MAX-Q470A

Industrial Motherboard

HIGH-DEFINITION MULTIMEDIA INTERFACE

E24315
Revised Edition v2
August 2024

Copyright Notice

This document is copyrighted, 2024. All rights are reserved. The original manufacturer reserves the right to make improvements to the products described in this manual at any time without notice.

No part of this manual may be reproduced, copied, translated, or transmitted in any form or by any means without the prior written permission of the original manufacturer. Information provided in this manual is intended to be accurate and reliable. However, the original manufacturer assumes no responsibility for its use, or for any infringements upon the rights of third parties that may result from its use.

The material in this document is for product information only and is subject to change without notice. While reasonable efforts have been made in the preparation of this document to assure its accuracy, the original manufacturer assumes no liabilities resulting from errors or omissions in this document, or from the use of the information contained herein.

The original manufacturer reserves the right to make changes in the product design without notice to its users.

Acknowledgments

All other products' name or trademarks are properties of their respective owners.

- AMI is a trademark of American Megatrends Inc.
- Intel®, Core™ are trademarks of Intel® Corporation.
- Microsoft Windows® is a registered trademark of Microsoft Corp.
- IBM, PC/AT, PS/2, and VGA are trademarks of International Business Machines Corporation.

The original manufacturer reserves the right to make changes in the product design without notice to its users.

All other product names or trademarks are properties of their respective owners.

Contents

Chapter 1 Product overview 1-1

1.1 Package contents 1-1

1.2 Features 1-1

1.3 Specifications 1-2

Chapter 2 Motherboard information 2-1

2.1 Before you proceed 2-1

2.2 Motherboard layout 2-2

2.3 Screw size 2-4

2.3.1 Component side 2-4

2.3.2 Solder side 2-5

2.4 Central Processing Unit (CPU) 2-6

2.4.1 CPU installation 2-7

2.4.2 CPU heatsink and fan assembly installation 2-8

2.5 System memory 2-10

2.5.1 DIMM installation 2-11

2.6 Jumpers 2-12

2.7 Onboard LEDs 2-17

2.8 Connectors 2-18

2.8.1 Rear panel connectors 2-18

2.8.2 Internal connectors 2-20

Chapter 3 BIOS setup 3-1

3.1 BIOS Setup program 3-1

3.1.1 BIOS menu screen 3-2

3.2 Main menu 3-2

3.2.1 System Date [Day MM/DD/YYYY] 3-2

3.2.2 System Time [HH:MM:SS] 3-2

3.3 Advanced menu 3-3

3.3.1 CPU Configuration 3-3

3.3.2 Trusted Computing 3-3

3.3.3 SATA Configuration 3-5

3.3.4 USB Configuration 3-6

3.3.5 Hardware Monitor 3-6

3.3.6 SIO Configuration 3-7

3.3.7 AMT Configuration 3-9
3.3.8 PCH-FW Configuration 3-9
3.3.9 NVMe Configuration..... 3-9
3.3.10 Power Management..... 3-9
3.3.11 Digital IO Port Configuration 3-10
3.4 Chipset menu 3-11
3.4.1 System Agent (SA) Configuration 3-11
3.4.2 PCH-IO Configuration 3-12
3.5 Security menu 3-13
3.5.1 Administrator Password 3-13
3.5.2 User Password..... 3-13
3.5.3 Secure Boot 3-14
3.6 Boot menu 3-16
3.6.1 Boot Configuration 3-16
3.6.2 FIXED BOOT ORDER Priorities 3-16
3.7 Save & Exit menu 3-17
3.8 BIOS Flash Recovery 3-18

Appendix

Notices A-1

Chapter 1

Product overview

1.1 Package contents

Check your industrial motherboard package for the following items.

- ☑ 1 x Industrial Motherboard
- ☑ 1 x SATA cable
- ☑ 1 x I/O Shield
- ☑ 1 x COM Port cable

NOTE: If any of the above items is damaged or missing, contact your distributor or sales representative immediately.

1.2 Features

- Intel® 10th Generation (Comet Lake-S) Core™ i9/ i7/ i5/ i3 14nm LGA1200 socket Processor, max. TDP 10+2 Cores 80W
- Four DDR4 (2933/2666/2400 MHz, max. 128GB, non-ECC, un-buffered memory)
- SATAIII 6.0 Gb/s ports (support RAID 0/1/5/10) x 4, M.2 2280/2242 M-key (PCIe x4) x 1, M.2 2230 E-key (PCIe/CNVI) x1, M.2 3042/3052 B-key (PCIe/ USB/SATA) x 1
- PCIe 3.0 [x16] slots x 2, PCIe 3.0 [x4] slots x 2
- HDMI 2.0, VGA and internal LVDS support

1.3 Specifications

System	
CPU	Intel® 10th Generation (Comet Lake-S) Core™ i9/ i7/ i5/ i3 Processor, 14nm LGA1200 CPU socket, 10+2 Cores, max. 80W TDPs
Memory	4 x DIMM, DDR4 (2933/2666/2400 MHz, max. 128GB), non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	IT5121E + F81216HD
Ethernet	1 x Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) 1 x Intel® i211AT Giga LAN 2 x RJ45 ports
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
BIOS	1 x 256Mbit Flash ROM, AMI BIOS, UEFI
Wake on LAN/PXE	Yes (WOL/PXE)
Watchdog Timer	1~255 steps by software program
H/W Monitor	Temperature Monitor on CPU/Chassis Voltage Monitor on Vcore/5V/3.3V/12V Fan Monitor on CPU/Chassis
Smart Fan Control	CPU Fan x 1 / Chassis Fan x 2
Power State	S3, S4, S5
Expansion slots	1 x PCIe 3.0 [x16] slot (16 lanes) (CPU) (8 lanes when dual use PCIe [x16]) 1 x PCIe 3.0 [x16] slot (8 lanes) (CPU) 1 x PCIe 3.0 [x4] slot (2 lanes) 1 x PCIe 3.0 [x4] slot 1 x M.2 2230 E-key (PCIe/CNVI) 1 x M.2 2280/2242 M-key (PCIex4) 1 x M.2 3042/3052 B-key (PCIe/USB/SATA) 1 x Micro SIM card slot
TPM	Nuvoton NPCT750 TPM2.0 onboard
Environment & Power & ME	
Battery	Lithium battery
Power requirement	1 x 24-pin ATX connector 1 x 8-pin ATX 12V Power connector
Gross weight	1.76 lb (0.8 kg)
Operating temperature	32 ~ 140°F (0 ~ 60°C)
Storage temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating humidity	60°C @ 90% RH Non-Condensing
Certificate	CE & FCC Class A
Form factor	Micro-ATX Form Factor, 9.6” x 9.6” (244mm x 244mm)

(continued on the next page)

Graphics	
Chipset	Intel® Graphics Media Accelerator
HDMI	Up to 4096 x 2160 @60/30Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60Hz, Dual Channel 18/24-bit
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
Rear I/O ports	
Audio	3 x Audio jacks: Line-in, Mic-in, Line-out
Ethernet	2 x LAN (RJ45) ports
Serial Port	1 x DB-9 COM (supports RS-232/422/485, 5V/12V/RI)
USB	2 x USB 3.2 Gen 2 ports (10 Gbps) 4 x USB 3.2 Gen 1 ports (5 Gbps) (bottom left one with BIOS receovery function)
Display	3 x HDMI™ ports (1 x 2.0, 2 x 1.4) 1 x VGA port
Others	1 x BIOS recovery button with Asmedia AI1315
Internal I/O connectors	
Storage	4 x SATA 6.0Gb/s ports (support RAID 0/1/5/10) 1 x M.2 2280/2242 M-key socket (supports PCIex4) 1 x M.2 3042/3052 B-key socket (supports PCIe/USB/SATA)
Serial Port	3 x RS-232 headers
USB	1 x USB 3.2 Gen 1 box header supports additional 2 USB ports (2x5pin, p=2.54mm) 1 x USB 2.0 header supports additional 2 USB ports (2x5pin, p=2.54mm) 1 x USB 3.2 Gen 1 vertical type A connector
Fan	1 x CPU Fan header (4-pin) 2 x System Fan headers (4-pin)
DIO	1 x 8-bit Digital I/O interface (In/Out programmable)
Power	1 x 24-pin EATX Power header 1 x 8-pin EATX 12V Power connector
Others	1 x Chassis Intrusion header 1 x AT/ATX mode selection jumper 1 x Front Panel header 1 x Clear CMOS jumper 1 x 3-pin ME lock header
Others	
OS Support	Windows® 10 64-bit Linux Ubuntu 64-bit (20.04.0/Kernel 5.4)

NOTE: The specifications are subject to change without notice. Please refer to the ASUS website for the latest specifications.

