ATX-Q370A

Industrial Motherboard

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Contents

Contents

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 Support DVD
- ☑ 1 x COM port cable

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

1.2   Features

- Intel® 9th/ 8th Generation (Coffee Lake-S, Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor, Max 95W
- Four DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory
- SATAIII 6.0 Gb/s port x 4 support RAID 0/1/5/10, M.2 2280 M-key (SATA3 + PCIe x4) x 1
- PCI-Express 3.0 slot [x16] x 1, PCI-Express 3.0 slot [x4] x 2 (open edge), PCI-Express 3.0 slot [x1] x 2 (open edge), PCI x 2, M.2 2280 M-key for PCIe x 4/ SATA3, M.2 2230 E-key for PCIe x1/ USB 2.0/ CNVi
- VGA, HDMI and DisplayPort support, 1 x USB3.1 Gen2-10Gbps Type-C connector (Alternate Mode: USB+DP) (optional, default: N/A)

1.3   Specifications

SYSTEM	
Form factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)
CPU	Intel® 8th / 9th Generation (Coffee Lake-S, Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor, Max. 95W
Memory	4 x DIMM, DDR4 (2666/2400/2133 MHz, max. 64GB), non-ECC, un-buffered memory
	Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	1 x Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0)
	1 x Intel® i211AT Giga LAN, (BOM option: 2 x Intel® i211AT Giga LAN)
	2 x RJ45 ports (BOM option: 3 x RJ45)
BIOS	1 x 256Mbit Flash ROM, AMI BIOS
Wake on LAN	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 slot	1 x PCIe 3.0 [x16] Slot
	2x PCIe 3.0 [x4] Slots (open edge)
	2x PCIe 3.0 [x1] Slots (open edge)
	2x PCI Slots
	1 x M.2 2230 E-key (PCIe x1/USB2.0/CNVi)
	1 x M.2 2280 M-key (PCIe x4/SATA3)
TPM	Nuvoton NPCT750AAAYX TPM2.0 onboard (optional, default: N/A)
Battery	Lithium battery
Power requirement	1 x 24-pin ATX connector
	1 x 8-pin (2x4) ATX 12V Power connector
Board size	9.6" x 9.6" (244mm x 244mm)
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	0%~90% relative humidity, non-condensing
Power compliance	N/A
Certificate	CE/FCC

DISPLAY	
Chipset	Intel® Graphics Media Accelerator
DisplayPort	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
HDMI	Up to 4096 x 2160 @ 30 Hz
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)

I/O	
Storage	4 x SATA III (6.0Gb/s) ports support RAID 0/1/5/10
	1 x M.2 2280 M-key (PCIe x 4/SATA3)
Serial port	5 x RS-232 headers
	1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
USB	4 x USB 3.1 Gen 2 ports (10 Gbps)
	2 x USB 3.1 Gen 1 ports (5 Gbps)
	4 x USB 2.0 headers
Fan	1 x CPU Fan connector (4-pin)
	2 x Chassis Fan connector(s) (4-pin)
DIO	1 x 8-bit Digital I/O interface (In/Out programmable)
Audio	3 x Audio Jack: Line-in, Mic-in, and Line-out on rear I/O
Ethernet	2 x RJ-45 ports on rear I/O
Display	1 x VGA port on rear I/O
	1 x HDMI port on rear I/O
	1 x DisplayPort port on rear I/O
	1 x USB3.1 Gen2-10Gbps Type-C connector (Alternate Mode: USB+DP) (optional, default: N/A)
Others	1 x Chassis Intrusion
	1 x AT/ATX mode select 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 (18.04.2/Kernal4.8.0)

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.
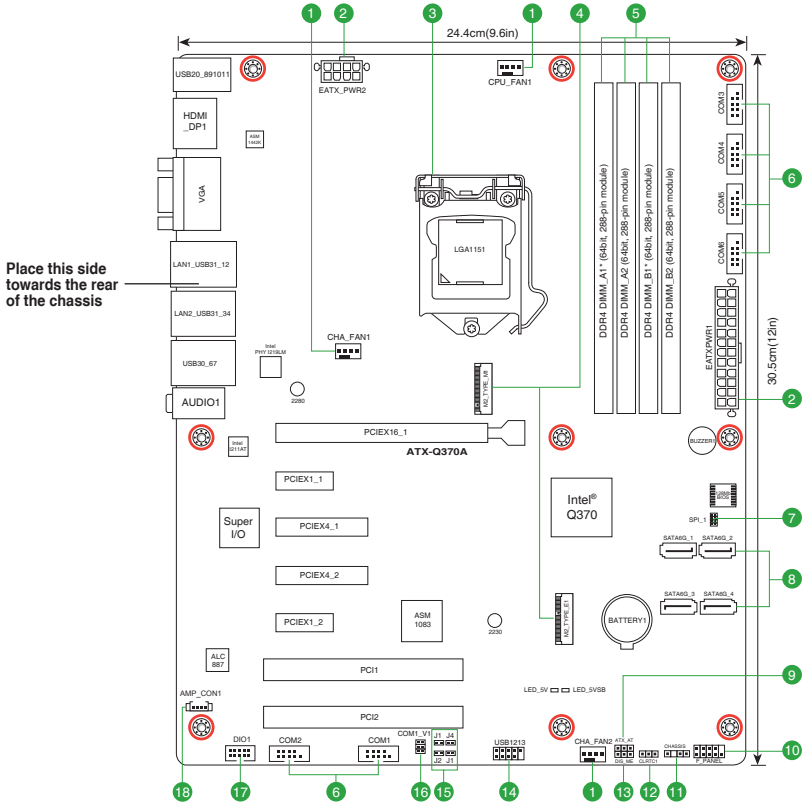
2.2 Motherboard layout

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.

