# EB-ITX-B

## *ASUS IPC*

## *(Industrial Computer Barebone)*

# User Manual


EB-ITX-B

E19903

First Edition
July 2022

# Table of contents


Notices ..... v
Safety information ..... vi
About this guide ..... vii
System package contents ..... viii

**Chapter 1: System introduction**

1.1 Welcome! ..... 1-2
1.2 Brief introduction ..... 1-2
1.3 Front panel ..... 1-4
1.4 Rear panel ..... 1-5
1.5 Internal components ..... 1-7
1.6 Installing the desk mount ..... 1-8

**Chapter 2: Motherboard information**

2.1 Before you proceed ..... 2-2
2.2 Motherboard layout ..... 2-3
2.3 Central Processing Unit (CPU) ..... 2-5
2.3.1 CPU installation ..... 2-6
2.3.2 CPU heatsink and fan assembly installation ..... 2-8
2.4 System memory ..... 2-10
2.5 Jumpers ..... 2-11
2.6 Connectors ..... 2-15
2.6.1 Rear panel connectors ..... 2-15
2.6.2 Internal connectors ..... 2-17

**Chapter 3: BIOS setup**

3.1 BIOS setup program ..... 3-2
3.2 Main menu ..... 3-3
3.2.1 System Date [Day MM/DD/YYYY] ..... 3-3
3.2.2 System Time [HH:MM:SS] ..... 3-3
3.3 Advanced menu ..... 3-3
3.3.1 LVDS Configuration ..... 3-3
3.3.2 PCH-FW Configuration ..... 3-5
3.3.3 Trusted Computing ..... 3-5
3.3.4 CPU Configuration ..... 3-6
3.3.5 Graphics Configuration ..... 3-7
3.3.6 PCI Express Configuration ..... 3-7

# Table of contents


3.3.7 AMT Configuration ..... 3-8
3.3.8 CSM Configuration ..... 3-9
3.3.9 Super IO Configuration ..... 3-10
3.3.10 Serial Console Redirection ..... 3-11
3.3.11 SATA And RST Configuration ..... 3-13
3.3.12 Network Stack Configuration ..... 3-14
3.3.13 USB Configuration ..... 3-14
3.3.14 NVMe Configuration ..... 3-15
3.3.15 Onboard Devices Configuration ..... 3-15
3.3.16 EZ-Flash ..... 3-16
3.3.17 APM Configuration ..... 3-16
3.3.18 Watchdog Timer ..... 3-17
3.3.19 Miscellaneous ..... 3-17
3.4 Hardware Monitor menu ..... 3-18
3.4.1 Smart Fan Mode ..... 3-18
3.4.2 Smart Fan Function ..... 3-18
3.5 Security menu ..... 3-18
3.5.1 Administrator Password ..... 3-18
3.5.2 User Password ..... 3-19
3.5.3 Secure Boot ..... 3-19
3.6 Boot menu ..... 3-20
3.7 Exit menu ..... 3-21


## Appendix


Notices ..... A-1
ASUS contact information ..... A-6

# Notices

## 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 the detailed recycling information in different regions.

## 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

## 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 manufacturer's instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

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

**WARNING!** 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.

# Safety information

## Electrical safety

- To prevent electric shock hazard, disconnect the power cable from the electric 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 that 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.

*Lithium-Ion Battery Warning*

**CAUTION:** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

**VORSICHT:** Explosionsgetahr bei unsachgemäßen Austausch der Batterie. Ersatz nur durch denselben oder einem vom Hersteller empfohlenem ähnljchen Typ. Entsorgung gebrauchter Batterien nach Angaben des Herstellers.

*LASER PRODUCT WARNING*

**CLASS 1 LASER PRODUCT**

# About this guide

## Audience

This guide provides general information and installation instructions about ASUS EB-ITX-B barebone system. This guide is intended for users and administrators with experience handling hardware and PC components.

## How this guide is organized

This guide contains the following parts:

1. **Chapter 1: System introduction**

   This chapter gives a general description of ASUS EB-ITX-B. The chapter lists system features, physical descriptions of the front and rear panels, and an overview of internal components.

2. **Chapter 2: Motherboard info**

   This chapter provides details about the motherboard that comes with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.

3. **Chapter 3: BIOS setup**

   This chapter provides a detailed guide to navigating and setting up the BIOS.

## Conventions used in this guide

**WARNING**: Indicates information that could prevent injury when completing a task.

**CAUTION**: Indicates information to prevent damage to the components when completing a task.

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

**NOTE**: Tips and additional information when 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 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.

## System package contents

Check your EB-ITX-B system package for the following items.

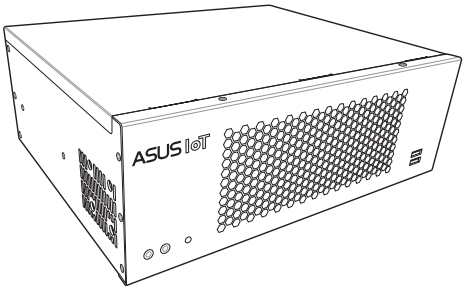
If any of the items is damaged or missing, contact your retailer immediately.

| Item | Description |
|---|---|
| 1. | ASUS EB-ITX-B barebone system with |
| | • ASUS industrial motherboard |
| | • Industrial power supply unit |
| | • Compact chassis for standard mini-ITX motherboard |
| | • 1 accessory box (labeled with P/N: 15020-04252000), including M.2 screw, M.2 screw hex, power cord, SATA cable |
| 2. | Cables |
| | • Power SW cable |
| | • SATA 6G cable |

# Chapter 1

# System introduction

This chapter gives a general description of ASUS EB-ITX-B. The chapter lists system features, physical descriptions of the front and rear panels, and an overview of internal components.




The illustrations in this user manual are for reference only. Actual product may vary.

## 1.1 Welcome!

Thank you for choosing the ASUS EB-ITX-B!

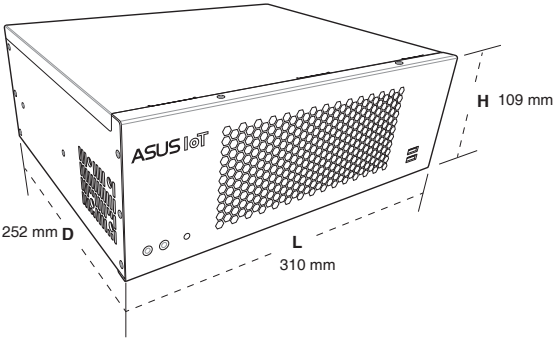
The ASUS EB-ITX-B provides cutting-edge performance and uncompromised reliability for industrial use.

The system is powered by the ASUS motherboard that supports the 10th Intel® Core™ i9 / i7 / i5 / i3, Pentium® and Celeron® processors in the Intel® socket LGA1200.

The system supports up to 32 GB of system memory using DDR4 2400/2133 MHz DIMMs. High-resolution graphics via integrated graphics controller or 2 PCI Express x8 slots, SATA 6.0Gb/s, USB 3.2 Gen 1 ports, USB 2.0 ports, and 5.1-channel audio features take you ahead in the world of power computing.

## 1.2 Brief introduction

- Color: Black (EB-ITX-B)
- Net weight: refer to the data sheet
- Form factor: 109mm (H) x 252mm (D) x 310mm (L)




- Operation temperature: 0~40°C
- Non-operation temperature: -20~80°C
- Relative humidity: 10% - 95%
- OS support:

  Windows® 10 (64bit)

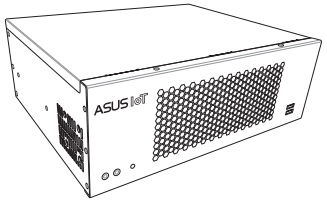
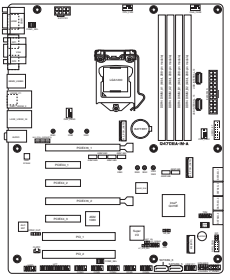
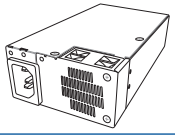
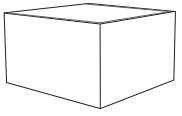
  Windows® 10 IoT Enterprise

  Ubuntu

  RedHat Enterprise

  Fedora Workstation

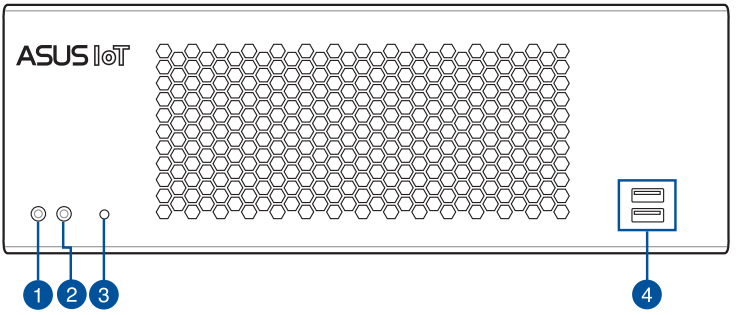
  OpenSUSE

| Main components | |
|---|---|
|  |  |
| Chassis | Motherboard (ASUS Q470EI-IM-A) |
|  |  |
| Power supply unit | Accessory box |

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

## 1.3 Front panel

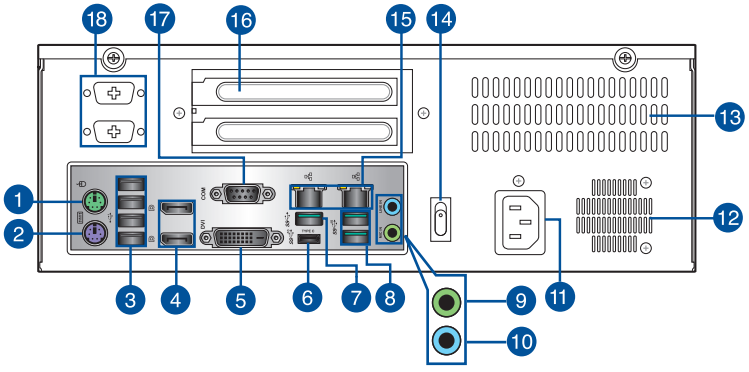
The front panel includes the LED indicators and I/O ports.




1. **HLED.** The LED lights up or blinks to indicate the status of the HDD.
2. **PLED.** The LED lights up or blinks to indicate the status of the system power.
3. **Reset button.** Press this button to reset the system.
4. **USB 2.0 ports.** These Universal Serial Bus 2.0 ports connect to USB 2.0 devices such as a mouse, printer, scanner, camera, PDA, and others.

## 1.4 Rear panel

The system rear panel includes the power connector and several I/O ports that allow convenient connection of devices.




1. **PS/2 mouse port (green)**. This port is for a PS/2 mouse.
2. **PS/2 keyboard port (purple)**. This port is for a PS/2 keyboard.
3. **USB 2.0 ports.** These 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
4. **DisplayPorts.** These ports are for DisplayPort-compatible devices.

DisplayPorts support a maximum resolution of 4096 x 2160 @60 Hz.

5. **DVI-D port.** This port is for any DVI-D compatible device.

- DVI-D can not be converted to output from RGB Signal to CRT and is not compatible with DVI-I.
- DVI-D port supports a maximum resolution of 1920 x 1200 @60Hz.