Chapter 2

Motherboard information

2.1 Before you proceed

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

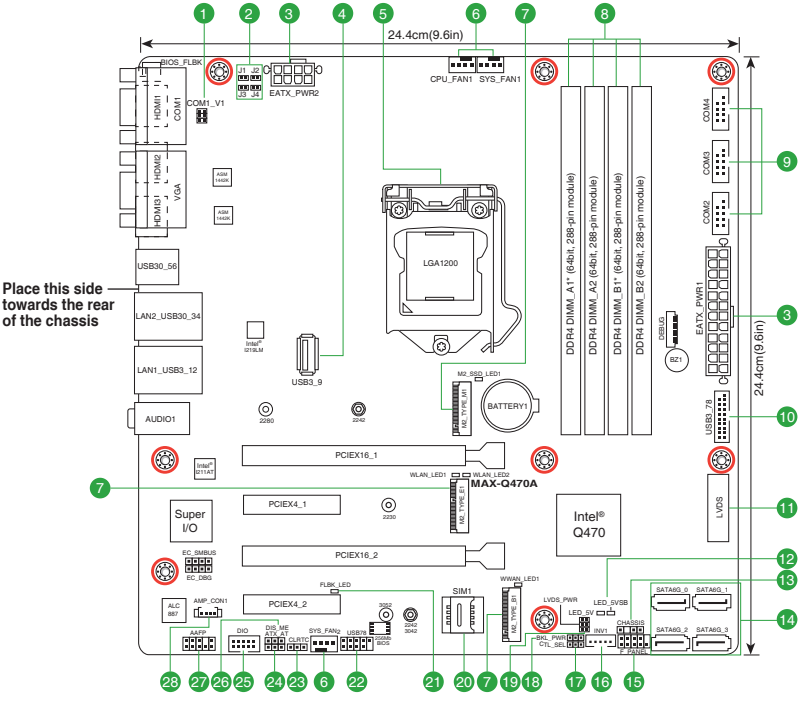
CAUTION!

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

2.2 Motherboard layout

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

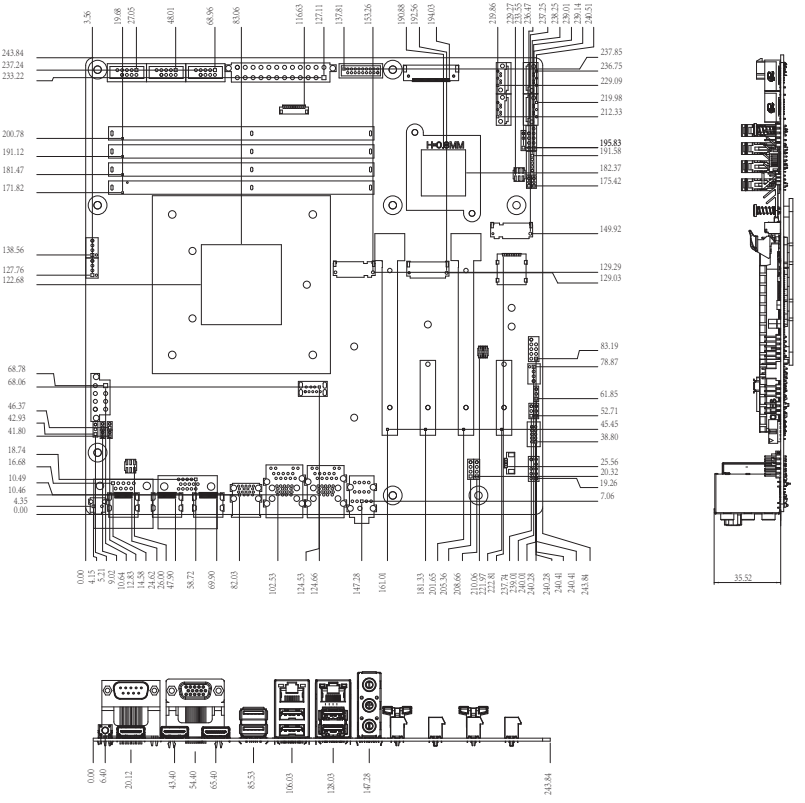
CAUTION! Do not overtighten the screws! Doing so can damage the motherboard.



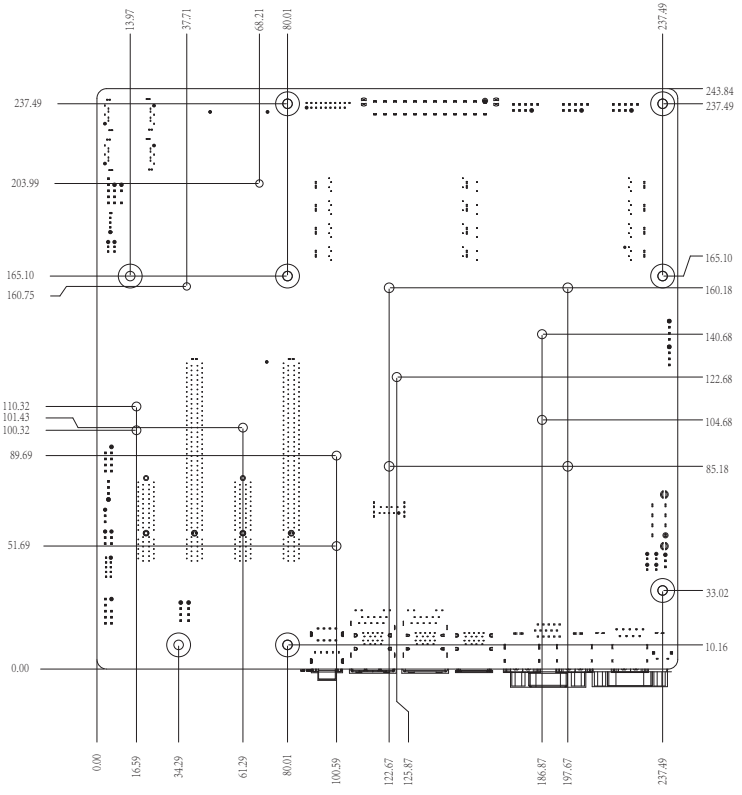
Connectors/Jumpers/Slots/LEDs		Page
1.	COM1 Ring/+5V/+12V selection jumper (COM1_V1)	2-14
2.	COM1 RS422/RS485 terminators (2-pin J1~4)	2-13
3.	ATX power connectors (24-pin EATX_PWR1, 8-pin EATX_PWR2)	2-20
4.	USB 3.2 Gen 1 connector (USB3_9)	2-26
5.	Intel® LGA1200 CPU socket	2-6
6.	CPU and System Fan headers (4-pin CPU_FAN1, SYS_FAN1/2)	2-21
7.	M.2 M-key/E-key/B-key sockets (M2_TYPE_M1/E1/B1)	2-25
8.	DDR4 DIMM slots	2-10
9.	Serial Port headers (10-1 pin COM2~4)	2-24
10.	USB 3.2 Gen 1 header (20-1 pin USB3_78)	2-26
11.	LVDS header (40-pin LVDS)	2-27
12.	Standby Power LEDs (LED_5V/5VSB)	2-17
13.	Chassis intrusion jumper (4-1 pin CHASSIS)	2-14
14.	Serial ATA 6.0 Gb/s connectors (7-pin SATA6G_0~3)	2-23
15.	Front panel system panel header (10-1 pin F_PANEL)	2-22
16.	Backlight inverter power header (5-pin INV1)	2-20
17.	Inverter backlight control mode selection jumper (3-pin CTL_SEL)	2-16
18.	Inverter voltage selection jumper (3-pin BKL_PWR)	2-16
19.	LVDS panel voltage selection jumper (6-pin LVDS_PWR)	2-15
20.	Micro SIM card slot (SIM1)	2-27
21.	FlashBack™ LED (FLBK_LED)	2-17
22.	Clear RTC RAM (3-pin CLRTC)	2-12
23.	AT/ATX mode selection jumper (3-pin ATX_AT)	2-13
24.	Digital I/O header (10-pin DIO)	2-25
25.	Intel® ME jumper (3-pin DIS_ME)	2-15
26.	Front panel audio header (10-1 pin AAPF)	2-23
27.	Audio amplifier header (4-pin AMP_CON1)	2-21

2.3 Screw size

2.3.1 Component side

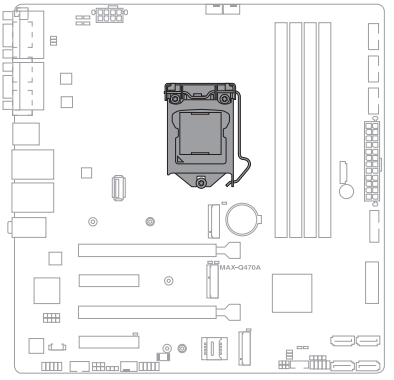


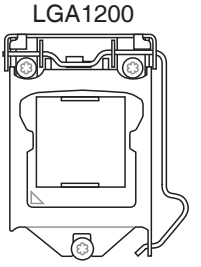
2.3.2 Solder side



2.4 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1200 socket designed for the Intel® 10th Generation (Comet Lake-S) Core™ i9/ i7/ i5/ i3 14nm LGA1200 socket Processor.