Place this side towards the rear of the chassis

ATX-Q370A

Connectors/Jumpers/Slots	Page
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2.3 Screw size

2.3.1 Component side
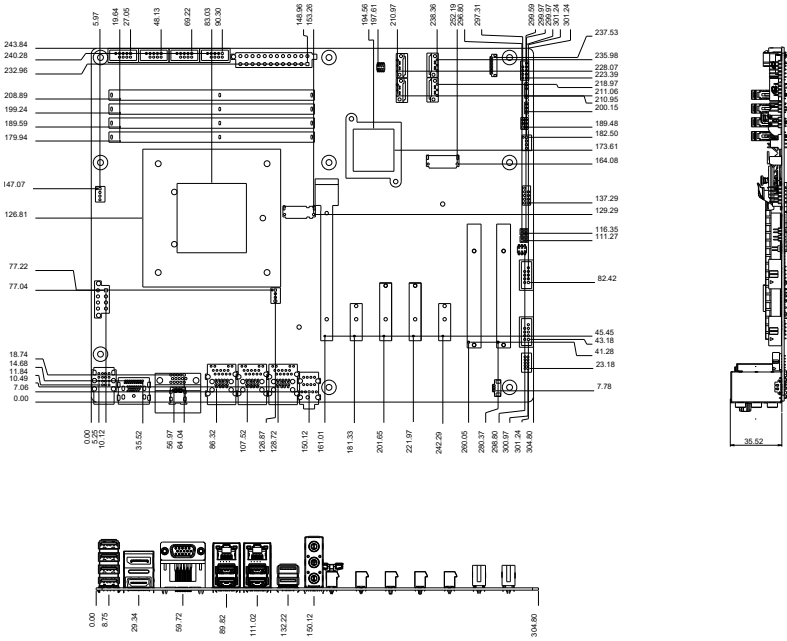
2.3.2 Solder side
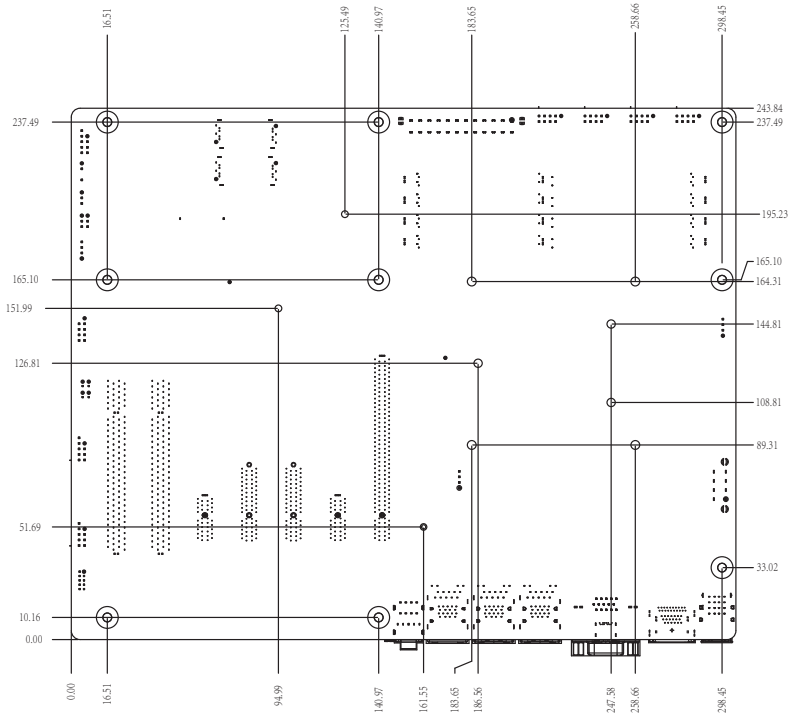
2.4   Central Processing Unit (CPU)

The motherboard comes with a surface mount LGA1151 socket designed for the Intel® 8th / 9th Generation(Coffee Lake-S, Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor.
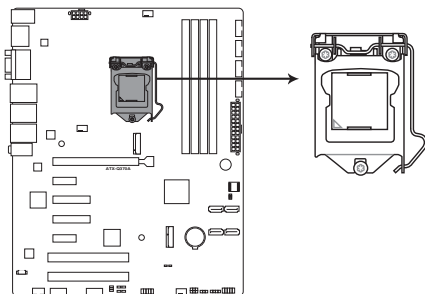
ATX-Q370A CPU socket LGA1151

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.

2.4.1   Installing the CPU

> ⚠ **CAUTION!** Ensure that you install the correct CPU designed for LGA 1151 only. DO NOT install a CPU designed for LGA1155 and LGA1156 sockets on the LGA1151 socket.
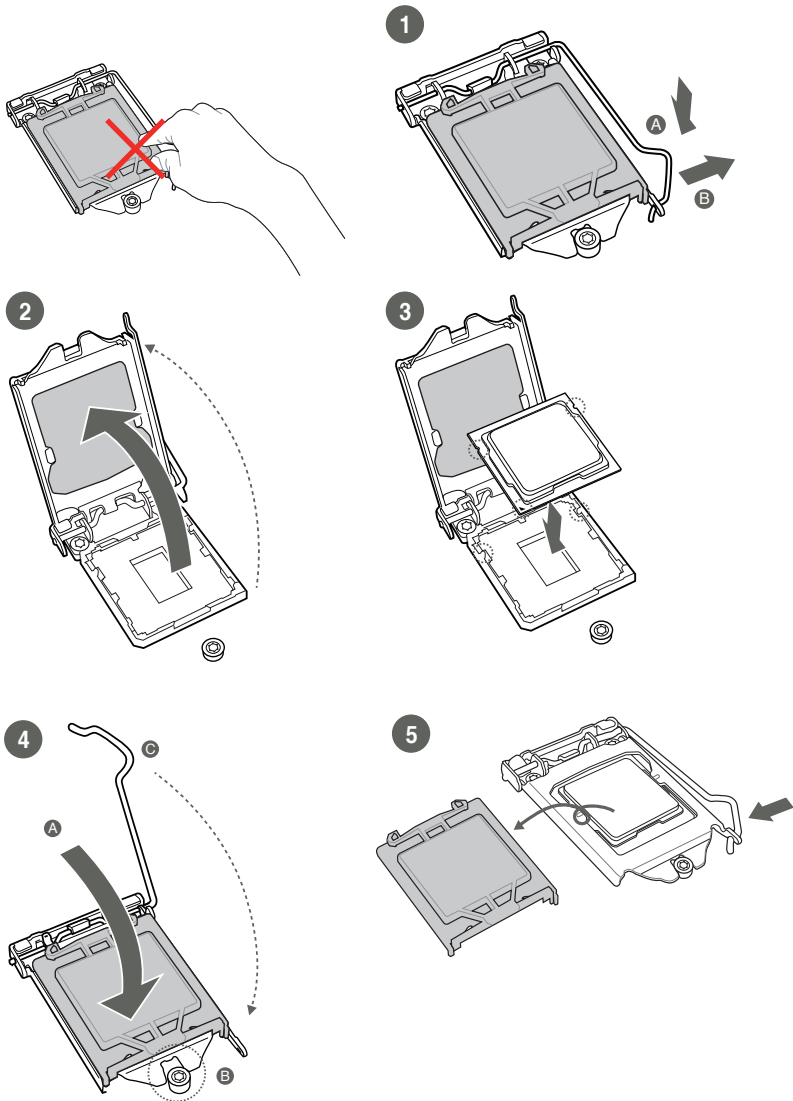
2.4.2　CPU heatsink and fan assembly installation
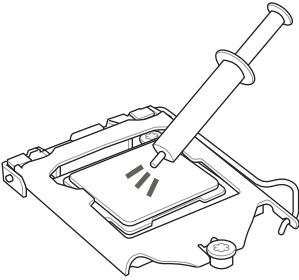
> ⚠️ **CAUTION!** Apply the Thermal Interface Material to the CPU heatsink and CPU before you install the heatsink and fan if necessary.

