USER'S MANUAL

KCO-2000/3000-RPL Series

FANNED INDUSTRIAL COMPUTER

Table of Contents

Prefaces

Revision

Revision	Description	Date
1.0	Manual Released	2024/10/23

Disclaimer

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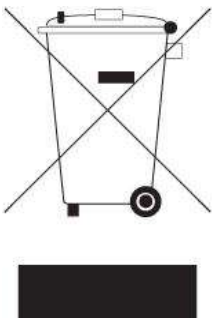
Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. Please recycle to minimize pollution and ensure environment protection.



Safety Precautions

Before installing and using the equipment, please read the following precautions:

- Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The power outlet shall be installed near the equipment and shall be easily accessible.
- Turn off the system power and disconnect the power cord from its source before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge
- of power could ruin sensitive components. Make sure the equipment is properly grounded.
- When the power is connected, never open the equipment. The equipment should be opened only by qualified service personnel.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Disconnect this equipment from the power before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- Avoid the dusty, humidity and temperature extremes.
- Do not place heavy objects on the equipment.
- If the equipment is not used for long time, disconnect it from the power to avoid being damaged by transient over-voltage.
- The storage temperature shall be above -30°C and below 85°C.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
- If one of the following situation arises, get the equipment checked be service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well or it cannot work according the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
- Ensure to connect the power cord to a socket-outlet with earthing connection.
- This product is intended to be supplied by a Listed Power Adapter or DC power source, rated 14-48 Vdc or 12-48 Vdc, min., 24.4-4.58 A for use at 60 °C min. and altitude of operation up to 5000 m. If need further assistance, please contact Premio INC for further information.
- This equipment is to be connected to Power in PoE networks which would be not routing to outside plants.

Technical Support and Assistance

1. Visit the Premio Inc website at www.premioinc.com where you can find the latest information about the product.
2. Contact your distributor, our technical support team or sales representative for technical support if you need additional assistance. Please have following information ready before you call:
   - Model name and serial number
   - Description of your peripheral attachments
   - Description of your software (operating system, version, application software, etc.)
   - A complete description of the problem
   - The exact wording of any error messages

Conventions Used in this Manual

WARNING This indication alerts operators to an operation that, if not strictly observed, may result in severe injury.

CAUTION This indication alerts operators to an operation that, if not strictly observed, may result in safety hazards to personnel or damage to equipment.

NOTE This indication provides additional information to complete a task easily.

Package Contents

Before installation, please ensure all the items listed in the following table are included in the package.

Item	Description	Q'ty
1	*Choosing one：* • **KCO-2000-RPL** Fanned Industrial Computer with 2U Short-Depth • **KCO-3000-RPL** Fanned Industrial Computer with 3U Rackmount	1

Optional Accessories

Model No.	Product Description
1-TPCD00005	Power Cord, 3-pin US Type, 180cm
1-TPCD00002	Power Cord, European Type, 180cm
1-TPCD00001	Power Cord, 3-pin UK Type, 180cm

Packing List

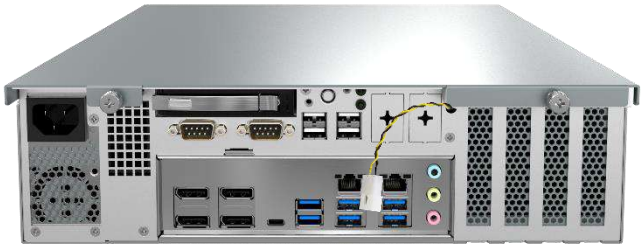
KCO-2000-RPL	KCO-3000-RPL
• 1x KCO-2000-RPL Series 2U Short-depth Fanned Industrial Computer • 1x SATA Cable • 1x Slide Rail Mount Kit • 1x Fan Cooler	• 1x KCO-3000-RPL Series 3U Rackmount Fanned Industrial Computer • 1x SATA Drive Kit (Cable, Screws, Bracket) • 1x Chassis Foot Pads • 1x Fan Cooler

Chapter 1

Product Introductions

1.1 Overview

12th /13th Generation Intel® Core™ processors features P-cores & E-cores, hybrid core architecture that allocates workload tasks accordingly to boost performance at the edge. This innovative design strikes a balance between high performance and energy efficiency, optimizing the KCO Series to excel in various industrial deployments.



KCO-2000-RPL

2U Short Depth chassis

KCO-3000-RPL

3U Rack Mountable chassis

Key Features

- Industrial Grade Micro-ATX Motherboard with Intel® Q670E PCH
- Support 12th/13th Gen Intel® Core™ Processors (LGA 1700, 65W Max TDP)
- 4x 288-pin DDR4 DIMM. Max. up to 128GB
- 1x 1GbE, 1x 2.5GbE Ports Support Wake-on-LAN, PXE
- 4x DP++ Independent Displays
- 1x PCIe x16 (Gen 5), 2x PCIe x4 (Gen 4, Gen 3), 1x PCIe x16 (Gen 4, 4-lane)
- 2x M.2 M Key, 1x M.2 E Key
- 6x RS-232 COM Ports (4x internal)
- 6x USB 3.1 Gen 2, 1x USB 3.2 Gen 2x2 Type C
- Support uEFI Secure Boot, TPM 2.0
- Tool-less Washable Dust Filter
- UL 62368 Ed. 3, FCC, CE