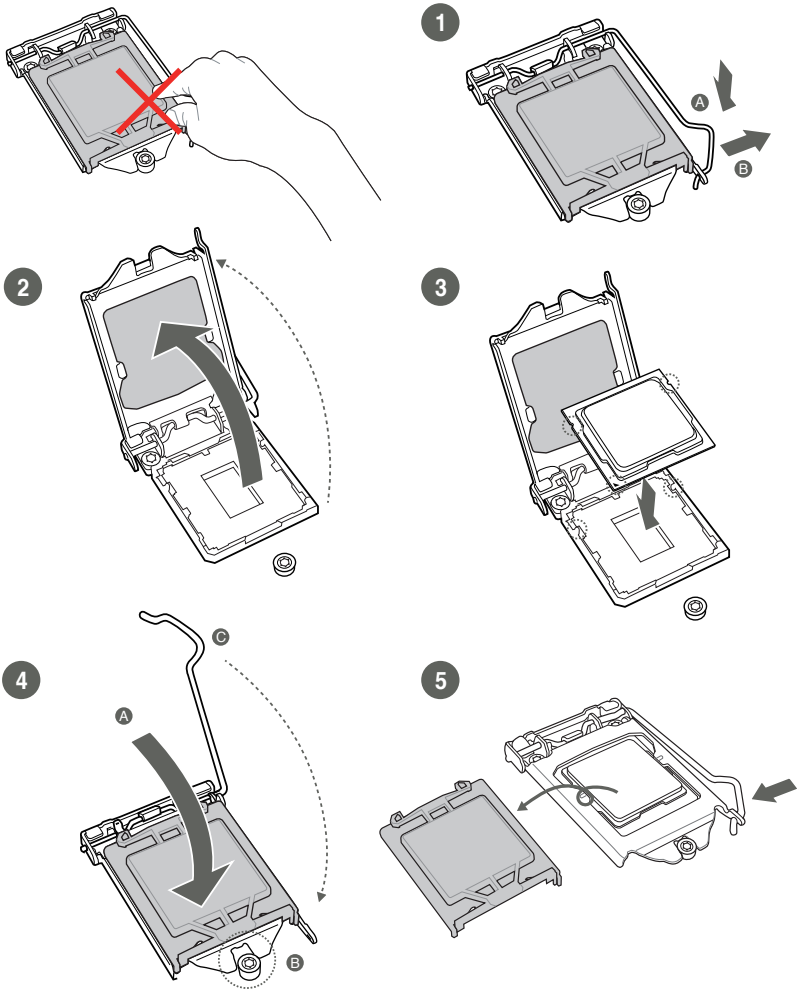
CAUTION!

- Ensure that you install the correct CPU designed for LGA1200 socket only. DO NOT install a CPU designed for other sockets on the LGA1200 socket.
- The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU.
- Ensure that all power cables are unplugged before installing the CPU.
- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. ASUS will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. ASUS will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the 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.

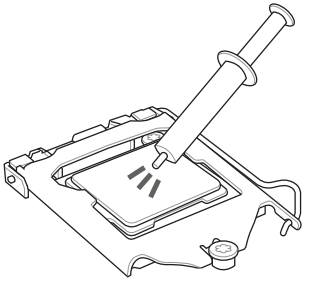
2.4.1 CPU installation

CAUTION!

- Ensure that you install the correct CPU designed for LGA1200 socket only. DO NOT install a CPU designed for LGA1155, LGA1156, and LGA1151 sockets on the LGA1200 socket.
- ASUS will not cover damages resulting from incorrect CPU installation/ removal, incorrect CPU orientation/placement, or other damages resulting from negligence by the user.

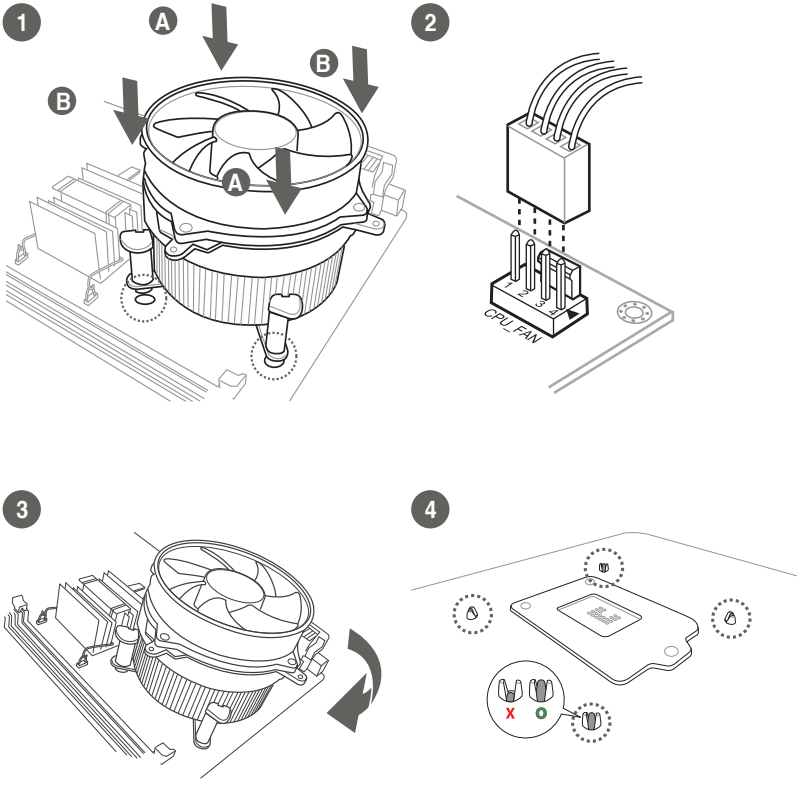


2.4.2 CPU heatsink and fan assembly installation



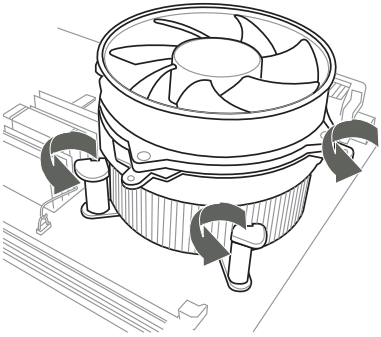
CAUTION! Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

To install the CPU heatsink and fan assembly

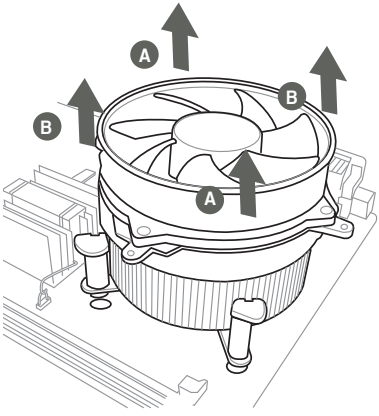


To uninstall the CPU heatsink and fan assembly

1



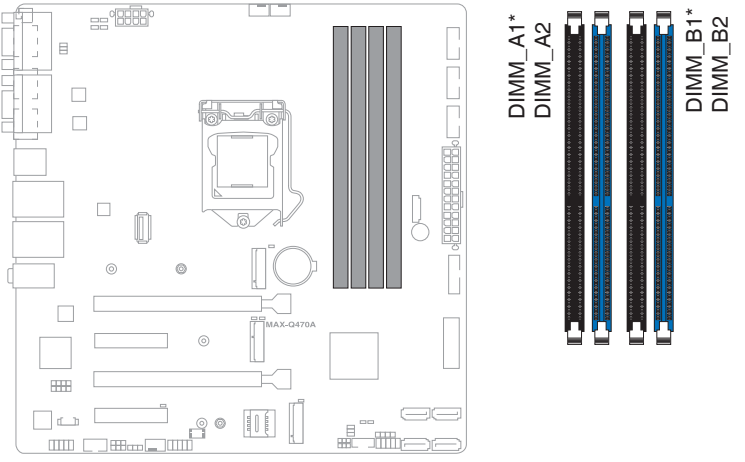
2



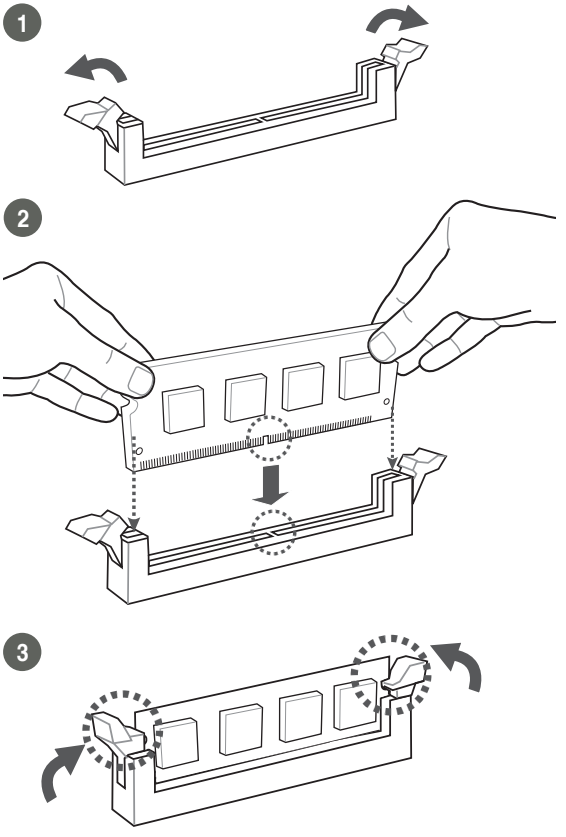
2.5 System memory

This motherboard comes with four Double Data Rate 4 (DDR4) Dual Inline Memory Module (DIMM) sockets. A DDR4 module is notched differently from a DDR, DDR2, or DDR3 module. DO NOT install a DDR, DDR2, or DDR3 memory module to the DDR4 slot.

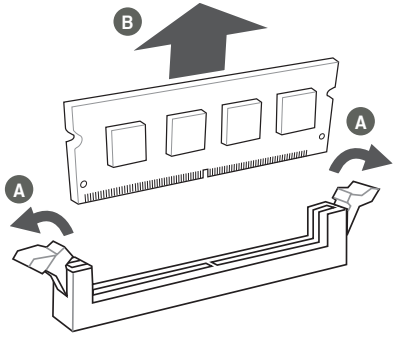
NOTE: According to Intel® CPU specifications, DIMM voltage below 1.2V is recommended to protect the CPU.



