H110A-IM-A

Industrial Motherboard

HIGH-DEFINITION MULTIMEDIA INTERFACE

E23533
Revised Edition v4
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Chapter 1
Product overview

1.1 Package contents

Check your industrial motherboard package for the following items.

- ☑ 1 x ASUS H110A-IM-A Industrial Motherboard
- ☑ 1 x SATA 6.0 Gb/s cable
- ☑ 1 x M.2 screw package
- ☑ 1 x ASUS I/O Shield

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

1.2 Features

- Intel® socket 1151 for 7th/6th Gen Intel® Core™ i7/ i5/ i3, Pentium®, and Celeron® Processors
- Two Dual Channel DDR4 2400/2133MHz Non-ECC U-DIMMs up to 32GB
- 3 x SATA 6.0 Gb/s, 4 x USB 3.2 Gen 1, 6 x USB 2.0, 8 COM ports
- 2 x PCIe x16 slots, 1 x M.2 Socket 3 with Key M, 2242/2260/2280 (SATA mode)
- Multi-display: 1 x VGA, 1 x HDMI (colay with DisplayPort)

1.3 Specifications

CPU	Intel® socket 1151 for 7th / 6th Gen Intel® Core™ i7/ i5/ i3, Pentium®, and Celeron® Processors Supports Intel® 14nm CPU Supports up to 65W
Chipset	Intel® H110 Chipset
Memory	2 x U-DIMM, max.32GB, DDR4 2400/2133 MHz SDRAM
Graphics	Integrated graphics processor - Intel® HD Graphics support Multi-VGA output support: VGA/HDMI ports - Supports VGA output with a maximum resolution of 1920 x 1200 @ 60Hz - Supports HDMI output with a maximum resolution of 4096 x 2160 @ 30 Hz (co-lay with optional DisplayPort 4096 x 2304 @ 60Hz)
Expansion slots	1 x PCIe 3.0/2.0 x16 slot (x16 mode) 1 x PCIe 2.0 x16 slot (x4 mode, x4 pin) 5 x PCI slots 1 x M.2 Socket 3 with M key, type 2242/2260/2280 (SATA mode)
Storage	3 x SATA Gen 3.0, up to 6.0 Gb/s ports
LAN	Dual Intel® Lan: 1 x Intel® i219V, 1 x Intel® I211AT
Audio	Realtek ALC887-VD2 / ALC 897 High Definition Audio* Line-Out, Line-In, Mic in *** The audio codec may vary between motherboards, please consult your sales window for the motherboards' exact codec type.**
Rear I/O ports	1 x VGA port 1 x HDMI™ port (colay with optional DisplayPort) 4 x USB 3.2 Gen 1 ports 2 x LAN (RJ45) ports 2 x COM ports (RS232/422/485) 1 x P/S2 keyboard port 1 x P/S2 mouse port 3 x Audio jacks
Internal I/O connectors	6 x COM headers (RS232) 2 x USB 2.0 headers support additional 4 USB 2.0 ports 2 x USB 2.0 connectors 1 x CPU Fan header (PWM mode) 1 x Chassis Fan header (PWM mode) 1 x Chassis intrusion header 1 x Front Panel Audio header (AAFP) 1 x System Panel header 1 x Clear CMOS header

(continued on the next page)

Internal I/O connectors	1 x Speaker header 1 x LPC Debug header 1 x I²C header 1 x LPT header 1 x GPIO header (8-bit) 1 x AT/ATX mode selection jumper 1 x 24-pin ATX power connector 1 x 4-pin ATX power connector
GPIO	1 x 8-bit GPIO header
Manageability	WfM 2.0, DMI 2.0, WOL by PME
Watch dog timer	Yes
Power requirement	AT/ATX mode
Operation Temperature	0~60°C
Non-Operation Temperature	-40~85°C
Relative Humidity	0%~85%
OS support	Windows® 7 (32/64bit) Windows® 10 (64bit) Windows® 10 IoT Enterprise Ubuntu RedHat Enterprise Fedora Workstation OpenSUSE
Certification	CE, FCC
Form Factor	ATX Form Factor, 12”x 9.6” (30.5cm x 24.4cm)

NOTE: Specifications are subject to change without notice.

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.

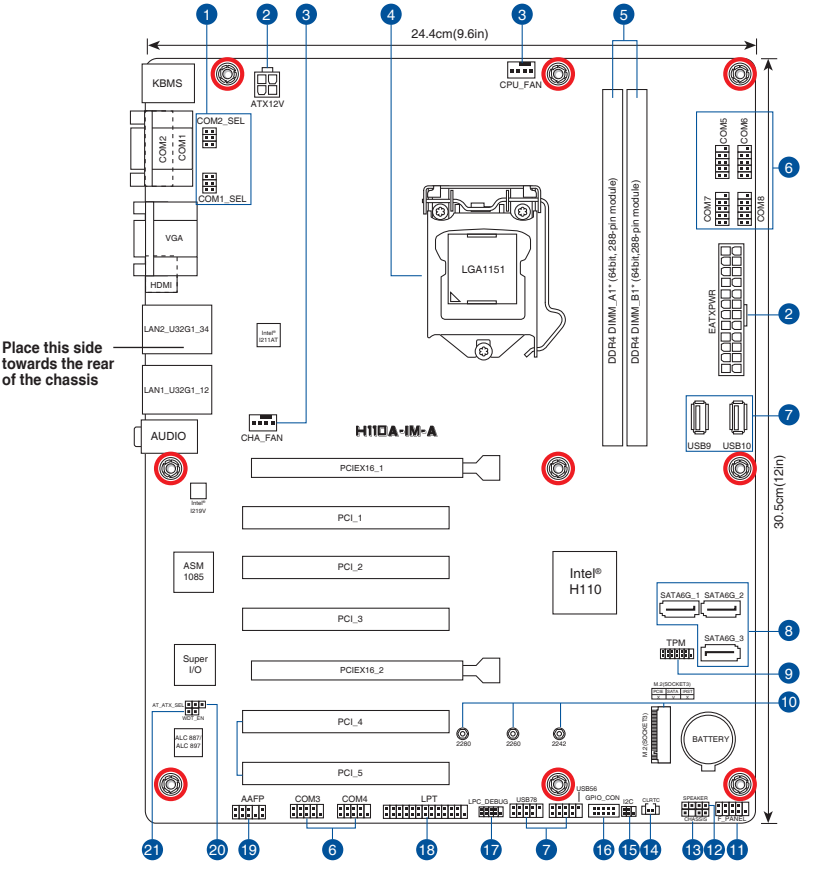
CAUTION!

