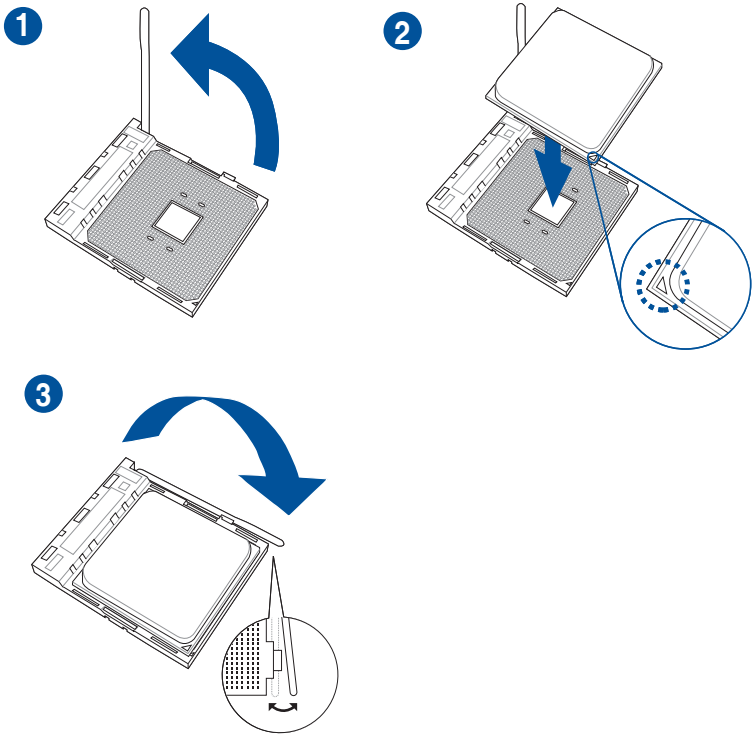




DO NOT over tighten the screws! Doing so can damage the motherboard.

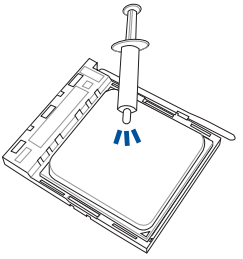
2.1.2 CPU installation

The AMD AM4 socket is compatible with AMD AM4 processors. Ensure you use a CPU designed for the AM4 socket. 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!

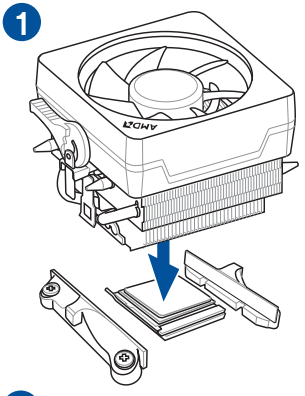


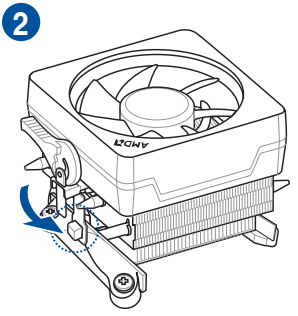
2.1.3 CPU heatsink and fan assembly installation

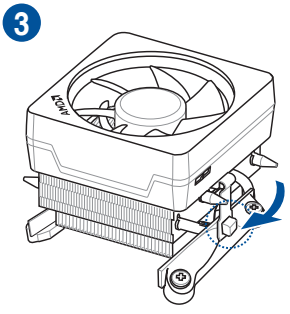
Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

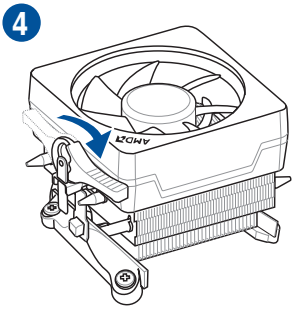


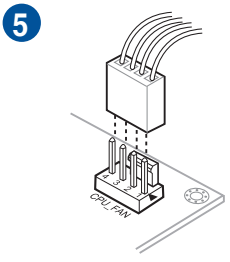
Type 1



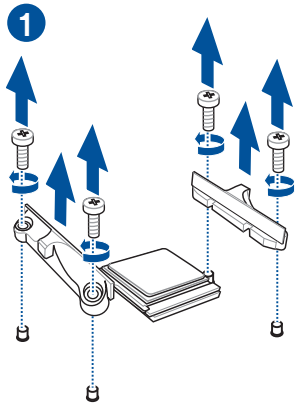


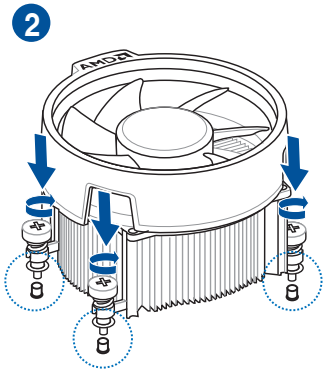


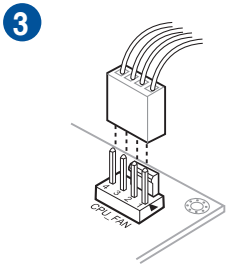




Type 2

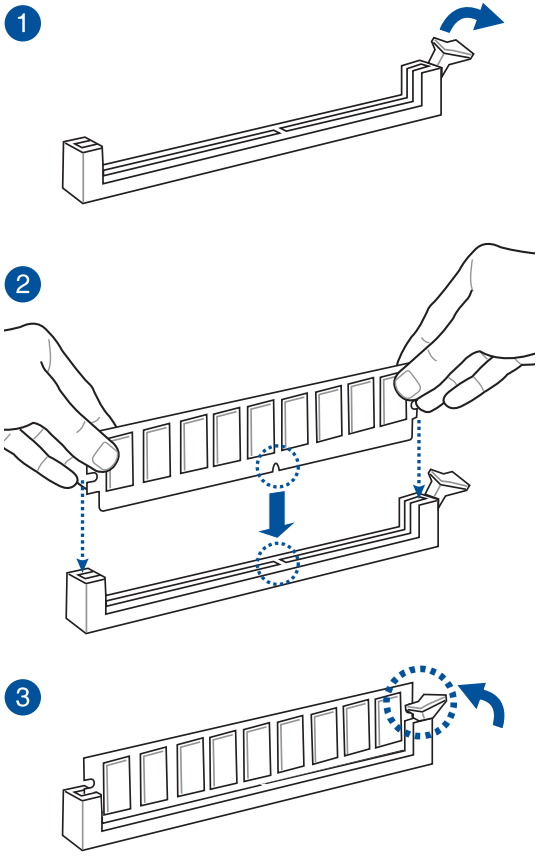




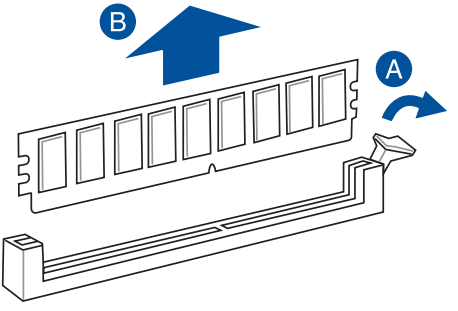


When using this type of CPU fan, remove the screws and the retention module only. Do not remove the plate on the bottom.

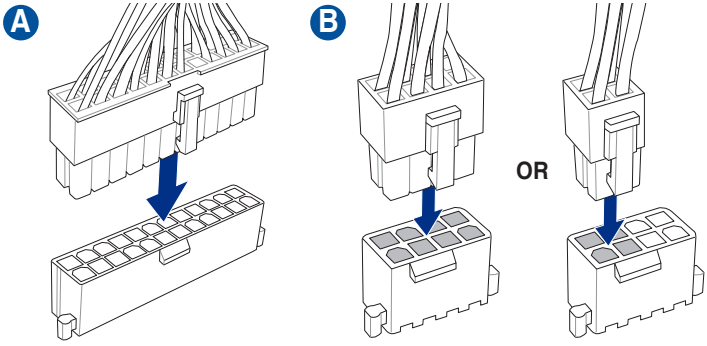
2.1.4 DIMM installation



To remove a DIMM

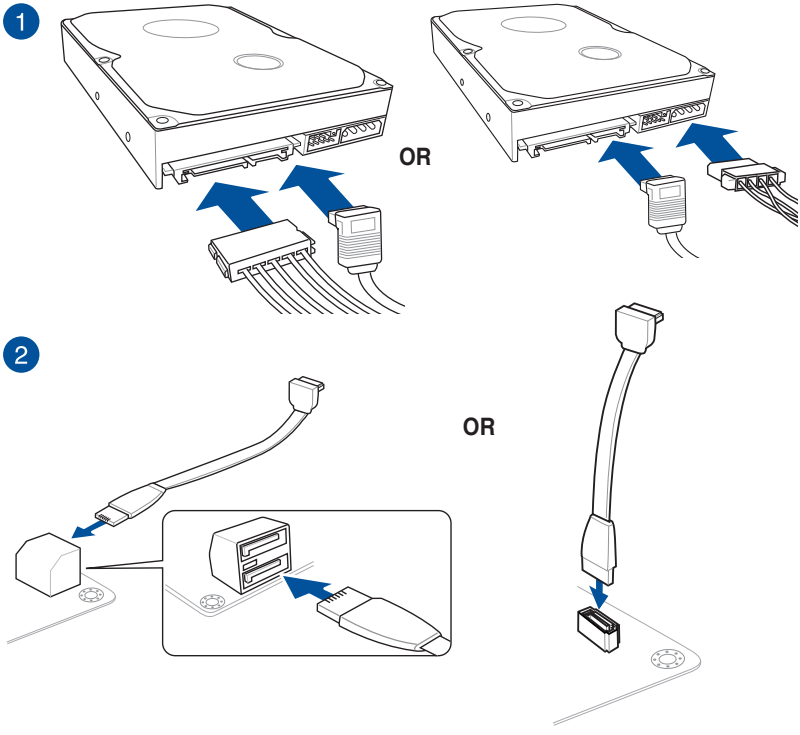


2.1.5 ATX power connection



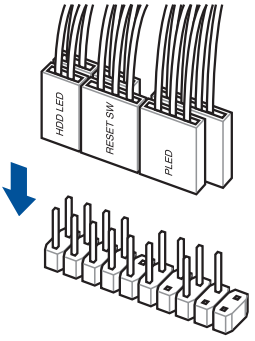
Ensure to connect the 8-pin power plug.