2.5.1 DIMM installation



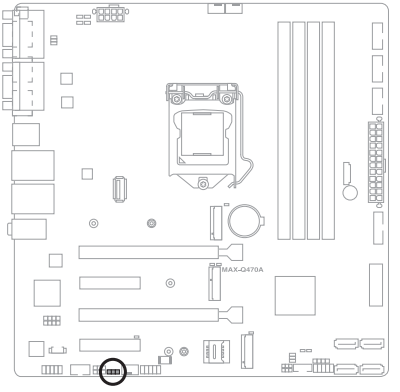
To remove a DIMM

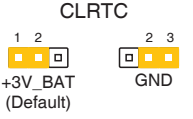


2.6 Jumpers

1. Clear RTC RAM (3-pin CLRTC)

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





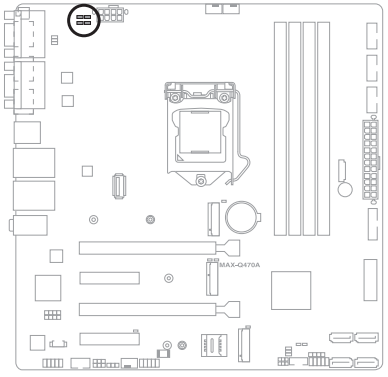
To erase the RTC RAM:

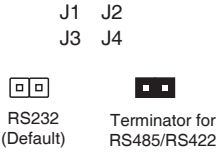
1. Turn OFF the computer and unplug the power cord.
2. Move the jumper cap from pins 1-2 (default) to pins 2-3. Keep the cap on pins 2-3 for about 5~10 seconds, then move the cap back to pins 1-2.
3. Plug the power cord and turn ON the computer.
4. Hold down the **<Del>** key during the boot process and enter BIOS Setup to reenter data.

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

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.

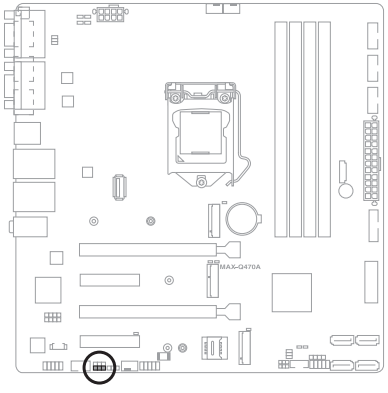
2. COM1 RS422/RS485 terminators (2-pin J1~4)

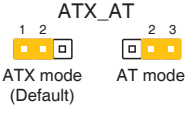




Pins	Mode
Open jumpers J1, J2, J3 and J4	RS232 (Default)
Short-circuit jumpers J1, J2, J3 and J4	Terminator for RS485/422

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





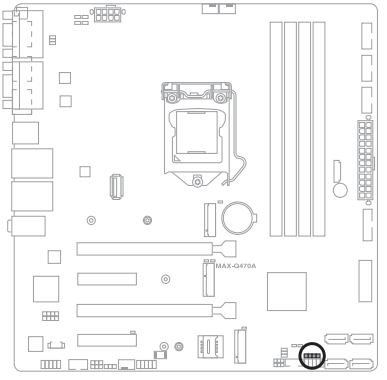
Pins	Mode
1-2 (Default)	ATX mode
2-3	AT mode

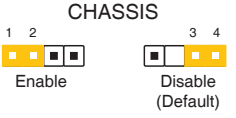
NOTE: Jumper setting of **ATX_AT** should be consistent with the setting of **Power Mode** in BIOS. Refer to section **3.3.10 Power Management**.

4. Chassis intrusion jumper (4-1 pin CHASSIS)

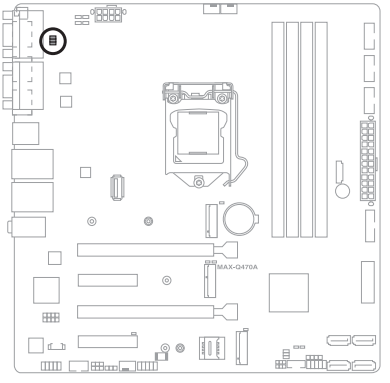
This header is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a high-level signal to this connector when a chassis component is removed or replaced. The signal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

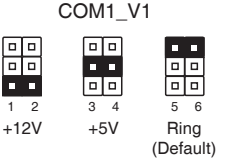
By default, the pin labeled “Chassis Signal” and “Ground” are shorted with a jumper cap. Remove the jumper caps only when you intend to use the chassis intrusion detection feature.





5. COM1 Ring/+5V/+12V selection jumper (6-pin COM1_V1)

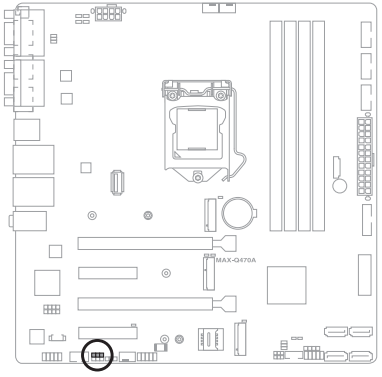


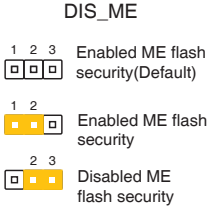


Setting	Pins
+12V	1-2
+5V	3-4
Ring (Default)	5-6

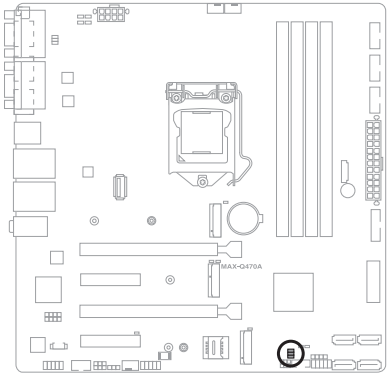
6. Intel® ME jumper (3-pin DIS_ME)

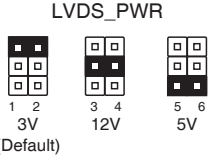
This jumper allows you to force the Intel® Management Engine (ME) to boot from recovery mode when ME becomes corrupted.





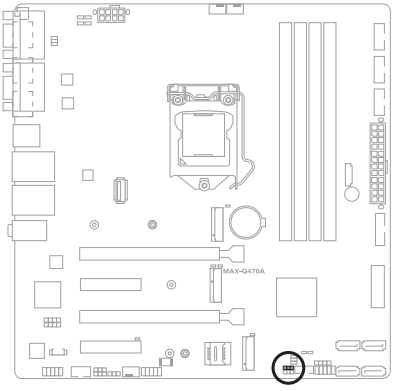
7. LVDS panel voltage selection jumper (6-pin LVDS_PWR)

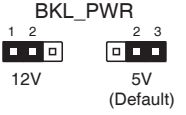




Setting	Pins
3V (Default)	1-2
12V	3-4
5V	5-6

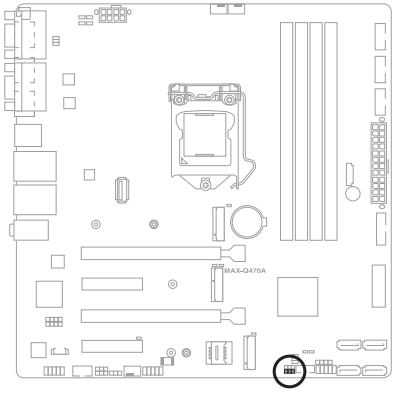
8. Inverter voltage selection jumper (3-pin BKL_PWR)

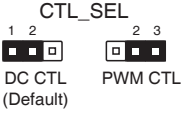




Setting	Pins
12V	1-2
5V (Default)	2-3

9. Inverter backlight control mode selection jumper (3-pin CTL_SEL)



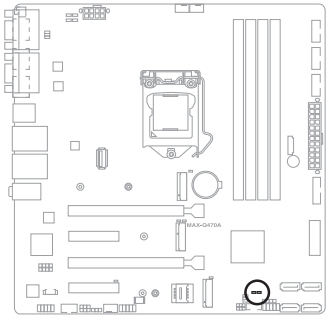


Setting	Pins
DC Voltage Control (Default)	1-2
PWM Voltage Control	2-3

2.7 Onboard LEDs

1. Standby Power LEDs (LED_5V/5VSB)

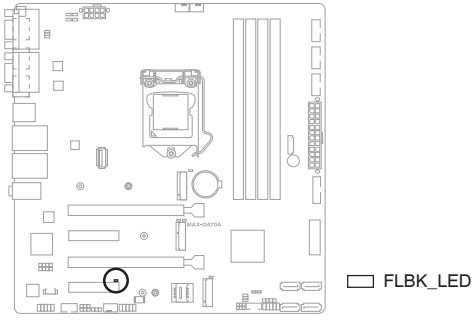
The motherboard comes with two standby power LEDs that light up to indicate that the system is ON, in sleep mode or in soft-off mode. This is a reminder that you should shut down the system and unplug the power cable before removing or plugging in any motherboard component. The illustration below shows the location of the onboard LEDs.



System state	LED indication
S0 state	LED_5V & LED_5VSB keep lighting
S5 state	Only LED_5VSB keep lighting

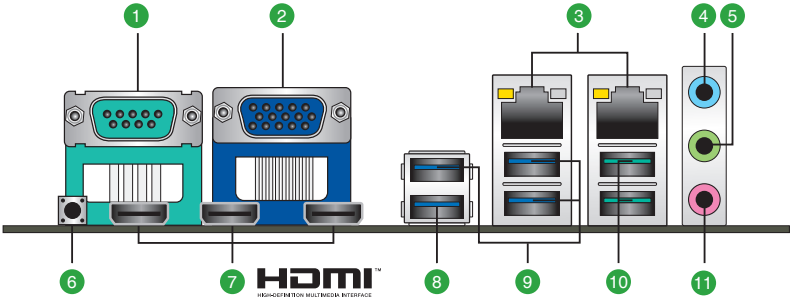
2. FlashBack™ LED (FLBK_LED)

The FlashBack™ LED lights up or blinks to indicate the status of the BIOS FlashBack™.