6. **USB 3.2 Gen 2 (up to 10Gbps) port (USB Type-C®).** This Universal Serial Bus (USB) port is for a USB 3.2 Gen 2 Type-C® device.
7. **USB 3.2 Gen 1 (up to 5Gbps) port.** This 9-pin Universal Serial Bus (USB) port is for a USB 3.2 Gen 1 device.

- USB 3.2 Gen 1 devices can only be used for data storage.
- We strongly recommend that you connect USB 3.2 Gen 1 devices to USB 3.2 Gen 1 ports for faster and better performance from your USB 3.2 Gen 1 devices.
- Due to the design of the Intel® 400 series chipset, all USB devices connected to the USB 2.0 and USB 3.2 Gen 1 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

8. **USB 3.2 Gen 2 (up to 10Gbps) ports (teal blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports are for USB 3.2 Gen 2 devices.

9. **Line Out port (lime).** This port connects to a headphone or speaker. In a 4, 5.1, or 7.1-channel configuration, the function of this port becomes Front Speaker Out.

10. **Line In port (light blue).** This port connects to a tape, CD, DVD player, or other audio sources.

11. **Power connector.** Plug the power cord to this connector.

- **RATING:** 100- 240V—, 50-60Hz, 4.0A
- The CPU, CPU fan(requires air flow above 42.06 CFM), RAM, SSD, and rear I/O serial ports are purchased separately.

12. **Power supply unit fan vent.** This vent is for the PSU fan that provides ventilation inside the power supply unit.

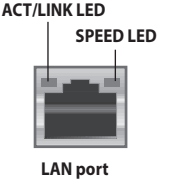
13. **Air vents.** These vents allow air ventilation.

14. **Power button.** Press this button to turn the system on.

15. **LAN (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub.

**LAN port LED indications**

| Activity/Link LED | | Speed LED | |
|---|---|---|---|
| Status | Description | Status | Description |
| OFF | No link | OFF | 10Mbps connection |
| ORANGE | Linked | ORANGE | 100Mbps connection |
| BLINKING | Data activity | GREEN | 1Gbps connection |



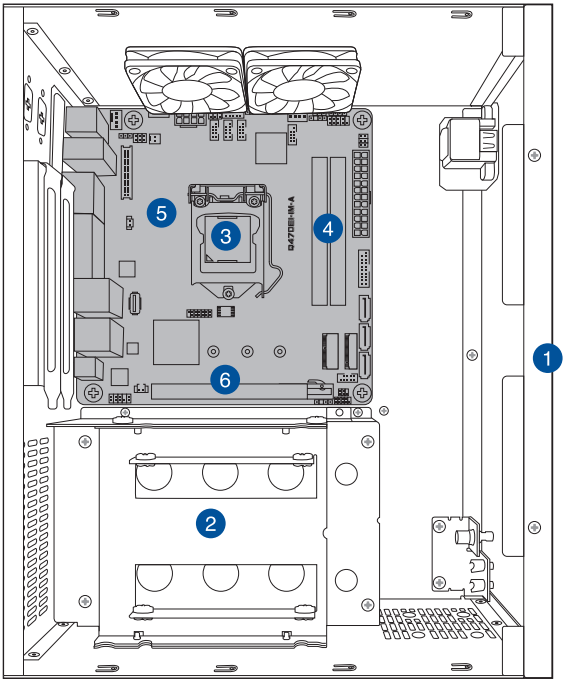

16. **Expansion slot brackets.** Remove the expansion slot bracket when installing an expansion card.

17. **COM port.** This 9-pin COM port is for a pointing device or other serial device.

18. **COM ports (optional).** These 9-pin COM ports are for pointing devices or other serial devices.

## 1.5 Internal components

The illustration below is the internal view of the system when you remove the chassis cover and the power supply unit. The installed components are labeled for your reference.



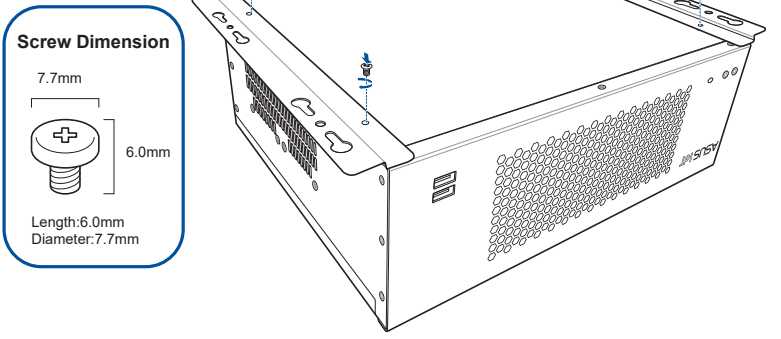

1. Front panel cover
2. Power supply unit
3. CPU socket
4. DIMM slots
5. ASUS motherboard
6. PCI Express 3.0/2.0 x16 slot (x16 mode)

## 1.6 Installing the desk mount

You can install your Edge Computer to a suitable surface using the desk mounts.

Align the desk mount with the screw holes on the bottom of the Edge Computer, then secure the desk mount to your Edge Computer using the bundled screws.

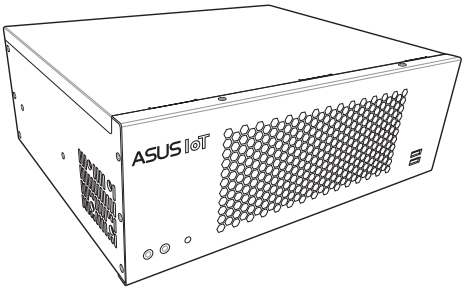
**IMPORTANT!** When installing the Edge Computer into a cabinet or on the ground, we strongly recommend installing your Edge Computer so that the Edge Computer sits upright with the top of the Edge Computer facing upwards to allow for efficient heat dissipation.



# Chapter 2

# Motherboard information

This chapter provides details about the motherboard that comes with the system. This chapter includes the motherboard layout, jumper settings, and connector locations.



## 2.1 Before you proceed

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

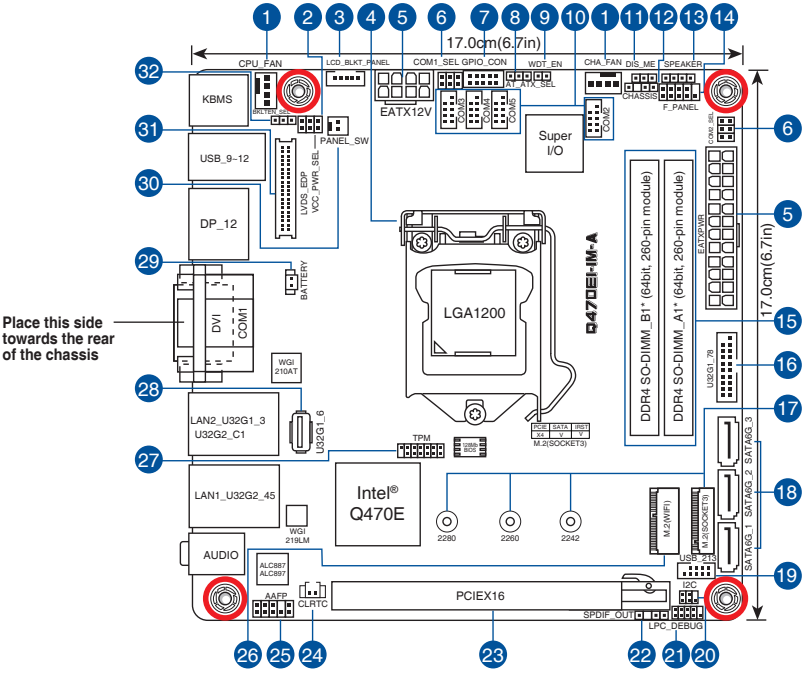
**CAUTION!**

- 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, always remove the AC power by unplugging the power cord from the power outlet. Failure to do so may cause severe damage to the motherboard, peripherals, or components.

## 2.2 Motherboard layout

**NOTE:** Place four screws into the holes indicated by circles to secure the motherboard to the chassis.

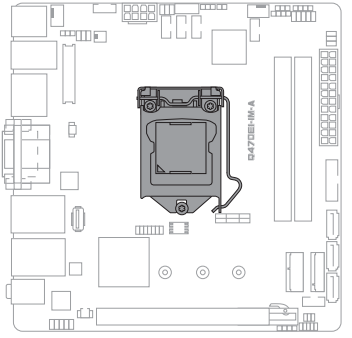
**CAUTION!** Do not overtighten the screws! Doing so can damage the motherboard.

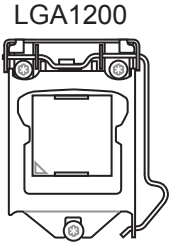


| Connectors/Jumpers/Slots | | Page |
|---|---|---|
| 1. | CPU and Chassis Fan headers (4-pin CPU_FAN, 4-pin CHA_FAN) | 2-19 |
| 2. | Display Panel VCC Power Selection jumper (6-pin VCC_PWR_SEL) | 2-11 |
| 3. | Flat Panel Display Brightness connector (5-pin LCD_BLKT_PANEL) | 2-24 |
| 4. | Intel® LGA1200 CPU socket | 2-5 |
| 5. | ATX Power connectors (24-pin EATXPWR, 8-pin EATX12V) | 2-26 |
| 6. | COM1/2 Ring/+5V/+12V Selection jumpers (6-pin COM1_SEL, COM2_SEL) | 2-10 |
| 7. | General Purpose Input/Output connector (10-pin GPIO_CON) | 2-18 |
| 8. | AT/ATX Mode Selection jumper (3-pin AT_ATX_SEL) | 2-11 |
| 9. | WDT Enable jumper (2-pin WDT_EN) | 2-12 |
| 10. | COM Port connectors (10-1 pin COM2, COM3, COM4, COM5) | 2-24 |
| 11. | Disable ME jumper (3-pin DIS_ME) | 2-13 |
| 12. | Chassis Intrusion header (4-1 pin CHASSIS) | 2-13 |
| 13. | Speaker header (4-pin SPEAKER) | 2-21 |
| 14. | System Panel header (10-1 pin F_PANEL) | 2-20 |
| 15. | DDR4 SO-DIMM slots | 2-10 |
| 16. | USB 3.2 Gen 1 connector (20-1 pin U32G1_78) | 2-17 |
| 17. | M.2 socket 3 | 2-22 |
| 18. | SATA 6.0Gb/s ports (7-pin SATA6G_1-3) | 2-21 |
| 19. | USB 2.0 connector (10-1 pin USB_213) | 2-18 |
| 20. | $I^2C$ connector (6-pin I2C) | 2-23 |
| 21. | LPC Debug header (10-1 pin LPC_DEBUG) | 2-23 |
| 22. | Digital Audio connector (4-1 pin SPDIF_OUT) | 2-25 |
| 23. | PCI Express 3.0/2.0 x16 slot | |
| 24. | Clear CMOS header (2-pin CLRTC) | 2-14 |
| 25. | Front Panel Audio connector (10-1 pin AAFP) | 2-25 |
| 26. | M.2 Wi-Fi socket | 2-22 |
| 27. | TPM header (14-1 pin TPM) | 2-19 |
| 28. | USB 3.2 Gen 1 port (U32G1_6) | 2-17 |
| 29. | RTC Battery header (2-pin BATTERY) | 2-22 |
| 30. | LCD Panel Monitor Switch header (2-pin PANEL_SW) | 2-17 |
| 31. | LVDS/eDP Signal header (LVDS_EDP) | 2-21 |
| 32. | LVDS/eDP Panel Enable Signal Selection jumper (3-pin BKLTEN_SEL) | 2-14 |

## 2.3 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1200 socket designed for the Intel® 10th Generation Intel® Core™ i9 / Core™ i7 / Core™ i5 / Core™ i3, Pentium®, and Celeron® processors.