2.1.6 SATA device connection

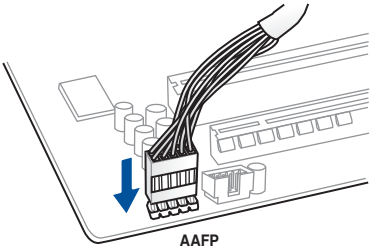


2.1.7 Front I/O connector

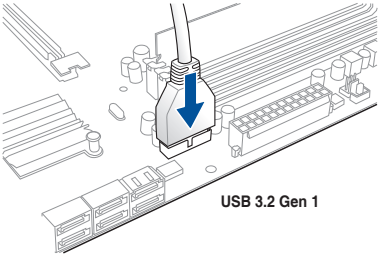
To install the front panel connector



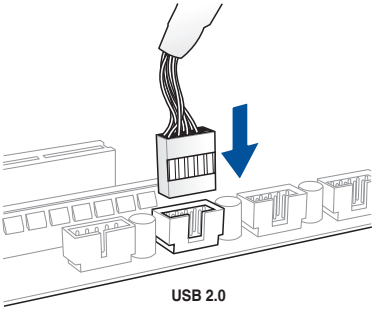
To install front panel audio connector



To install USB 3.2 Gen 1 connector

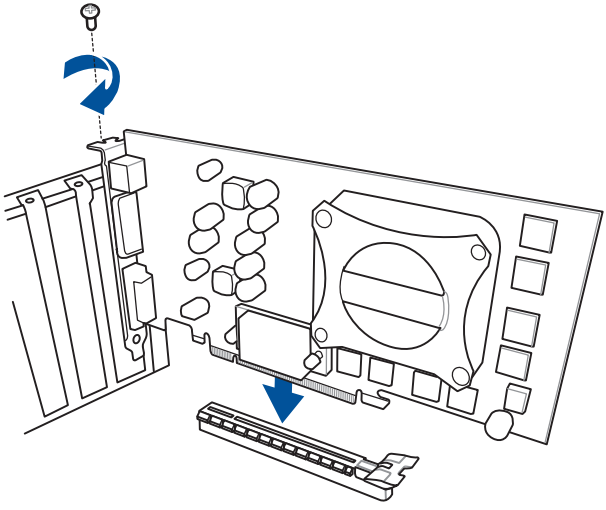


To install USB 2.0 connector

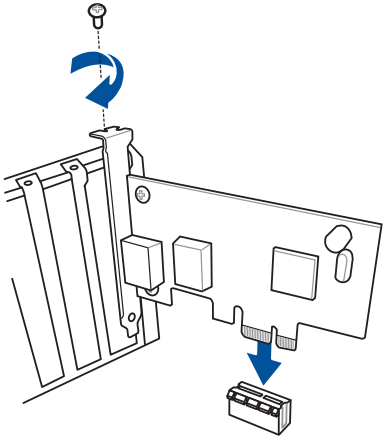


2.1.8 Expansion card installation

To install PCIe x16 cards



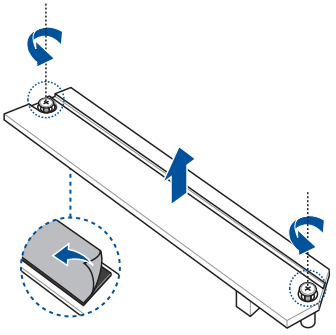
To install PCIe x1 cards



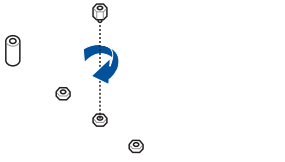
2.1.9 M.2 installation

Supported M.2 type varies per motherboard.

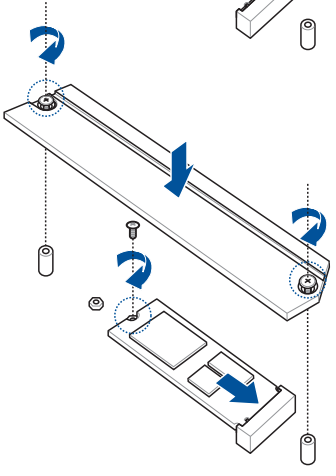
1



2

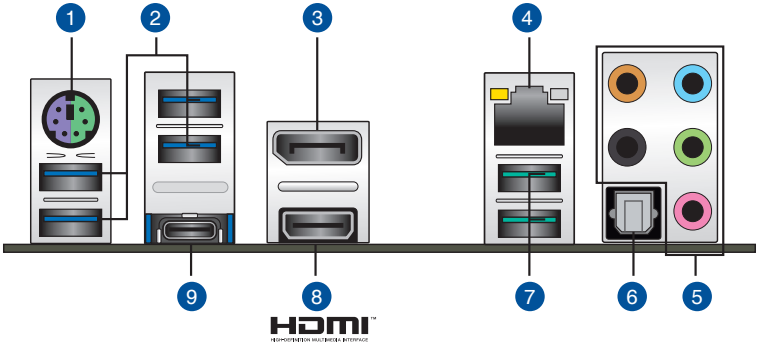


3



2.2 Motherboard rear and audio connections

2.2.1 Rear I/O connection



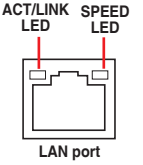
Rear panel connectors	
1.	PS/2 keyboard/ mouse combo port
2.	USB 3.2 Gen 1 (up to 5Gbps) ports
3.	DisplayPort
4.	LAN (RJ-45) port*
5.	Audio I/O ports**
6.	Optical S/PDIF Out port
7.	USB 3.2 Gen 2 (up to 10Gbps) ports
8.	HDMI port
9.	USB 3.2 Gen 2 (up to 10Gbps) port (Type-C)

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

- USB 3.2 Gen 2 / Gen 1 devices can only be used for data storage.
- Due to the design of AMD AM4 series chipset, all USB devices connected to the USB 2.0 and USB 3.2 Gen 1 / Gen 2 ports are controlled by the xHCI controller.
- We strongly recommend that you connect USB 3.2 Gen 2 devices to USB 3.2 Gen 2 ports for faster and better performance from your USB 3.2 Gen 2 devices.

*** LAN ports LED indications**

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

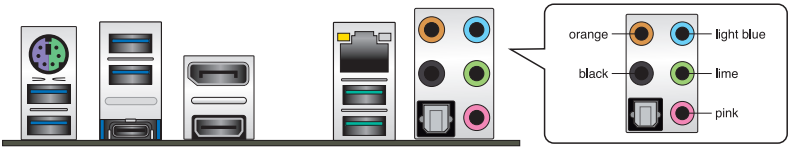


**** Audio 2, 4, 6 or 8-channel configuration**

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

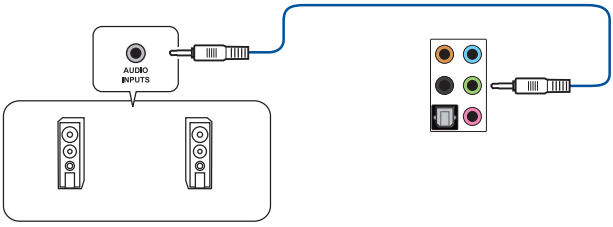
2.2.2 Audio I/O connections

Audio I/O ports

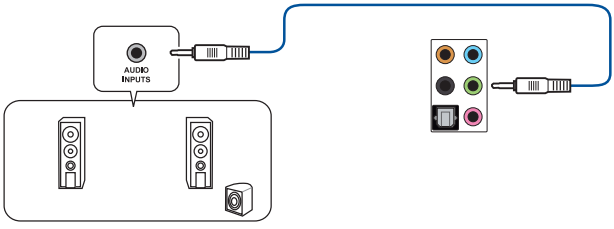


Connect to Headphone and Mic

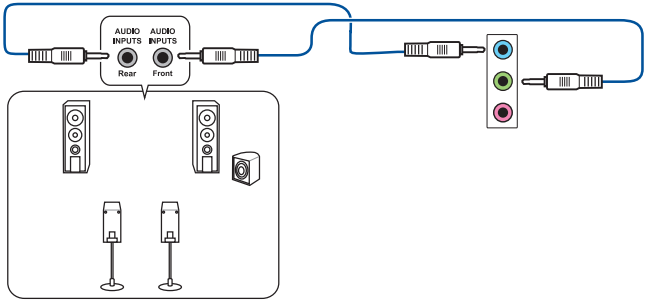
Connect to Stereo Speakers



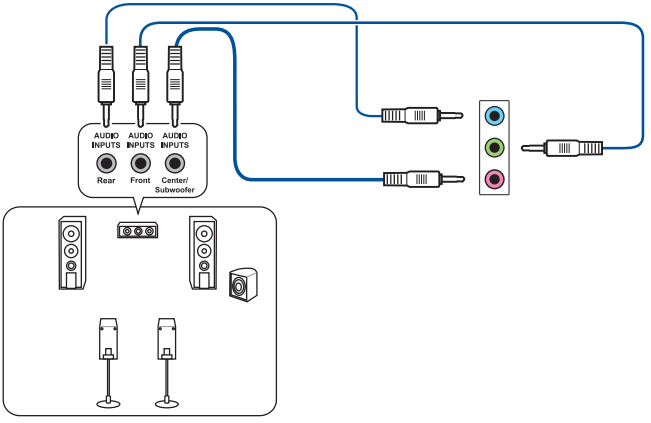
Connect to 2.1 channel Speakers



Connect to 4.1 channel Speakers

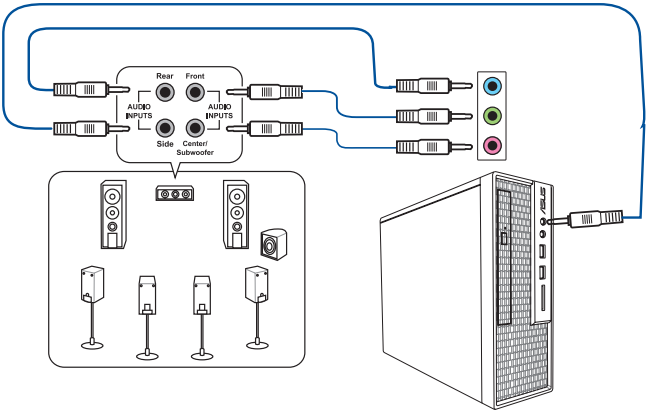


Connect to 5.1 channel Speakers



Use only the light blue audio port for Side Speaker Out in a 5.1 channel configuration.

Connect to 7.1 channel Speakers



2.3 Starting up for the first time

1. After making all the connections, replace the system case cover.
2. Ensure that all switches are off.
3. Connect the power cord to the power connector at the back of the system chassis.
4. Connect the power cord to a power outlet that is equipped with a surge protector.
5. Turn on the devices in the following order:
   a. Monitor
   b. External SCSI devices (starting with the last device on the chain)
   c. System power
6. After applying power, the system power LED on the system front panel case lights up. For systems with ATX power supplies, the system LED lights up when you press the ATX power button. If your monitor complies with the “green” standards or if it has a “power standby” feature, the monitor LED may light up or change from orange to green after the system LED turns on.

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

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

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

2.4 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

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 **TGX570P.CAP** for this motherboard.
- BIOS settings and options may vary due to different BIOS release versions. Please refer to the latest BIOS version for settings and options.

3.2 BIOS setup program

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

Entering BIOS at startup

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

Entering BIOS Setup after POST

To enter BIOS Setup after POST:

- Press <Ctrl>+<Alt>+<Delete> simultaneously.
- Press the reset button on the system chassis.
- Press the power button to turn the system off then back on. Do this option only if you failed to enter BIOS Setup using the first two options.