2.8 Connectors

2.8.1 Rear panel connectors



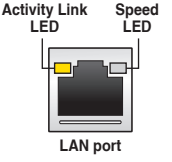
1. **Serial (COM, RS-232/422/485) port.** This port connects to a modem or other device that conforms with serial specification.

2. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.

3. **LAN1~2 (RJ-45) ports.** These ports allow Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications.

LAN port LED indications

ACT/LINK LED		SPEED LED	
Status	Description	Status	Description
OFF	No link	OFF	10 Mbps connection
ORANGE	Linked	ORANGE	100 Mbps connection
BLINKING	Data activity	GREEN	1 Gbps connection



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

5. **Line Out port (lime).** This port connects to a headphone or a speaker. In the 4.1, and 5.1-channel configurations, the function of this port becomes Front Speaker Out.

6. **BIOS recovery button.** This botton allows you to easily recover a BIOS image using a USB-attached device.

NOTE: For instructions on how to recover BIOS using a USB-attached device, refer to **3.8 BIOS Flash Recovery**.

7. **HDMI™ ports.** These ports are for a High-Definition Multimedia Interface (HDMI™) connector, and is HDCP compliant allowing playback of HD DVD, Blu-ray, and other protected content.

8. **USB 3.2 Gen 1 port with BIOS recovery function.** Insert a USB storage device to this 9-pin Universal Serial Bus (USB) port to run BIOS recovery.

9. **USB 3.2 Gen 1 (up to 5Gbps) ports (blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports connect to USB 3.2 Gen 1 devices.

NOTES:

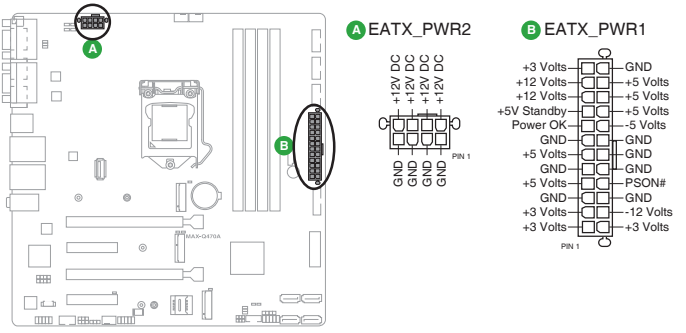
- We strongly recommend that you connect USB 3.2 Gen 1 devices to USB 3.2 Gen 1 ports for a faster and better performance from your USB 3.2 Gen 1 devices.
- Due to the design of the Intel® 300 series chipset, all USB devices connected to the USB 2.0 and USB 3.2 Gen 1 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

10. **USB 3.2 Gen 2 (up to 10Gbps) ports (teal blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports connect to USB 3.2 Gen 2 devices.
11. **Microphone port (pink).** This port connects to a microphone.

2.8.2 Internal connectors

1. ATX power connectors (24-pin EATX_PWR1, 8-pin EATX_PWR2)

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

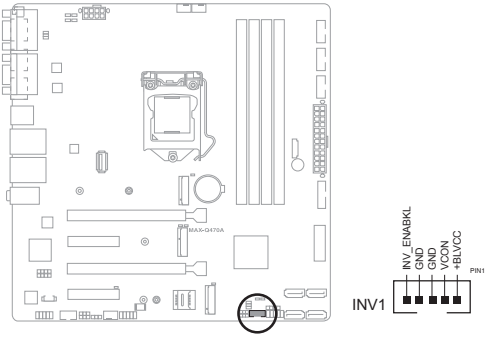


IMPORTANT!

- For a fully configured system, we recommend that you use a power supply unit (PSU) that complies with ATX 12 V Specification 2.0 (or later version) and provides a minimum power of 330W.
- We recommend that you use a PSU with higher power output when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.

2. Backlight inverter power header (5-pin INV1)

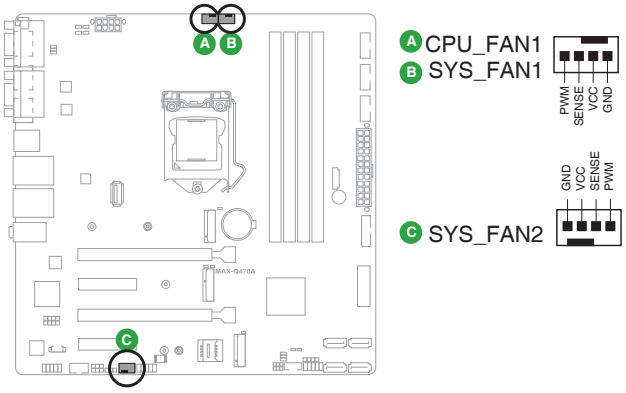
Connect the backlight inverter power cable to this header.



IMPORTANT! The backlight inverter power header supports 1A current to the maximum.

3. CPU and System Fan headers (4-pin CPU_FAN1, SYS_FAN1/2)

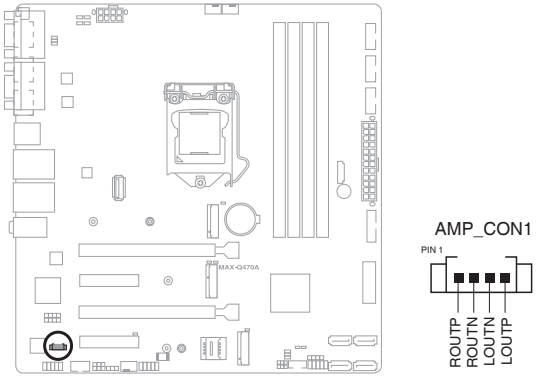
Connect the fan cables to the fan headers on the motherboard, ensuring that the black wire of each cable matches the ground pin of the header.



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!

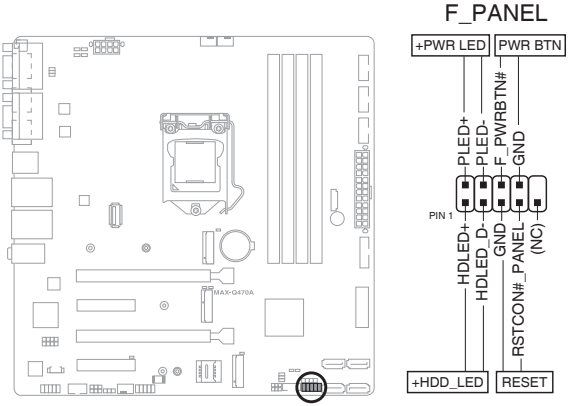
4. Audio amplifier header (4-pin AMP_CON1)

This header is for an internal stereo amplifier speakers support (2W/4Ω via WtoB header).



5. Front panel system panel header (10-1 pin F_PANEL)

This header supports several chassis-mounted functions.



- **System power LED (2-pin P_LED)**

  This 2-pin header is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and turns off when the system is in ACPI-S3/S4/S5 mode by default.

- **Hard disk drive activity LED (2-pin +HDLED)**

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

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

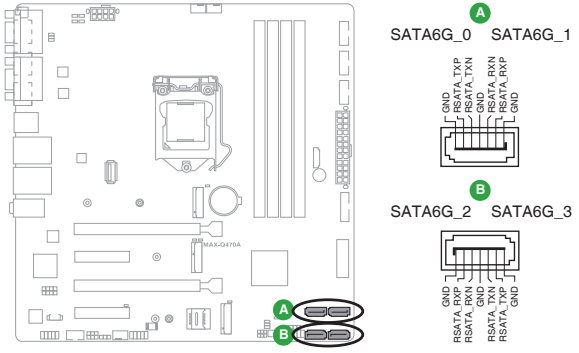
  This 2-pin header is for the system power button. Pressing the power button turns the system on, puts the system in sleep, or soft-off mode depending on the operating system setting. Pressing the power switch for more than four seconds while the system is ON turns the system OFF.

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

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

6. Serial ATA 6.0 Gb/s connectors (7-pin SATA6G_0~3)

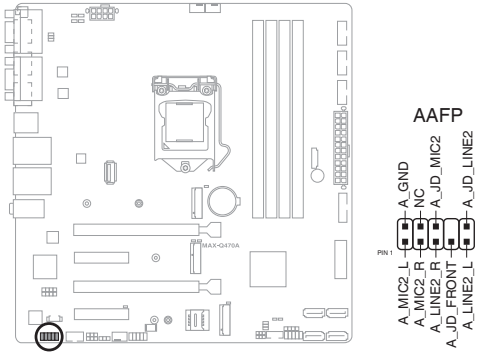
These connectors connect to Serial ATA 6.0 Gb/s hard disk drives via SATA 6.0 Gb/s signal cables.



NOTE: When using hot-plug and NCQ, set the SATA Mode Selection item in the BIOS to [AHCI]. See section **3.3.3 SATA Configuration** for details.

7. Front panel audio header (10-1 pin AAFP)

This header 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 header.

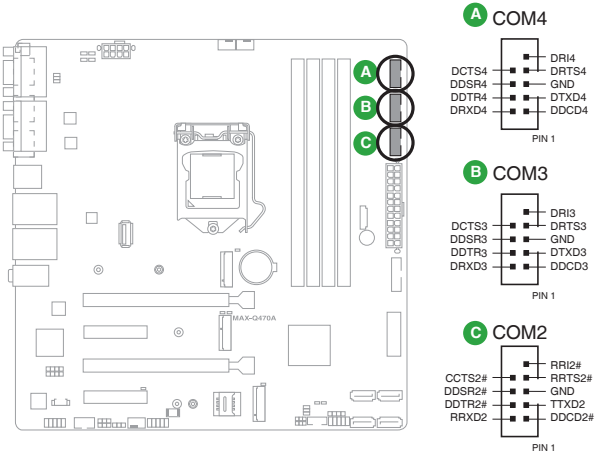


IMPORTANT!