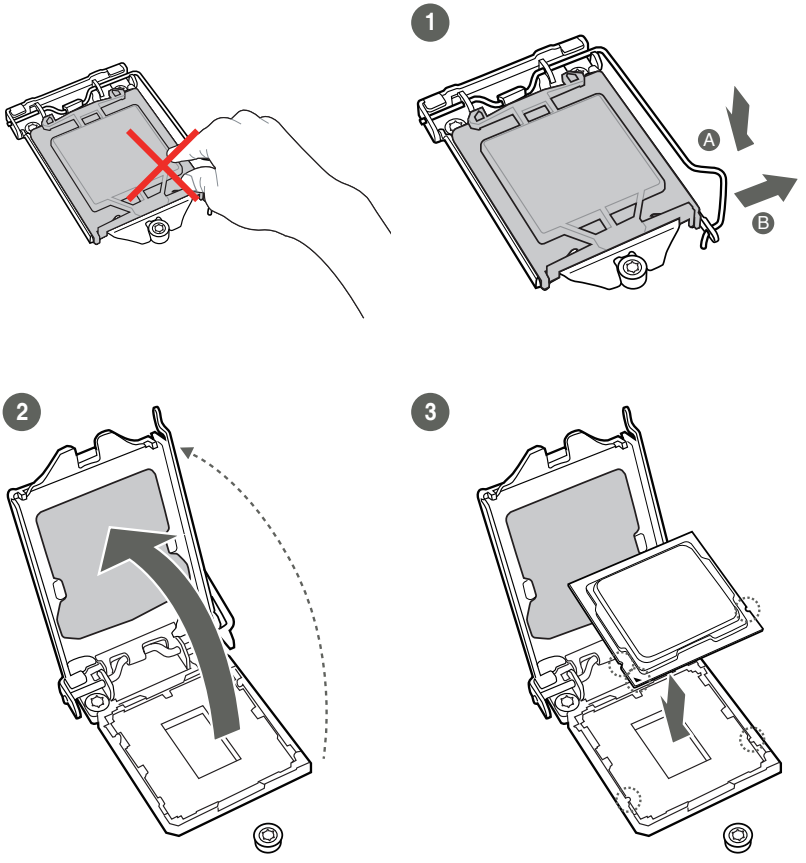


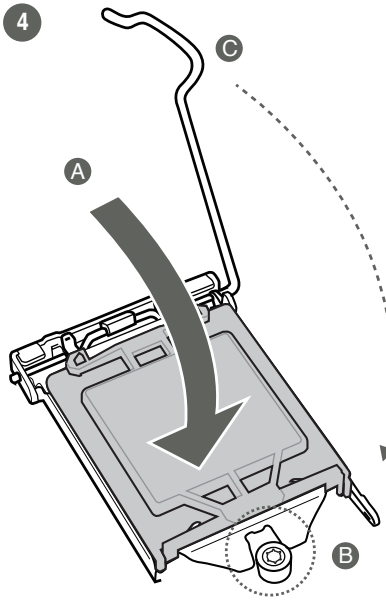

**IMPORTANT!** Unplug all power cables before installing the CPU.

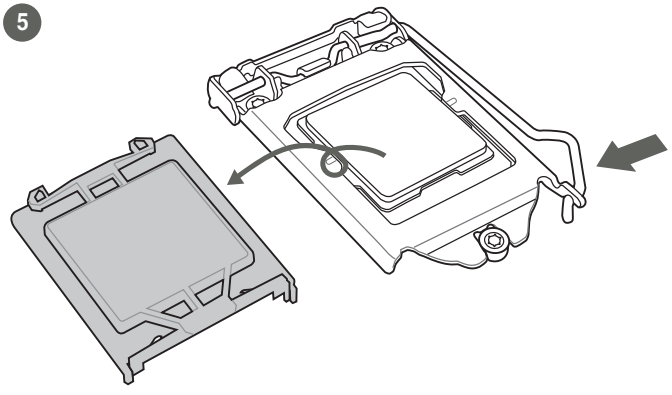
**CAUTION!**

- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. The manufacturer will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. The manufacturer will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1200 socket.
- The product warranty does not cover damage to the socket contacts resulting from incorrect CPU installation/removal, or misplacement/loss/ incorrect removal of the PnP cap.

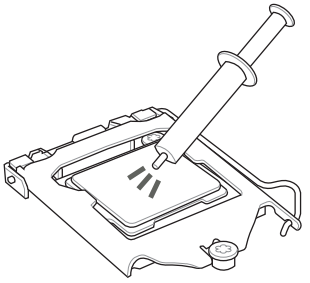
### 2.3.1 CPU installation




4
C
A
B

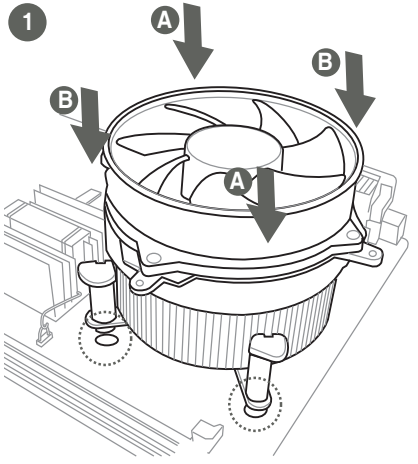

5

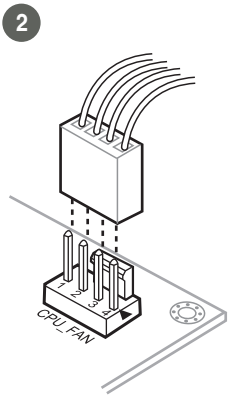
## 2.3.2 CPU heatsink and fan assembly installation

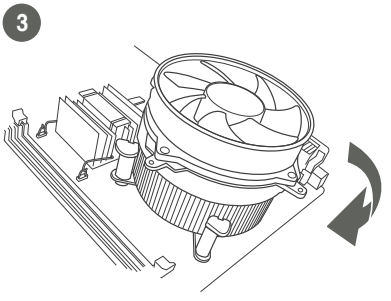


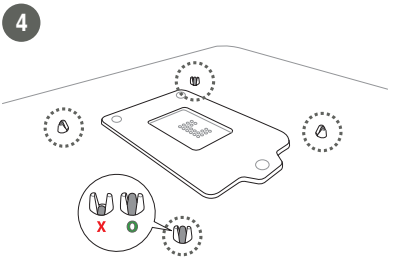
**CAUTION!** Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

**To install the CPU heatsink and fan assembly**



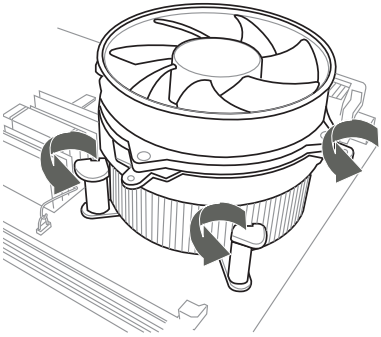



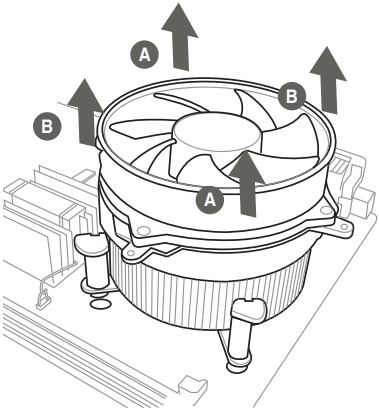



**To uninstall the CPU heatsink and fan assembly**

1

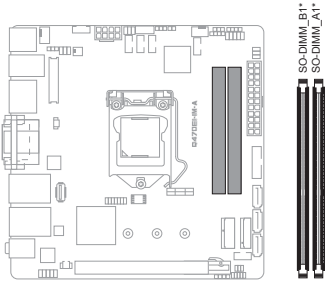


2



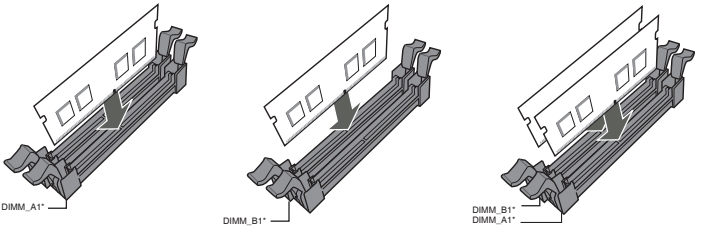
## 2.4 System memory

This motherboard comes with two Double Data Rate 4 (DDR4) Small Outline Dual Inline Memory Module (SO-DIMM) sockets. The figure below illustrates the location of the DDR4 SO-DIMM sockets:

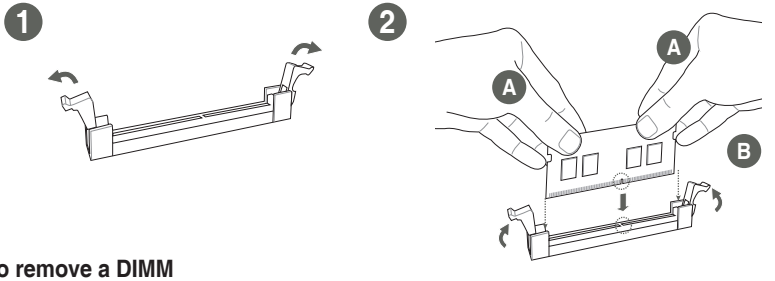



| Channel | Sockets |
|---|---|
| Channel A | SO-DIMM_A1* |
| Channel B | SO-DIMM_B1* |