- 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, 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 nine 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.



NOTE: The audio codec may vary between motherboards, please consult your sales window for the motherboards' exact codec type.

Connectors/Jumpers/Slots		Page
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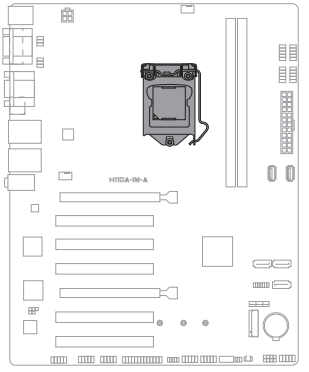
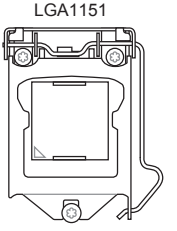
2.3 Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1151 socket designed for the Intel® 7th/6th Generation Core™ i7 / Core™ i5 / Core™ i3, Pentium®, and Celeron® Processors.



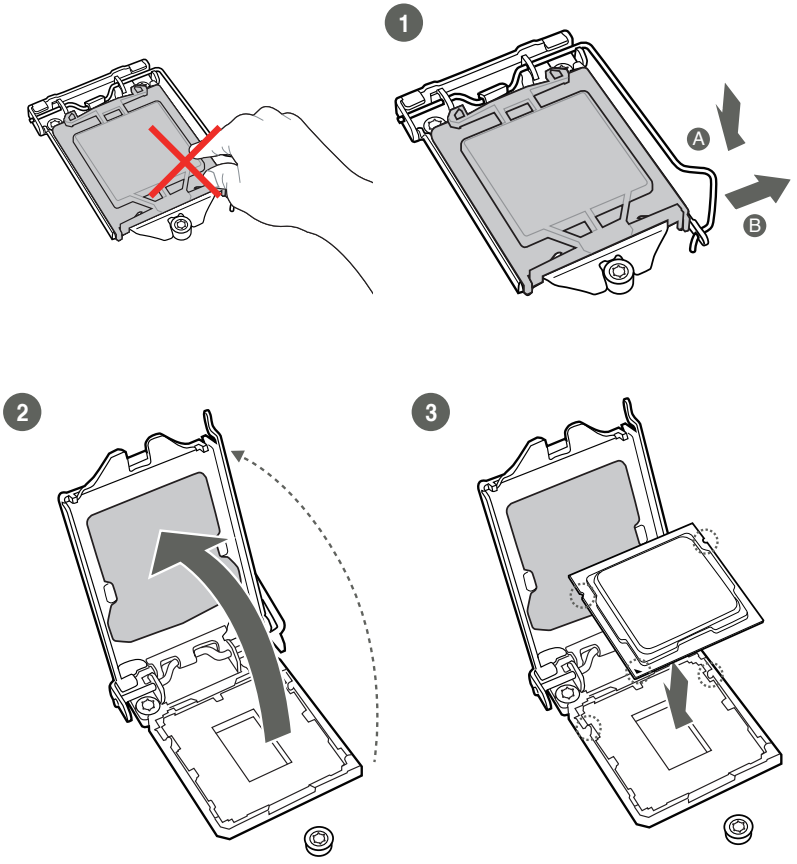


IMPORTANT: Unplug all power cables before installing the CPU.

CAUTION!

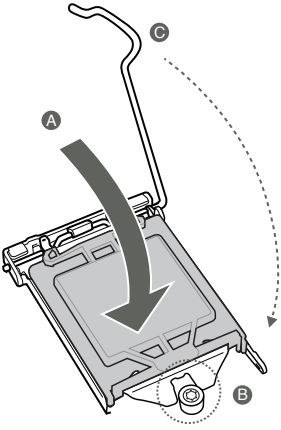
- Upon purchase of the motherboard, ensure that the PnP cap is on the socket and the socket contacts are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket contacts/motherboard components. The manufacturer will shoulder the cost of repair 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 LGA1151 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 Installing the CPU



CAUTION! LGA1156 CPU is not compatible with the LGA1151 socket. DO NOT install an LGA1156 CPU on the LGA1151 socket.

4



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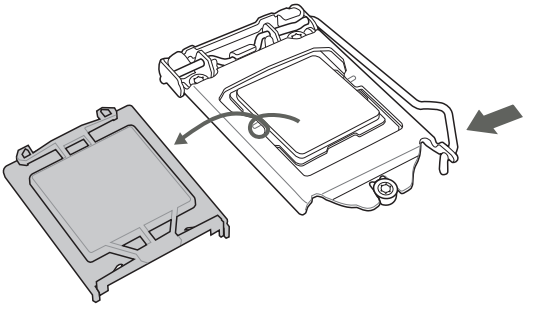
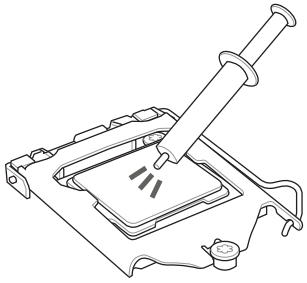
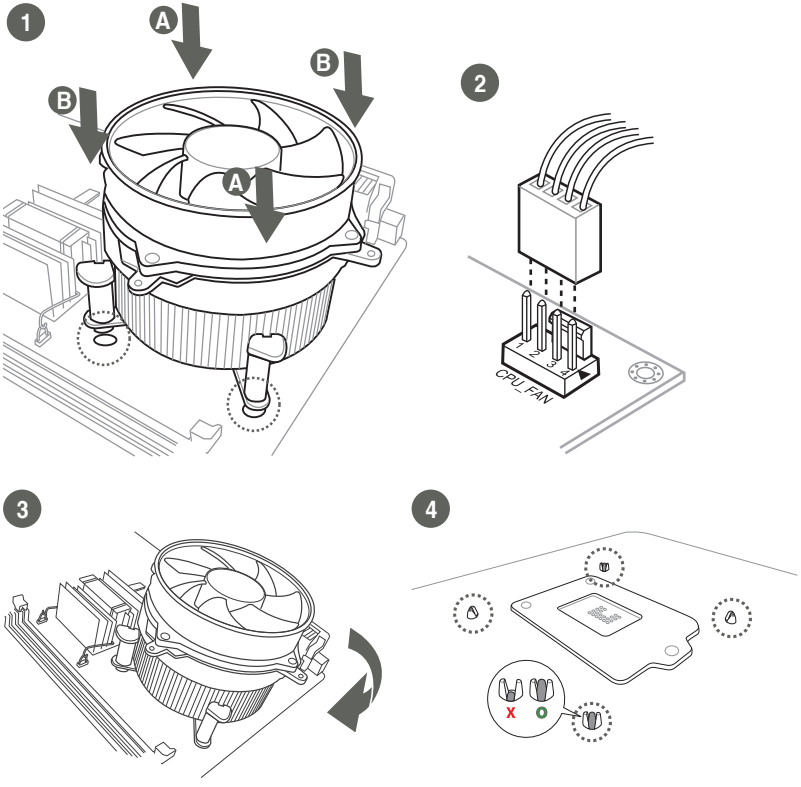