- We recommend that you connect a high-definition front panel audio module to this header to avail of the motherboard's high-definition audio capability.
- If you want to connect a high-definition front panel audio module to this header, set the Front Panel Type item in the BIOS Setup to [HD Audio]. By default, this header is set to [HD Audio].

8. Serial Port headers (10-1 pin COM2~4)

These headers are for serial (COM) ports. Connect the serial port module cable to this header, then install the module to a slot opening at the back of the system chassis.

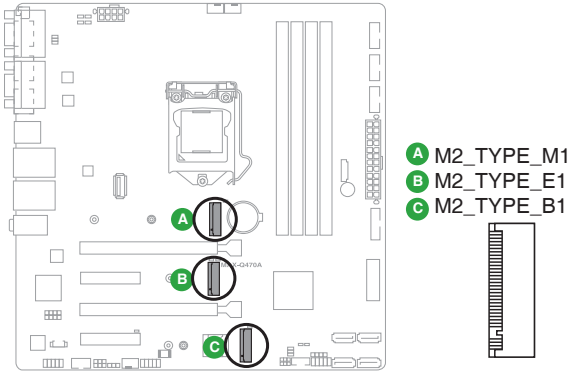


NOTE: The COM module is purchased separately.

Pin	Signal	Pin	Signal
1	DCD# (422TXD-/485DATA-)	2	RXD (422TXD+/485DATA+)
3	TXD (422RXD+)	4	DTR# (422RXD-)
5	GND	6	DSR#
7	RTS#	8	CTS#
9	RI/+5V/+12V	10	N.C.

9. M.2 M-key/E-key/B-key slots (M2_TYPE_M1/E1/B1)

These M.2 slots allow you to install M.2 modules.

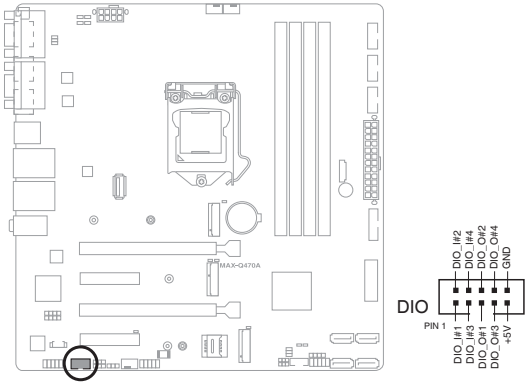


NOTES:

- The M.2 module is purchased separately.
- The M.2 M-key slot supports type 2280/2242 PCIex4 storage devices.
- The M.2 E-key slot supports type 2230 PCIe/CNVI module devices.
- The M.2 B-key slot supports type 3042/3052 PCIe/USB/SATA storage devices.

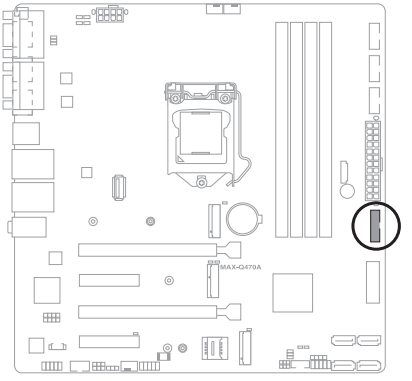
10. Digital I/O header (10-pin DIO)

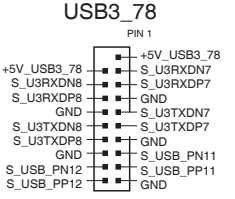
This header includes eight I/O lines (In/Out programmable). All of the Digital I/O lines are programmable and each I/O pin can be individually programmed to support various devices.



11. USB 3.2 Gen 1 header (20-1 pin USB3_78)

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



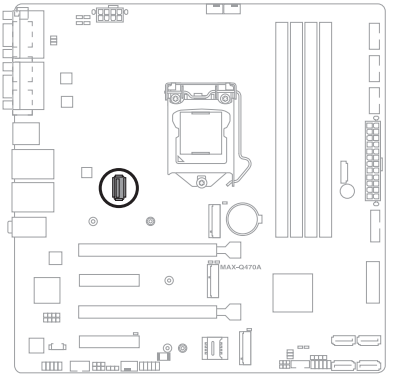


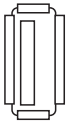
NOTES:

- These headers are based on xHCI specification. We recommend you to install the related driver to fully use the USB 3.2 ports under Windows® 7.
- The plugged USB 3.2 device will run on xHCI mode.

12. USB 3.2 Gen 1 connector (USB3_9)

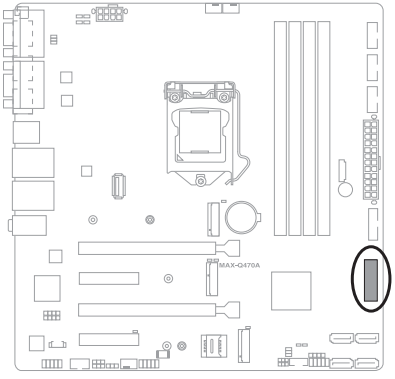
This connector allows you to connect a USB 3.2 Gen 1 cable for additional USB 3.2 Gen 1 front or rear panel ports.

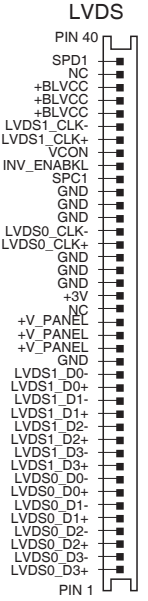




13. LVDS header (40-pin LVDS)

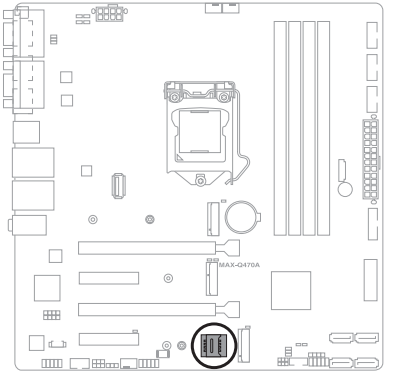
This header is for an LCD monitor that supports Low-Voltage Differential Signaling (LVDS) interface.

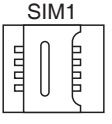




14. Micro SIM card slot (SIM1)

This slot allows you to install a micro SIM card.





Chapter 3

BIOS setup

3.1 BIOS Setup program

Use the BIOS Setup program to 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> during the Power-On Self Test (POST). If you do not press <Delete>, POST continues with its routine.

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!

- 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 **Save & Exit** menu. See section **3.7 Save & Exit menu**.
- The BIOS Setup screens shown in this section are for reference purposes only, and may not exactly match what you see on your screen.

3.1.1 BIOS menu screen

Menu bar

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.
Chipset	For viewing and changing chipset settings.
Security	For setting up BIOS security settings.
Boot	For changing the system boot configuration.
Save & Exit	For selecting the exit options and loading default settings.

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 an overview of the basic system information, and allows you to set the system date and 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.

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

Case Open Warning [Disabled]

Allows you to enable or disable the case open detecting function.
Configuration options: [Disabled] [Enabled] [Clear]

3.3.1 CPU Configuration

The items in this menu show CPU-related information the BIOS automatically detects and allow you to adjust the CPU configuration parameters.

IMPORTANT! The items shown in the submenu may be different depending on the type of CPU installed.

Hyper-Threading [Enabled]

The Intel Hyper-Threading Technology allows a hyper-threading processor to appear as two logical processors to the operating system, allowing the operating system to schedule two threads or processes simultaneously.
Configuration options: [Disabled] [Enabled]

[Disabled]	Only one thread per activated core is enabled.
[Enabled]	Two threads per activated core are enabled.

Intel (VMX) Virtualization Technology [Enabled]

Allows you to enable or disable a VMM to utilize the additional hardware capacities provided by Vanderpool Technology. Configuration options: [Disabled] [Enabled]

[Disabled]	Disables this function.
[Enabled]	Allows a hardware platform to run multiple operating systems separately and simultaneously, enabling one system to virtually function as several systems.

3.3.2 Trusted Computing

The items in this menu allow you to configure the Trusted Computing settings.

Security Device Support [Enable]

Allows you to enable or disable BIOS support for security devices.
Configuration options: [Disable] [Enable]

NOTE: When **Security Device Support** is set to **[Disable]**, the operating system will not show the security device, and TCG EFI protocol and INT1A interface will be unavailable.

SHA-1 PCR Bank [Disabled]

Allows you to enable or disable SHA-1 PCR Bank.
Configuration options: [Disabled] [Enabled]

SHA256 PCR Bank [Enabled]

Allows you to enable or disable SHA256 PCR Bank.
Configuration options: [Disabled] [Enabled]

SHA384 PCR Bank [Disabled]

Allows you to enable or disable SHA384 PCR Bank.
Configuration options: [Disabled] [Enabled]

Pending operation [None]

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

NOTE: In order to change the state of the security device, your computer will reboot during restart.

Platform Hierarchy [Enabled]

Allows you to enable or disable Platform Hierarchy.
Configuration options: [Enabled] [Disabled]

Storage Hierarchy [Enabled]

Allows you to enable or disable Storage Hierarchy.
Configuration options: [Enabled] [Disabled]

Endorsement Hierarchy [Enabled]

Allows you to enable or disable Endorsement Hierarchy.
Configuration options: [Enabled] [Disabled]

TPM 2.0 UEFI Spec Version [TCG_2]

Allows you to select the TCG2 specification version support.
Configuration options: [TCG_1_2] [TCG_2]

[TCG_1_2] Compatible mode for Windows® 8 or Windows® 10.