To install the CPU heatsink and fan assembly
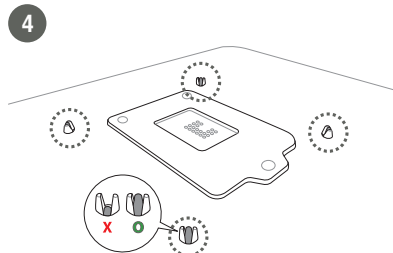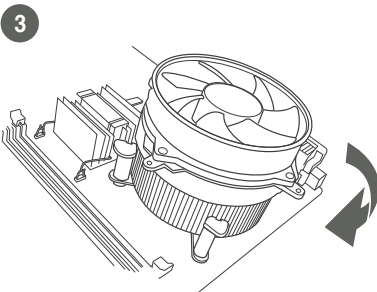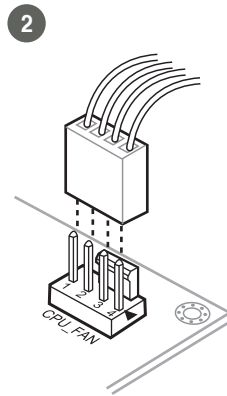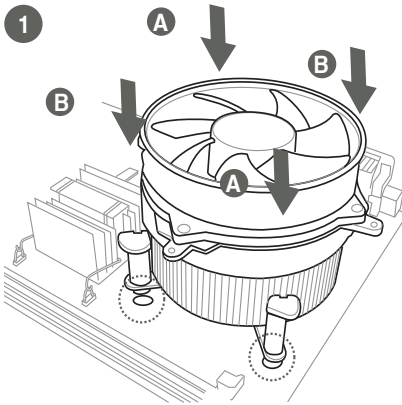
To uninstall the CPU heatsink and fan assembly
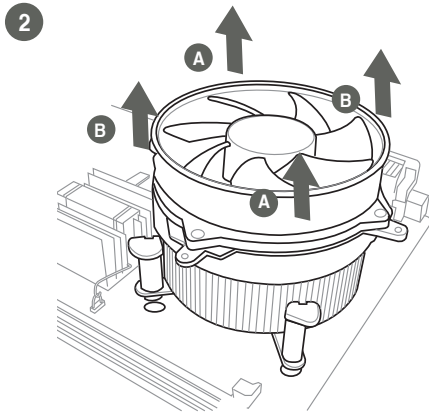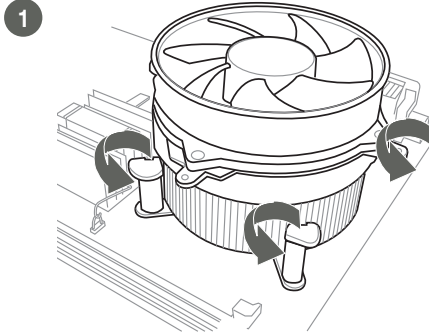
2.5   System memory

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.

According to Intel® CPU spec, DIMM voltage below 1.2 V is recommended to protect the CPU.
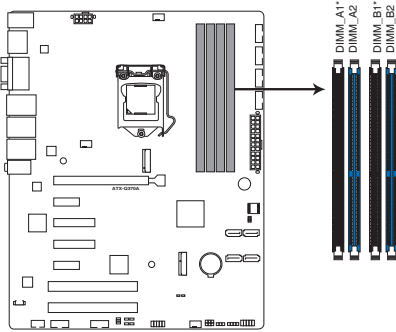
ATX-Q370A 288-pin DDR4 DIMM sockets

2.5.1   Installing a DIMM
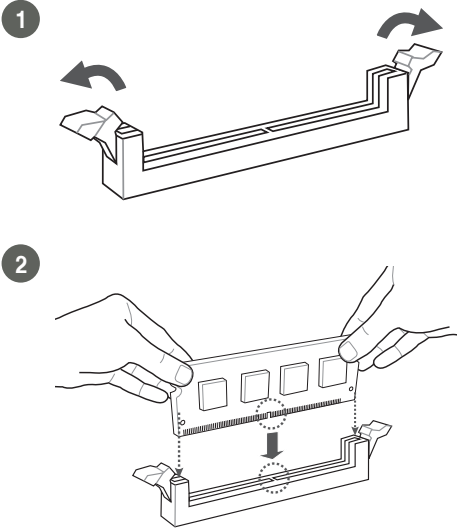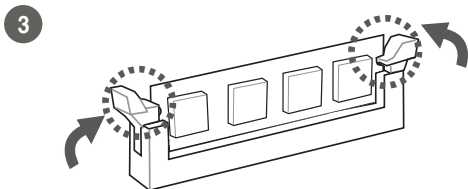
To remove a DIMM
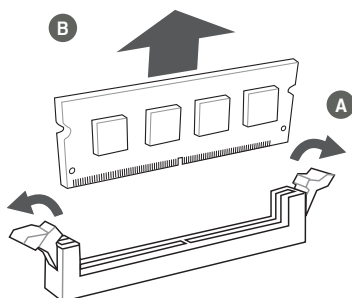
2.6   Jumpers