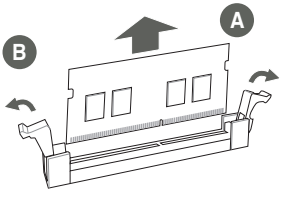
### Recommended memory configuration




### Installing a DIMM

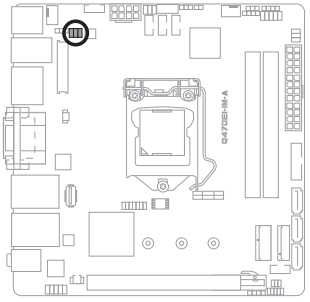


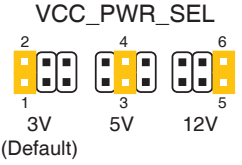

### To remove a DIMM



## 2.5 Jumpers

### 1. Display Panel VCC Power Selection jumper (6-pin VCC_PWR_SEL)

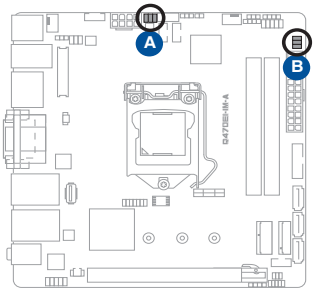


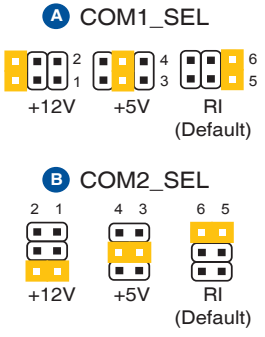



| Setting | Pins |
|---|---|
| 3V (Default) | 1-2 |
| 5V | 3-4 |
| 12V | 5-6 |

| Connector type | HEADER 2 x 3p, 2.54mm pitch, S/T |
|---|---|

### 2. COM1/2 Ring/+5V/+12V Selection jumper (6-pin COM1_SEL, COM2_SEL)

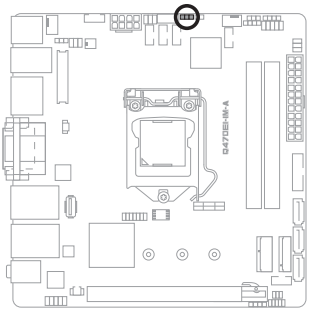


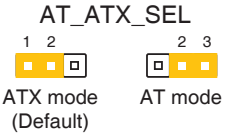




| Setting | Pins |
|---|---|
| +12V | 1-2 |
| +5V | 3-4 |
| Ring (Default) | 5-6 |

| Connector type | HEADER 2x3p, 2.54mm pitch, S/T |
|---|---|

### 3. AT/ATX mode selection jumper (3-pin AT_ATX_SEL)



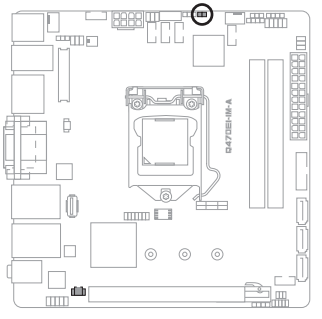



| Pins | |
|---|---|
| 1-2 (Default) | ATX mode |
| 2-3 | AT mode |

| Connector type | HEADER 1x3p, 2.54mm pitch, S/T |
|---|---|

### 4. WDT Enable jumper (2-pin WDT_EN)

A watchdog timer is an electronic timer that is used to detect and recover from computer malfunctions. The HW WDT (watchdog timer) Enable jumper allows the HW watchdog resets the system automatically even when the system crashes.

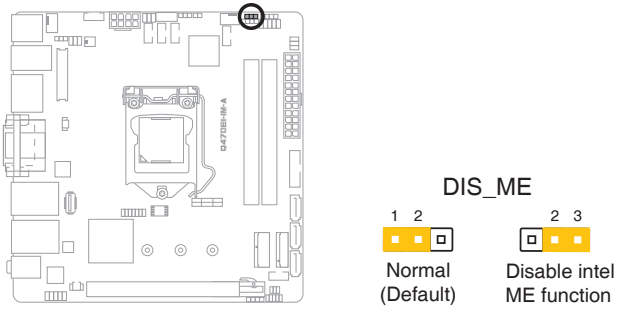



| Connector type | HEADER 1x2p, 2.54mm pitch, S/T |
|---|---|

**NOTE:** By default, this jumper is set to HW WDT enabled with a jumper cap attached.

### 5. Disable ME jumper (3-pin DIS_ME)

This jumper allows you to enable or disable the Intel® ME function. Set this jumper to pins 1-2 to enable (default) the Intel® ME function and to pins 2-3 to disable it.

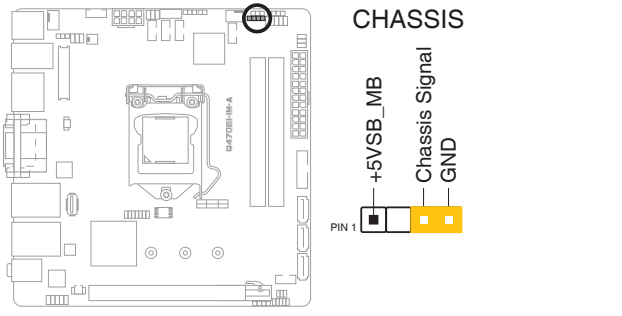



| Connector type | HEADER 1x3p, 2.54mm pitch, S/T |
|---|---|

### 6. Chassis intrusion header (4-1 pin CHASSIS)

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

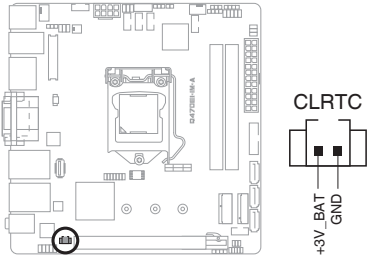
By default, the pin labeled “Chassis Signal” and “Ground” are shorted with jumper caps. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.




| Connector type | HEADER 4p, K2, 2.54mm pitch |
|---|---|

## 7. Clear CMOS header (2-pin CLRTC)

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



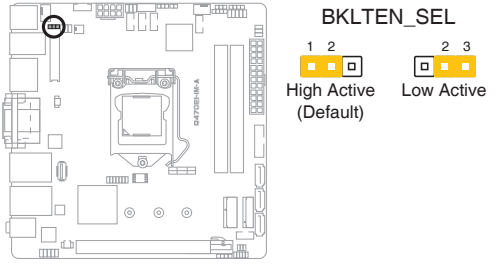

| Connector type | HEADER 1x2p, 1.25mm pitch, S/T |
|---|---|

**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.

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

## 8. LVDS/eDP Panel Enable Signal Selection jumper (BKLTEN_SEL)

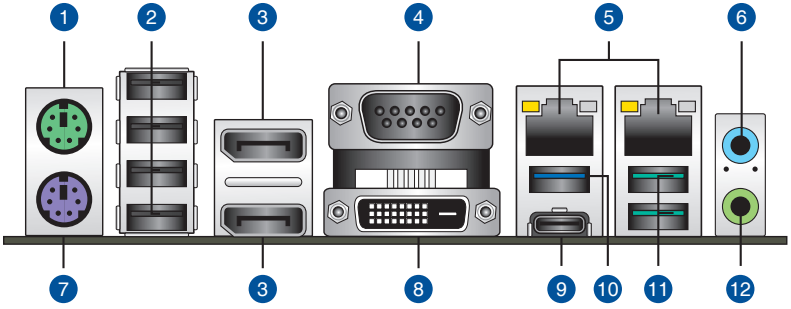



| Pins | |
|---|---|
| 1-2 (Default) | High Active |
| 2-3 | Low Active |

| Connector type | HEADER 1x3p, 2.54mm pitch, S/T |
|---|---|

## 2.6 Connectors

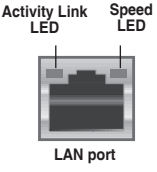
### 2.6.1 Rear panel connectors




1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **USB 2.0 ports.** These 4-pin Universal Serial Bus (USB) ports are for USB 2.0/1.1 devices.
3. **DisplayPorts.** These ports are for DisplayPort-compatible devices.
4. **Serial port (COM).** This port connects a modem or other device that conforms with serial specification.
5. **LAN (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub.

**LAN port LED indications**

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




6. **Line In port (light blue).** This port connects to the tape, CD, DVD player, or other audio sources.
7. **PS/2 keyboard port (purple).** This port is for a PS/2 keyboard.
8. **DVI-D port.** This port is for any DVI-D compatible device.

DVI-D can not be converted to output from RGB Signal to CRT and is not compatible with DVI-I.

9. **USB 3.2 Gen 2 (up to 10Gbps) port (USB Type-C®).** This Universal Serial Bus (USB) port is for a USB 3.2 Gen 2 Type-C® device.

10. **USB 3.2 Gen 1 (up to 5Gbps) port.** This 9-pin Universal Serial Bus (USB) port is for a USB 3.2 Gen 1 device.

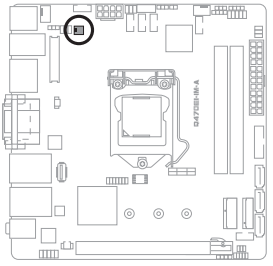
- USB 3.2 Gen 1 devices can only be used for data storage.
- We strongly recommend that you connect USB 3.2 Gen 1 devices to USB 3.2 Gen 1 ports for faster and better performance from your USB 3.2 Gen 1 devices.
- Due to the design of the Intel® 400 series chipset, all USB devices connected to the USB 2.0 and USB 3.2 Gen 1 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

11. **USB 3.2 Gen 2 (up to 10Gbps) ports (teal blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports are for USB 3.2 Gen 2 devices.
12. **Line Out port (lime).** This port connects to a headphone or a speaker. In the 4 and 5.1 channel configurations, the function of this port becomes Front Speaker Out.

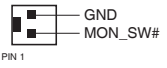
## 2.6.2 Internal connectors

### 1. LCD panel monitor switch header (2-pin PANEL_SW)

This 2-pin header is for connecting a monitor switch that can turn off the LCD panel display backlight.

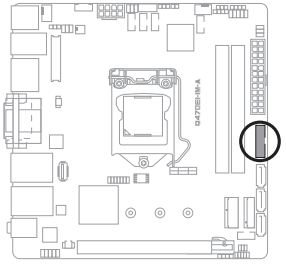


PANEL_SW

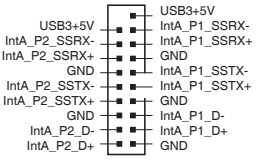



### 2. USB 3.2 Gen 1 connector (20-1 pin U32G1_78)

Connect a USB 3.2 Gen 1 module to this connector for additional USB 3.2 Gen 1 front or rear panel ports. This connector complies with USB 3.2 Gen 1 specifications and provides faster data transfer speeds of up to 5 Gbps, faster charging time for USB-chargeable devices, optimized power efficiency, and backward compatibility with USB 2.0.



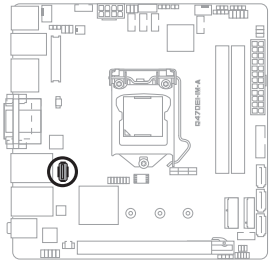
U32G1_78




| Connector type | BOX HD 2x10p, K20, 2.0mm pitch |
|---|---|

### 3. USB 3.2 Gen 1 port (U32G1_6)

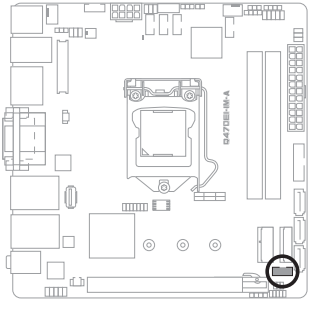
This Universal Serial Bus (USB) port is for USB 3.2 Gen 1 devices.



U32G1_6

### 4. USB 2.0 connector (10-1 pin USB213)

This connector is for an USB 2.0 port. Connect the USB cable to this connector. This USB connector complies with USB 2.0 specification that supports up to 480 Mbps connection speed.