[TCG_2] New TCG2 protocol and event format for Windows® 10 or later.

Physical Presence Spec Version [1.3]

Allows you to select which Physical Presence Interface Specification Version is supported by the operating system. Configuration options: [1.2] [1.3]

NOTE: Some HCK tests might not support Version 1.3.

TPM 2.0 InterfaceType [TIS]

Device Select [Auto]

Allows you to select the TPM devices supported. When set to [Auto], support to TPM 2.0 devices will be the default; if no TPM 2.0 device is found, TPM 1.2 devices will be enumerated. Configuration options: [TPM 1.2] [TPM 2.0] [Auto]

3.3.3 SATA Configuration

The BIOS automatically detects the presence of SATA devices. The states of the Serial ATA ports to which no SATA device is connected will appear as **Empty**.

SATA Controller(s) [Enabled]

Allows you to enable or disable the onboard SATA device(s).
Configuration options: [Disabled] [Enabled]

NOTE: The following items appear when you set **SATA Controller(s)** to **[Enabled]**.

SATA Mode Selection [AHCI]

Allows you to select how SATA controllers operate.
Configuration options: [AHCI] [RAID]

[AHCI] Set to [AHCI] when you want the SATA hard disk drives to use the AHCI (Advanced Host Controller Interface). The AHCI allows the onboard storage driver to enable advanced Serial ATA features that increases storage performance on random workloads by allowing the drive to internally optimize the order of commands.

[RAID] Set to [RAID] when you want to create a RAID configuration from the SATA hard disk drives.

M.2 SATA Port

Port 1 [Enabled]

Allows you to enable or disable this M.2 SATA port.
Configuration options: [Disabled] [Enabled]

Hot Plug [Enabled]

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

Serial ATA Port 2~5

Port 2~5 [Enabled]

These items allow you to enable or disable Serial ATA ports 2~5.
Configuration options: [Disabled] [Enabled]

Hot Plug [Enabled]

These items allow you to select whether to designate ports 2~5 as Hot Pluggable. Configuration options: [Disabled] [Enabled]

3.3.4 USB Configuration

The items in this menu display the USB configuration parameters. The **USB Devices** item lists the auto-detected values. If no USB device is detected, the screen shows **None**.

3.3.5 Hardware Monitor

The items in this menu provide you an overview of the CPU, PCH and Ambient temperatures, CPU and System fan speeds, and the various voltage values, and allow you to configure the smart fan settings.

Smart Fan Configuration

CPU Fan Mode [Auto]

Allows you to select the CPU Fan control mode.
Configuration options: [Auto] [Silent] [Performance] [Full Speed] [Manual] [Disable]

NOTE: The following item appears when you set **CPU FAN Mode** to **[Manual]**.

PWM Duty Cycle Value [128]

Allows you to set the PWM value allocated for the CPU Fan control.
Input value range: [0] – [255]

System Fan 1/2 Mode [Auto]

Allows you to select the System Fan 1/2 control mode.
Configuration options: [Auto] [Silent] [Performance] [Full Speed] [Manual] [Disable]

NOTE: The following items appear when you set **System Fan 1/2 Mode** to **[Manual]**.

PWM Duty Cycle Value [128]

These items allow you to set the PWM value allocated for the System Fan 1/2 control. Input value range: [0] – [255]

3.3.6 SIO Configuration

The items in this menu allow you to configure Super I/O logical devices, resources, features, and other SIO chip settings.

[*Active*] Serial Port 1

Allow you to view and set the basic properties of the SIO logical device, including IO Base, IRQ Range, DMA Channel, and Device Mode.

Use This Device [Enabled]

Allows you to enable or disable this logical device.
Configuration options: [Disabled] [Enabled]

CAUTION! Disabling SIO logical devices may lead to unwanted side effects. Please proceed with caution.

NOTE: The following two items appear when you set **Use This Device** to **[Enabled]**.

Possible: [IO=240h; IRQ=11; DMA;]

Allows you to change the device resource settings.
Configuration options: [Use Automatic Settings] [IO=240h; IRQ=11; DMA;] [IO=240h; IRQ=11; DMA;] [IO=248h; IRQ=11; DMA;] [IO=250h; IRQ=11; DMA;] [IO=258h; IRQ=11; DMA;]

Mode: [RS232]

Allows you to select the mode of Serial Port 1.
Configuration options: [RS232] [RS422] [RS485]

[*Active*] Serial Port 2

Allow you to view and set the basic properties of the SIO logical device, including IO Base, IRQ Range, and DMA Channel.

Use This Device [Enabled]

Allows you to enable or disable this logical device.
Configuration options: [Disabled] [Enabled]

CAUTION! Disabling SIO logical devices may lead to unwanted side effects. Please proceed with caution.

NOTE: The following item appears when you set **Use This Device** to **[Enabled]**.

Possible: [IO=248h; IRQ=11; DMA;]

Allows you to change the device resource settings.
Configuration options: [Use Automatic Settings] [IO=248h; IRQ=11; DMA;] [IO=240h; IRQ=11; DMA;] [IO=248h; IRQ=11; DMA;] [IO=250h; IRQ=11; DMA;] [IO=258h; IRQ=11; DMA;]

[*Active*] Serial Port 3

Allow you to view and set the basic properties of the SIO logical device, including IO Base, IRQ Range, and DMA Channel.

Use This Device [Enabled]

Allows you to enable or disable this logical device.
Configuration options: [Disabled] [Enabled]

CAUTION! Disabling SIO logical devices may lead to unwanted side effects. Please proceed with caution.

NOTE: The following item appears when you set **Use This Device** to **[Enabled]**.

Possible: [IO=250h; IRQ=11; DMA;]

Allows you to change the device resource settings.
Configuration options: [Use Automatic Settings] [IO=250h; IRQ=11; DMA;] [IO=240h; IRQ=11; DMA;] [IO=248h; IRQ=11; DMA;] [IO=250h; IRQ=11; DMA;] [IO=258h; IRQ=11; DMA;]

[*Active*] Serial Port 4

Allow you to view and set the basic properties of the SIO logical device, including IO Base, IRQ Range, and DMA Channel.

Use This Device [Enabled]

Allows you to enable or disable this logical device.
Configuration options: [Disabled] [Enabled]

CAUTION! Disabling SIO logical devices may lead to unwanted side effects. Please proceed with caution.

NOTE: The following item appears when you set **Use This Device** to **[Enabled]**.

Possible: [IO=258h; IRQ=11; DMA;]

Allows you to change the device resource settings.
Configuration options: [Use Automatic Settings] [IO=258h; IRQ=11; DMA;] [IO=240h; IRQ=11; DMA;] [IO=248h; IRQ=3,4,5,6,7,10,11,12; DMA;] [IO=250h; IRQ=3,4,5,6,7,10,11,12; DMA;] [IO=258h; IRQ=3,4,5,6,7,10,11,12; DMA;]

3.3.7 AMT Configuration

The items in this menu allow you to adjust the Intel® Active Management Technology (AMT) parameters.

AMT BIOS Features [Enabled]

Allows you to enable or disable the AMT BIOS features. Setting this item to [disabled] will render MEBx Setup inaccessible, but does not disable Manageability Features in FW. Configuration options: [Disabled] [Enabled]

3.3.8 PCH-FW Configuration

The items in this menu display firmware related information and allow you to configure the Management Engine (ME) Technology parameters.

Firmware Update Configuration

Me FW Image Re-Flash [Disabled]

Allows you to enable or disable ME Firmware Image Re-Flash function. Configuration options: [Disabled] [Enabled]

FW Update [Enabled]

Allows you to enable or disable ME Firmware Update function. Configuration options: [Disabled] [Enabled]

3.3.9 NVMe Configuration

The items in this menu display the NVMe controller and drive information of the connected devices. The screen shows **No NVME Device Found** if no NVME device is detected.

3.3.10 Power Management

The items in this menu allow you to configure the power management settings.

Power Mode [ATX Type]

Restore AC Power Loss [Last State]

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

RI Wake Event [Disabled]

Allows you to enable or disable the system to wake up from RI#. Configuration options: [Disabled] [Enabled]

RTC wake system from S5 [Disabled]

Configuration options: [Disabled] [Enabled]

[Disabled]	Disables the system to wake up from S5.
[Fixed Time]	Enables the system to wake up at the specified hr::min::sec.
[Dynamic Time]	Enables the system to wake up at the current time plus a specified number of minutes.

NOTE: The following item appears when you set **RTC wake system from S5** to **[Fixed Time]**.

Wake up day/hour/minute/second [0]

Allows you to specify the values for the day/hour/minute/second of the system wake up time.

NOTE: The following item appears when you set **RTC wake system from S5** to **[Dynamic Time]**.

Wake up minute increase [1]

Allows you to specify the number of minutes added to the current time before waking up system. Input value range: [1] – [5]

3.3.11 Digital IO Port Configuration

The items in this menu allow you to change the Input/Output of Digital IO port configuration settings.

DIO Port1~4 [Output]

These items allow you to set DIO ports 1~4 as input or output.
Configuration options: [Input] [Output]

NOTE: The following items appear when you set **DIO Port1~4** to **[Output]**.

Output Level [High]

These items allow you to set the output levels of DIO ports 1~4.
Configuration options: [Low] [High]

DIO Port5~8 [Input]

These items allow you to set DIO ports 5~8 as input or output.
Configuration options: [Input] [Output]

NOTE: The following items appear when you set **DIO Port5~8** to **[Output]**.