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

- The BIOS setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.
- Ensure that a USB mouse is connected to your motherboard if you want to use the mouse to control the BIOS setup program.
- If the system becomes unstable after changing any BIOS setting, load the default settings to ensure system compatibility and stability. Select the **Load Optimized Defaults** item under the **Exit** menu or press hotkey **<F5>**. See section **3.10 Exit Menu** for details.
- If the system fails to boot after changing any BIOS setting, try to clear the CMOS and reset the motherboard to the default value. See section **1.1.7 Jumpers** for information on how to erase the RTC RAM via the Clear CMOS button.
- The BIOS setup program does not support the Bluetooth devices.

Please visit ASUS website for the detailed BIOS content manual.

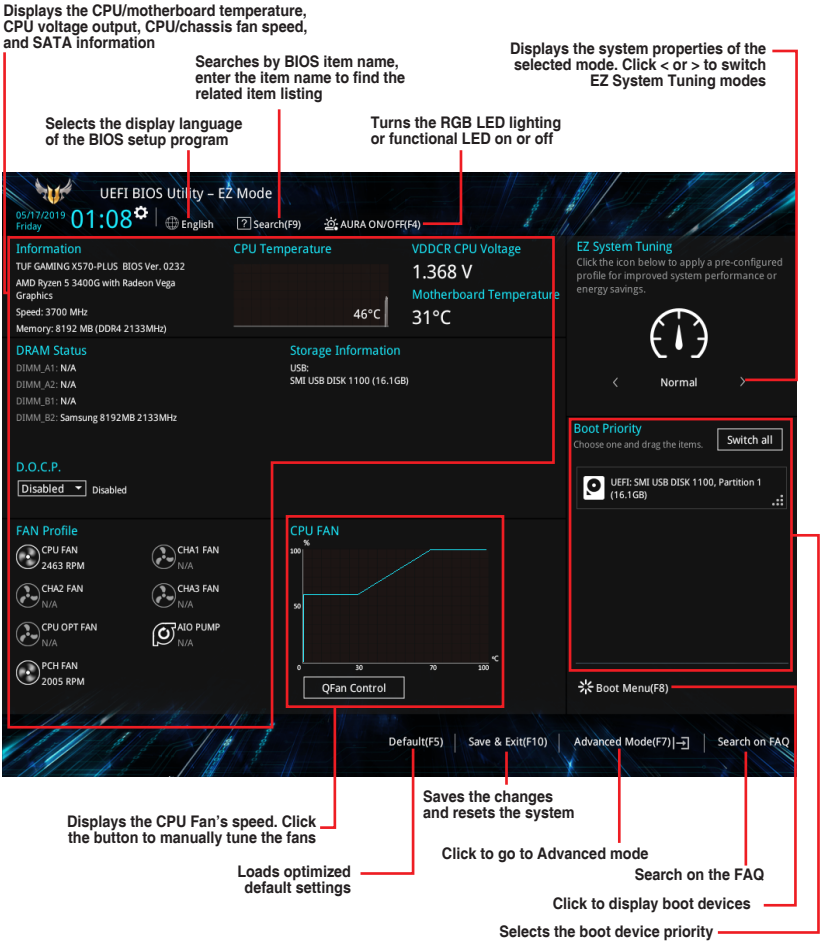
BIOS menu screen

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 EZ Mode

By default, the EZ Mode screen appears when you enter the BIOS setup program. 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.

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

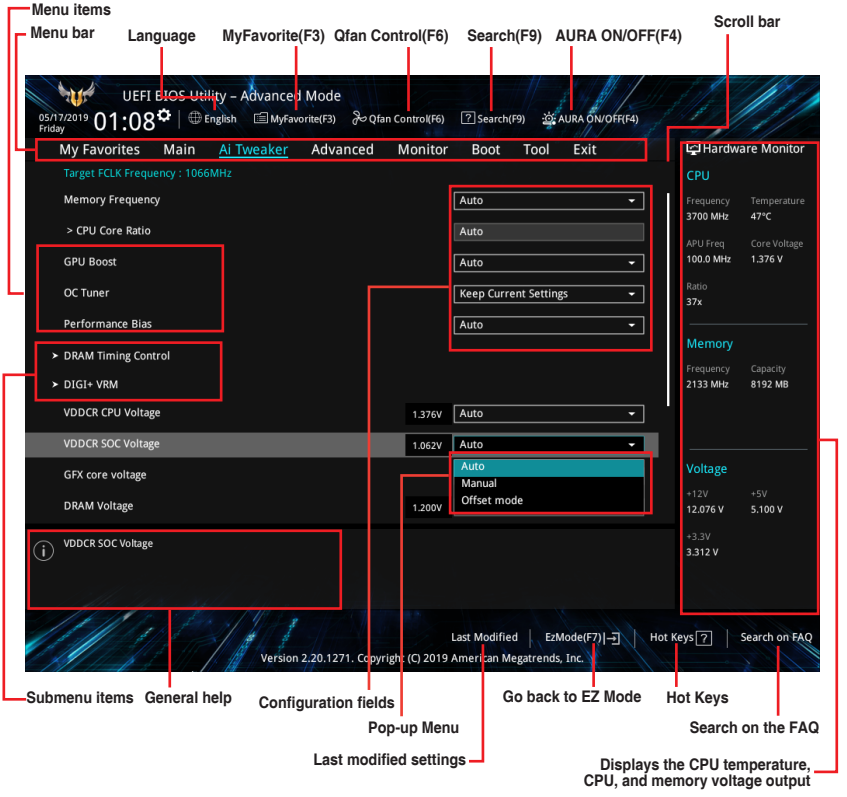


The boot device options vary depending on the devices you installed to the system.

3.2.2 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.

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



Chapter 3

Menu bar

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

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

Menu items

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

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

Submenu items

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

Language

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

My Favorites(F3)

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

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

Q-Fan Control(F6)

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

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

Search (F9)

This button allows you to search by BIOS item 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.

[ON] All AURA effects will be enabled. (Default mode)

[OFF] All AURA effects 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.

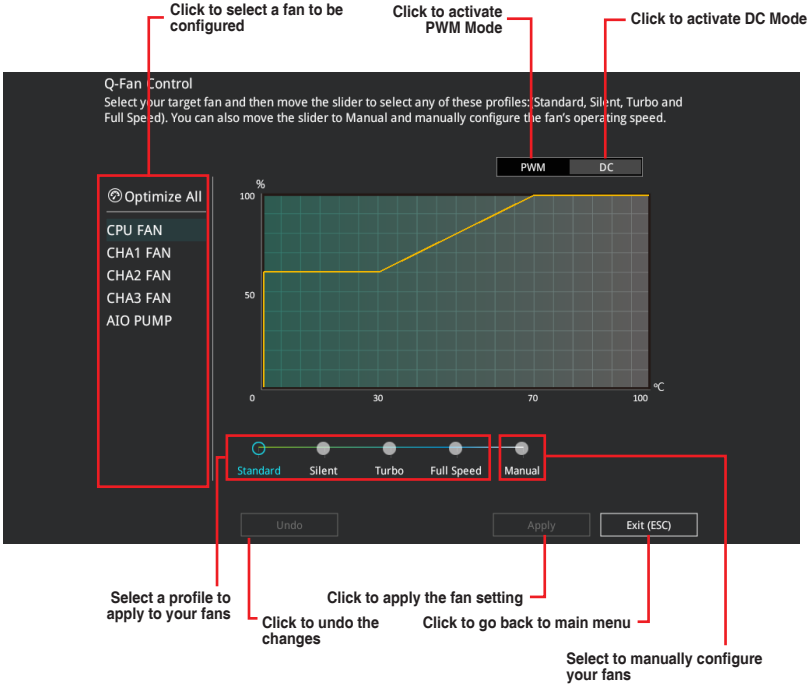
A configurable field is highlighted when selected. To change the value of a field, select it and press <Enter> to display a list of options.

Last Modified button

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

3.2.3 Q-Fan Control

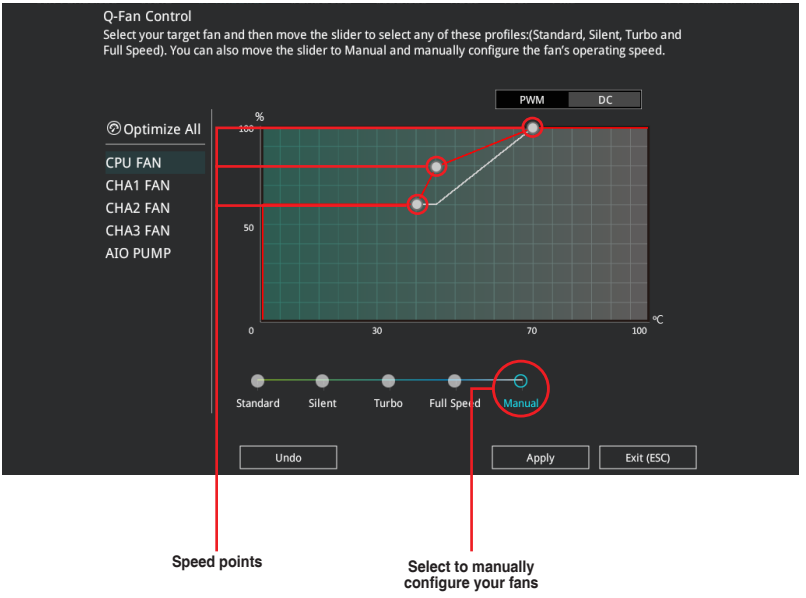
The QFan Control allows you to set a fan profile or manually configure the operating speed of your CPU and chassis fans.



Chapter 3

Configuring fans manually

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



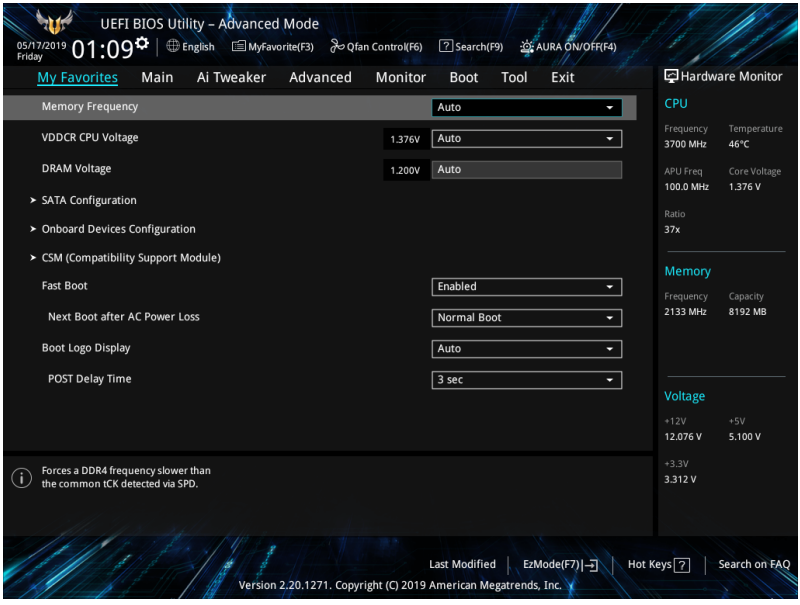
To configure your fans:

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)**.