1.   Clear RTC RAM (CLRTC1)

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.
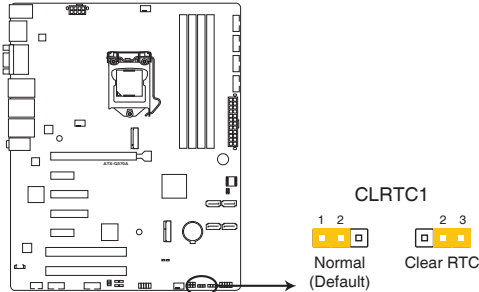
ATX-Q370A Clear RTC RAM

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 terminator (2-pin J1~4)

ATX-Q370A COM1 RS422/RS485 Terminator (J1/J2/J3/J4)
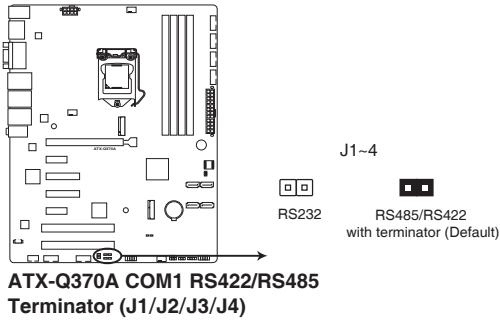
3.   AT/ATX Mode selection (2-pin ATX_AT)

ATX-Q370A H/W AT/ATX mode selection
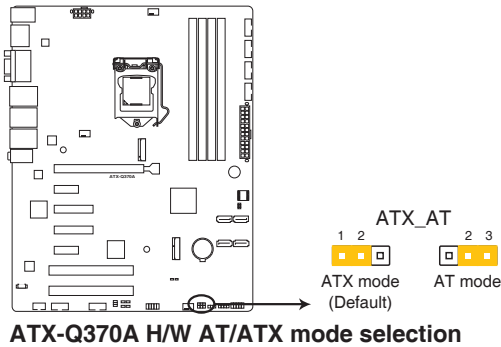
Pins	
1-2 (Default)	ATX mode
2-3	AT mode

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

This connector 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.

ATX-Q370A Chassis intrusion connector
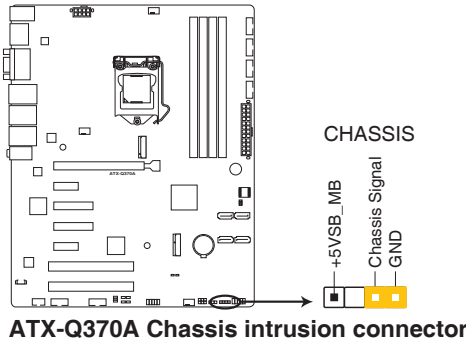
5. COM1 Ring/+5V/+12V selector (6-pin COM1_V1)

ATX-Q370A COM1 Ring/+5V/+12V Selection
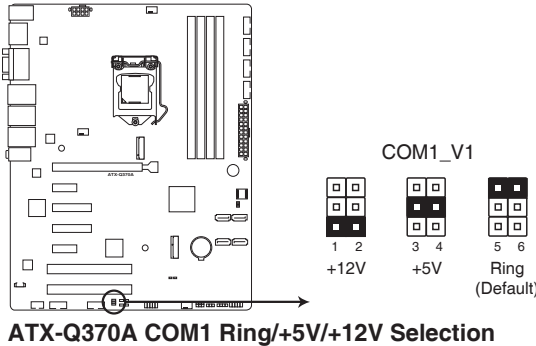
Setting	Pins
+12V	1-2
+5V	3-4
Ring (Default)	5-6

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.

   DIS_ME

1 2 3	Enabled ME flash security(Default)
1 2	Enabled ME flash security
2 3	Disabled ME flash security

   ATX-Q370A Intel® ME flash security selection
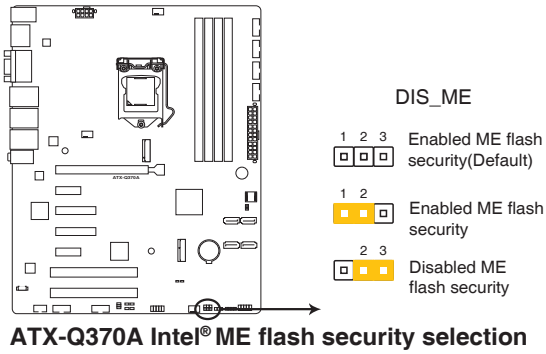
2.7 Connectors

2.7.1 Rear panel connectors
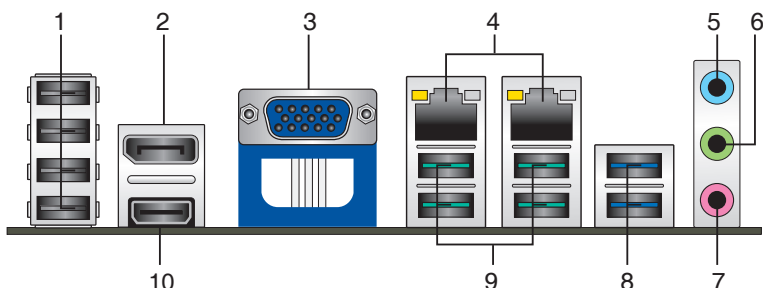
1. **USB 2.0 ports.** These two 4-pin Universal Serial Bus (USB) ports are available for connecting USB 2.0/1.1 devices.

> **NOTE:** Before you install Windows 7 operating system, go to BIOS Setup > Advanced > XHCI mode [Disabled], USB 2.0 (EHCI) support [Enabled], and set them back when you finish installing the operating system.

2. **DisplayPort**. This port is for a DisplayPort-compatible devices.

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

> **NOTE:** Disable LVDS support when using only the VGA port. Refer to the section on System Agent (SA) Configuration in Chapter 3 for details.

4. **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

Activity Link LED   Speed LED

LAN port

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.

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

8.   **USB 3.1 Gen 1 ports (Blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports connect to USB 3.1 Gen 1/2.0 devices.

> **NOTES:**
>
> • We strongly recommend that you connect USB 3.1 Gen 1 devices to USB 3.1 Gen 1 ports for a faster and better performance from your USB 3.1 Gen 1 devices.
>
> • Due to the design of the Intel® 300 series chipset, all USB devices connected to the USB 2.0 and USB 3.1 Gen 1 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

9.   **USB 3.1 Gen 2 ports (Blue, Type-A).** These 9-pin Universal Serial Bus (USB) ports connect to USB 3.1 Gen 2 devices.