Output Level [High]

These items allow you to set the output levels of DIO ports 5~8.
Configuration options: [Low] [High]

3.4 Chipset menu

The Chipset menu items allow you to configure the chipset related settings.

3.4.1 System Agent (SA) Configuration

The items in this menu allow you to adjust the System Agent (SA) parameters.

Primary Display [Auto]

Allows you to select which of IGFX, PEG, or PCI graphics devices should be the primary display device, or select SG for Switchable Gfx.
Configuration options: [Auto] [IGFX] [PEG] [PCI] [SG]

PCIEX16_1 Gen Speed [Auto]

Allows you to set the PEG 0:1:0 maximum speed.
Configuration options: [Auto] [Gen1] [Gen2] [Gen 3]

PCIEX16_2 Gen Speed [Auto]

Allows you to set the PEG 0:1:1 maximum speed.
Configuration options: [Auto] [Gen1] [Gen2] [Gen 3]

LVDS [Disabled]

Allows you to enable or disable LVDS (CH7511).
Configuration options: [Disabled] [Enabled]

NOTE: The following item appears when you set **LVDS** to **[Enabled]**.

LVDS Panel Type [1024x768,18bit,60Hz]

Allow you to select LCD panel used by the internal graphics device by selecting the appropriate setup item. Configuration options: [640x480,18bit,60Hz] [800x480,18bit,60Hz] [800x600,18bit,60Hz] [1024x600,18bit,60Hz] [1024x768,18bit,60Hz] [1024x768,24bit,60Hz] [1024x768,24bit,60Hz] [1280x1024,48bit,60Hz] [1366x768,24bit,60Hz] [1440x900,48bit,60Hz] [1600x1200,48bit,60Hz] [1920x1080,48bit,60Hz] [1920x1200,48bit,60Hz] [1280x800,24bit,60Hz] [1280x800,18bit,60Hz]

LVDS Backlight Invert [Normal]

Configuration options: [Normal] [Invert]

LVDS Backlight Output Level [0%]

Configuration options: [0%] [10%] [20%] [30%] [40%] [50%] [60%] [70%] [80%] [90%] [100%]

3.4.2 PCH-IO Configuration

The items in this menu allow you to adjust the PCH parameters.

HD Audio [Enabled]

Allows you to enable or disable detection of HD-Audio devices.
Configuration options: [Disabled] [Enabled]

[Disabled] HDA will be unconditionally disabled.

[Enabled] HDA will be unconditionally enabled.

PCIEX4_1/2 Gen Speed [Auto]

These items allow you to set the PCI Express speeds of PCIe x4 slots 1/2.
Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

3.5 Security menu

The Security menu allows a new password to be created or a current password to be changed. The menu also allows you to enable or disable the Secure Boot state and configure the System Mode state.

3.5.1 Administrator Password

If an administrator password has already been set, we recommend that you enter the administrator password for accessing the system. Otherwise, you might be able to see or change only selected fields in the BIOS Setup program.

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>.
3. Confirm the password when prompted.

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.

NOTE: To clear the administrator password, follow the first and second steps above, but leave the other boxes blank and then press <Enter>.

3.5.2 User Password

If a user password has already been set, 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.

NOTE: To clear the user password, follow the first and second steps above, but leave the other boxes blank and press <Enter>.

3.5.3 Secure Boot

The items in this menu allow you to configure the Secure Boot settings.

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 the 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]

Restore Factory Keys

Allows you to force the system to switch to User mode and install factory default Secure Boot key databases. Select this item and press <Enter> to proceed.

Reset To Setup Mode

Allows you to delete all Secure Boot key databases from NVRAM. Select this item and press <Enter> to proceed.

IMPORTANT! Deleting all variables will reset the system to Setup mode.

Key Management

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

Factory Key Provision [Disabled]

Allows you to install factory default Secure Boot keys after the platform reset and while the system is in Setup mode.
Configuration options: [Disabled] [Enabled]

Restore Factory Keys

Allows you to force the system to switch to User mode and install factory default Secure Boot key databases.

Reset To Setup Mode

Allows you to reset the system to Setup mode.

NOTE: The above item is selectable when the system is in User mode.

Export Secure Boot variables

Allows you to export the Secure Boot variables that have been set.

NOTE: The above item is selectable only after the secure variables are set up.

Enroll Efi Image

Allows you to select an image from a valid file system and run the image in Secure Boot mode or to enroll the SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

Remove 'UEFI CA' from DB

Allows you to remove UEFI CA from db.

NOTE: The above item is selectable only when UEFI CA has been loaded.

Restore DB defaults

Allows you to restore db variable to factory defaults.

Platform Key(PK)

The PK locks and secures the firmware from any permissible changes. The system verifies the PK before your system enters the operating system.
Configuration options: [Update]

Key Exchange Keys

The Key Exchange Keys (KEK) manage the Authorized Signature database (db) and Forbidden Signature database (dbx).
Configuration options: [Update] [Append]

Authorized Signatures

The Authorized Signatures (db) lists the signers or images of UEFI applications, operating system loaders, and UEFI drivers that you can load on the single computer. Configuration options: [Update] [Append]

Forbidden Signatures

The Forbidden Signature database (dbx) lists the forbidden images of db items that are no longer trusted and cannot be loaded.
Configuration options: [Update] [Append]

Authorized TimeStamps / OsRecovery Signatures

Configuration options: [Update] [Append]

3.6 Boot menu

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

3.6.1 Boot Configuration

Quiet Boot [Enabled]

Allows you to enable or disable Quiet Boot.
Configuration options: [Disabled] [Enabled]

Network Stack [Disabled]

Allows you to enable or disable the UEFI network stack.
Configuration options: [Disabled] [Enabled]

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

IPv4 PXE Support

Allows you to enable or disable the IPv4 PXE Boot Support. If this item is set to [Disabled], IPv4 PXE boot option will not be created.
Configuration options: [Disabled] [Enabled]

IPv6 PXE Support

Allows you to enable or disable the IPv6 PXE Boot Support. If this item is set to [Disabled], IPv6 PXE boot option will not be created.
Configuration options: [Disabled] [Enabled]

3.6.2 FIXED BOOT ORDER Priorities

Boot Option #1~9

These items allow you to set the system boot order.
Configuration options: [USB Key] [USB Hard Disk] [Hard Disk] [Network] [USB Lan] [CD/DVD] [USB CD/DVD] [USB Floppy] [SD] [Disabled]

3.7 Save & Exit menu

Save Changes and Reset

Once you are finished making your selections, choose this option from the Save & Exit menu to ensure the values you selected are saved. When you select this option, a confirmation window appears. Select **Yes** to save changes and reset.

Discard Changes and Exit

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

Restore Defaults

Allows you to restore or load the default values to all the setup options. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to load the optimized defaults.

3.8 BIOS Flash Recovery

This feature allows you to recover a BIOS image using a USB-attached device without any additional utilities.

CAUTION!

- We DO NOT recommend using BIOS flash recovery function unless there is a BIOS related issue. Incorrect BIOS flashing process may cause irreparable damage to your system. Aaeon bears no responsibility for and provides no guarantee against any damages arising from BIOS update.
- DO NOT shut down or reset the system while the BIOS is updating! Doing so can cause system boot failure.

To recover the BIOS

1. Download the latest BIOS file (**MA47AMxx.BIN**) on Aaeon website, and manually rename the file as **CREATIVE.ROM**.
2. Copy the renamed file (**CREATIVE.ROM**) to your USB storage device.
3. Plug the USB device into the USB port with BIOS recovery funtion.

NOTES:

- Make sure that the system is in S5 state simultaneously. You can check the onboard Standby Power LEDs to see whether the system is in S5 state. Please refer to **2.7 Onboard LEDs** for details.
- Refer to **2.8.1 Rear panel connectors** for details of the USB port with BIOS recovery funtion.

4. Press the BIOS recovery button for 8 to 10 seconds until the Flashback™ LED's blinking frequency changes, indicating that the BIOS recovery function is enabled.
5. Wait until the light goes out, indicating that the BIOS updating process is completed.

NOTES:

- The updating process takes about 3 minutes.
- Flashback™ LED's blinking frequency will speed up during the updating process.

6. Reboot the system to utilize the new BIOS.

Appendix

Notices

Federal Communications Commission Statement

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

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

This equipment has been tested and found to comply with the limits for a Class A 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.

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.

HDMI Trademark Notice

The terms HDMI, HDMI High-Definition Multimedia Interface, HDMI trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing

HIGH-DEFINITION MULTIMEDIA INTERFACE

電子信息產品污染控制標示：圖中之數字為產品之環保使用期限。僅指電子信息產品中含有的有毒有害物質或元素不致發生外洩或突變從而對環境造成污染或對人身、財產造成嚴重損害的期限。

有毒有害物質或元素的名稱及含量說明標示：

部件名稱	有害物質或元素					
	鉛 (Pb)	汞 (Hg)	鎘 (Cd)	六價鉻 (Cr(VI))	多溴聯苯 (PBB)	多溴二苯醚 (PBDE)
印刷電路板及其電子組件	×	○	○	○	○	○
外部信號連接頭及線材	×	○	○	○	○	○

○：表示該有毒有害物質在該部件所有均質材料中的含量均在 SJ/T 11363-2006 標准規定的限量要求以下。

×：表示該有毒有害物質至少在該部件的某一均質材料中的含量超出 SJ/T 11363-2006 標准規定的限量要求，然該部件仍符合歐盟指令 2002/95/EC 的規范。

備註：此產品所標示之環保使用期限，係指在一般正常使用狀況下。