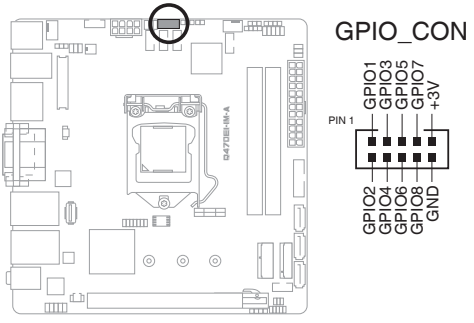

| Connector type | Header 2x5p, K9, 2.0mm pitch |
|---|---|

**CAUTION!** Never connect a 1394 cable to the USB connector. Doing so will damage the motherboard.

**NOTE:** The USB cable is purchased separately.

### 5. General Purpose Input/Output connector (10-pin GPIO_CON)

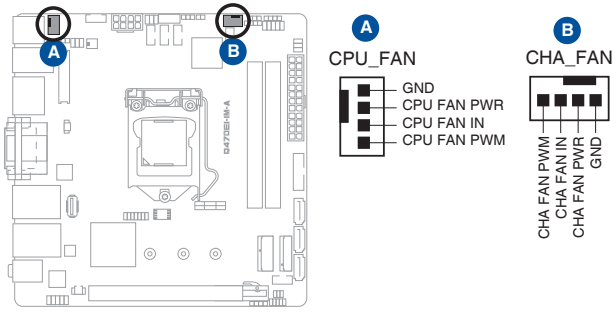
This connector is for a general purpose input/output module which allows you to customize the digital signal input/output.




| Connector type | WAFER HD 2x5p, 2.0mm pitch, S/T |
|---|---|

## 6. CPU and Chassis Fan headers (4-pin CPU_FAN, 4-pin CHA_FAN)

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

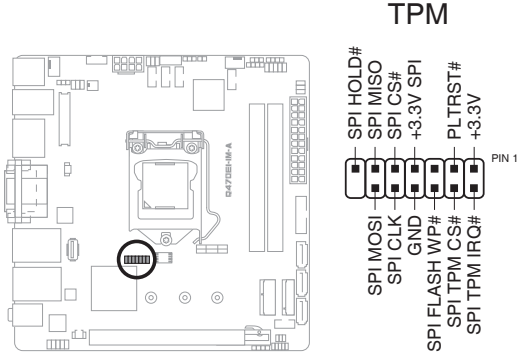



| Connector type | WAFER HD 4p, 2.54mm pitch, S/T |
|---|---|

**CAUTION!** Do not forget to connect the fan cables to the fan headers. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan headers!

## 7. TPM header (14-1 pin TPM)

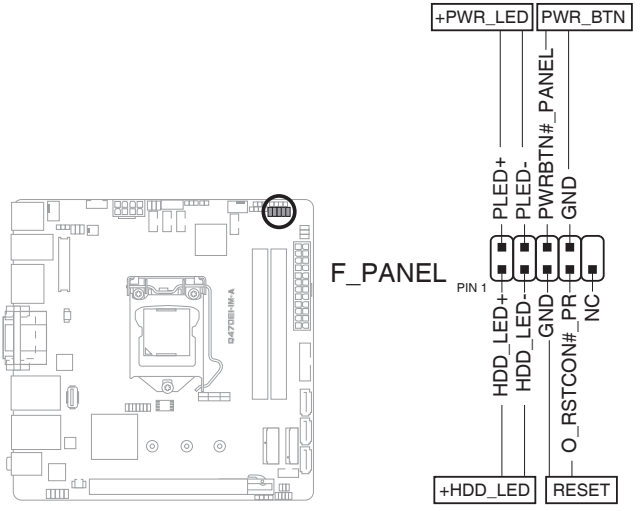
This header supports a Trusted Platform Module (TPM) system, allowing you to securely store keys, digital certificates, passwords and data. A TPM system also enhances network security, protects digital identities, and ensures platform integrity.




| Connector type | Header 2x7p, K14, 2.0mm pitch |
|---|---|

**8. System Panel header (10-1 pin F_PANEL)**

This header supports several chassis-mounted functions.




| Connector type | Header 2x5p, K10, 2.54mm pitch |
|---|---|

- **System power LED (2-pin +PWR_LED)**

  This 2-pin header is for the system power LED. Connect the chassis power LED cable to this header. 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)**

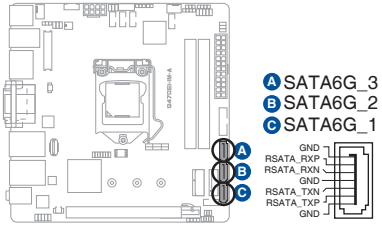
  This 2-pin header is for the HDD Activity LED. Connect the HDD Activity LED cable to this header. The IDE LED lights up or flashes when data is read from or written to the HDD.
- **ATX power button/soft-off button (2-pin PWR_BTN)**

  This 2-pin header is for the system power button.
- **Reset button (2-pin RESET)**

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

## 9. SATA 6.0Gb/s ports (7-pin SATA6G_1/2/3)

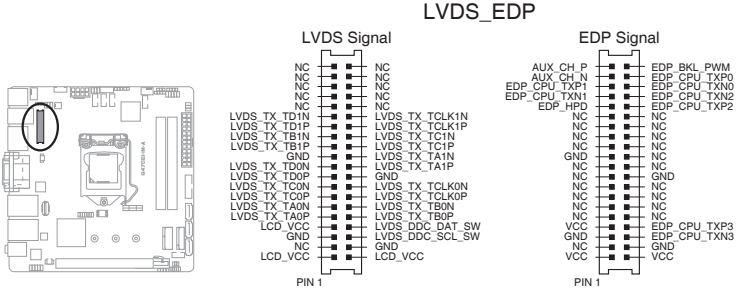
The SATA 6Gb/s port allows you to connect SATA devices such as optical disc drives and hard disk drives via a SATA cable.




| Connector type | WAFER HD 7p, 1.27mm pitch |
|---|---|

## 10. LVDS/eDP Signal header (40-pin LVDS_EPD)

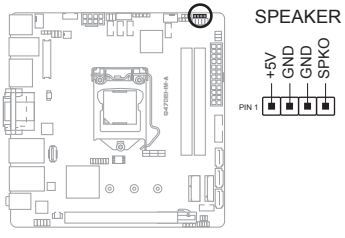
This header is for an LCD monitor that supports Low Voltage Differential Signaling (LVDS) interface or an internal embedded DisplayPort (eDP) connection.




| Connector type | WAFER HD 2x20p, 1.25mm pitch |
|---|---|

## 11. Speaker header (4-pin SPEAKER)

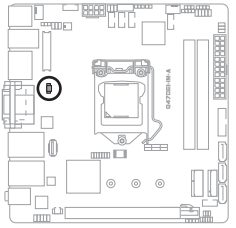
The 4-pin header is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.




| Connector type | HEADER 1x4p, 2.54mm pitch, S/T |
|---|---|

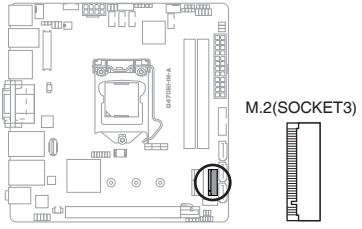
### 12. RTC Battery header (2-pin BATTERY)

This header is for the lithium CMOS battery.




### 13. M.2 socket 3

This socket allows you to install an M.2 SSD module.

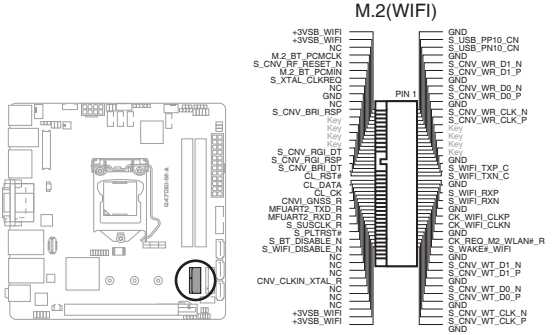



**NOTES:**

- The M.2 SSD module is purchased separately.
- This socket supports M Key and 2242/2260/2280 storage devices.

### 14. M.2 Wi-Fi socket

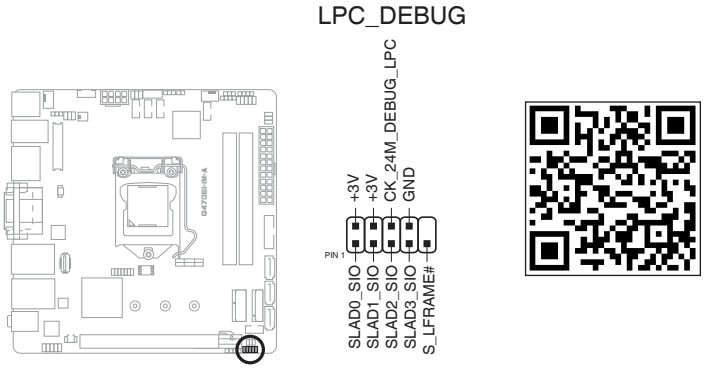
This socket connects to an M.2 Wi-Fi device.




**NOTE:** The M.2 Wi-Fi module is purchased separately.

### 15. LPC Debug header (10-1 pin LPC_DEBUG)

This header allows connection to a LPC debug card.



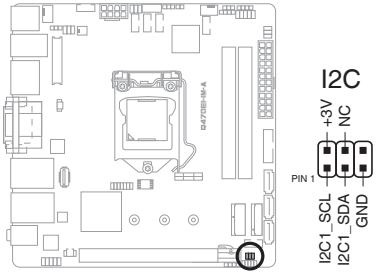

| Connector type | HEADER 2x5p, K10, 2.0mm pitch |
|---|---|

**IMPORTANT!**

- Scan the QR code to view the meaning of each debugging code.
- Debugging codes are only available for ASUS LPC debug cards.
- Contact your region sales representative for LPC debug cards ordering.

### 16. I²C connector (6-pin I2C)

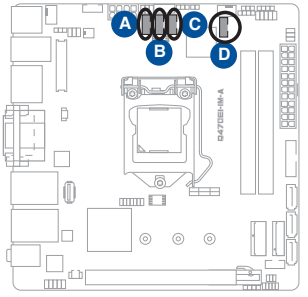
The I²C (Inter-Integrated Circuit) connector allows you to connect an I²C compatible IoT security module.




| Connector type | Header 2x3p, K6, 2.0mm pitch |
|---|---|

### 17. COM Port connectors (10-1 pin COM2, COM3, COM4, COM5)

The COM (Serial) Port connectors allow you to connect COM port modules. Connect the COM port module cable to this connector, then install the module to a slot opening on the system chassis.



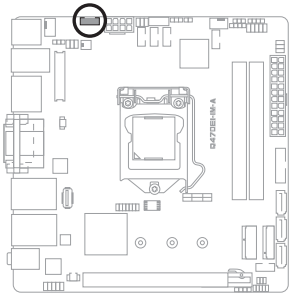


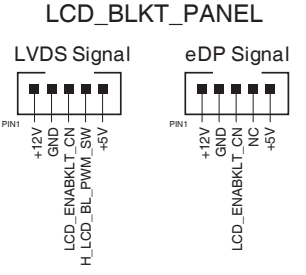
| Connector type | BOX header 2x5p, K10, 2.0mm pitch |
|---|---|

**NOTE:** The COM port modules are purchased separately.

### 18. Flat Panel Display Brightness connector (5-pin LCD_BLKT_PANEL)

This connector is for the LVDS/eDP panel backlight voltage selection.

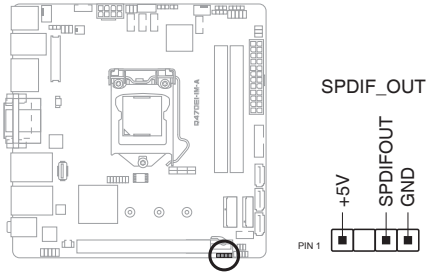





| Connector type | WAFER 6p, 2.0mm pitch |
|---|---|

### 19. Digital Audio connector (4-1 pin SPDIF_OUT)

This connector is for an additional Sony/Philips Digital Interface (S/PDIF) port. Connect the S/PDIF Out module cable to this connector, then install the module to a slot opening at the back of the system chassis.