> **NOTES:**
>
> • We strongly recommend that you connect USB 3.1 Gen 2 devices to USB 3.1 Gen 2 ports for a faster and better performance from your USB 3.1 Gen 2 devices.
>
> • Due to the design of the Intel® 300 series chipset, all USB devices connected to the USB 2.0 and USB 3.1 Gen 2 ports are controlled by the xHCI controller. Some legacy USB devices must update their firmware for better compatibility.

10. **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.

2.7.2 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.
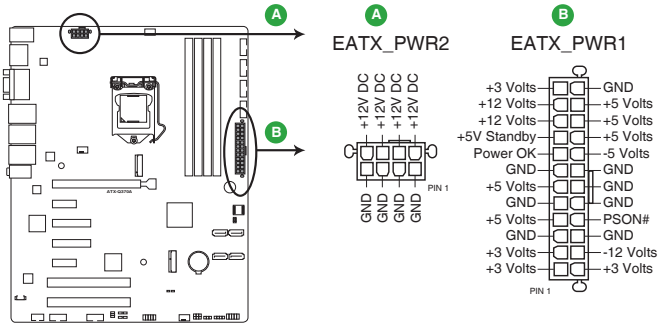
ATX-Q370A ATX power connectors

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. BIOS programmable connector (8-pin SPI_1)

Use this connector to flash the BIOS ROM.
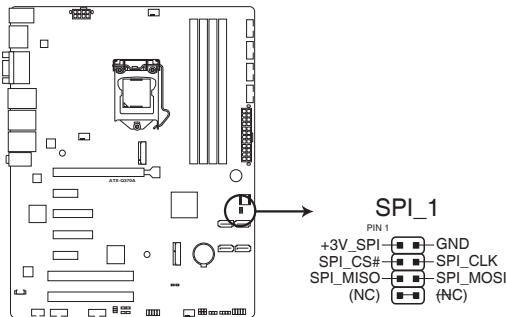
ATX-Q370A BIOS Programmable connector

3. **CPU and chassis fan connectors (4-pin CPU_FAN1, 4-pin CHA_FAN1~2)**

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

ATX-Q370A Fan connectors
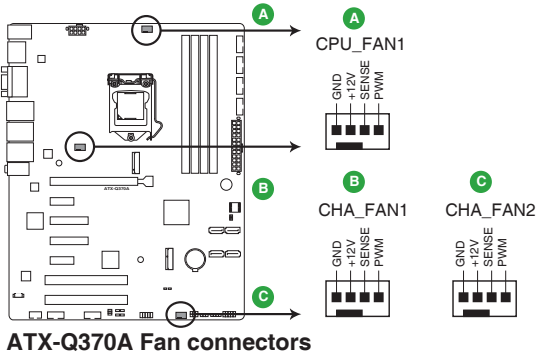
⚠️ **CAUTION:** Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components. These are not jumpers! Do not place jumper caps on the fan connectors!

4. **Audio amplfier connector (4-pin AMP_CON1)**

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

ATX-Q370A Audio Stereo Output with Amp connector
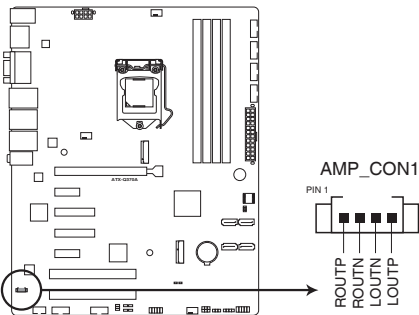
5. **System panel connector (10-1 pin F_PANEL)**

    This connector supports several chassis-mounted functions.

    F_PANEL

ATX-Q370A Front panel connector
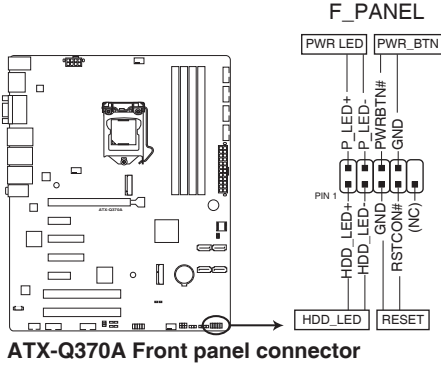
*   **System power LED (2-pin PWR_LED)**

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

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

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

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

    This 2-pin connector 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. Forcing a system to shut down may damage your system or data.

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

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

6. Serial ATA 6.0Gb/s connector (7-pin SATA6G_1~4)

These connectors connect to Serial ATA 6.0 Gb/s hard disk drives via Serial ATA 6.0 Gb/s signal cables.
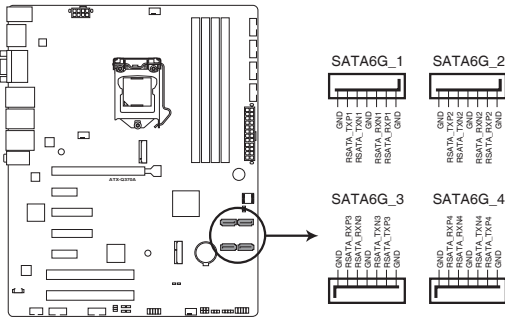
ATX-Q370A Intel® SATA 6 Gb/s connectors

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. USB 2.0 connectors (10-1pin USB1112)

These USB connectors comply with USB 2.0 specifications.
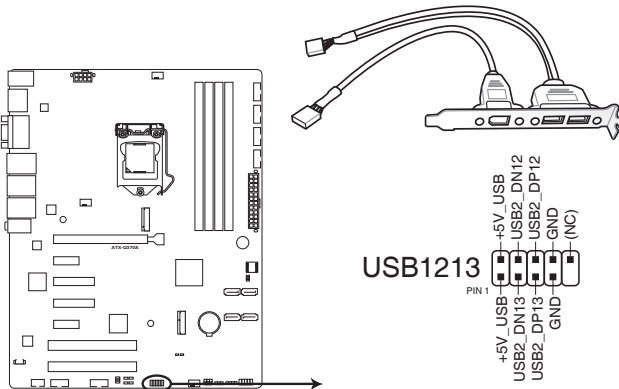
ATX-Q370A USB2.0 connectors