Chapter 3

3.3 My Favorites

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



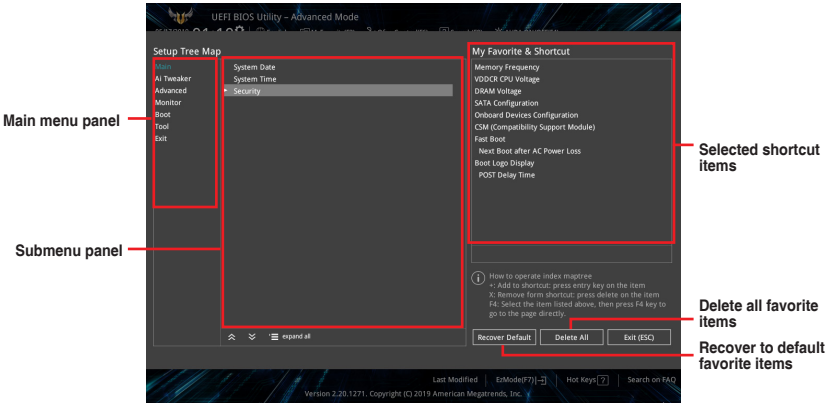
My Favorites comes with several performance, power saving, and fast boot related items by default. You can personalize this screen by adding or removing items.

Chapter 3

Adding items to My Favorites

To add BIOS items:

1. Press <F3> on your keyboard or click (F3)MyFavorite from the BIOS screen to open Setup Tree Map screen.
2. On the Setup Tree Map screen, select the BIOS items that you want to save in My Favorites screen.



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 user-managed items such as language and boot order to My Favorites.

4. Click **Exit (ESC)** or press <Esc> key to close Setup Tree Map screen.
5. Go to My Favorites menu to view the saved BIOS items.

Chapter 3

3.4 Main menu

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

Security

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

- If you have forgotten your BIOS password, erase the CMOS Real Time Clock (RTC) RAM to clear the BIOS password. See section **1.1.7 Headers** for information on how to erase the RTC RAM via the Clear CMOS button.
- 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.

Memory Frequency

This item allows you to set the memory operating frequency. The configurable options vary with the BCLK (base clock) frequency setting. Select the auto mode to apply the optimized setting. Configuration options: [Auto] [DDR4-1333MHz] - [DDR4-4200MHz]

Selecting a very high memory frequency may cause the system to become unstable! If this happens, revert to the default setting.

OC Tuner

The OC tuner automatically overclocks the CPU and DRAM frequencies and voltages respectively to enhance the system performance. It also boosts the CPU graphics performance according to the CPU graphics loading. Configuration options: [Keep Current Settings] [OC Tuner]

To keep the current overclocking tuner status, select **[Keep Current Settings]**.

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 allow you to configure the AMD fTPM settings.

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]

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]

Core Leveling Mode

This item allows you to change the number of compute unit in the system. Configuration options: [Automatic mode] [One] [TWO] [THREE]

3.6.3 NB Configuration

NB Configuration function is not support when using an AMD Ryzen processor.

IGFX Multi-Monitor

Enables or disables the Internal Graphics Device Multi-Monitor support for add-on VGA devices. And the memory size of Internal Graphics Device will keep memory reserved. Configuration options: [Disabled] [Enabled] [HybridGraphics]

The **IGFX Multi-Monitor** item must be enabled before using AMD Dual Graphics technology.

Primary Video Device

Selects the primary display device. Configuration options: [IGFX Video] [PCIE Video]

UMA Frame Buffer Size [Auto]

Configuration options: [Auto] [64M] [80M] [96M][128M] [256M] [384M] [512M] [768M] [1G] [2G] [3G] [4G]

3.6.4 SATA Configuration

While entering Setup, the BIOS automatically detects the presence of SATA devices. The SATA Port items show **Empty** 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]

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 Serial ATA 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 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_1~8 (Gray), M.2_1 (Gray), M.2_2 (Gray)

Select one item and click Enter to assign a new name for the item.

Hot Plug

These items allow you to enable/disable SATA Hot Plug Support. Configuration options: [Disabled] [Enabled]

3.6.5 Onboard Devices Configuration

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

HD Audio Controller

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

PCIEX16_1 Bandwidth

This item displays on AMD Ryzen™ 2nd and 1st Generation with Radeon™ Vega Graphics Processors.

[X8 Mode] The PCIe x16_1 slot runs at x8 mode.

[PCIe RAID Mode] The Hyper M.2 x16 card and other add-on M.2 devices all run at x4 mode, which allows you to create a PCIe RAID array.

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.

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: [All On] [Stealth Mode] [Aura Only] [Aura Off]

When system is in sleep, hibernate or soft off states

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

Realtek LAN Controller

Enables or disables the Realtek LAN controllers. Configuration options: [On] [Off]

Realtek PXE OPROM

Enables or disables the Realtek PXE OPROM. Configuration options: [On] [Off]

3.6.6 APM Configuration

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

ErP Ready

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

Restore 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 Off] [Power On] [Last State]

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]

3.6.7 PCI Subsytem Settings

SR-IOV Support

This item allows you to enable or disable the Single Root IO Virtualization support if your system has SR-IOV capable PCIe devices.

3.6.8 USB Configuration

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

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

USB Single Port Control

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

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

3.6.9 HDD/SSD SMART Information

This menu displays the SMART information of the connected devices.

NVM Express devices do not support SMART information.

3.6.10 NVMe Configuration

This menu displays the NVMe controller and Drive information of the connected devices.

3.6.11 Network Stack Configuration

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

3.7 Monitor menu

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

Q-Fan Configuration

The subitems in this menu allow you to configure the Q-Fan features.

Qfan Tuning

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

3.8 Boot menu

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

Fast Boot

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

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

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

Next Boot after AC Power Loss

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

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

Boot Configuration

Setup Mode

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

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

CSM (Compatibility Support Module)

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

Launch CSM

[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 Windows® the Windows secure update and secure boot.

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

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

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

Boot from Network Devices
This item allows you to select the type of network devices that you want to launch. Configuration options: [Ignore] [Legacy only] [UEFI only]

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 only]

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: [Ignore] [Legacy only] [UEFI only]

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.
- To select the boot device during system startup, press <F8> when the ASUS Logo appears.

Boot Override

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

3.9 Tool menu

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

3.9.1 ASUS EZ Flash 3 Utility

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

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

3.9.2 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.

3.9.3 ASUS SPD Information

This item allows you to view the DRAM SPD information.

3.9.4 ASUS Armoury Crate

This item allows you to download and install the ASUS ARMOURY CRATE app.

3.10 Exit menu

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

Load Optimized Defaults

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

Save Changes & Reset

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

Discard Changes & Exit

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

Launch EFI Shell from USB drives

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

3.11 Updating BIOS

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

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

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

1. EZ Update: Updates the BIOS in Windows® environment.
2. ASUS EZ Flash 3: Updates the BIOS using a USB flash drive.
3. ASUS CrashFree BIOS 3: Restores the BIOS using the motherboard support DVD or a USB flash drive when the BIOS file fails or gets corrupted.

3.11.1 EZ Update

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

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

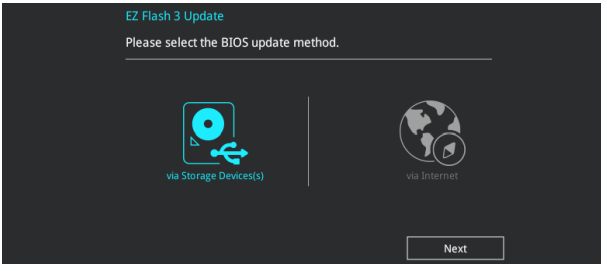
3.11.2 ASUS EZ Flash 3

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

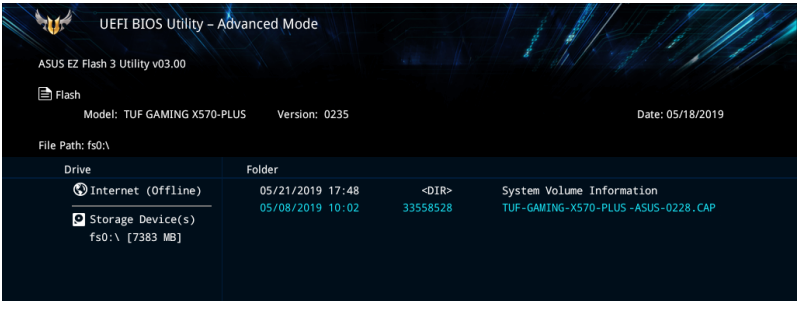
Updating through the Internet varies per region and Internet conditions. Check your local Internet connection before updating through the Internet.

To update the BIOS by USB:

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



4. Press <Tab> to switch to the Drive field.
5. Press the Up/Down arrow keys to find the USB flash disk that contains the latest BIOS, and then press <Enter>.
6. Press <Tab> to switch to the Folder Info field.
7. Press the Up/Down arrow keys to find the BIOS file, and then press <Enter> to perform the BIOS update process. Reboot the system when the update process is done.

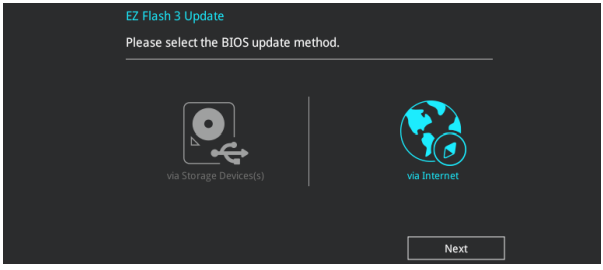


- This function can support devices such as a USB flash disk with FAT 32/16 format and single partition only.
- DO NOT shut down or reset the system while updating the BIOS to prevent system boot failure!

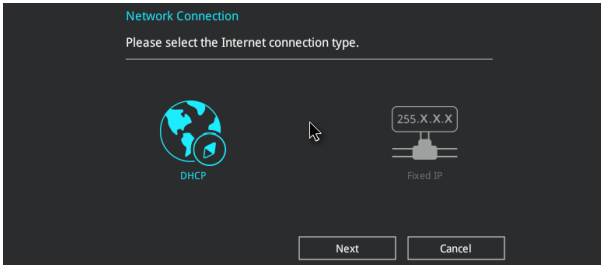
Ensure to load the BIOS default settings to ensure system compatibility and stability. Select the Load Optimized Defaults item under the Exit menu. See section **3.10 Exit Menu** for details.

To update the BIOS by Internet:

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



3. Press the Left/Right arrow keys to select an Internet connection method, and then press <Enter>.



4. Follow the onscreen instructions to complete the update.
5. Reboot the system when the update process is done.

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

3.11.3 ASUS CrashFree BIOS 3

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

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

Recovering the BIOS

To recover the BIOS:

1. Turn on the system.
2. Insert the motherboard support DVD to the optical drive, or the USB flash drive containing the BIOS file to the USB port.
3. The utility automatically checks the devices for the BIOS file. When found, the utility reads the BIOS file and enters ASUS EZ Flash 3 automatically.
4. The system requires you to enter BIOS Setup to recover the BIOS setting. To ensure system compatibility and stability, we recommend that you press <F5> to load default BIOS values.