1.2 Hardware Specification

System	
Processor **Support 12th/13th Gen Intel® ADL & RPL S Processor (LGA 1200, 65W TDP)** - Intel® Core™ i9-14900T/i9-13900TE/i9-12900TE, up to 24 Cores, 36MB Cache, up to 5.5 GHz - Intel® Core™ i7-14700T, up to 20 Cores, 33MB Cache, up to 5.2 GHz - Intel® Core™ i7-13700TE/i7-12700TE, up to 16 Cores, 30MB cache, up to 4.8 GHz - Intel® Core™ i5-14500T/i5-13500TE/i5-12500TE, up to 14 Core, 24MB Cache, up to 4.8 GHz - Intel® Core™ i3-14100T/i3-13100TE/i3-12100TE, up to 4 Cores, 12MB Cache, up to 4.4 GHz - Intel® Core™ 300T, up to 2 Cores, 6MB Cache, up to 3.4 GHz - Intel® Pentium® G7400TE, 2 Cores, 6MB Cache, 3.0 GHz - Intel® Celeron® G6900TE, 2 Cores, 4MB Cache, 2.4 GHz	
System Chipset	Intel® Q670E PCH
LAN Chipset	GbE1: Intel® I219LM; 1GbE (Support Wake-on-LAN and PXE) GbE2: Intel® I225-V; 2.5GbE (Support Wake-on-LAN and PXE)
Audio Codec	Realtek ALC888S HD Audio Codec, support 5.1 channel
System Memory	4x DDR4 2133/2400/2666MHz DIMM. 128 GB Max
Graphics	Intel® Integrated Iris Xe Graphic (CPU Dependent)
BIOS	AMI uEFI 256MB SPI flash
Watchdog	Software Programmable Supports 1~255 sec. System Reset
iAMT	Intel® AMT 12.0 supported
TPM	TPM 2.0

Display	
DisplayPort	4x DP++

Storage	
M.2	1x M.2 M Key: 2242/2260/2280 (NVMe, PCIe x4 Gen 4) 1x M.2 M Key: 2242/2260/2280 (NVMe/SATA, PCIe x4 Gen 4)
SATA	4x SATA III (6Gb/s)
SSD/HDD	• **KCO-2000-RPL** 1x Hot-Swappable 2.5" SATA Drive Bay (support H=7mm) • **KCO-3000-RPL** 1x 3.5" SATA HDD drive or 2x 2.5" SSD/HDD up to 15mm

Expansion	
M.2	1x M.2 E Key: 2230 (PCIe x1 Gen 3/USB 2.0)
PCIe	1x PCIe x16 Slot (Gen 5) 1x PCIe x16 Slot (Gen 4, 4-Lane) 1x PCIe x4 Slot (Gen 4, Open End) 1x PCIe x4 Slot (Gen 3, Open End)

I/O	
Audio	1x Mic-in, 1x Line-in, 1x Line-out
USB	**KCO-2000-RPL:** 6x USB 3.1 Gen 2 (10 Gbps) 1x USB 3.2 Gen 2x2 (20 Gbps) Type C 4x USB 2.0
	KCO-3000-RPL: 2x USB 3.0 Gen 1 (Front Panel) 6x USB 3.1 Gen 2 (10 Gbps) 1x USB 3.2 Gen 2x2 (20 Gbps) Type C 4x USB 2.0

Internal I/O	
Audio	1x Front panel audio
COM	4x RS-232
DIO	1x 8-bit DIO (4-in/4-out)
SATA	4 x SATA Gen 3, support RAID 0/1/5/10)
USB	2x USB 3.0 Gen 1 (KCO-2000-RPL only)
Others	1x SPI header 1x Front panel 1x CPU fan 2x System fan

Operating System	
Windows	Windows 10
Linux	Linux Kernel 5.X

Power	
Power Management	ACPI 5.0 compliant
Power Mode	100-240V AC @ 50/60Hz
Power Connector	IEC 60320 C14

Environment	
Operating Temperature	**KCO-2000-RPL:** UL : 0 ˚C to 40 ˚C, CE/FCC/IC : 0 ˚C to 50 ˚C **KCO-3000-RPL:** 0 ˚C to 50 ˚C
Storage Temperature	-40 ˚C to 85 ˚C
Relative Humidity	10% ~ 90% relative humidity, non-condensing
Certification	UL 62368 Ed. 3, FCC, CE
Vibration	1 Grms, 5 - 500 Hz, 0.5 hr/axis
Shock	**KCO-2000-RPL:** With SSD: 20G, half sine, 11ms **KCO-3000-RPL:** With SSD: 10G, half sine, 11ms

- **KCO-2000-RPL**

Physical	
Form Factor	2U
Dimensions	324(W) x 276(D) x 89(H) mm
Weights	5 KG (barebone w/ chassis, mb, and PSU only)
Construction	Heavy Duty Metal
Mounting Options	Slide Rail Mount

- **KCO-3000-RPL**

Physical	
Form Factor	3U
Dimensions	334(W) x 300(D) x 133(H) mm
Weights	5 KG (barebone w/ chassis, mb, and PSU only)
Construction	Heavy Duty Metal
Mounting Options	Rack Mountable (with special brackets)