2.3.2 CPU heatsink and fan assembly installation



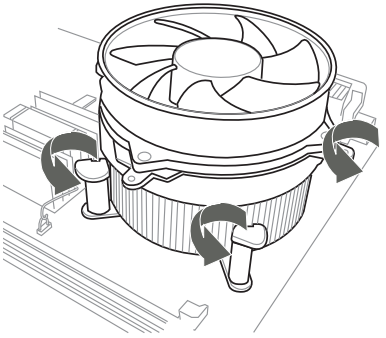
CAUTION! Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

To install the CPU heatsink and fan assembly

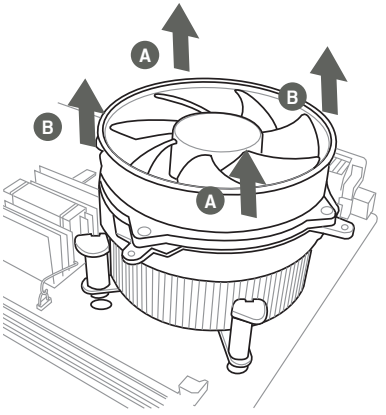


To uninstall the CPU heatsink and fan assembly

1

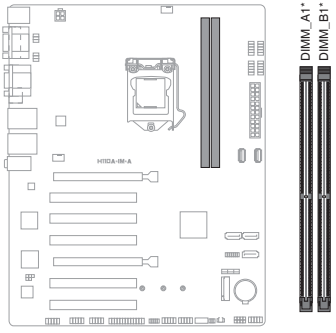


2



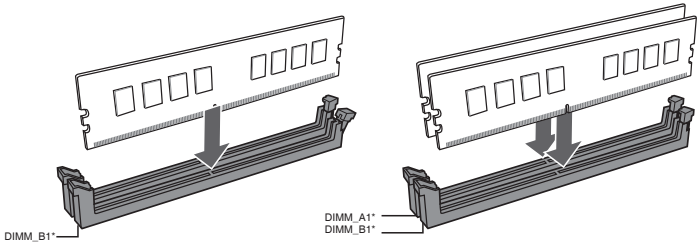
2.4 System memory

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



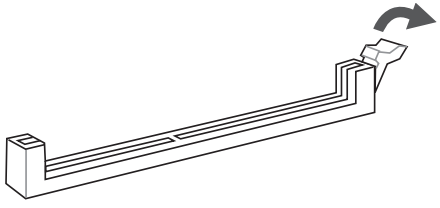
Channel	Sockets
Channel A	U-DIMM_A1*
Channel B	U-DIMM_B1*

Recommended memory configuration

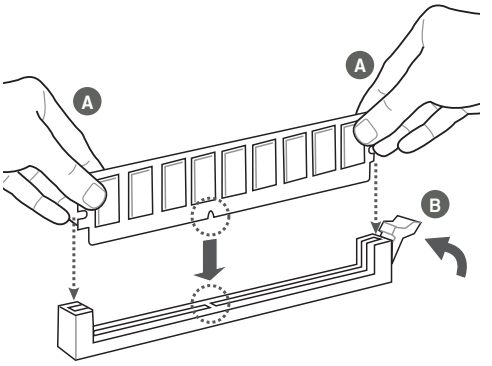


Installing a DIMM

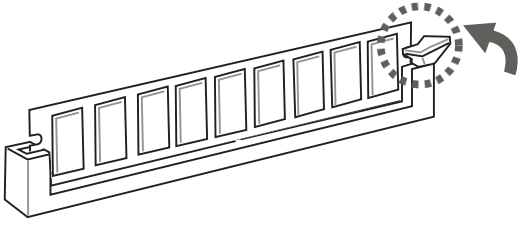
1



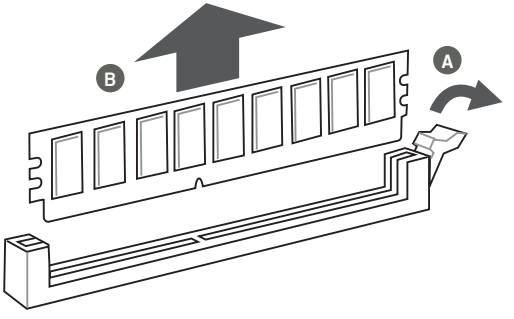
2



3



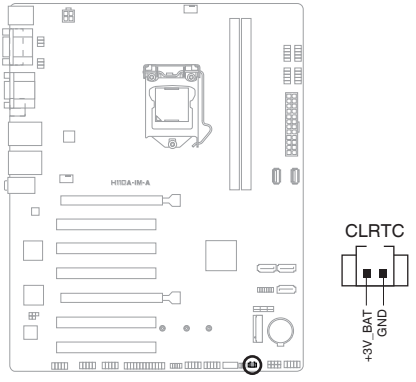
To remove a DIMM



2.5 Jumpers

1. Clear RTC RAM (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.



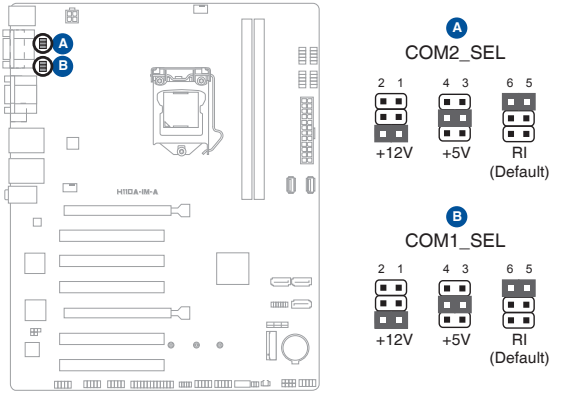
Connector type	HEADER 1x2p, 2.54mm pitch, S/T

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.