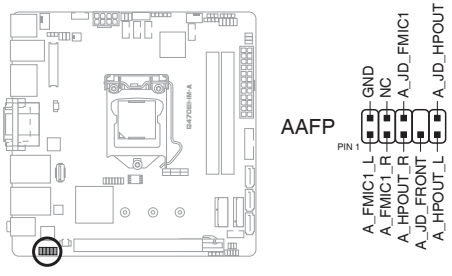



| Connector type | HEADER 1x4p, K2, 2.54mm pitch |
|---|---|

**NOTE:** The SPDIF Out module is purchased separately.

### 20. 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 standard. Connect one end of the front panel audio I/O module cable to this connector.



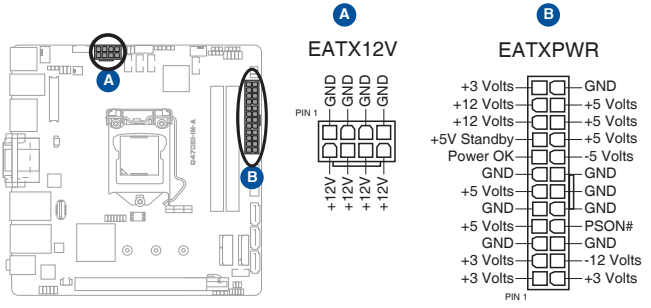

| Connector type | HEADER 2x5p, K8, 2.54mm pitch |
|---|---|

**IMPORTANT!**

- 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.
- If you want to connect a high-definition front panel audio module to this connector, set the HD Audio Controller item in the BIOS Setup to [Enabled].

## 21. ATX Power connectors (24-pin EATXPWR, 8-pin EATX12V)

Correctly orient the ATX power supply plugs into these connectors and push down firmly until the connectors completely fit.




### DC Mode EATXPWR

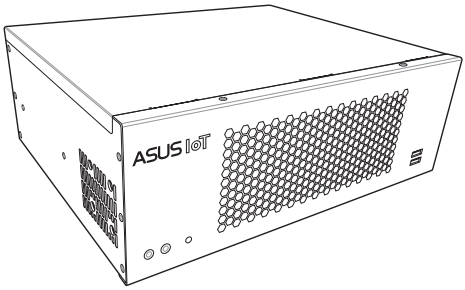
| Pins | Signal | Pins | Signal |
|---|---|---|---|
| 1 | +3.3V out | 13 | +3.3V out |
| 2 | +3.3V out | 14 | NC |
| 3 | GND | 15 | GND |
| 4 | +5V out | 16 | PSON# |
| 5 | GND | 17 | GND |
| 6 | +5V out | 18 | GND |
| 7 | GND | 19 | GND |
| 8 | NC | 20 | +12V out |
| 9 | NC | 21 | +5V out |
| 10 | +12V in | 22 | +5V out |
| 11 | +12V in | 23 | +5V out |
| 12 | +3.3V out | 24 | GND |

### DC Mode EATX12V

| Pins | Signal | Pins | Signal |
|---|---|---|---|
| 1 | GND | 5 | +12V in |
| 2 | GND | 6 | +12V in |
| 3 | GND | 7 | +12V in |
| 4 | GND | 8 | +12V in |

# Chapter 3

This chapter provides a detailed guide to navigating and setting up the BIOS.




BIOS setup

Scan the QR code to view the BIOS update guide.

## 3.1 BIOS setup program

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

**Entering BIOS Setup 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>**+**<Del>** 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.

**NOTE:** Using the power button, reset button, or the <Ctrl>+<Alt>+<Del> keys to reboot a running operating system can cause damage to your data or system. Always shut down the system properly from the operating system.

**IMPORTANT!**

- Visit the ASUS website at www.asus.com to download the latest BIOS file for this motherboard.
- The default BIOS settings for this motherboard apply to most working conditions and ensures optimal performance. If the system becomes unstable after changing any BIOS settings, load the default settings to regain system stability. Select the option **Restore Defaults** under the Exit menu or press hotkey <F3>.
- The BIOS Setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

## BIOS menu screen

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

| | |
|---|---|
| **Main** | For changing the basic system configuration. |
| **Advanced** | For changing the advanced system settings. |
| **Hardware Monitor** | For displaying the system temperatures, fan and power status, and changing smart fan settings. |
| **Security** | For configuring the system security settings. |
| **Boot** | For changing the system boot configuration. |
| **Exit** | For selecting the save options and default options. |

To select an item on the menu bar, press the right or left arrow key on the keyboard until the desired item is highlighted.

# 3.2 Main menu

The Main menu provides you with an overview of the basic system information, and allows you to set the system date and the system time.

## 3.2.1 System Date [Day MM/DD/YYYY]

Allows you to set the system date.

## 3.2.2 System Time [HH:MM:SS]

Allows you to set the system time.

# 3.3 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.

## 3.3.1 LVDS Configuration

**Switch to LVDS**
Configuration options: [Disable] [Enable]

**All-in-One Chassis**
Allows you to select All-in-One (AiO) Chassis (if applicable) for simplified AiO configuration. Configuration options: [None] [1920*1080 LVDS1] [1920*1080 LVDS2] [1920*1080 LVDS3] [1600*900 LVDS4]

- Be cautious when selecting AiO chassis. Incorrect selection of AiO chassis can cause incorrect operation or potential damage to AiO chassis hardware.
- The following items appear only when you set **All-in-One Chassis** to **[None]**.

**EDID Data Source**
Configuration options: [Pre-Defined] [Flat Panel Display]

The following item appears when you set **EDID Data Source** to **[Pre-Defined]**.

**LFP Panel Type**
Allows you to select LFP panel used by Internal Graphics Device. Configuration options: [VBIOS Default] [640x480] [800x600] [1024x768] [1280x1024] [1400x1050 LVDS1] [1400x1050 LVDS2] [1600x1200] [1366x768] [1680x1050] [1920x1200] [1440x900] [1600x900] [1024x768] [1280x800] [1920x1080] [2048x1536]

**Backlight Control**
Configuration options: [PWM Inverted] [PWM Normal]

**Channel Select**
Configuration options: [Dual Channel] [Single Channel]

**Mode Select**
Confuguration options: [8bit Mode(JEIDA)] [8bit Mode(VESA)] [6bit Mode(VESA and JEIDA)]

**Panel Power Sequence Control**
Configuration options: [Enable] [Disabled]

The following items appear when you set **Panel Power Sequence Control** to **[Enable]**.

**Panel_Vcc ON to Video_Data ON (T8)**
Configuration options: [10 ms] [20 ms] [30 ms] [40 ms]

**Video_Data ON to BKLT_PWM ON (T9)**
Configuration options: [100 ms] [200 ms] [250 ms] [300 ms]

**BKLT_PWM ON to BKLT_Enable ON (T10)**
Configuration options: [10 ms] [15 ms] [20 ms] [25 ms]

**BKLT_Enable OFF to BKLT_PWM OFF (T11)**
Configuration options: [5 ms] [10 ms] [15 ms] [20 ms]

**BKLT_PWM OFF to Video_Data OFF (T12)**
Configuration options: [100 ms] [200 ms] [250 ms] [300 ms]

**Video_Data OFF to Panel_Vcc OFF (T13)**
Configuration options: [10 ms] [20 ms] [30 ms] [40 ms]

**Min Panel_Vcc OFF Time (T15)**
Configuration options: [600 ms] [700 ms] [800 ms] [1000 ms]

**LVDS Spread Spectrum Control**
Allows you to configure LVDS spread spectrum clocking. Configuration options: [Disabled] [+/- 0.5%% Center Spread] [+/- 1%% Center Spread]

### 3.3.2 PCH-FW Configuration

This item allows you to configure Management Engine Technology parameters.

**TPM Device Selection**
Allows you to select TPM device.

[PTT] Enables PTT in SkuMgr.

[dTPM] Disables PTT in SkuMgr.

When PTT is disabled, all data saved on it will be lost.

### 3.3.3 Trusted Computing

**Security Device Support**
Allows you to enable or disable BIOS support for security device.
Configuration options: [Disabled] [Enabled]

The following items appear when a TPM device is installed on your motherboard.

**SHA-1 PCR Bank**
Configuration options: [Disabled] [Enabled]

**SHA256 PCR Bank**
Configuration options: [Disabled] [Enabled]

**SHA384 PCR Bank**
Configuration options: [Disabled] [Enabled]

**Pending operation**
Allows you to schedule an operation for security device.
Configuration options: [None] [TPM Clear]

Your computer will reboot during restart in order to change the state of security device.

**Platform Hierarchy**
Configuration options: [Disabled] [Enabled]

**Storage Hierarchy**
Configuration options: [Disabled] [Enabled]

**Endorsement Hierarchy**
Configuration options: [Disabled] [Enabled]

**TPM 2.0 UEFI Spec Version**
Allows you to select the TCG2 Spec Version support.
Configuration options: [TCG_1_2] [TCG_2]

[TCG_1_2] Support the compatible mode for Win8/Win10.

[TCG_2] Support new TCG2 protocol and event format for Win10 or later.

**Physical Presence Spec Version**
Allows you to select to tell O.S. to support PPI Spec Version 1.2 or 1.3.
Configuration options: [1.2] [1.3]

Some HCK tests might not support 1.3.

**PH Randomization**
Allows you to enable or disables Platform Hierarchy randomization. Configuration options: [Disabled] [Enabled]

Do not enable this question in production platforms. This is for development testing. OVERRIDE ChangePlatformAuth ELINK for production platforms supports TXT.

## 3.3.4 CPU Configuration

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

**CPU Run Control**
Configuration options: [Disabled] [Enabled] [No Change]

**Software Guard Extensions (SGX)**
Configuration options: [Disabled] [Enabled] [Software Controlled]

**Intel (VMX) Virtualization Technology**
This item, when set to [enabled], will allow a VMM to utilize the additional hardware capacities provided by Vanderpool Technology.
Configuration options: [Disabled] [Enabled]

**Hyper-Threading**
Configuration options: [Disabled] [Enabled]

**VT-d**
Configuration options: [Disabled] [Enabled]

**CPU - Power Management Control**
This item allows you to manage and configure the CPU's power.

**Intel® SpeedStep™**
Allows your system to support more than two frequency ranges.
Configuration options: [Disabled] [Enabled]

**Intel® Speed Shift Technology**
Allows you to enable or disable Intel® Speed Shift Technology support. When enabled, CPPC v2 interface allows hardware controlled P-state.

Configuration options: [Disabled] [Enabled]

The following item appears only when **Intel® SpeedStep** or **Intel® Speed Shift** is available and enabled.

**Turbo Mode**
Configuration options: [Disabled] [Enabled]

**C states**
Allows you to enable or disable CPU Power Management. Configuration options: [Disabled] [Enabled]

The following item appears only when you set **C states** to **[Enabled]**.

**Enhanced C-states**
Allows you to enable or disable C1E. CPU will switch to minimum speed when all cores enter C-state. Configuration options: [Disabled] [Enabled]

**Package C State Limit**
Set the maximum package C state limit. Configuration options: [C0/C1] [C2] [C3] [C6] [C7] [C7S] [C8] [C9] [C10] [Cpu Default] [Auto]

[Cpu Default] Leaves to factory default value.

[Auto] Initializes to deepest available Package C State Limit.

## 3.3.5 Graphics Configuration

This item allows you to select a primary display from IGFX and PEG graphical devices.