1.3 System I/O

1.3.1 KCO-2000-RPL

USB port
Used to connect USB device

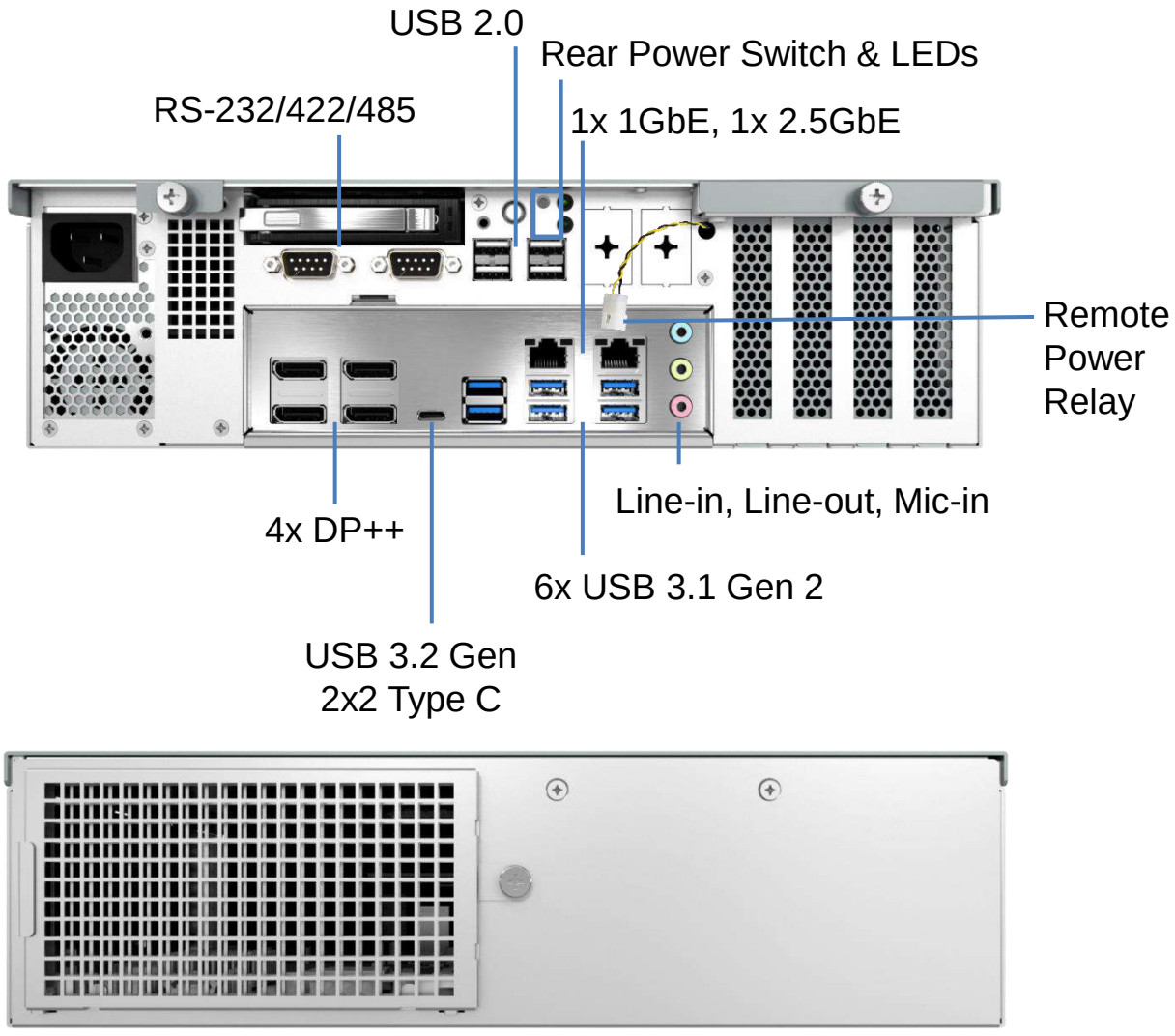
DisplayPort
Used to connect a DisplayPort monitor