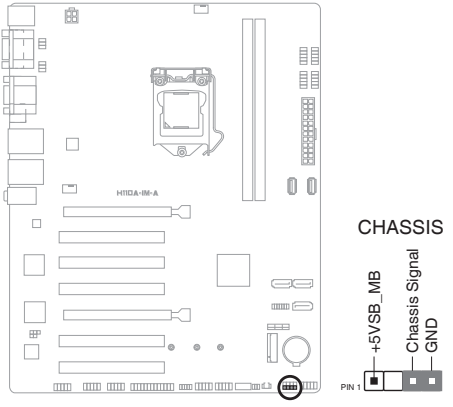
2. COM Ring/+5V/+12V selection jumper (6-pin COM1/2_SEL)



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

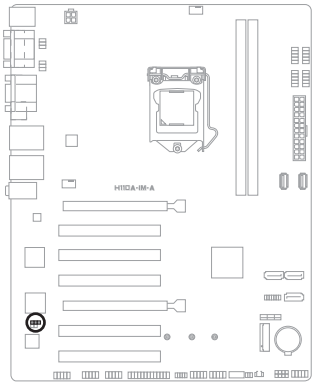
3. Chassis intrusion header (4-1 pin_CHASSIS)

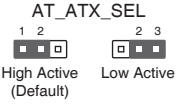
This header is for a chassis-mounted intrusion detection sensor or switch. Connect one end of the chassis intrusion sensor or switch cable to this connector. The chassis intrusion sensor or switch sends a low-level signal to this connector when a chassis component is installed. The signal is then generated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



Connector type	HEADER 4p, K2, 2.54mm pitch

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



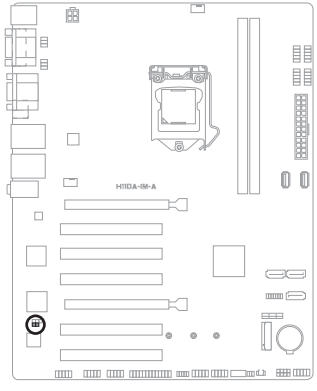


Pins	
1-2 (Default)	ATX mode
2-3	AT mode

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

5. 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.

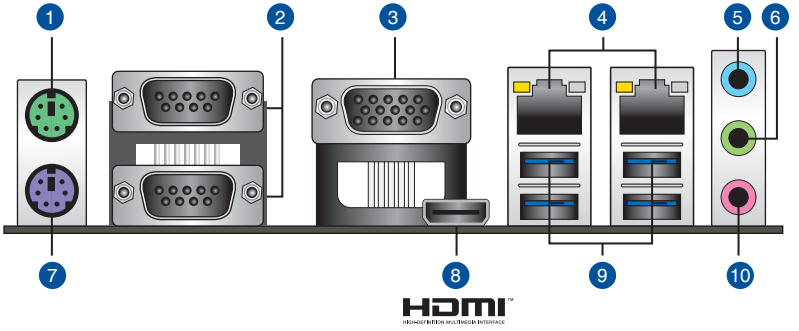


Connector type	HEADER 1x2p, 2.54mm pitch, S/T

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

2.6 Connectors

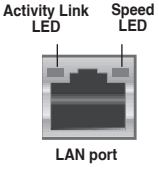
2.6.1 Rear panel connectors



1. **PS/2 mouse port (green).** This port is for a PS/2 mouse.
2. **COM ports (COM, RS232/RS422/RS485).** These ports connect modems, or other devices that conform with serial specification.
3. **Video Graphics Adapter (VGA) port.** This 15-pin port is for a VGA monitor or other VGA-compatible devices.
4. **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		



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

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

9. **USB 3.2 Gen 1 (up to 5Gbps) ports.** These 9-pin Universal Serial Bus (USB) ports are for USB 3.2 Gen 1 devices.

10. **Microphone port (pink).** This port connects to a microphone.

Refer to the audio configuration table for the function of the audio ports in 2, 4, 5.1, or 7.1-channel configuration.

Audio 2, 4, 5.1 or 7.1-channel configuration

Port	Headset 2-channel	4-channel	5.1-channel	7.1-channel
Light Blue (Rear panel)	Line In	Rear Speaker Out	Rear Speaker Out	Rear Speaker Out
Lime (Rear panel)	Line Out	Front Speaker Out	Front Speaker Out	Front Speaker Out
Pink (Rear panel)	Mic In	Mic In	Bass/Center	Bass/Center
Lime (Front panel)	-	-	-	Side Speaker Out

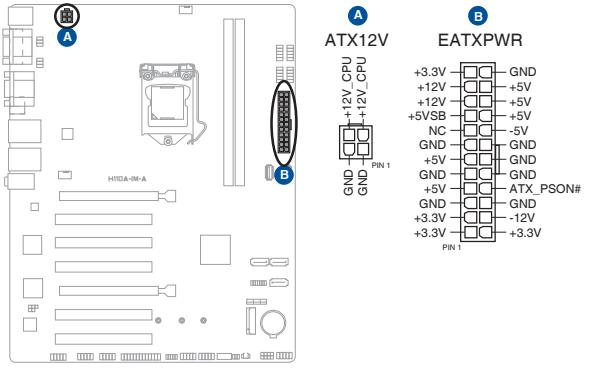
To configure a 7.1-channel audio output:

Use a chassis with HD audio module in the front panel to support a 7.1-channel audio output.

2.6.2 Internal connectors

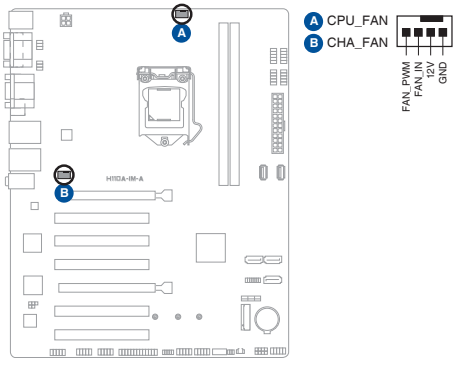
1. ATX power connectors (24-pin EATXPWR, 4-pin ATX12V)

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



2. 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.