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

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 rcadm.

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

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.

Appendix

REACH

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

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

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

ASUS Recycling/Takeback Services

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

Regional notice for California

WARNING

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

Google™ License Terms

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

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

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

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

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

Български С настоящото ASUSTeK Computer Inc. декларира, че това устройство е в съответствие със съществените изисквания и другите приложими постановления на свързаните директиви. Пълният текст на декларацията за съответствие на ЕС е достъпна на адрес: 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

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

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

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

Eesti Käesolevaga kinnitab ASUSTeK Computer Inc, et see seade vastab asjakohaste direktiivide oluliste nõuetele ja teistele asjassepuutuvatele sätetele. EL vastavusdeklaratsiooni täielik tekst on saadaval järgmisel aadressil: www.asus.com/support

Suomi ASUSTeK Computer Inc. ilmoittaa täten, että tämä laite on asiaankuuluvien direktiivien olennaisten vaatimusten ja muiden tätä koskevien säädösten mukainen. EU-yhdenmukaisuusilmoituksen koko teksti on luettavissa osoitteessa: 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 συμβατότητας είναι διαθέσιμο στη διεύθυνση: 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 megfelelőségi nyilatkozat teljes szövege innen letölthető: 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

Lietuvių „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

Norsk ASUSTeK Computer Inc. erklærer herved at denne enheten er i samsvar med hovedsaklige krav og andre relevante forskrifter i relaterte direktiver. Fullstendig tekst for EU-samsvarserklæringen finnes på: 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

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

Română ASUSTeK Computer Inc. declară că acest dispozitiv se conformează cerinţelor esenţiale şi altor prevederi relevante ale directivelor conexe. Textul complet al declaraţiei de conformitate a Uniunii Europene se găseşte la: 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 usaglašenosti je dostupan da adresi: www.asus.com/support

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

Slovenščina ASUSTeK Computer Inc. izjavlja, da je ta naprava skladna z bistvenimi zahtevami in drugimi ustreznimi določbami povezanih direktiv. Celotno besedilo EU-izjave o skladnosti je na voljo na spletnem mestu: 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

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

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

Türkçe AsusTek Computer Inc., bu aygıtın temel gereksinimlerle ve ilişkili Yönergelerin diğer ilgili koşullarıyla uyumlu olduğunu beyan eder. AB uygunluk bildiriminin tam metni şu adreste bulunabilir: www.asus.com/support

Bosanski ASUSTeK Computer Inc. ovim izjavljuje da je ovaj uređaj usklađen sa bitnim zahtjevima i ostalim odgovarajućim odredbama vezanih direktiva. Cijeli tekst EU izjave o usklađenosti dostupan je na: www.asus.com/support

ASUS contact information

ASUSTeK COMPUTER INC.

Address	4F, No. 150, Li-Te Road, Peitou, Taipei 112, Taiwan
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Fax	+886-2-2890-7798
Web site	www.asus.com

Technical Support

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

ASUS COMPUTER INTERNATIONAL (America)

Address	48720 Kato Rd., Fremont, CA 94538, USA
Telephone	+1-510-739-3777
Fax	+1-510-608-4555
Web site	http://www.asus.com/us/

Technical Support

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

ASUS COMPUTER GmbH (Germany and Austria)

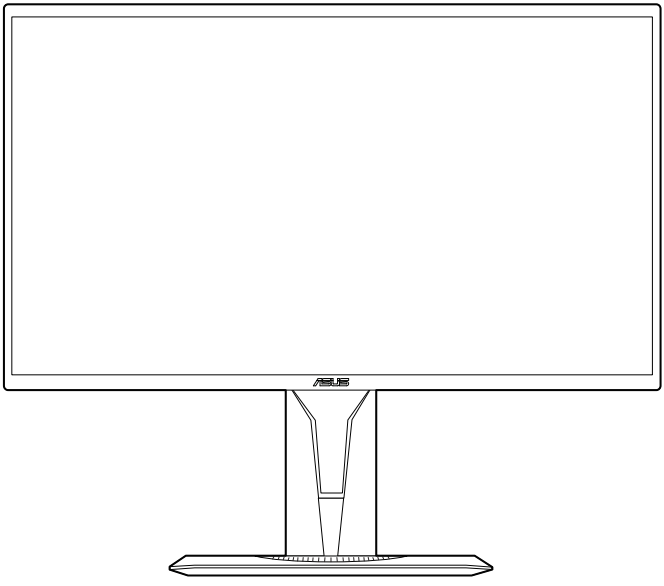
Address	Harkort Str. 21-23, 40880 Ratingen, Germany
Fax	+49-2102-959931
Web site	http://www.asus.com/de
Online contact	http://eu-rma.asus.com/sales

Technical Support

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

TUF Gaming Monitor
VG259 series

User Guide



HIGH-DEFINITION MULTIMEDIA INTERFACE

First Edition

August 2019

Contents

Notices

Federal Communications Commission Statement

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

- This device may not cause harmful interference, and
- 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.

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

Canadian Department of Communications Statement

This digital apparatus does not exceed the Class B limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

This class B digital apparatus complies with Canadian ICES-003.

This Class B digital apparatus meets all requirements of the Canadian Interference - Causing Equipment Regulations.

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

EAC

Safety information

- Before setting up the monitor, carefully read all the documentation that came with the package.
- To prevent fire or shock hazard, never expose the monitor to rain or moisture.
- Never try to open the monitor cabinet. The dangerous high voltages inside the monitor may result in serious physical injury.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your retailer.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- Slots and openings on the back or top of the cabinet are provided for ventilation. Do not block these slots. Never place this product near or over a radiator or heat source unless proper ventilation is provided.
- The monitor should be operated only from the type of power source indicated on the label. If you are not sure of the type of power supply to your home, consult your dealer or local power company.
- Use the appropriate power plug which complies with your local power standard.
- Do not overload power strips and extention cords. Overloading can result in fire or electric shock.
- Avoid dust, humidity, and temperature extremes. Do not place the monitor in any area where it may become wet. Place the monitor on a stable surface.
- Unplug the unit during a lightning storm or if it will not be used for a long period of time. This will protect the monitor from damage due to power surges.
- Never push objects or spill liquid of any kind into the slots on the monitor cabinet.
- To ensure satisfactory operation, use the monitor only with UL listed computers which have appropriate configured receptacles marked between 100-240V AC.
- If you encounter technical problems with the monitor, contact a qualified service technician or your retailer.
- Adjustment of the volume control as well as the equalizer to other settings than the center position may increase the ear-/headphones output voltage and therefore the sound pressure level.
- The adapter is only used for this monitor, do not use it for other purpose. Your device uses one of the following power supplies:
  - Manufacturer: Delta Electronics Inc., Model: ADP-40KD BB

This symbol of the crossed out wheeled bin indicates that the product (electrical, electronic equipment, and mercury-containing button cell battery) should not be placed in municipal waste. Please check local regulations for disposal of electronic products.

AEEE yönetmeliğine uygundur

Care & Cleaning

- Before you lift or reposition your monitor, it is better to disconnect the cables and power cord. Follow the correct lifting techniques when positioning the monitor. When lifting or carrying the monitor, grasp the edges of the monitor. Do not lift the display by the stand or the cord.
- Cleaning. Turn your monitor off and unplug the power cord. Clean the monitor surface with a lint-free, non-abrasive cloth. Stubborn stains may be removed with a cloth dampened with mild cleaner.
- Avoid using a cleaner containing alcohol or acetone. Use a cleaner intended for use with the monitor. Never spray cleaner directly on the screen, as it may drip inside the monitor and cause an electric shock.

The following symptoms are normal with the monitor:

- The screen may flicker during the initial use due to the nature of the fluorescent light. Turn off the Power Switch and turn it on again to make sure that the flicker disappears.
- You may find slightly uneven brightness on the screen depending on the desktop pattern you use.
- When the same image is displayed for hours, an afterimage of the previous screen may remain after switching the image. The screen will recover slowly or you can turn off the Power Switch for hours.
- When the screen becomes black or flashes, or cannot work anymore, contact your dealer or service center to fix it. Do not repair the screen by yourself!

Conventions used in this guide


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: Information that you MUST follow to complete a task.


NOTE: Tips and additional information to aid in completing a task.

Where to find more information

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

1. **ASUS websites**
   The ASUS websites worldwide provide updated information on ASUS hardware and software products. Refer to http://www.asus.com

2. **Optional documentation**
   Your product package may include optional documentation that may have been added by your dealer. These documents are not part of the standard package.

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 our customers to be able to responsibly recycle our products, batteries and other components as well as the packaging materials.

Please go to http://csr.asus.com/english/Takeback.htm for detail recycling information in different region.

Product information for EU energy label

VG259Q VG259QR

1.1 Welcome!

Thank you for purchasing the ASUS® LCD monitor!

The latest widescreen LCD monitor from ASUS provides a broader, brighter and crystal-clear display, plus a host of features that enhance your viewing experience.

With these features, you can enjoy the convenience and delightful visual experience that the monitor brings to you!

1.2 Package contents

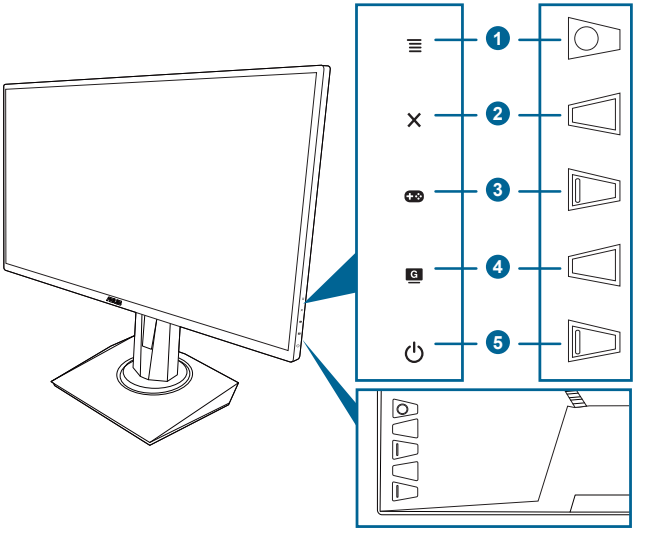
Check your package for the following items:

- ✓ LCD monitor
- ✓ Monitor base
- ✓ Quick start guide
- ✓ Warranty card
- ✓ Power adapter
- ✓ Power cord
- ✓ DisplayPort cable (optional)
- ✓ HDMI cable (optional)

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

1.3 Monitor introduction

1.3.1 Front view



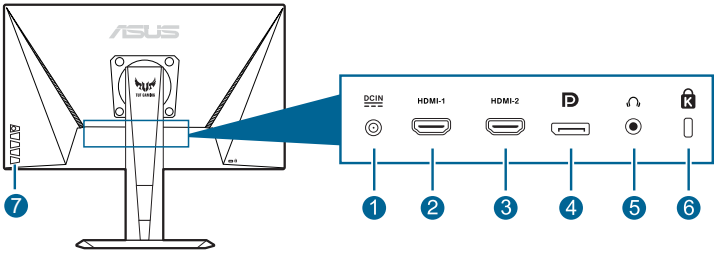
1. ☰ (◈ 5-way) button:
   - Turns on the OSD menu. Enacts the selected OSD menu item.
   - Increases/Decreases values or moves your selection up/down/left/right.
   - Displays the input selection bar when the monitor enters standby mode or displays the “NO SIGNAL“ message.
2. ✕ button
   - Exits the OSD menu item.
   - Displays the input selection bar when the monitor enters standby mode or displays the “NO SIGNAL“ message.
   - Toggles the Key Lock function between on and off with a long press for 5 seconds.
3. 🎮 button:
   - GamePlus hotkey. Move the ☰ (◈) button up/down to select and press ☰ (◈) to confirm the function needed.
   - Displays the input selection bar when the monitor enters standby mode or displays the “NO SIGNAL“ message.
4. G button
   - GameVisual hotkey. This function contains 7 sub-functions you can select for your preference.