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

8. Serial port connectors (10-1 pin COM1~COM6)

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

ATX-Q370A Serial port (COM) connectors
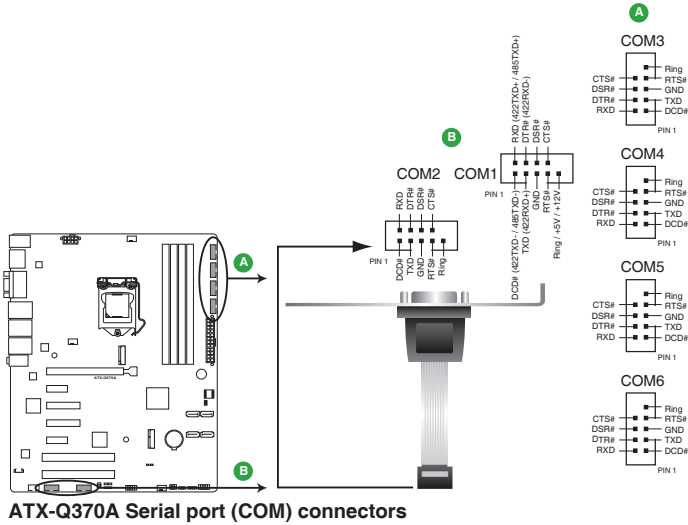
NOTE:

- The COM module is purchased separately.
- COM1 also supports RS-232 / RS-422 / RS-485. See the table below and section **3.3.6 SIO Configuration** for details.

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 sockets

The M.2 M-key socket allows you to install an M.2 (SATA or NVMe PCIe) SSD module.

The M.2 E-key socket allows you to install an M.2 (WI-FI) module.

M2_TYPE_M1

M2_TYPE_E1

ATX-Q370A M.2(M-key)s
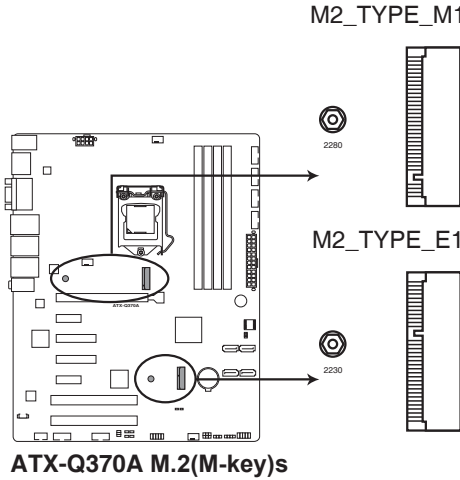
NOTES:

- The M.2 module is purchased separately.
- The M.2 E-key slot supports type 2230 WI-FI devices and Intel® CNVi WLAN module.
- The M.2 M-key slot supports PCIe3.0 x4 and SATA mode design and type 2280 storage devices.

10. Digital I/O connector (10-pin DIO1)

This connector includes 8 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.

DIO1

DIO_PI2 (In_2)
DIO_PI4 (In_4)
DIO_PI6 (Out_2)
DIO_PI8 (Out_4)
GND

PIN 1

DIO_PI1 (In_1)
DIO_PI3 (In_3)
DIO_PI5 (Out_1)
DIO_PI7 (Out_3)
+5V

ATX-Q370A Digitial I/O connector
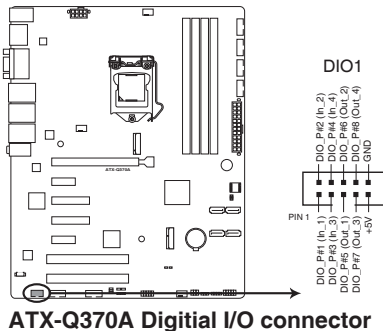
Chapter 3

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**.

*   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

3.1.2   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 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.

Case Open Warning [Disabled]

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

3.3.1   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 [Enabled]

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

3.3.2   Trusted Computing

Security Device Support [Enable]

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

SHA-1 PCR Bank [Enabled]

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]

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]

TPM2.0 UEFI Spec Version [TCG_2]

[TCG_1_2]   Selects this spec version to support the compatible mode for Windows® 8 / Windows® 10.

[TCG_2]   Supports new TCG2 protocol and event format for Winows® 10 or later operating systems.

Physical Presence Spec Version [1.3]

Selects to tell operating system to support PPI S pec Version 1.2 or 1.3. Some HCK tests might not support 1.3. Configuration options: [1.2] [1.3]

PH Randomization [Disabled]

Allows you to select the PH Randomization. Configuration options: [Disabled] [Enabled]

Device Select [Auto]

Allows you to select the TPM device. Configuration options: [Auto] [TPM1.2] [TPM2.0]

3.3.3   SATA Configuration

The BIOS automatically detects the presence of SATA devices. The Serial ATA Ports listed will display **Empty** if there are no Serial devices connected to the ports.

SATA Controller(s) [Enabled]

Configuration options: [Enabled] [Disabled].

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

SATA Mode Selection [AHCI]

Allows you to set the SATA configuration.

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

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

SATA6G1/2/3/4

Port 0/1/2/3 [Enabled]

These items become configurable when you set the SATA Mode Selection
item to [AHCI] and [RAID], and allow you to enable/disable the SATA port(s).
Configuration options: [Disabled] [Enabled]

Hot Plug [Disabled]

These items become configurable when you set the SATA Mode Selection item
to [AHCI] and [RAID], and allow you to enable/disable SATA Hot Plug Support.
Configuration options: [Disabled] [Enabled]

M.2 SATA Port [Enabled]

This item allows you to enable/disable SATA port. Configuration options: [Disabled]
[Enabled]

3.3.4   USB Configuration

> The USB Devices item lists auto-detected values. If no USB device is detected,
> the item shows None.

Legacy USB Support [Enabled]

[Enabled]   Enables the support for USB devices on legacy operating
                 systems (OS).

[Disabled]   USB devices are only available when running BIOS Setup.

[Auto]   Allows the system to detect the presence of USB devices
                 at startup. If detected, the USB controller legacy mode is
                 enabled. If no USB device is detected, the legacy USB support
                 is disabled.

3.3.5   Hardware Monitor

The items in this menu allow you to configure the smart fan.

Smart Fan Configuration

CPU Smart Fan Control [Enabled]

Allows you to enable or disable CPU Smart Fan Control. Configuration options:
[Enabled] [Disabled]

The following sub-items appear only when you set **CPU Smart Fan Control** to
[Enabled].