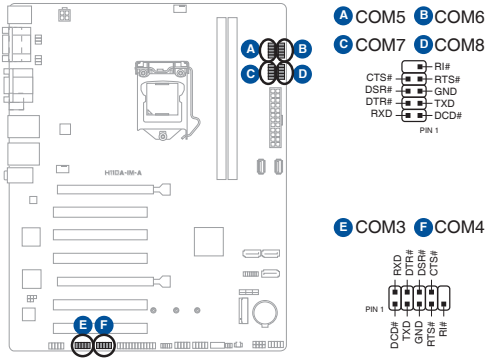


Connector type	WAFER HD 4p, 2.54mm pitch, S/T

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!

3. COM Port headers (10-pin COM3 - COM8)

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

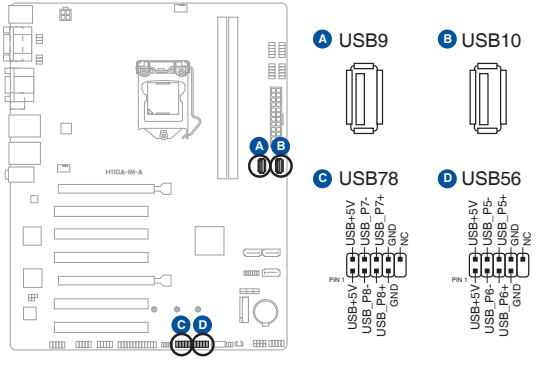


Connector type	Header 2x5p, K10, 2.54mm pitch

NOTE: The serial port cables are purchased separately.

4. USB 2.0 headers/connectors (10-pin USB56, USB78 / USB9, USB10)

These connectors are for USB 2.0 ports. Connect the USB cables to the connectors. The USB connector complies with USB 2.0 specification that supports up to 480 Mbps connection speed.



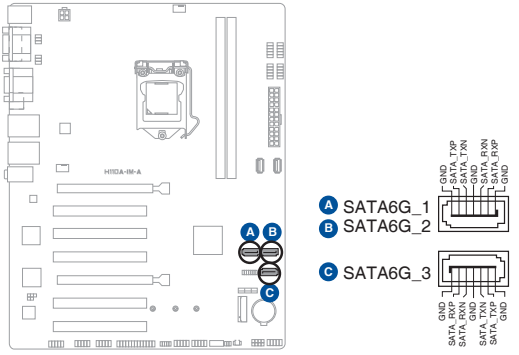
Connector type	Header 2x5p, K9, 2.54mm pitch

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

NOTE: The USB cable is purchased separately.

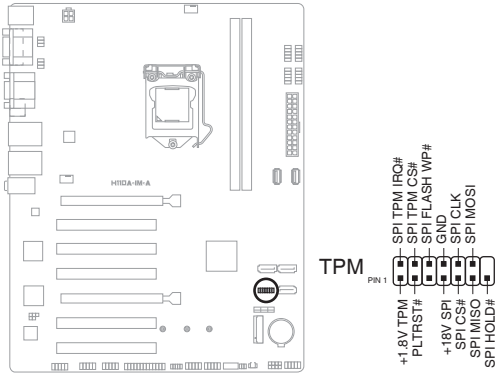
5. SATA 6.0Gb/s ports (7-pin SATA6G_1/2/3)

These ports connect to SATA 6.0 Gb/s hard disk drives or an optical drive via SATA 6.0 Gb/s signal cables.



6. TPM header (14-1 pin TPM)

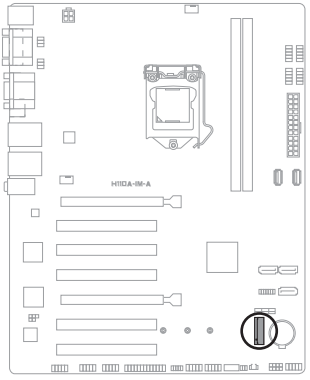
This header supports a Trusted Platform Module (TPM) system with a Serial Peripheral Interface (SPI), allowing you to securely store keys, digital certificates, passwords and data. A TPM system also enhances network security, protects digital identities, and ensures platform integrity.

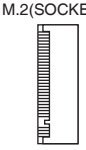


Connector type	Header 2x7p, K14, 2.0mm pitch

7. M.2 slot (SOCKET 3)

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



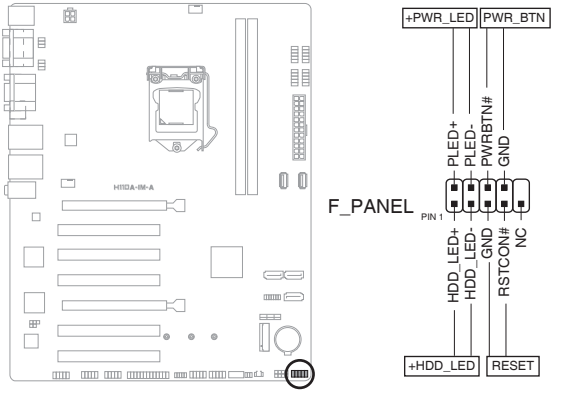


NOTES:

- The M.2 SSD module is purchased separately.
- This slot supports M Key and 2242/2260/2280 storage devices.
- We recommend using a PH1 screwdriver with a torque of 2.0 +/- 0.2 kgf.cm when tightening the screw.

8. Front panel system panel connector (10-1 pin F_PANEL)

This connector 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)**

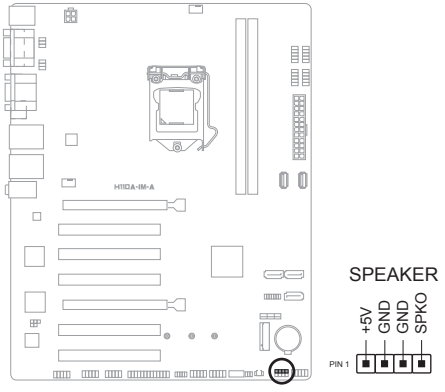
  This 2-pin header is for the system power button.

- **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. Speaker header (4-pin SPEAKER)

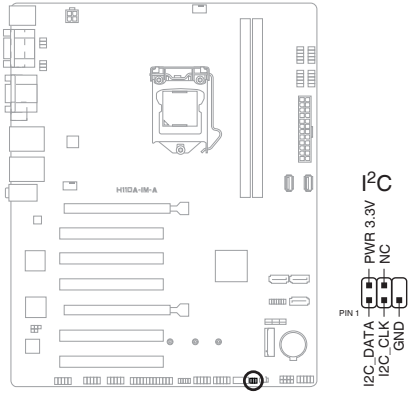
The 4-pin header is for the chassis-mounted system warning speaker. The speaker allows you to hear system beeps and warnings.