- Displays the input selection bar when the monitor enters standby mode or displays the “NO SIGNAL“ message.

5. Power button/power indicator
   - Turns the monitor on/off.
   - The color definition of the power indicator is as the below table.

Status	Description
White	ON
Amber	Standby mode/No signal
OFF	OFF

1.3.2 Back view



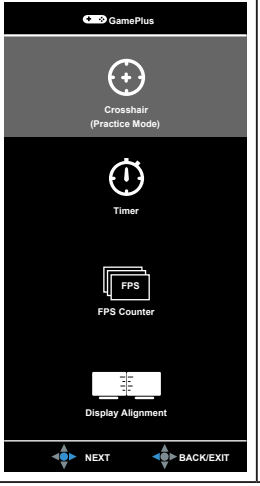
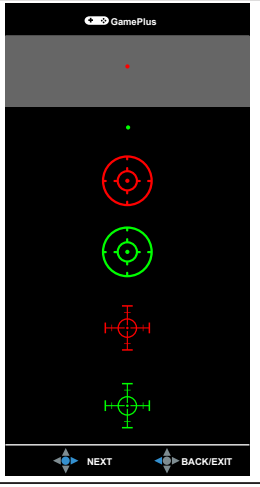
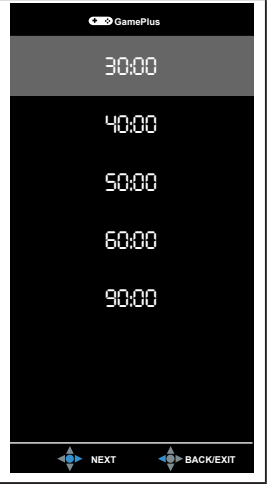
1. **DC-IN port.** This port connects the power cord.
2. **HDMI port.** This port is for connection with an HDMI compatible device.
3. **HDMI port.** This port is for connection with an HDMI compatible device.
4. **DisplayPort.** This port is for connection for a DisplayPort compatible device.
5. **Earphone jack.** This port is only available when an HDMI/DisplayPort cable is connected.
6. **Kensington lock slot**.
7. **Control buttons.**

1.3.3 GamePlus Function

The GamePlus function provides a toolkit and creates a better gaming environment for users when playing different types of games. The crosshair overlay with 6 different crosshair options lets you choose the one that best suits the game you're playing. There's also an onscreen timer you can position on the left of the display so you can keep track of the elapsed gaming time; while the FPS (frames per second) counter lets you know how smooth the game is running. Display Alignment displays alignment lines on 4 sides of the screen, serving as an easy and handy tool for you to line up multiple monitors perfectly.

To active GamePlus:

1. Press the GamePlus hotkey.
2. Move the ☰ (◈) button up/down to select among different functions.
3. Press the ☰ (◈) button or move the ☰ (◈) button right to confirm the function you choose, and move the ☰ (◈) button up/down to navigate through the settings. Move the ☰ (◈) button left to go back, off, and exit.
4. Highlight the desired setting and press the ☰ (◈) button to activate it. Press the ✕ button to inactivate it.

GamePlus Main Menu	GamePlus — Crosshair	GamePlus — Timer
		

1.3.4 GameVisual Function

The GameVisual function helps you select among different picture modes in a convenient way.

To active GameVisual:

Press the GameVisual hotkey repeatedly to select.

- **Scenery Mode**: This is the best choice for scenery photo displaying with GameVisual™ Video intelligence Technology.
- **Racing Mode**: This is the best choice for racing game playing with GameVisual™ Video intelligence Technology.
- **Cinema Mode**: This is the best choice for movie watching with GameVisual™ Video intelligence Technology.
- **RTS/RPG Mode**: This is the best choice for Real-Time Strategy (RTS)/ Role-Playing Game (RPG) playing with GameVisual™ Video intelligence Technology.
- **FPS Mode**: This is the best choice for First Person Shooter game playing with GameVisual™ Video intelligence Technology.
- **sRGB Mode**: This is the best choice for viewing photos and graphics from PCs.
- **MOBA Mode**: This is the best choice for multiplayer online battle arena game playing with GameVisual™ Video intelligence Technology.

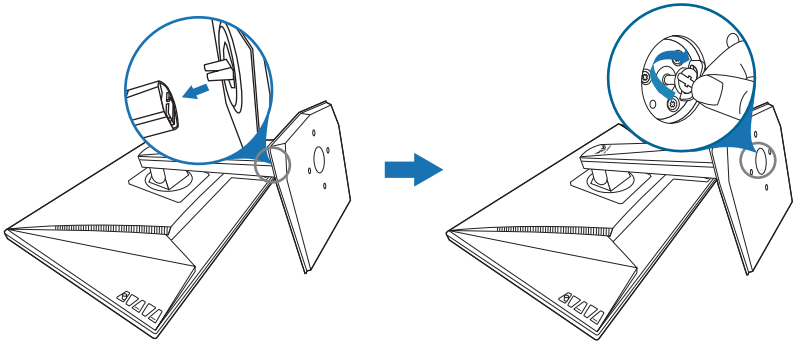
- In the Racing mode, the following function(s) are not user-configurable: Saturation, Skin Tone, Sharpness, ASCR.
- In the sRGB mode, the following function(s) are not user-configurable: Brightness, Contrast, Saturation, Color Temp., Skin Tone, Sharpness, ASCR.
- In the MOBA mode, the following function(s) are not user-configurable: Saturation, Skin Tone, Sharpness, ASCR.

2.1 Assembling the monitor arm/base

To assemble the monitor base:

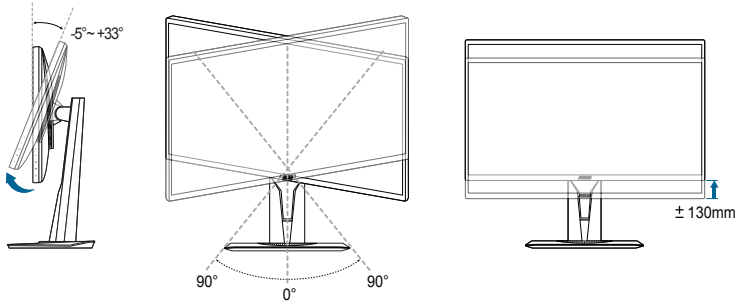
1. Have the front of the monitor face down on a table.
2. Attach the base into the arm, making sure the tab on the arm fits into the groove on the base.
3. Fix the base to the arm by fastening the bundled screw.

We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.



2.2 Adjusting the monitor

- For optimal viewing, we recommend that you look at the full face of the monitor, then adjust the monitor to the angle that is most comfortable for you.
- Hold the stand to prevent the monitor from falling when you change its angle.
- The recommended adjusting angle is +33˚ to -5˚ (for tilt)/+90˚ to -90˚ (for swiveling/ ±130 mm (for height adjustment)/90˚ (for portrait view).

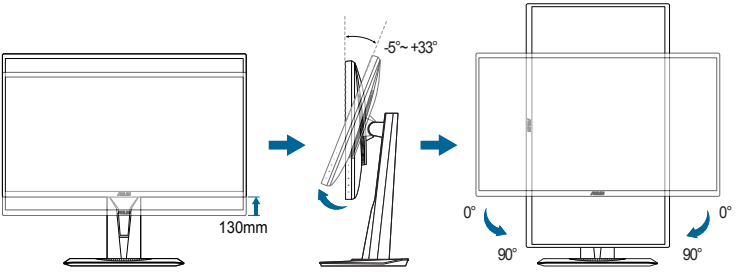


(Tilt) (Swivel) (Height adjustment)

It is normal that the monitor slightly shakes while you adjust the viewing angle.

Pivoting the monitor

1. Lift the monitor to the highest position.
2. Tilt the monitor to its maximum angle.
3. Pivot the monitor to the angle you need.



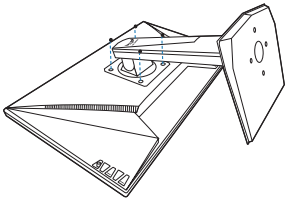
It is normal that the monitor slightly shakes while you adjust the viewing angle.

2.3 Detaching the arm (for VESA wall mount)

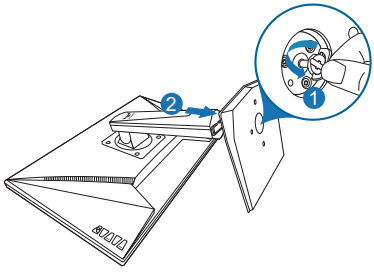
The detachable arm/base of this monitor is specially designed for VESA wall mount.

To detach the arm/base:

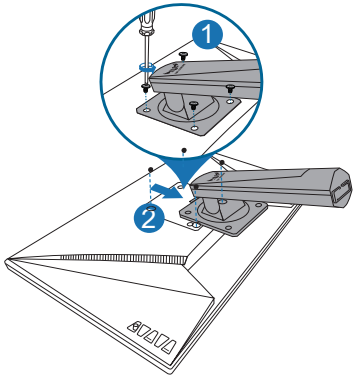
1. Have the front of the monitor face down on a table.
2. Remove the rubbers in the four screw holes. (Figure 1)
3. Remove the base (Figure 2).
4. Use a screwdriver to remove the screw on the hinge (Figure 3), then remove the hinge.



(Figure 1)



(Figure 2)

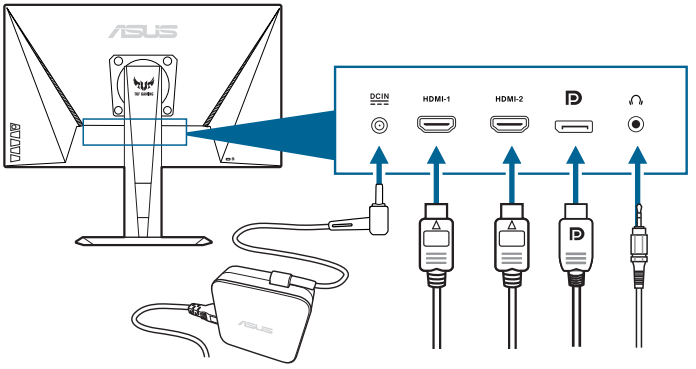


(Figure 3)

We recommend that you cover the table surface with soft cloth to prevent damage to the monitor.