Line-out
Used to connect a speaker

Mic-in
Used to connect a microphone

COM port
COM support RS232/422/485 serial

LAN port
Used to connect the system to a local area network



1.3.2 KCO-3000-RPL

USB port
Used to connect USB device

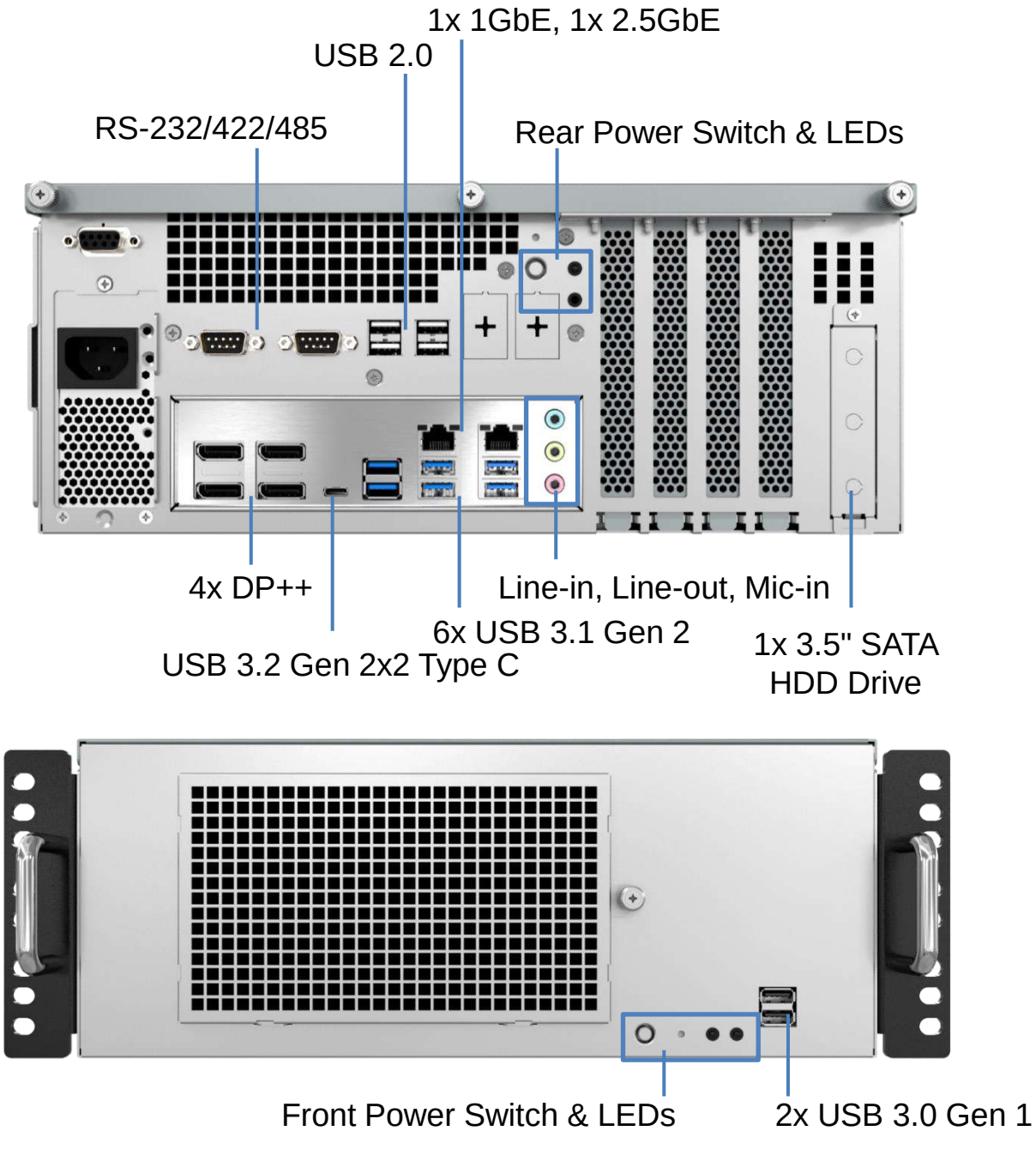
DisplayPort
Used to connect a DisplayPort monitor

Line-out
Used to connect a speaker

Mic-in
Used to connect a microphone

COM port
COM support RS232/422/485 serial

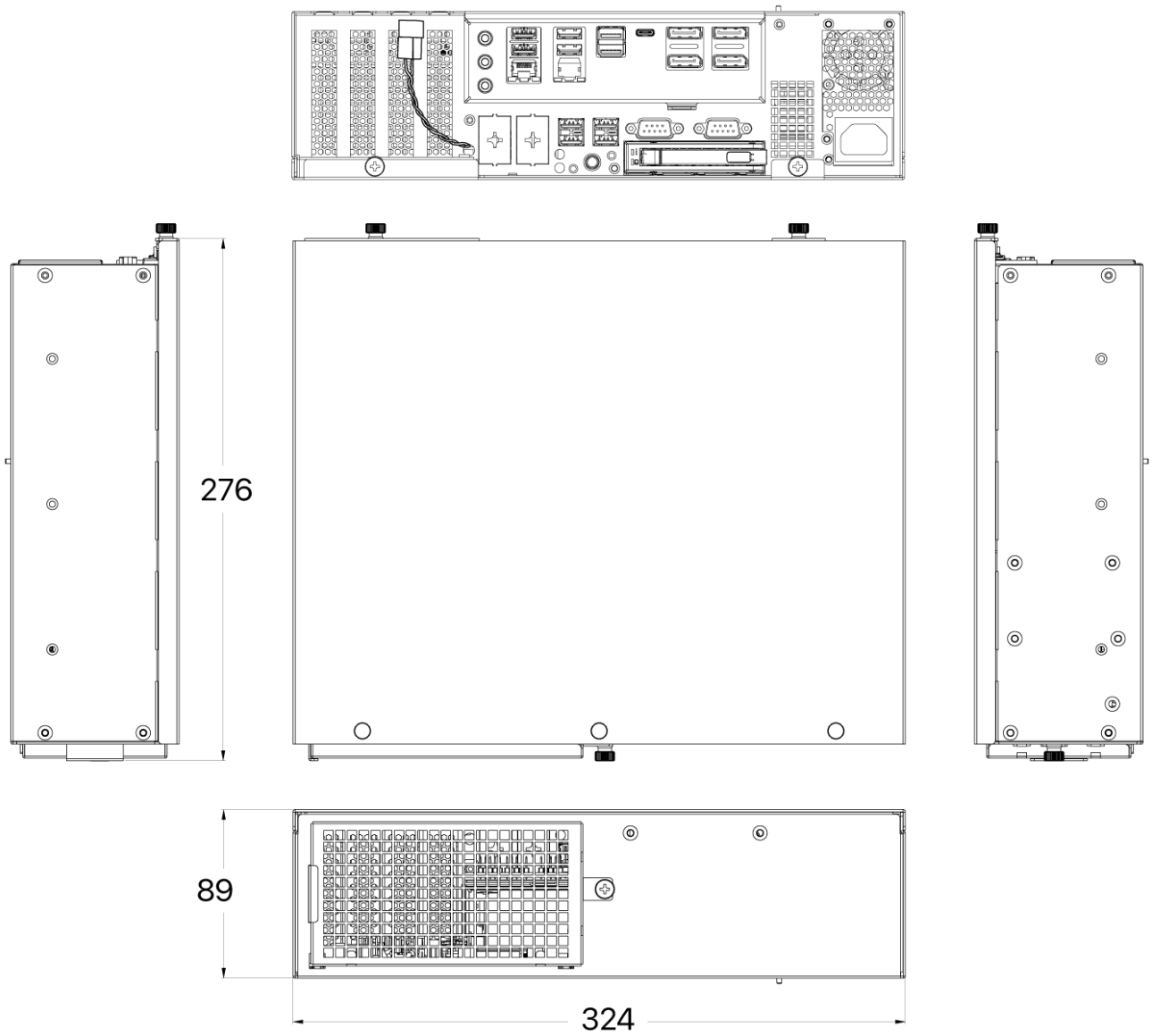
LAN port
Used to connect the system to a local area network