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

10. I²C header

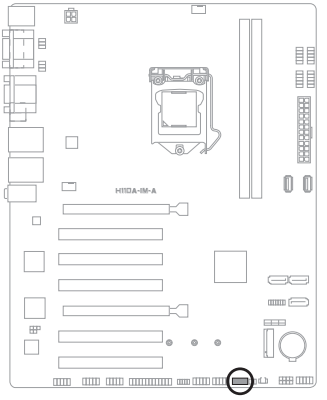
The I²C (Inter-Integrated Circuit) header allows you to connect an I²C compatible IoT security module.



Connector type	Header 2x3p, K6, 2.0mm pitch

11. General purpose input/output header (GPIO_CON)

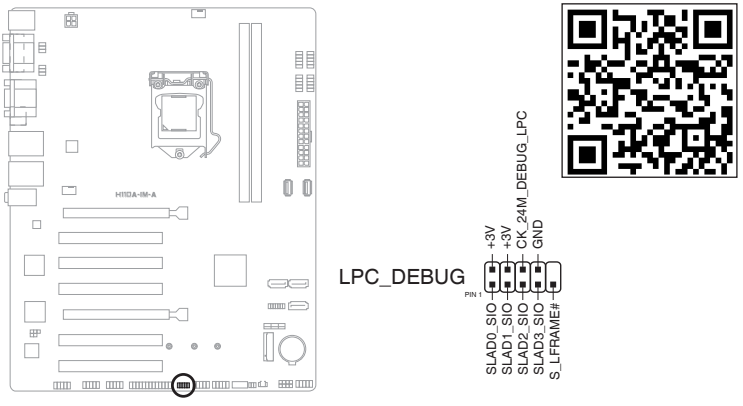
This header is for a general purpose input/output module which allows you to customize the digital signal input/output.



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

12. LPC Debug header

This header allows connection to a LPC Debug card.



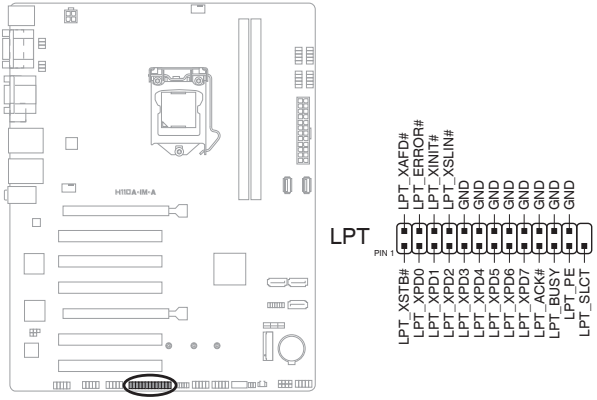
Connector type	HEADER 2x5p, K10, 2.0mm pitch

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.

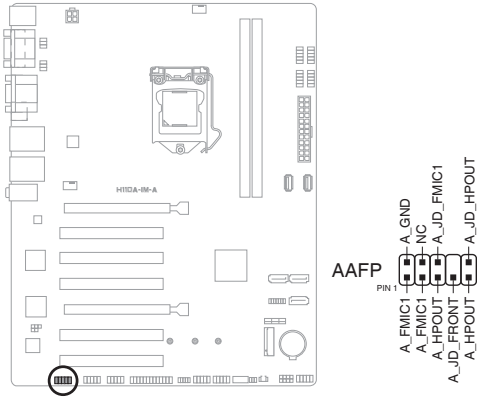
13. LPT header (26-1 pin LPT)

The LPT (Line Printing Terminal) header supports devices such as a printer. LPT is standardized as IEEE 1284, which is the parallel port interface on IBM PC-compatible computers.



14. 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.



Connector type	HEADER 2x5p, K8, 2.54mm pitch

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 **HD Audio Controller** item in the BIOS setup to [**Enabled**].

Chapter 3
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.

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
Hardware Monitor	For displaying the system temperature and changing the 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 an overview of the basic system information, and allows you to set the system date, time, language, and security settings.

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 PCH-FW Configuration

TPM Device Selection

This item allows you to select the TPM device. Configuration options: [dTPM] [PTT]

3.3.2 Trusted Computing

Security Device Support

This item allows you to enable or disable BIOS support for security devices. Configuration options: [Disabled] [Enabled]

3.3.3 CPU Configuration

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

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

Intel (VMX) Virtualization Technology

When set to **[Enabled]**, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. Configuration options: [Disabled] [Enabled]

Intel Trusted Execution Technology

When set to **[Enabled]**, allows you to enable the utilization of additional hardware capabilities provided by Intel® Trusted Execution Technology and requires a full power cycyle. Configuration options: [Disabled] [Enabled]

Hyper-Threading

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.

[Enabled] Two threads per activated core are enabled.

[Disabled] Only one thread per activated core is enabled.

VT-d [Disabled]

Allows you to enable or disable VT-d function on MCH. Configuration options: [Enabled] [Disabled]

CPU Power Management Control

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

Intel(R) SpeedStep(tm)

This item allows your system to support more than two frequency ranges. Configuration options: [Disabled] [Enabled]

Intel(R) Speed Shift Technology

This item allows you to enable or disable Intel(R) Speed Shift Technology support. When enabled, CPPC v2 interface allows hardware controlled P-state. Configuration options: [Disabled] [Enabled]

Turbo Mode

This item allows you to enable or disable Turbo Mode for your processor. Configuration options: [Enabled] [Disabled]

CPU C states

[Enabled]	Enables the CPU C states.
[Disabled]	Disables the CPU C states.

Enhanced C-states

[Enabled]	Enables enhanced C1 state.
[Disabled]	Disables enhanced C1 state.

Package C State limit

Allows you to disable or enable the whole C-State package support. Configuration options: [C0/C1] [C2] [C3] [C6] [C7] [C7s] [C8] [Cpu Default] [Auto]

3.3.4 Graphics Configuration

Allows you to select a primary display from IGFX, PEG and PCI graphical devices.

Primary Display

Allows you to select which of the IGFX/PEG/PCI Graphics device should be the Primary Display. Configuration options: [Auto] [IGFX] [PEG] [PCI]

Internal Graphics

[Auto]	Keep IGFX enabled base on the setup options.
[Disabled]	Disables internal graphics.
[Enabled]	Enables internal graphics.