Fan Control Mode [Smart Fan IV Mode]

Configuration options: [Manual Mode] [Thermal Cruise Mode] [Smart Fan IV
Mode]

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

PWM/DC Voltage Output [255]

Sets the voltage allocated for Fan Control. Input value range: [0~255]

The following items appear only when you set **Fan Control Mode** to [Thermal
Cruise Mode].

Target Temperature [50]

Input value range: [0~127]

Tolerance of Temperature [0]

Input value range: [0~7]

Fan Out Start-Up Value [127]

Input value range: [0~255]

Fan Stop Duty [Down to 0]

Selects fan stop duty mode. Configuration options: [Down to 0] [To Fan Out
Stop Value]

Fan Out Stop Value [100]

The Fan Out value decreases to this value if the temperature reaches below
the lowest temperature limit. Input value range: [0~255]

Fan Out Stop Time [60]

Determines the amount of time it takes for the Fan Out value to fall from the stop value to zero. Input value range: [0~255]

Critical Temperature [75]

Determines the amount of time Fan Out takes to decrease its value by one step. Input value range: [0~255]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

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

Temperature 1 [40] / Temperature 2 [50] / Temperature 3 [60] / Temperature 4 [70]

Determines the temperature value for the Smart Fan IV mode.

Fan PWM 1 [150] / Fan PWM 2 [170] / Fan PWM 3 [200] / Fan PWM 4 [220]

Determines the amount of Fan PWM value for the Smart Fan IV mode

Tolerance of Temperature [0]

Input value range: [0~7]

Critical Temperature [75]

Input value range: [0~255]

Critical Temp Tolerance [0]

Input value range: [0~7]

Fan Count Step Up [1]

Input value range: [0~15]

Fan Count Step Down [1]

Input value range: [0~15]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

CHA_FAN1 Smart Fan Control [Enabled]

Allows you to enable or disable CHA_FAN1 Smart Fan Control. Configuration options: [Enabled] [Disabled]

> The following sub-items appear only when you set **CHA_FAN1 Smart Fan Control** to [Enabled].

Fan Control Mode [SMART FAN IV Mode]

Configuration options: [Manual Mode] [Thermal Cruise Mode] [SMART FAN IV Mode]

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

PWM/DC Voltage Output [255]

This item appears only when you set the previous item to [Manual Mode] and allows you to set the voltage allocated for Fan Control. Input value range: [0~255]

> The following items appear only when you set **Fan Control Mode** to [Thermal Cruise Mode].

Target Temperature [50]
Input value range: [0~127]

Tolerance of Temperature [0]
Input value range: [0~7]

Fan Out Start-Up Value [127]
Input value range: [0~255]

Fan Stop Duty [To Fan Out Stop Value]

Selects fan stop duty mode. Configuration options: [Down to 0] [To Fan Out Stop Value]

Fan Out Stop Value [100]

The Fan Out value decreases to this value if the temperature reaches below the lowest temperature limit. Input value range: [0~255]

Fan Out Stop Time [60]

Determines the amount of time it takes for the Fan Out value to fall from the stop value to zero. Input value range: [0~255]

Critical Temperature [75]

Determines the amount of time Fan Out takes to decrease its value by one step. Input value range: [0~255]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

> The following items appear only when you set **Fan Control Mode** to [SMART FAN IV Mode].

Temperature 1 [40] / Temperature 2 [50] / Temperature 3 [60] / Temperature 4 [70]

Determines the temperature value for the Smart Fan IV mode.

Fan PWM 1 [150] / Fan PWM 2 [170] / Fan PWM 3 [200] / Fan PWM 4 [220]

Determines the amount of Fan PWM value for the Smart Fan IV mode.

Tolerance of Temperature [0]

Input value range: [0~7]

Critical Temperature [75]

Input value range: [0~255]

Critical Temp Tolerance [0]

Input value range: [0~7]

Fan Count Step Up [1]

Input value range: [0~15]

Fan Count Step Down [1]

Input value range: [0~15]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

CHA_FAN2 Smart Fan Control [Enabled]

Allows you to enable or disable CHA _FAN2 Smart Fan Control. Configuration options: [Enabled] [Disabled]

> The following sub-items appear only when you set **CHA_FAN2 Smart Fan Control** to [Enabled].

Fan Control Mode [SMART FAN IV Mode]

Configuration options: [Manual Mode] [Thermal Cruise Mode] [Speed Cruise Mode] [SMART FAN IV Mode]

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

PWM/DC Voltage Output [255]

Sets the voltage allocated for Fan Control. Input value range: [0~255]

> The following items appear only when you set **Fan Control Mode** to [Thermal Cruise Mode].

Target Temperature [50]

Input value range: [0~127]

Tolerance of Temperature [0]

Input value range: [0~7]

Fan Out Start-Up Value [127]

Input value range: [0~255]

Fan Stop Duty [Down to 0]

Selects fan stop duty mode. Configuration options: [Down to 0] [To Fan Out Stop Value]

Fan Out Stop Value [100]

The Fan Out value decreases to this value if the temperature reaches below the lowest temperature limit. Input value range: [0~255]

Fan Out Stop Time [60]

Determines the amount of time it takes for the Fan Out value to fall from the stop value to zero. Input value range: [0~255]

Critical Temperature [75]

Determines the amount of time Fan Out takes to decrease its value by one step. Input value range: [0~255]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

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

Temperature 1 [40] / Temperature 2 [50] / Temperature 3 [60] / Temperature 4 [70]

Determines the temperature value for the Smart Fan IV mode.

Fan PWM 1 [150] / Fan PWM 2 [170] / Fan PWM 3 [200] / Fan PWM 4 [220]

Determines the amount of Fan PWM value for the Smart Fan IV mode

Tolerance of Temperature [0]

Input value range: [0~7]

Critical Temperature [75]

Input value range: [0~255]

Critical Temp Tolerance [0]

Input value range: [0~7]

Fan Count Step Up [1]

Input value range: [0~15]

Fan Count Step Down [1]

Input value range: [0~15]

Fan Out Step Up Time [10]

Determines the amount of time Fan Out takes to increase its value by one step. Input value range: [0~255]

Fan Out Step Down Time [10]

Determines the amount of time Fan Out takes to decrease its value by one step in intervals of 0.1 seconds. Input value range: [0~255]

3.3.6   SIO Configuration

The items in this menu allow you to configure Super IO settings.

[*Active*] Serial Port 1

Use this device [Enabled]

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

> The following two items appear only when you set **Use this device** to [Enabled].