1.4 Mechanical Dimensions

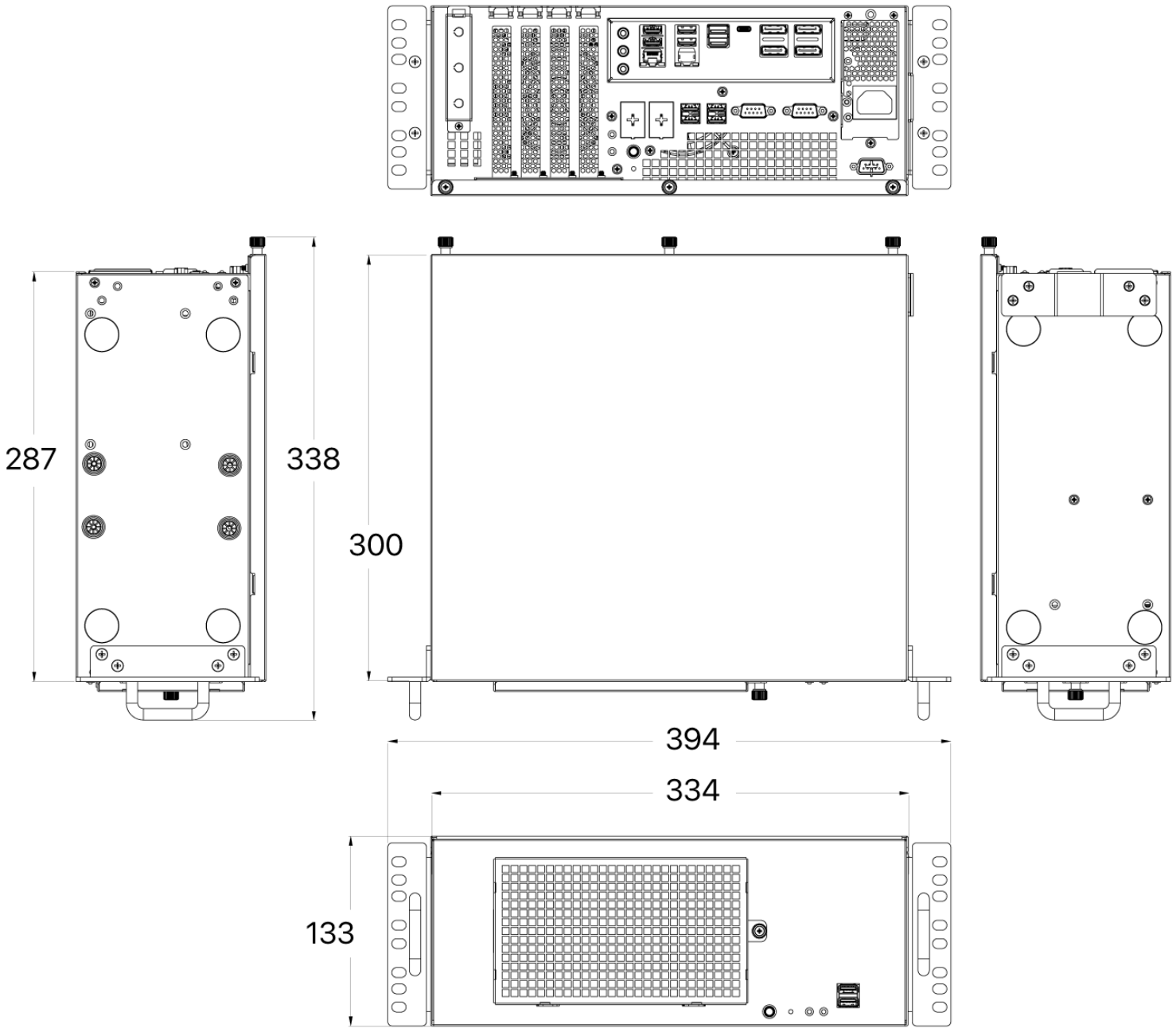
1.4.1 KCO-2000-RPL

Unit: mm



1.4.2 KCO-3000-RPL

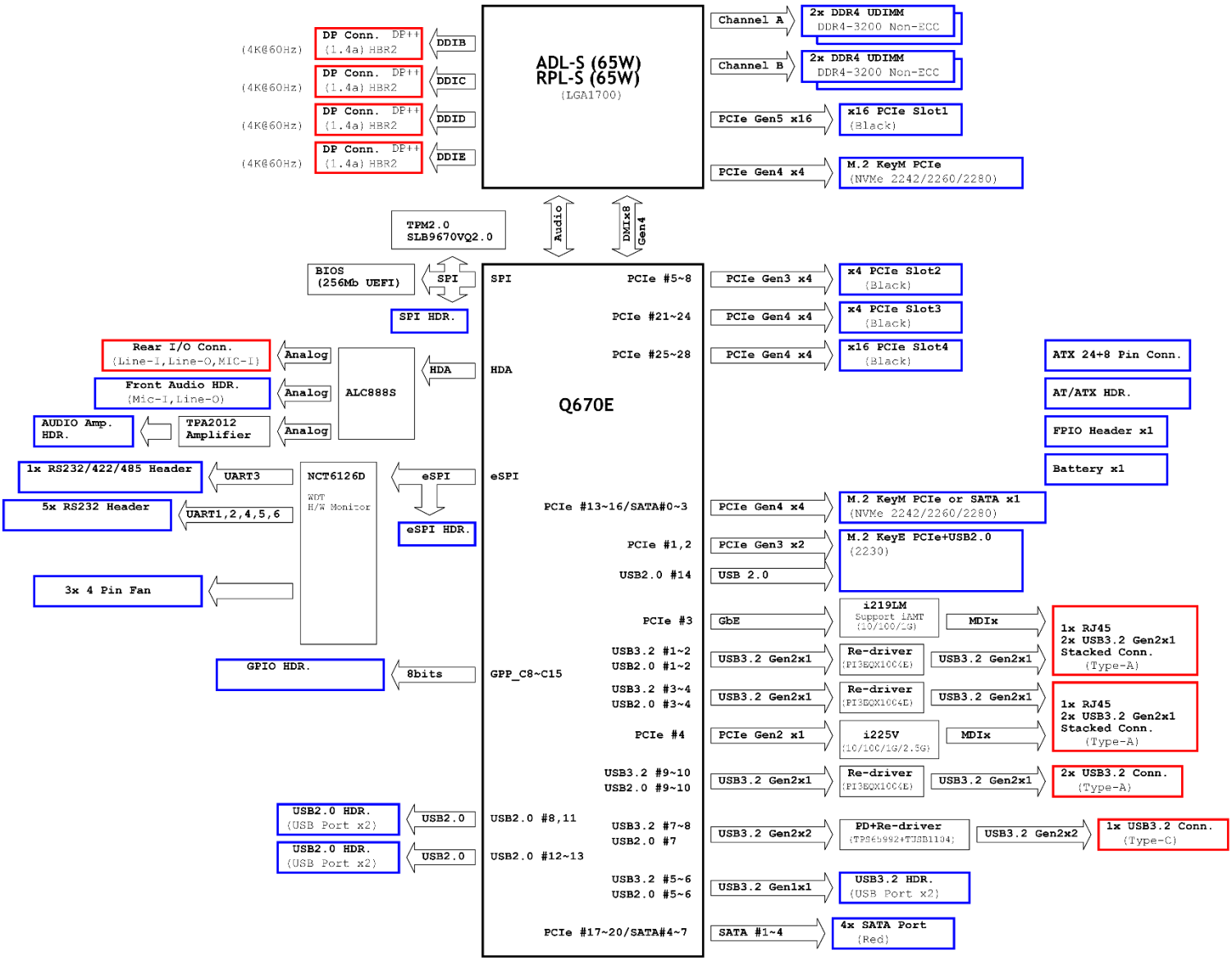
Unit: mm



Chapter 2

Mechanical Specifications

Block Diagram



2.1 Before you proceed

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

- Unplug the power cord from the wall socket before touching any component.
- Use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, before handling components 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 anti-static 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, and/or components.

2.2 Motherboard Overview

Before you install the motherboard, study the configuration of your chassis to ensure that the motherboard fits into it. Refer to the chassis documentation before installing the motherboard.

Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so can cause you physical injury and damage motherboard components.