RC6 (Render Standby)

Allows you to enable or disable render standby support. Configuration options: [Disabled] [Enabled]

3.3.5 PCI Express Configuration

Allows you to select a PEG or PCI graphical device.

PCIEX16_2 Slot

PCIEX16_2 Slot

This item allows you to enable or disable the PCIEX16_2 slot. Configuration options: [Disabled] [Enabled]

ASPM

This item allows you to control the Active State Power Management on both NB (NorthBridge) side and SB (SouthBridge) side of the DMI Link. Configuration options: [Disabled] [L0s] [L1] [L0sL1] [Auto]

L1 Substates

This item allows you to select the PCI Express L1 Substates settings. Configuration options: [Disabled] [L1.1] [L1.1 & L1.2]

PCIe Speed

Configures the speed of PCIEX16_2 slot. Configuration options: [Auto] [Gen1] [Gen2]

Detect Timeout

Allows you to set the time (milliseconds) of waiting for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port. Use the <+> and <-> keys to adjust the value or input the desired value.

Hot Plug

These items allow you to enable/disable PCIEX16_2 slot Hot Plug support. Configuration options: [Disabled] [Enabled]

Detect Non-Compliance Device

Allows you to enable or disable the detection function of non-compliance PCI Express device. Configuration options: [Disabled] [Enabled]

PCIEX16_1 Slot

Enable Root Port

Enables or disables the root port. Configuration options: [Disabled] [Enabled] [Auto]

Max Link Speed

Allows you to configure PEG 0:1:0. Configuration options: [Auto] [Gen1] [Gen2] [Gen 3]

Max Link Width

Allows you to force the PEG link to x1, x2, x4 or x8. Configuration options: [Auto] [Force X1] [Force X2] [Force X4] [Force X8]

ASPM

This item allows you to control the ASPM (Active State Power Management) for PEG 0. It does not work if PEG is not the current active device. Configuration options: [Disabled] [Auto] [ASPM L0s] [ASPM L1] [ASPM L0sL1]

Detect Non-Compliance Device

Allows you to enable or disable the detection function of non-compliance PCI Express device. Configuration options: [Disabled] [Enabled]

3.3.6 CSM Configuration

CSM Support

Allow you to enable/disable the CSM support. Configuration options: [Disabled] [Enabled]

Network

Controls the execution of UEFI and Legacy PXE OpROM. Configuration options: [Do not launch] [UEFI] [Legacy]

Storage

Controls the execution of UEFI and Legacy Storage OpROM. Configuration options: [Do not launch] [UEFI] [Legacy]

Video

Controls the execution of UEFI and Legacy Video OpROM. Configuration options: [Do not launch] [UEFI] [Legacy]

Other PCI devices

Determines OpROM execution policy for devices other than Network, Storage, or Video. Configuration options: [Do not launch] [UEFI] [Legacy]

3.3.7 Super IO Configuration

NCT6116D Super IO Configuration

Serial Port 1 Configuration

Serial Port

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

The following items appear only when you set **Serial Port** to **[Enabled]**.

COM1 Control

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

Serial Port 2 Configuration

Serial Port

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

The following item appears only when you set **Serial Port** to **[Enabled]**.

COM2 Control

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

Serial Port 3 Configuration

Serial Port

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

Serial Port 4 Configuration

Serial Port

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

Parallel Port Configuration

Parallel Port

Allows you to enable or disable the Parallel port (LPT/LPTE).Configuration options: [Disabled] [Enabled]

The following items appear only when you set **Parallel Port** to **[Enabled]**.

Change Settings [Auto]

This item allows you to select an optimal setting for Super I/O Device. Configuration options: [Auto] [IO=378h; IRQ=5] [IO=378h; IRQ=5, 6, 7, 9, 10, 11, 12;] [IO=278h; IRQ=5, 6, 7, 9, 10, 11, 12;] [IO=3BCh; IRQ=5, 6, 7, 9, 10, 11, 12;]

Mode [RS232]

Allows you to select the Parallel Port mode. Configuration options: [STD Printer Mode] [SPP Mode] [EPP-1.9 and SPP Mode] [EPP-1.7 and SPP Mode] [ECP Mode] [ECP and EPP 1.9 Mode] [ECP and EPP 1.7 Mode]

NCT5104DSEC Super IO Configuration

Serial Port 5/6/7/8 Configuration

Serial Port

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

3.3.8 Serial Console Configuration

COM1~COM8

Console Redirection

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

3.3.9 SATA Configuration

SATA6G_1/2/3

Allow you to enable/disable the SATA6G_1/2/3 port. Configuration options: [Disabled] [Enabled]

Hot Plug

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

M.2

Allow you to enable/disable the M.2 (SOCKET3). Configuration options: [Disabled] [Enabled]

3.3.10 USB Configuration

LAN1_U32G1_1/2, LAN2_U32G1_3/4

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]

USB5-10

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]

3.3.11 Onboard Devices Configuration

I2C1 Controller

This item allows you to enable or disable the Serial IO Controller. Configuration options: [Enabled] [Disabled]

Audio Controller

[Enabled] Enables the HD Audio Device.

[Disabled] Disables the HD Audio Device.

Intel LAN1 Controller

[Enabled] Enables the Intel LAN1 controller.

[Disabled] Disables the controller.

Intel LAN PXE OPROM

This item allows you to enable or disable the PXE Option ROM of the Intel LAN1 controller. Configuration options: [Disabled] [Enabled]

Intel LAN2 Controller

[Enabled] Enables the Intel LAN2 controller.

[Disabled] Disables the controller.

Intel LAN2 PXE OPROM

This item allows you to enable or disable the PXE Option ROM of the Intel LAN2 controller. Configuration options: [Disabled] [Enabled]

3.3.12 APM Configuration

ErP Ready

Allows you 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

[S5 State] The system goes into off state after an AC power loss.

[S0 State] The system goes into on state after an AC power loss.

Power On By PCI-E

This item allows you to enable or disable the Wake-on-LAN function of the onboard LAN controller or other installed PCIe LAN cards. Configuration options: [Disabled] [Enabled]

Power On By PCI

This item allows you to enable or disable the Wake-on-LAN function of the onboard LAN controller or other installed PCI LAN cards. Configuration options: [Disabled] [Enabled]

Power On By Ring

[Enabled] Enables the Ring devices to generate a wake event.