2.4 Connecting the cables

Connect the cables as the following instructions:



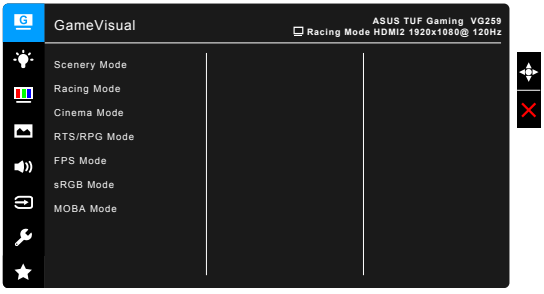
- **To connect the power cord**:
  a. Connect the power adapter securely to the monitor's DC input.
  b. Connect one end of the power cord to the power adapter and the other end to a power outlet.
- **To connect the DisplayPort/HDMI cable**:
  a. Plug one end of the DisplayPort/HDMI cable to the monitor's DisplayPort/HDMI port.
  b. Connect the other end of the DisplayPort/HDMI cable to your computer's DisplayPort/HDMI port.
- **To use the earphone:** connect the end with plug type to the monitor's earphone jack when an HDMI or DisplayPort signal is fed.

2.5 Turning on the monitor

Press the power button ⏻ . See page 1-2 for the location of the power button. The power indicator ⏻ lights up in white to show that the monitor is ON.

3.1 OSD (On-Screen Display) menu

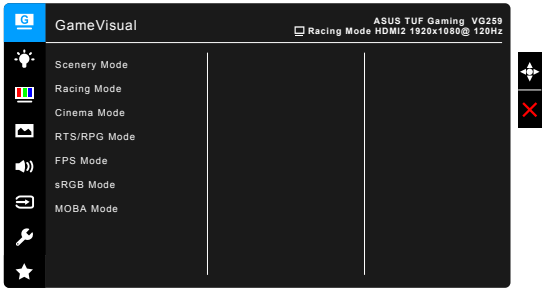
3.1.1 How to reconfigure



1. Press the ☰ (◎) button to activate the OSD menu.
2. Move the ☰ (◎) button up/down to navigate through the functions. Highlight the desired function and press the ☰ (◎) button to activate it. If the function selected has a sub-menu, move the ☰ (◎) button up/down again to navigate through the sub-menu functions. Highlight the desired sub-menu function and press the ☰ (◎) button or move the ☰ (◎) button right to activate it.
3. Move the ☰ (◎) button up/down to change the settings of the selected function.
4. To exit and save the OSD menu, press the ✕ button or move the ☰ (◎) left repeatedly until the OSD menu disappears. To adjust other functions, repeat steps 1-3.

3.1.2 OSD function introduction

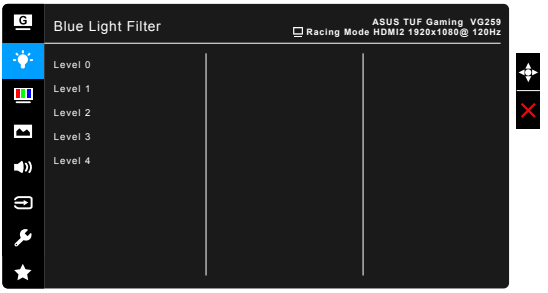
1. GameVisual



Please refer to “1.3.4 GameVisual Function”.

2. Blue Light Filter

In this function, you can adjust the blue light filter level.



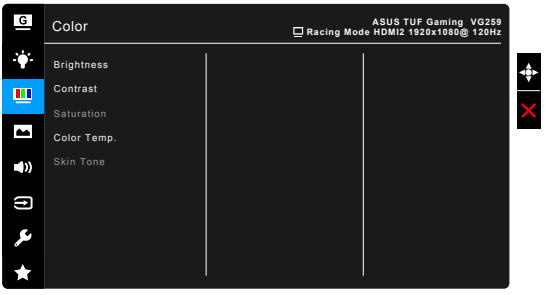
- **Level 0:** No change.
- **Level 1~4:** The higher the level, the less blue light is scattered. When Blue Light Filter is activated,the default settings of Racing Mode will be automatically imported. Between Level 1 to Level 3, the Brightness function is user-configurable. Level 4 is optimized setting. It is compliance with TUV Low Blue Light Certification. The Brightness function is not user-configurable.

Please refer to the following to alleviate eye strains:

- Users should take some time away from the display if working for long hours. It is advised to take short breaks (at least 5 mins) after around 1 hour of continuous working at the computer. Taking short and frequent breaks is more effective than a single longer break.
- To minimize eye strain and dryness in your eyes, users should rest the eye periodically by focusing on objects that are far away.
- Eye exercises can help to reduces eye strain. Repeat these exercises often. If eye strain continues please consult a physician. Eye exercises: (1) Repeating look up and down (2) Slowly roll your eyes (3) Move your eyes diagonal.
- High energy blue light may lead to eye strain and AMD (Age-Related Macular Degeneration). Blue light Filter to reduce 70% (max.) harmful blue light to avoiding CVS (Computer Vision Syndrome).

3. Color

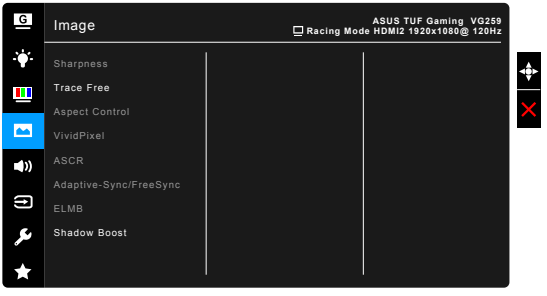
Set a desired color setting from this menu.



- **Brightness**: The adjusting range is from 0 to 100.
- **Contrast**: The adjusting range is from 0 to 100.
- **Saturation**: the adjusting range is from 0 to 100.
- **Color Temp.**: Contains 4 modes including Cool, Normal, Warm, and User Mode.
- **Skin Tone**: Contains three color modes including Reddish, Natural, and Yellowish.

4. Image

Set the image related setting from this menu.



- **Sharpness**: The adjusting range is from 0 to 100.
- **Trace Free**: Adjusts the response time of the monitor.

This function is not available when ELMB is activated.

- **Aspect Control**: Adjusts the aspect ratio to full or 4:3.

4:3 is only available when input source is in 4:3 format.

- **VividPixel:** Enhances the outline of the displayed picture and generates high-quality images on screen.

- **ASCR**: Turns on/off the ASCR (ASUS Smart Contrast Ratio) function.
- **Adaptive-Sync/FreeSync**: Allows an Adaptive-Sync/FreeSync supported* graphics source to dynamically adjust display refresh rate based on typical content frame rates for power efficient, virtually stutter free and low-latency display update.

To activate Adaptive-Sync/FreeSync, turn off ELMB function first.
* Adaptive-Sync/FreeSync can only be activated within 48Hz ~ 144Hz.
* For supported GPUs, minimum PC system and driver requirements, please contact the GPU manufactures.

- **ELMB**: Turns on/off the ELMB (Extreme Low Motion Blur) function. This function is available when the refresh rate is 100Hz, 120Hz, 144Hz or 165Hz (for **VG259QR**).

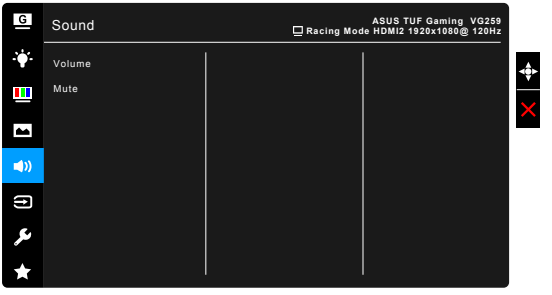
To activate ELMB, turn off Adaptive-Sync/FreeSync function first.

- **Shadow Boost**: Dark color enhancement adjusts monitor gamma curve to enrich the dark tones in an image, making dark scenes and objects much easier to be seen.

This function is only available in Racing mode, RTS/RPG mode, FPS mode or sRGB mode.

5. Sound

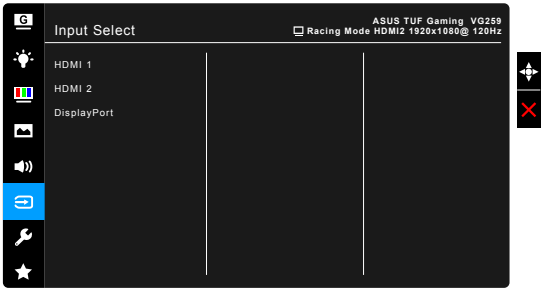
Set the sound related setting from this menu.



- **Volume**: the adjusting range is from 0 to 100.
- **Mute**: toggles the monitor sound between on and off.

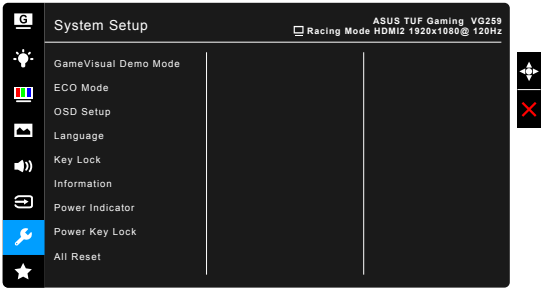
6. Input Select

In this function, you can select your desired input source.



7. System Setup

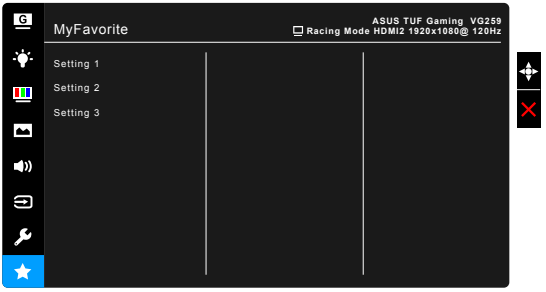
Allows you to adjust the system.



- **GameVisual Demo Mode**: Activate the demo mode for the GameVisual function.
- **ECO Mode**: Reduces power consumption.
- **OSD Setup**:
  - Adjusts the OSD timeout from 10 to 120 seconds.
  - Enables or disables the DDC/CI function.
  - Adjusts the OSD background from opaque to transparent.
- **Language**: There are 21 languages for your selection, including English, French, German, Italian, Spanish, Dutch, Portuguese, Russian, Czech, Croatian, Polish, Romanian, Hungarian, Turkish, Simplified Chinese, Traditional Chinese, Japanese, Korean, Thai, Indonesian, Persian.
- **Key Lock**: To disable all function keys. Press ✕ over 5 seconds to cancel the key lock function.
- **Information**: Shows the monitor information.
- **Power Indicator**: Turn the power LED indicator on/off.
- **Power Key Lock**: Enables or disables the power key.
- **All Reset**: “Yes” allows you to restore the default settings.