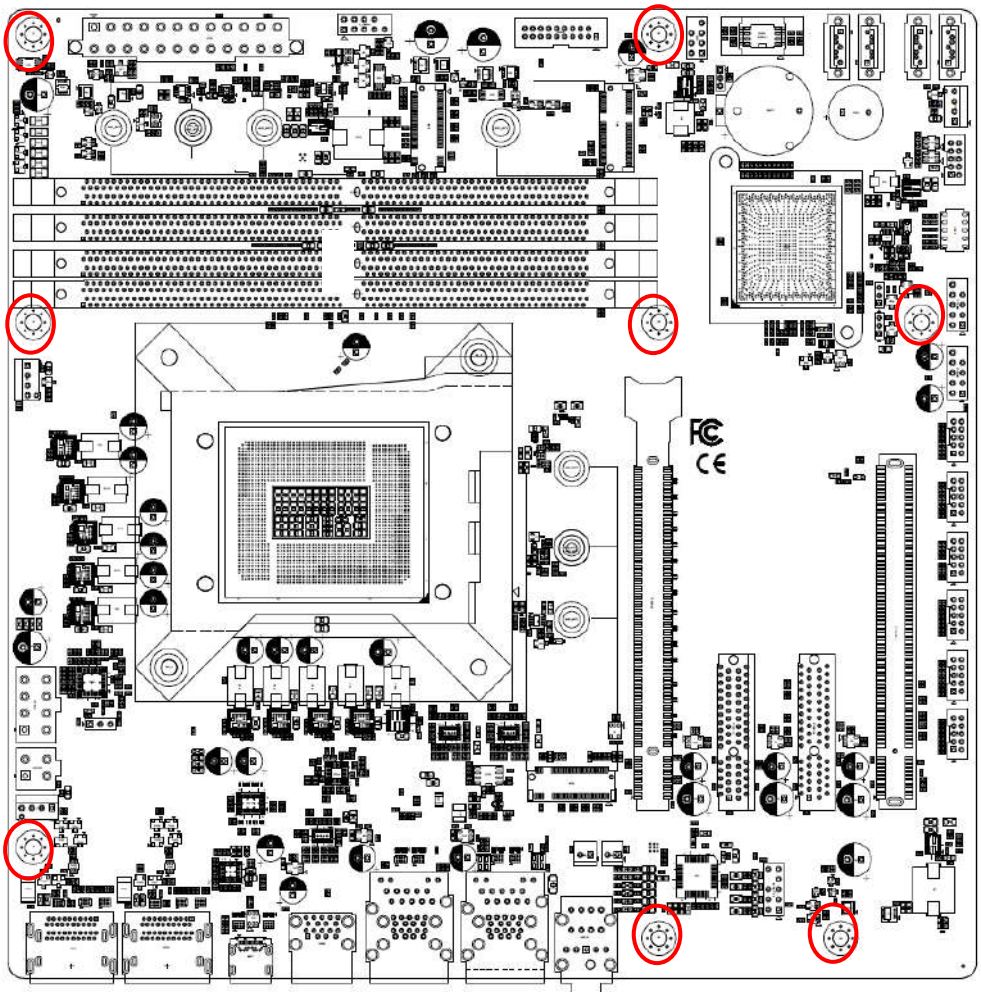
2.2.1 Placement Direction

When installing the motherboard, make sure that you place it into the chassis in the correct orientation. The edge with external ports goes to the rear part of the chassis as indicated in the image below.

2.2.2 Screw Holes

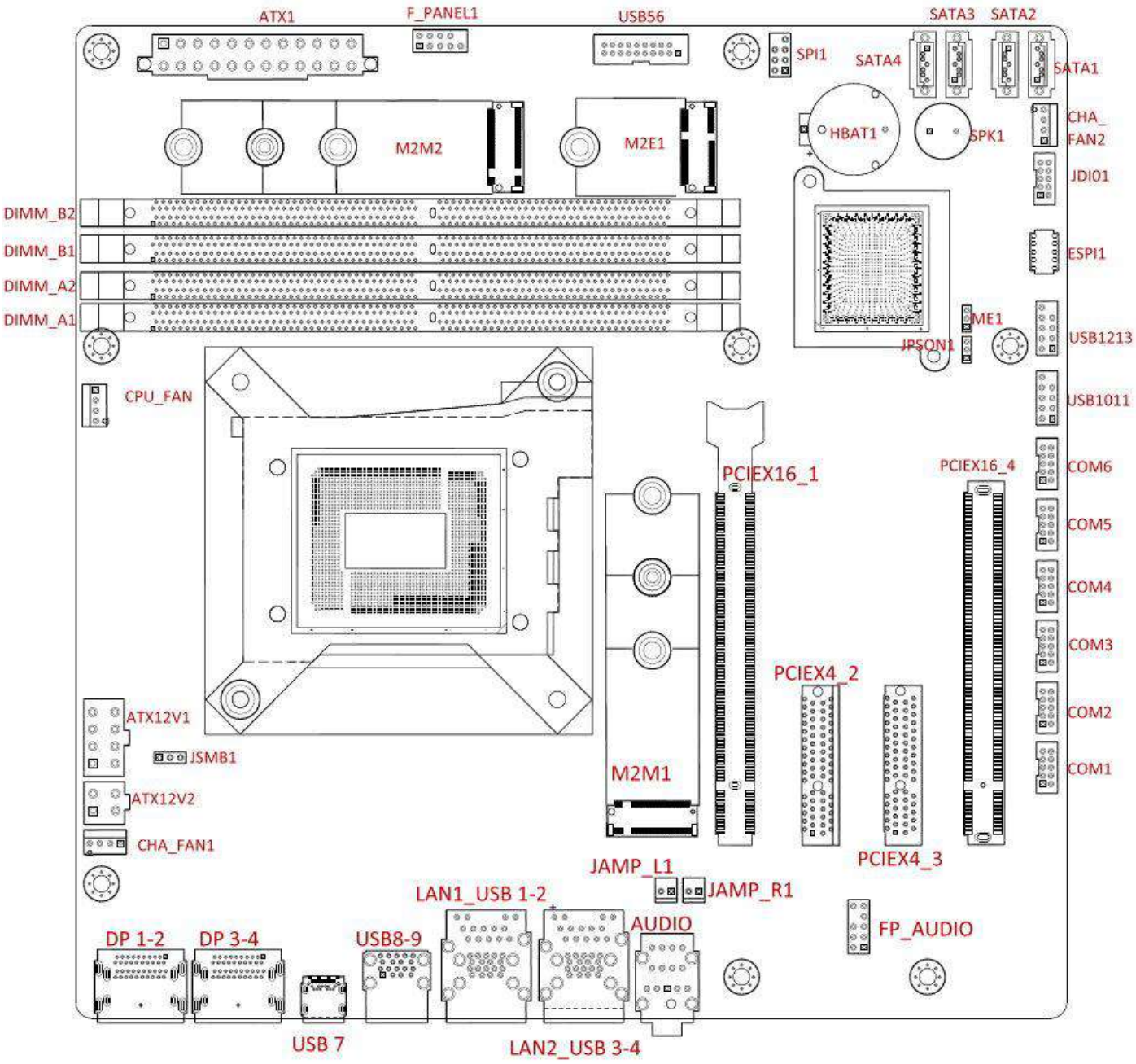
Place eight (8) screws into the holes indicated by circles to secure the motherboard to the chassis.