[Disabled] Disables the Ring devices to generate a wake event.

Power On By RTC

[Enabled] When set to [Enabled], the items **RTC Alarm Date(Days)** and **Hour/Minute/Second** are use-conffigurable with set values.

[Disabled] Disables RTC to generate a wake event.

3.3.13 EzFlash

Enter Ez-Flash mode

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

3.3.14 Watchdog Timer

Watchdog Support

This item allows you to enable or disable Watchdog timer. Configuration options: [Enabled] [Disabled]

Watchdog Timer

Use the <+> and <-> keys to adjust the value or input the desired value directly. The value ranges from 1 to 255.

3.3.15 Network Stack Configuration

Network Stack

This item allows user to disable or enable the UEFI network stack. Configuration options: [Disabled] [Enabled]

The following two items appear only when you set the previous item to [Enabled].

Ipv4 PXE Support

This item allows user to disable or enable the Ipv4 PXE Boot support. Configuration options: [Disabled] [Enabled]

Ipv6 PXE Support

This item allows user to disable or enable the Ipv6 PXE Boot support. Configuration options: [Disabled] [Enabled]

3.3.16 Miscellaneous

DMI/OPI Configuration

DMI Link ASPM Control

This item allows you to control the Active State Power Management on SA side of the DMI Link. Configuration options: [Disabled][L1]

PCI Express Configuration

DMI Link ASPM Control

This item allows you to control the Active State Power Management of the DMI Link. Configuration options: [Disabled] [Enabled]

3.4 Hardware Monitor menu

The items in this menu provide you an overview of system status including temperature, fan speed and voltage, and allow you to configure the smart fan.

Smart Fan Mode

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

The following item appears only when you set **Smart Fan Mode** to [Manual Mode].

Smart Fan Function

Chassis Fan Setting

Temperature 1/2/3/4

Input value range: [0~255]

FD/RPM 1/2/3/4

Input value range: [0~255]

Cpu Fan Setting

Temperature 1/2/3/4

Input value range: [0~255]

FD/RPM 1/2/3/4

Input value range: [0~255]

3.5 Security menu

This 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.

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>.
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.

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.

User Password

If you have set a user password, you must enter the user password for accessing the system. The **User Password** item on top of the screen shows the default **Not Installed**. After you set a password, this item shows **Installed**.

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>.

Secure Boot

Secure Boot

Secure Boot can be enabled if the system is running in User mode with enrolled platform Key (EPK) or if the CSM function is disabled. Configuration options: [Disabled] [Enabled]

Secure Boot Mode

In Custom mode, Secure Boot policy variables can be configured by a physically present user without full authentication. Configuration options: [Standard] [Custom]

Key Management

The Key Management item allows you to modify Secure Boot variables and set Key Management page.

Platform Key (PK) / Key Exchange Keys / Authorized Signatures / Forbidden Signatures
Configuration options: [Details] [Export] [Update] [Delete]

3.6 Boot menu

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

Boot Configuration

CHASSIS INTRUDE

Allows you to enable or disable the chassis intrusion detection function.
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. Configuration options: [1] - [65535]

Boot up NumLock State

[On]	Set the power-on state of the NumLock to [On].
[Off]	Set the power-on state of the NumLock to [Off].

Quiet Boot

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

Fast Boot [Enabled]

[Enabled]	Select to accelerate the boot speed.
[Disabled]	Select to go back to normal boot.

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

SATA Support

[All Devices]	All devices connected to SATA ports will be available during POST. This process will extend the POST time.
[Last Boot SATA Devices Only]	Only the last boot SATA devices connected to SATA ports will be detected during POST. Any hardware change will disable fast boot.

NVMe Support

[Disabled]	NVMe device will be skipped in fast boot mode.
[Enabled]	NVMe device will be enabled in fast boot mode.

VGA Support

[Auto]	Only installing Legacy OpROM with Legacy OS and logo will not display during POST .
[EFI Driver]	Only EFI driver will be installed with EFI OS.

USB Support

[Disabled]	All USB devices will not be available until OS boot up for a fastest POST time.
[Full Initial]	All USB devices will be available during POST. This process will extend the POST time.
[Partial Initial]	For a faster POST time, only the USB ports with keyboard and mouse connections will be detected.

PS/2 Devices Support

Select any of these settings when PS/2 devices are installed. These settings only apply when Fast Boot is enabled.

[Enabled]	PS/2 devices will be available during POST at any circumstances. This process will extend POST time.
[Disabled]	For the fastest POST time, all PS/2 devices will not be available until your computer enters the operating system.

Network Stack Driver Support

[Disabled]	Select to skip the network stack driver from loading during POST.
[Enabled]	Select to load the network stack driver during POST.

Redirection Support

[Disabled]	Select to skip the redirection function during POST.
[Enabled]	Select to enable the redirection function driver during POST.

Boot mode select

Allows you to select the boot mode. Configuration options: [LEGACY] [UEFI]

FIXED BOOT ORDER Priorities

Boot Option #1~#6

This item allows you to set the system boot order. Configuration options: [Hard Disk] [NVME] [CD/DVD] [SD] [USB Device] [Network] [Disabled]

3.7 Exit menu

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

Save Changes & Exit

This option allows you to save your changes and exit the Setup program. When you select this option or if you press <Esc>, a confirmation window appears. Select **Yes** to save changes and exit.

Discard Changes & Exit

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

Save Changes & Reset

This option allows you to exit the Setup program after saving changes.

Discard Changes & Reset

This option allows you to exit the Setup program without saving changes.

Save changes

This option allows you to save changes to any of the setup options you have made so far.

Discard changes

This option allows you to discard changes to any of the setup options you have made so far.

Restore Defaults

Restore/load default values for all the setup options.

Save as User Defaults

This option allows you to save the changes you have made so far as user defaults.

Restore User Defaults

Restore the user defaults with all the setup options.

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, HDMI trade dress and the HDMI Logos are trademarks or registered trademarks of HDMI Licensing Administrator, Inc.

HIGH-DEFINITION MULTIMEDIA INTERFACE

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。

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KC: Korea Warning Statement

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

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 https://esg.asus.com/Compliance.htm.

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

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

ASUS Recycling/Takeback Services

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

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 cerințelor esențiale și altor prevederi relevante ale directivelor conexe. Textul complet al declarației de conformitate a Uniunii Europene se găsește la: www.asus.com/support

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

Service and Support

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