**Primary Display**
Allows you to select which of the IGFX/PEG Graphics devices should be the primary display or select SG for switchable Gfx.
Configuration options: [Auto] [IGFX] [PEG]

**Internal Graphics**
Configuration options: [Auto] [Disabled] [Enabled]

[Auto] Keeps IGFX enabled base on the setup options.

[Disabled] Disables internal graphics.

[Enabled] Enables internal graphics.

## 3.3.6 PCI Express Configuration

This item allows you to configure PCI Express settings.

**HYPER_PCIeX16**
Configuration options: [PCIe x16 mode] [PCIe x8/x8 mode] [PCIe x8/x4/x4 mode]

**PCIe x16/x8 Slot**
Allows you to configure the PEG Port settings.

**PEG 0:1:0**

**Enable Root Port**
Allows you to enable or disable the Root Port.
Configuration options: [Disabled] [Enabled] [Auto]

**Max Link Speed**
Allows you to configure PEG 0:1:0 Max Speed.
Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

**Max Link Width**
Allows you to force PEG link to restrain to X1/2/4/8.
Configuration options: [Auto] [Force X1] [Force X2] [Force X4] [Force X8]

**ASPM**
Allows you to control ASPM support for the PEG 0, and this has no effect if PEG is not the currently active device.
Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

**PEG 0:1:1**

**Enable Root Port**
Allows you to enable or disable the Root Port.
Configuration options: [Disabled] [Enabled] [Auto]

**Max Link Speed**
Allows you to configure PEG 0:1:1 Max Speed.
Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

**Max Link Width**
Allows you to force PEG link to restrain to X1/2/4.
Configuration options: [Auto] [Force X1] [Force X2] [Force X4]

**ASPM**
Allows you to control ASPM support for the PEG 1, and this has no effect if PEG is not the currently active device.
Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

**PEG 0:1:2**

**Enable Root Port**
Allows you to enable or disable the Root Port.
Configuration options: [Disabled] [Enabled] [Auto]

**Max Link Speed**
Allows you to configure PEG 0:1:2 Max Speed.
Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

**Max Link Width**
Allows you to force PEG link to restrain to X1/2.
Configuration options: [Auto] [Force X1] [Force X2]

**ASPM**
This item allows you to control ASPM support for the PEG 2, and this has no effect if PEG is not the currently active device.
Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

## 3.3.7 AMT Configuration

This item allows you to configure Intel® Active Management Technology parameters.

**AMT BIOS Features**
Allows you to enable or disable AMT BIOS Features. When set to [Disabled], MEBx Setup will be inaccessible.
Configuration options: [Disabled] [Enabled]

This item does not disable Manageability Features in FW.

**USB Provisioning of AMT**
Allows you to enable or disable AMT USB Provisioning.
Configuration options: [Disabled] [Enabled]

**End Of Post Message**
Allows you to enable or disable End of Post message sent to ME.
Configuration options: [Disabled] [Enabled]

**Secure Erase Configuration**

**Secure Erase mode**
Allows you to change Secure Erase module behavior.
Configuration options: [Simulated] [Real]

| | |
|---|---|
| [Simulated] | Performs SE flow without erasing SSD. |
| [Real] | Erases SSD. |

**Force Secure Erase**
Allows you to force Secure Erase on next boot.
Configuration options: [Disabled] [Enabled]

**OEM Flags Settings**
Allows you to configure OEM Flags.

**MEBx Selection Screen**
Allows you to enable MEBx selection screen by pressing 1 to enter ME Configure Screen or pressing 2 to initiate a remote connection.
Configuration options: [Disabled] [Enabled]

Network Access must be activated from MEBx Setup for this screen to be dispalyed.

**Unconfigure ME**
Allows you to unconfigure ME by resetting the MEBx password to default.
Configuration options: [Disabled] [Enabled]

## 3.3.8 CSM Configuration

**CSM Support**
Allows you to enable or disable CSM (Compatibility Support Module) Support.
Configuration options: [Disabled] [Enabled]

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

**GateA20 Active**

Configuration options: [Upon Request] [Always]

[Upon Request] GA20 can be disabled using BIOS services.

[Always] Do not allow disabling GA20, which functions when any RT code is executed above 1MB.

**Network**
Allows you to control the execution of UEFI and Legacy Network OpROM.
Configuration options: [Do not lauch] [UEFI] [Legacy]

**Storage**
Allows you to control the execution of UEFI and Legacy Storage OpROM.
Configuration options: [Do not lauch] [UEFI] [Legacy]

**Video**
Allows you to control the execution of UEFI and Legacy Video OpROM.
Configuration options: [Do not lauch] [UEFI] [Legacy]

**Other PCI devices**
Allows you to determine OpROM execution policy for devices other than Network, Storage, or Video.
Configuration options: [Do not lauch] [UEFI] [Legacy]

## 3.3.9 Super IO Configuration

**Serial Port 1 Configuration**
This item allows you to set parameters of Serial Port 1 (COMA).

**Serial Port**
Allows you to enable or disable the serial port (COM).
Configuration options: [Disabled] [Enabled]

**COM1 Control**
Allows you to select COM1 mode.
Configuration options: [RS232] [RS422] [RS485]

**Serial Port 2 Configuration**
This item allows you to set parameters of Serial Port 2 (COMB).

**Serial Port**
Allows you to enable or disable the serial port (COM).
Configuration options: [Disabled] [Enabled]

**COM2 Control**
Allows you to select COM2 mode.
Configuration options: [RS232] [RS422] [RS485]

**Serial Port 3 Configuration**
This item allows you to set parameters of Serial Port 3 (COMC).

**Serial Port**
Allows you to enable or disable the serial port (COM).Configuration options:

[Disabled] [Enabled]

**Serial Port 4 Configuration**
This item allows you to set parameters of Serial Port 4 (COMD).

**Serial Port**
Allows you to enable or disable the serial port (COM).Configuration options: [Disabled] [Enabled]

**Serial Port 5 Configuration**
This item allows you to set parameters of Serial Port 5 (COME).

**Serial Port**
Allows you to enable or disable the serial port (COM).Configuration options: [Disabled] [Enabled]

## 3.3.10 Serial Console Redirection

**COM1(~5)**

**Console Redirection**
Allows you enable or disable the console redirection feature.
Configuration options: [Enabled] [Disabled]

The following item is accessible when you set **Console Redirection** to **[Enabled]**.

**Console Redirection Settings**
The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

**Terminal Type**
Configuration options: [VT100] [VT100+] [VT-UTF8] [ANSI]

| | |
|---|---|
| [VT100] | ASCII char set. |
| [VT100+] | Extends VT100 to support color, function keys, etc. |
| [VT-UTF8] | Uses UTF8 encoding to map Unicode chars onto 1 or more bytes. |
| [ANSI] | Extended ASCII char set. |

**Bits per second**
Allows you to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.
Configuration options: [9600] [19200] [38400] [57600] [115200]

**Data Bits**
Configuration options: [7] [8]

**Parity**
A parity bit can be sent with the data bits to detect some transmission errors.

Configuration options: [None] [Even] [Odd] [Mark] [Space]

[None] Disables parity check.

[Even] Parity bit is 0 if the num of 1's in the data bits is even.

[Odd] Parity bit is 0 if the num of 1's in the data bits is odd.

[Mark] Parity bit is always 1.

[Space] Parity bit is always 0.

Mark and Space Parity do not allow for error detection.

**Stop Bits**
Stop bits indicate the end of a serial data packet. The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit. Configuration options: [1] [2]

**Flow Control**
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. Configuration options: [None] [Hardware RTS/CTS]

**VT-UTF8 Combo Key Support**
Allows you to enable or disable VT-UTF8 Combination Key Support for ANSI/ VT100 terminals. Configuration options: [Disabled] [Enabled]

**Recorder Mode**
With this mode enabled only text will be sent. This is to capture Terminal data. Configuration options: [Disabled] [Enabled]

**Resolution 100x31**
Allows you to enable or disable extended terminal resolution. Configuration options: [Disabled] [Enabled]

**Putty KeyPad**
Allows you to select FunctionKey and KeyPad on Putty. Configuration options: [VT100] [LINUX] [XTERMR6] [SCO] [ESCN] [VT400]

**COM6(Pci Bus0,Dev0,Func0) (Disabled)**

**Legacy Console Redirection Settings**

**Redirection COM Port**
Allows you to select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.
Configuration options: [COM1] [COM2] [COM3] [COM4] [COM5] [COM6(Pci Bus0,Dev0,Func0) (Disabled)]

**Resolution**
This allows you to set the number of rows and columns supported on the

Legacy OS. Configuration options: [80x24] [80x25]

**Redirect After POST**
Configuration options: [Always Enable] [BootLoader]

| | |
|---|---|
| [Always Enable] | Legacy Console Redirection is enabled for Legacy OS. |
| [BootLoader] | Legacy Console Redirection is disabled before booting to Legacy OS. |

## 3.3.11 SATA And RST Configuration

This item allows you to configure SATA device options settings.

**SATA Controller(s)**
Allows you to enables or disables the onboard SATA device.
Configuration options: [Disabled] [Enabled]

The following item appears only when you set **SATA Controller(s)** to **[Enabled]**.

**SATA Mode Selection**
Allows you to determine how SATA controller(s) operate. Configuration options: [AHCI] [Intel RST Premium With Intel Optane System Acceleration]

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

The following items appear only when you set **SATA Mode Selection** to **[Intel RST Premium With Intel Optane System Acceleration]**.

**Sata Interrupt Selection**
Allows you to select which interrupt will be available to the operating system. This option only takes effect if SATA controller is in RAID mode.
Configuration options: [Msix] [Msi] [Legacy]

**RAID Device ID**
Allows you to choose RAID device ID.
Configuration options: [Client] [Alternate]

**Aggressive LPM Support**
Allows you to enable PCH to aggressively enter link power state.
Configuration options: [Disabled] [Enabled]

**Serial ATA Port 1(~3)**

**Port 1(~3)**
Allows you to enable or disable SATA Port.
Configuration options: [Disabled] [Enabled]

**Hot Plug**
Allows you to designate this port as Hot Pluggable.
Configuration options: [Disabled] [Enabled]

**M.2 SATA(M-Key)**

**Port 4**
Allows you to enable or disable SATA Port.
Configuration options: [Disabled] [Enabled]

## 3.3.12 Network Stack Configuration

**Network Stack**
This item allows user to disable or enable the UEFI Network Stack.
Configuration options: [Disabled] [Enabled]

The following items appear only when you set **Network Stack** to **[Enabled]**.

**IPv4 PXE Support**

Allows you to enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will be unavailable. Configuration options: [Disabled] [Enabled]

**IPv6 PXE Support**

Allows you to enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will be unavailable. Configuration options: [Disabled] [Enabled]

**PXE boot wait time**
Use either +/- or numeric keys to set the value for wait time (in seconds) to press ESC key to abort the PXE boot.

**Media detect count**
Use either +/- or numeric keys to set the value for number of times the presence of media will be checked.