8. MyFavorite

Loads/Saves all settings on the monitor.



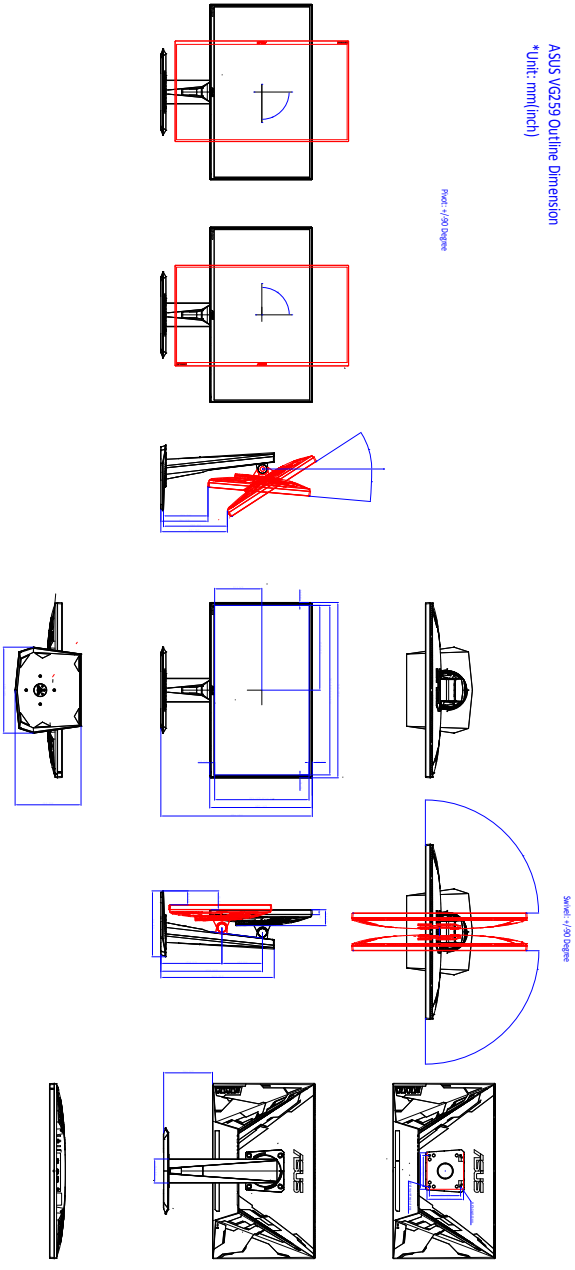
3.2 Specifications summary

Panel Type	TFT LCD
Panel size	24.5”W (16:9, 62.2 cm) wide screen
Max. Resolution	1920 x 1080
Pixel pitch	0.2832 mm x 0.2802 mm
Brightness (Typ.)	**VG259Q**: 400 cd/m^2 **VG259QR**: 300 cd/m^2
Contrast Ratio (Typ.)	1000:1
Contrast Ratio (Max.)	100,000,000:1 (with ASCR on)
Viewing angle(H/V) CR>10	178˚/178˚
Display colors	16.7 M
Response time	3 ms (Gray to gray), 1ms MPRT
Color temperature selection	4 color temperatures
Analog input	No
Digital input	HDMI x 2, DisplayPort v1.2 x 1
Earphone jack	Yes
Audio input	No
Speaker (Built-in)	2 W x 2 Stereo, RMS
USB 3.0 port	No
Colors	Black
Power LED	White (On)/Amber (Standby)
Tilt	+33˚~ -5˚
Swivel	+90˚~ -90˚
Height adjustment	130 mm
VESA wall mount	100 x 100 mm
Kensington lock	Yes
Voltage rating	AC: 100~240V DC: 19V, 2.1A (AC adapter)
Power consumption	Power On: < 40 W, Standby: < 0.5 W, Power Off: < 0.3 W
Temperature (Operating)	0˚C~40˚C
Temperature (Non-operating)	-20˚C~+60˚C
Dimensions (W x H x D) without stand	563 x 329 x 51 mm
Dimensions (W x H x D) with stand	563 x 487 x 211 mm (highest) 563 x 357 x 211 mm (lowest) 664 x 415 x 221 mm (package)
Weight (Esti.)	5.1 kg (Net); 2.9 kg (without stand); 7.4 kg (Gross)

Multi-languages	21 languages (English, French, German, Italian, Spanish, Dutch, Portuguese, Russian, Czech, Croatian, Polish, Romanian, Hungarian, Turkish, Simplified Chinese, Traditional Chinese, Japanese, Korean, Thai, Indonesian, Persian)
Accessories	DisplayPort cable (optional), HDMI cable (optional), power adapter, power cord, quick start guide, warranty card
Compliance and Standards	UL/cUL, CB, CE, ErP, FCC, CCC, CU, RCM, BSMI, VCCI, RoHS, J-MOSS, WEEE, Windows 7 & 10 WHQL, CEL, MEPS, PSE, UkrSEPRO, KCC, E-Standby, TUV-Flicker Free, TUV-Low Blue Light, ICES-3, PC Recycle

***Specifications are subject to change without notice.**

3.3 Outline dimensions



3.4 Troubleshooting (FAQ)

Problem	Possible Solution
Power LED is not ON	• Press the ⏻ button to check if the monitor is in the ON mode. • Check if the power cord is properly connected to the monitor and the power outlet.
The power LED lights amber and there is no screen image	• Check if the monitor and the computer are in the ON mode. • Make sure the signal cable is properly connected the monitor and the computer. • Inspect the signal cable and make sure none of the pins are bent. • Connect the computer with another available monitor to check if the computer is properly working.
Screen image is too light or dark	• Adjust the Contrast and Brightness settings via OSD.
Screen image bounces or a wave pattern is present in the image	• Make sure the signal cable is properly connected to the monitor and the computer. • Move electrical devices that may cause electrical interference.
Screen image has color defects (white does not look white)	• Inspect the signal cable and make sure that none of the pins are bent. • Perform All Reset via OSD. • Adjust the R/G/B color settings or select the Color Temperature via OSD.

3.5 Supported operating mode

VG259Q

Resolution Frequency	Refresh Rate	Horizontal Frequency
640x350	70Hz	31.469KHz
640x350	85Hz	37.861KHz
640x480	60Hz	31.469KHz
640x480	67Hz	35KHz
640x480	75Hz	37.5KHz
640x480	85Hz	43.269KHz
720x400	70Hz	31.469KHz
720x400	85Hz	37.927KHz
800x600	56Hz	35.156KHz
800x600	60Hz	37.897KHz
800x600	72Hz	48.077KHz
800x600	75Hz	46.875KHz
800x600	85Hz	53.674KHz
832x624	75Hz	49.725KHz
848x480	60Hz	31.02KHz
1024x768	60Hz	48.363KHz
1024x768	70Hz	56.476KHz
1024x768	75Hz	60.023KHz
1024x768	85Hz	68.677KHz
1152x864	75Hz	67.5KHz
1280x720	60Hz	44.444KHz
1280x720	60Hz	44.772KHz
1280x720	75Hz	56.456KHz
1280x768	60Hz	47.396KHz
1280x800	60Hz	49.306KHz
1280x800	60Hz	49.702KHz
1280x800	75Hz	62.795KHz
1280x960	60Hz	60KHz
1280x1024	60Hz	63.981KHz
1280x1024	75Hz	79.976KHz
1366x768	60Hz	47.712KHz
1440x900	60Hz	55.469KHz
1440x900	60Hz	55.935KHz
1440x900	75Hz	70.635KHz

Resolution Frequency	Refresh Rate	Horizontal Frequency
1680x1050	60Hz	64.674KHz
1680x1050	60Hz	65.29KHz
1920x1080	60Hz	66.587KHz
1920x1080	60Hz	67.5KHz
1920x1080	85Hz	95.43KHz
1920x1080*	100Hz	113.3KHz
1920x1080*	120Hz	137.2KHz
1920x1080* (DP)	144Hz	158.11KHz
640x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
720x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
720x576P (HDMI)	50Hz	31.25KHz
1280x720P (HDMI)	50Hz	37.5KHz
1280x720P (HDMI)	59.94/60Hz	44.955KHz/45KHz
1440x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
1440x576P (HDMI)	50Hz	31.25KHz
1920x1080P (HDMI)	50Hz	56.25KHz
1920x1080P (HDMI)	59.94/60Hz	67.433KHz/67.5KHz

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Resolution Frequency	Refresh Rate	Horizontal Frequency
640x350	70Hz	31.469KHz
640x350	85Hz	37.861KHz
640x480	60Hz	31.469KHz
640x480	67Hz	35KHz
640x480	75Hz	37.5KHz
640x480	85Hz	43.269KHz
720x400	70Hz	31.469KHz
720x400	85Hz	37.927KHz
800x600	56Hz	35.156KHz
800x600	60Hz	37.897KHz
800x600	72Hz	48.077KHz
800x600	75Hz	46.875KHz
800x600	85Hz	53.674KHz
832x624	75Hz	49.725KHz
848x480	60Hz	31.02KHz
1024x768	60Hz	48.363KHz
1024x768	70Hz	56.476KHz

Resolution Frequency	Refresh Rate	Horizontal Frequency
1024x768	75Hz	60.023KHz
1024x768	85Hz	68.677KHz
1152x864	75Hz	67.5KHz
1280x720	60Hz	44.444KHz
1280x720	60Hz	44.772KHz
1280x720	75Hz	56.456KHz
1280x768	60Hz	47.396KHz
1280x800	60Hz	49.306KHz
1280x800	60Hz	49.702KHz
1280x800	75Hz	62.795KHz
1280x960	60Hz	60KHz
1280x1024	60Hz	63.981KHz
1280x1024	75Hz	79.976KHz
1366x768	60Hz	47.712KHz
1440x900	60Hz	55.469KHz
1440x900	60Hz	55.935KHz
1440x900	75Hz	70.635KHz
1680x1050	60Hz	64.674KHz
1680x1050	60Hz	65.29KHz
1920x1080	60Hz	66.587KHz
1920x1080	60Hz	67.5KHz
1920x1080	85Hz	95.43KHz
1920x1080*	100Hz	113.3KHz
1920x1080*	120Hz	137.2KHz
1920x1080* (DP)	144Hz	158.11KHz
1920x1080* (DP)	165Hz	192.788KHz
640x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
720x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
720x576P (HDMI)	50Hz	31.25KHz
1280x720P (HDMI)	50Hz	37.5KHz
1280x720P (HDMI)	59.94/60Hz	44.955KHz/45KHz
1440x480P (HDMI)	59.94/60Hz	31.469KHz/31.5KHz
1440x576P (HDMI)	50Hz	31.25KHz
1920x1080P (HDMI)	50Hz	56.25KHz
1920x1080P (HDMI)	59.94/60Hz	67.433KHz/67.5KHz

Note: You must select one of the "*" timings for enabling ELMB or 144Hz (and above) feature with a compatible GPU graphic card.