Possible [Use Automatic Settings]

Allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=3F8h; IRQ=4;] [IO=3E8h; IRQ=7]

Mode [RS232]

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

[*Active*] Serial Port 2

Use this device [Enabled]

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

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=3E8h; IRQ=7] [IO=3F8h; IRQ=4;]

Mode [RS232]

Allows you to select the Serial Port mode. Configuration options: [RS232]

[*Active*] Serial Port 3

Use this device [Enabled]

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

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [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 Serial Port mode. Configuration options: [RS232]

[*Active*] Serial Port 4

Use this device [Enabled]

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

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=248h; IRQ=11; DMA] [IO=240h; IRQ=11; DMA] [IO=250h; IRQ=11; DMA] [IO=258h; IRQ=11; DMA]

Mode [RS232]

Allows you to select the Serial Port mode. Configuration options: [RS232]

[*Active*] Serial Port 5

Use this device [Enabled]

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

Possible [Use Automatic Settings]

This item appears only when you set **Use this device** to [Enabled] and allows you to select an optimal setting for Super I/O devices. Configuration options: [Use Automatic Settings] [IO=250h; IRQ=11; DMA] [IO=240h; IRQ=11; DMA] [IO=248h; IRQ=11; DMA] [IO=258h; IRQ=11; DMA]

Mode [RS232]

Allows you to select the Serial Port mode. Configuration options: [RS232]

[*Active*] Serial Port 6

Use this device [Enabled]

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

Possible [Use Automatic Settings]

Allows you to select an optimal setting for Super I/O devices. 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]

Mode [RS232]

Allows you to select the Serial Port mode. Configuration options: [RS232]

3.3.7   AMT Configuration

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

3.3.8   PCH-FW Configuration

The items listed in this screen display firmware related information.

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]

3.3.9   Power Management

Power Mode [ATX Type]

Shows the current power supply mode [ATX Type] or [AT Type] according to the position of ATX_AT jumper.

The following items appear when the Power Mode is [ATX Type].

Restore AC Power Loss [Last State]

[Last State]   The system goes into either off or on state, whatever the system state was.

[Always On]   The system goes into on state after an AC power loss.

[Always Off]   The system goes into off state after an AC power loss.

RI Wake Event [Disabled]

Enable or disable system to wake up from RI#. Configuration options: [Enabled] [Disabled]

RTC Wake system from S5 [Disabled]

[Disabled]   Disables system wake up from S5.

[Fixed Time]   The system will wake up at the specified hr::min::sec.

[Dynamic Time]   The system will wake up at the current time plus a specified number of minutes.

The following items appear when Fixed Time is enabled.

Wake up day/hour/minute/second [0]
Specify the values for day/hour/minute/second.

The following item appears when Wake System with Dynamic Time is enabled.

Wake up minute increase [1]

Specify the number of minutes added to the current time before waking up system. Input value range: [1~5]

3.3.10 Digital IO Port Configuration

The items listed in this screen configure Digital IO settings.

DIO Port1~DIO Port4 [Output]

Configuration options: [Input] [Output]

The following item appears only when you set **DIO Port1/2/3/4** to [Output].

Output Level [High]
Configuration options: [High] [Low]

DIO Port5~DIO Port8 [Input]

Configuration options: [Input] [Output]

3.4 Chipset menu

The Chipset menu items allow you to change the settings for the chipset.

3.4.1 System Agent (SA) Configuration

Max TOLUD [Dynamic]

Configures the maximum value of TOLUD. Dynamic assignment will adjust TOLUD automatically based on the largest MMIO length of installed graphics controller. Configuration options: [Dynamic] [1GB] [1.25GB] ~ [3.5GB]

Primary Display [Auto]

Allows you to decide which graphics controller to use as the primary boot device. Configuration options: [Auto] [IGFX] [PEG] [PCI]

Primary IGFX Boot Display [VBIOS Default]

Select the video device which will be activated during POST. This setting has no effect if an external graphics device is present. The secondary boot display selection appears based on your selection and the VGA mode is supported only on primary display.Configuration options: [VBIOS Default] [DP] [HDMI] [VGA]

PCIEX16 Gen Speed [Auto]

Allows you to select the PCI Express port speed. Configuration options: [Auto] [Gen1] [Gen2] [Gen 3]

3.4.2 PCH-IO Configuration

HD Audio [Enabled]

This item controls the detection of HD Audio devices. Configuration options: [Disabled] [Enabled]

PCIE X1_1 Gen Speed [Auto]

Configures the speed of PCI Express x1 slot. Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

PCIE X1_2 Gen Speed [Auto]

Configures the speed of PCI Express x1 slot. Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

PCIEX4_1 Gen Speed [Auto]

Configures the speed of PCI Express x4 slot. Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

PCIEX4_2 Gen Speed [Auto]

Configures the speed of PCI Express x4 slot. Configuration options: [Auto] [Gen1] [Gen2] [Gen3]

3.5 Security menu

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

3.5.1 Administrator Password

If you have set an administrator password, 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.

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. After you clear the password, the **Administrator Password** item on top of the screen shows **Not Installed**.

3.5.2 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 the user password, follow the same steps as in changing a user password, but press <Enter> when prompted to create/confirm the password. After you clear the password, the **User Password** item on top of the screen shows **Not Installed**.

3.6   Boot menu

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

3.6.1   Boot Configuration

Quiet Boot [Enabled]

This item enables/disables Quiet Boot. Configuration options: [Disabled] [Enabled]

Launch PXE ROM [Do not launch]

This item controls the execution of UEFI and Legacy. Configuration options: [Do not Launch] [UEFI] [Legacy]

3.6.2   FIXED BOOT ORDER Priorities

Boot Option #1~#16

This item allows you to set the system boot order. Configuration options: [UEFI USB Key] [UEFI Hard Disk] [UEFI USB Hard Disk] [UEFI Network] [UEFI USB Lan] [UEFI CD/DVD] [UEFI USB CD/DVD] [UEFI USB Floppy][USB Key] [Hard Disk] [USB Hard Disk] [Network] [USB Lan] [CD/DVD] [USB CD/DVD] [USB Floppy][Disabled]

3.6.3   UEFI NETWORK Drive BBS Priorities

This item specifies the boot device priority sequence from the available UEFI network drives.

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

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.

Restore Defaults

Restore/Load Default values for all the setup options.

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.

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。