## 3.3.13 USB Configuration

**Legacy USB Support**
Configuration options: [Enabled] [Disabled] [Auto]

| | |
|---|---|
| [Enabled] | Enables Legacy USB support. |
| [Disabled] | Keeps USB devices available only for EFI applications. |
| [Auto] | Allows the system to detect the presence of USB devices at startup. If any USB device(s) is detected, the USB controller legacy mode is enabled. If none is detected, the legacy USB support is disabled. |

**XHCI Hand-off**

This item functions as a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
Configuration options: [Enabled] [Disabled]

**USB Mass Storage Driver Support**
Allows you to enable or disable USB Mass Storage Driver Support.
Configuration options: [Disabled] [Enabled]

**U32G1_1(~3)**
Allows you to enable or disable USB port. Once set to [Disabled], any USB devices plugged into the connector will not be detected by BIOS or OS.
Configuration options: [Disabled] [Enabled]

**U32G2_4(~5)**
Allows you to enable or disable USB port. Once set to [Disabled], any USB devices plugged into the connector will not be detected by BIOS or OS.
Configuration options: [Disabled] [Enabled]

**U32G1_6(~8)**
Allows you to enable or disable USB port. Once set to [Disabled], any USB devices plugged into the connector will not be detected by BIOS or OS.
Configuration options: [Disabled] [Enabled]

**USB_2, USB_9(~13)**
Allows you to enable or disable USB port. Once set to [Disabled], any USB devices plugged into the connector will not be detected by BIOS or OS.
Configuration options: [Disabled] [Enabled]

## 3.3.14 NVMe Configuration

The NVMe Configuration menu displays the NVMe controller and drive information of the devices connected and allows you to configure NVMe device options settings.

## 3.3.15 Onboard Devices Configuration

**HD Audio Controller**
Allows you to control detection of the HD-Audio device.
Configuration options: [Enabled] [Disabled]

| | |
|---|---|
| [Enabled] | Enables the HD Audio Device unconditionally. |
| [Disabled] | Disables the HD Audio Device unconditionally. |

**LAN1 I219**
Configuration options: [Disabled] [Enabled]

**Intel LAN1 OPROM**
Allows you to launch Intel PXE OPROM. Configuration options: [Disabled] [Enabled]

**LAN2 I210**
Configuration options: [Disabled] [Enabled]

**Intel LAN2 OPROM**
Allows you to launch Intel PXE OPROM. Configuration options: [Disabled] [Enabled]

**I2C0 Controller**
Allows you to enable or disable Serial IO Controller.
Configuration options: [Disabled] [Enabled]

## 3.3.16 EZ-Flash

This item allows you to enter EZ-Flash mode. After 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.

## 3.3.17 APM Configuration

This item allows you to configure APM (Advanced Power Management) settings.

**ErP Ready**
Allows BIOS to switch off some power at S5 to get the system ready for ErP requirement. When set to [Enabled], all other PME options will be switched off.
Configuration options: [Disabled] [Enabled]

**Restore AC Power Loss**
Allows you to select AC power state when power is re-applied after a power failure.
Configuration options: [S5 State] [S0 State]

**Power On By PCIE**
Allows you to enable or disable the Wake-on-LAN function of the onboard LAN controller or other installed PCIe LAN cards.
Configuration options: [Disabled] [Enabled]

**Power On By Ring**
Configuration options: [Disabled] [Enabled]

**Power On By RTC**
Configuration options: [Disabled] [Enabled]

The following items appear when you set **Power On By RTC** to **[Enabled]**.

**RTC Alarm Date (Days)**
Allows you to set the value for number of days of RTC Alarm Date. Value 0 represents “Every Day”.

**Wake up hour**
Allows you to enter a natural number within 0-23 for hour. For example, enter 3 for 3:00 am and 15 for 3:00 pm.

**Wake up minute**
Allows you to enter a natural number within 0-59 for minute.

**Wake up second**
Allows you to enter a natural number within 0-59 for second.

## 3.3.18 Watchdog Timer

**Watchdog Support**
Configuration options: [Disabled] [Enabled]

The following items appear when you set **Watchdog Support** to **[Enable]**.

**Watchdog Count mode**
Allows you to select Watchdog Timer I count mode.
Configuration options: [Second Mode] [Minute Mode]

**Watchdog Timer**
Allows you to set the Watchdog Timer I Time-out value.

## 3.3.19 Miscellaneous

**DMI/OPI Configuration**

**DMI Link ASPM Control**
Allows you to disable or control Active State Power Management on SA side of the DMI link. Configuration options: [Disabled] [L0s] [L1] [L0sL1]

**PCI Express Configuration**

**DMI Link ASPM Control**
Allows you to disable or control Active State Power Management on SA side of the DMI link. Configuration options: [Disabled] [L0s] [L1] [L0sL1] [Auto]

## 3.4 Hardware Monitor menu

The Monitor menu displays the system temperatures, fan and power status, and allows you to configure the smart fan.

### 3.4.1 Smart Fan Mode

Allows you to select the Smart Fan mode. Configuration options: [Disabled] [Normal] [Manual Mode]

The following items appear only when you set **Smart Fan Mode** to **[Manual Mode]**.

### 3.4.2 Smart Fan Function

**Chassis Fan Setting**

**Temperature 1(~4)**
Allows you to set the value of temperature1(~4).

**FD/RPM 1(~4)**
Allows you to set the value of Fan Duty/PRM 1(~4) when temperature is T1(~4).

**CPU Fan Setting**

**Temperature 1(~4)**
Allows you to set the value of temperature1(~4).

**FD/RPM 1(~4)**
Allows you to set the value of Fan Duty/PRM 1(~4) when temperature is T1(~4).

## 3.5 Security menu

The Security menu allows a new password to be created or a current password to be changed. The menu also enables or disables the Secure Boot state and lets the user configure the System Mode state.

### 3.5.1 Administrator Password

If you have set an administrator password, we recommend that you enter the administrator password for accessing the system.

**To set an administrator password:**

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.

**To change an administrator password:**

1. Select the **Administrator Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.

3. From the **Create New Password box**, key in a new password, then press <Enter>.

4. Confirm the password when prompted.

To clear the administrator password, follow the same steps as in changing an administrator password, but press <Enter> when prompted to create/confirm the password.

## 3.5.2 User Password

If you have set a user password, you must enter the user password for accessing the system.

**To set a user password:**

1. Select the **User Password** item and press <Enter>.
2. From the **Create New Password** box, key in a password, then press <Enter>.
3. Confirm the password when prompted.

**To change a user password:**

1. Select the **User Password** item and press <Enter>.
2. From the **Enter Current Password** box, key in the current password, then press <Enter>.
3. From the **Create New Password** box, key in a new password, then press <Enter>.
4. Confirm the password when prompted.

**To clear a user password:**

1. Select the **Clear User Password** item and press <Enter>.
2. Select **Yes** from the Warning message window then press <Enter>.

## 3.5.3 Secure Boot

Secure Boot feature is active when Secure Boot is set to [Enabled], Platform Key (PK) is enrolled and the system is running in User mode. Changing the mode requires platform reset. Configuration options: [Disabled] [Enabled]

**Secure Boot Mode**
Allows you to select Secure Boot Mode. When set to [Custom], Secure Boot Policy variables can be configured by a physically present user without full authentication. Configuration options: [Standard] [Custom]

**Key Management**
Allows you to modify Secure Boot Policy variables without full authentication.

**Platform Key (PK)**
Configuration options: [Details] [Export] [Update] [Delete]

**Key Exchange Keys / Authorized Signatures**
Configuration options: [Details] [Export] [Update] [Append] [Delete]

**Forbidden Signatures**

Configuration options: [Update] [Append]

## 3.6 Boot menu

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

**Boot Configuration**

**CHASSIS INTRUDE**
Allows you to enable or disable CHASSIS INTRUDE. Configuration options: [Disabled] [Enabled]

**Setup Prompt Timeout**
Allows you to set the number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

**Bootup NumLock State**
Allows you to select the keyboard NumLock state. Configuration options: [On] [Off]

**Quiet Boot**
Configuration options: [Disabled] [Enabled]

**Fast Boot**
Allows you to enable or disable boot with initialization of a minimal set of devices required to launch active boot option. This has no effect for BBS boot options. Configuration options: [Disabled] [Enabled]

[Enabled] Select to accelerate the boot speed.

[Disabled] Select to go back to normal boot speed.

**Boot mode select**
Configuration options: [LEGACY] [UEFI]

**FIXED BOOT ORDER Priorities**

**Boot Option #1(~10)**
Allows you to set the system boot order. Configuration options: [Hard Disk] [NVME] [CD/DVD] [SD] [USB Hard Disk] [USB CD/DVD] [USB Key:UEFI: Generic-SD/MMC, Partition 1] [USB Floppy] [USB Lan] [Network] [Disabled]

**UEFI USB Key Drive BBS Priorities**

**Boot Option #1**
Allows you to set the system boot order.
Configuration options: [UEFI: Generic-SD/MMC, Partition 1] [Disable]

## 3.7 Exit menu

The items in the Exit menu allow you to save or discard your changes to the BIOS items.

**Save Changes and Exit**
Allows you to exit the system setup program after saving the changes.

**Discard Changes and Exit**
Allows you to exit the system setup program without saving the changes you made. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to discard changes and exit.

**Save Changes and Reset**
Allows you to reset the system setup after saving the changes.

**Discard Changes and Reset**
Allows you to reset the system setup without saving the changes you made.

**Save Options**

**Save Changes**
Allows you to save changes done so far to any of the setup options.

**Discard Changes**
Allows you to discard changes done so far to any of the setup options.

**Restore Defaults**
Allows you to restore or load default values for all the setup options.

**Save as User Defaults**
Allows you to save the changes done so far as User Defaults.

**Restore User Defaults**
Allows you to restore the User Defaults to all the setup options.

**Boot Override**

**UEFI: Generic-SD/MMC, Partition 1**
When you select this option, a confirmation window appears. Select **Yes** to save configuration and reset.

# 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.

### HDMI Trademark Notice

The terms HDMI, HDMI High-Definition Multimedia Interface, and the HDMI Logo are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

## 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-003(B)/NMB-003(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-003(B)/NMB-003(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

## Japan JATE

本製品は電気通信事業者（移動通信会社、固定通信会社、インターネットプロバイダ等）の通信回線（公衆無線LANを含む）に直接接続することができません。本製品をインターネットに接続する場合は、必ずルーター等を経由し接続してください。

## KC: Korea Warning Statement

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

## Google™ License Terms



## Declaration of compliance for product environmental regulation

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

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

### EU REACH and Article 33

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

### EU RoHS

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

### India RoHS

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

### Vietnam RoHS

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

Các sản phẩm ASUS bán tại Việt Nam, vào ngày 23 tháng 9 năm2011 trở về sau, đều phải đáp ứng các yêu cầu của Thông tư 30/2011/TT-BCT của Việt Nam.

### Turkey RoHS

AEEE Yönetmeliğine Uygundur

### ASUS Recycling/Takeback Services

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

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.

## France sorting and recycling information


## Safety Precautions

Accessories that came with this product have been designed and verified for the use in connection with this product. Never use accessories for other products to prevent the risk of electric shock or fire.

## 安全上のご注意

付属品は当該専用品です。他の機器には使用しないでください。機器の破損もしくは、火災や感電の原因となることがあります。

## Simplified UKCA Declaration of Conformity

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

## Simplified EU Declaration of Conformity

**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: 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan

**ASUS COMPUTER INTERNATIONAL (America)**
Address: 48720 Kato Rd., Fremont, CA 94538, USA

**ASUS COMPUTER GmbH (Germany and Austria)**
Address: Harkortstrasse 21-23, 40880 Ratingen, Germany

**ASUSTeK (UK) LIMITED**
Address: 1st Floor, Sackville House, 143-149 Fenchurch Street, London, EC3M 6BL, England, United Kingdom

## Service and Support

Visit our multi-language website at https://www.asus.com/support.