Do not over tighten the screws! Doing so can damage the motherboard.



Place this side towards the rear of the chassis.

2.2.3 Motherboard Layout



2.2.4 Layout Content List

Slots & sockets		
Label	**Function**	**Note**
CPU1	LGA1700 socket	
DIMMA1~B2	DDR4 Long-DIMM	
PCIEX16_1	PCIE Gen5	
PCIEX4_2	PCIE Gen3	
PCIEX4_3	PCIE Gen4	
PCIEX16_4 (J)	PCIE Gen4	

Jumpers		
Label	**Function**	**Note**
JCMOS1	Clear CMOS	Jumper 1x2P
JPSON1	AT/ATX Mode Select	Jumper 1x2P

Rear Panel Connector		
Label	**Function**	**Note**
COM1-6	COM port connector	
DP1+DP2	DP+ DP connector	
DP3+DP4	DP+ DP connector	
USB7	Type-C connector	
USB89	USB2.0 connector	
LAN1_USB1-2	RJ-45 Ethernet Connector x 1 USB 3.1 Gen2 Connector x 2	
LAN2_USB3-4	RJ-45 Ethernet Connector x 1 USB 3.1 Gen2 Connector x 2	
AUDIO1	3 port Audio Jack	Line-out, Mic-In , Lin-In

Internal Connector		
Label	**Function**	**Note**
CPU_FAN1	CPU fan connector	4 x 1 wafer, pitch 2.54mm
SYS_FAN1	System fan connector	4 x 1 wafer, pitch 2.54mm
SYS_FAN2	Chassis fan connector	4 x 1 wafer, pitch 2.54mm
F_PANEL1	Intel front panel connector	5 x 2 header, pitch 2.54mm
EATXPWR1	ATX power connector	12 x 2 wafer
ATX12V1	12V ATX power connector	2 x 4 wafer
SATA1 ~ 4	SATA data connector	7P Male connector
USB5-6	USB 3.1 Gen1 connector	10 x 2 wafer, pitch 2.00mm
M2E1	M.2 connector	M.2 E / PCIe x2 / USB 2.0 / 2230
M2M1	M.2 connector	M.2 M / NVMe PCIe x 4 / 2242, 2260, 2280
M2M2	M.2 connector	M.2 M / MVMe PCIe x 4 / SATA / 2242, 2260, 2280
BAT1	RTC battery holder	
SPI1	SPI header	4 x 2 header, pitch 2.54mm
JLPC1	Port 80	5 x 2 wafer, pitch 2.00mm
JDIO1	DIO connector	5 x 2 wafer, pitch 2.00mm
FP_AUDIO1	Front audio header	5 x 2 header, pitch 2.54mm

2.3 Central Processing Unit (CPU)

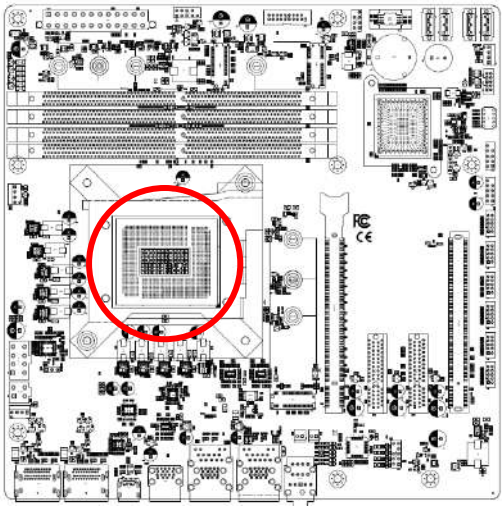
The motherboard comes with a surface mount LGA1700 socket designed for the Intel® Core™ i9/ i7/ i5/ i3 processor in the 1700-land package.

- Your boxed Intel® Core™ i9/ i7/ i5/ i3 LGA1700 processor package should come with installation instructions for the CPU, fan and heatsink assembly. If the instructions in this section do not match the CPU documentation, follow the latter.
- Upon purchase of the motherboard, make sure that the PnP cap is on the socket and the socket pins are not bent. Contact your retailer immediately if the PnP cap is missing, or if you see any damage to the PnP cap/socket pins/motherboard components. Premio will shoulder the cost of repair only if the damage is shipment/transit-related.
- Keep the cap after installing the motherboard. Premio will process Return Merchandise Authorization (RMA) requests only if the motherboard comes with the cap on the LGA1700 socket.
- The product warranty does not cover damage to the socket pins resulting from incorrect CPU installation/removal, or misplacement/loss/incorrect removal of the PnP cap.
- Install the CPU fan and heatsink assembly before you install motherboard to the chassis.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

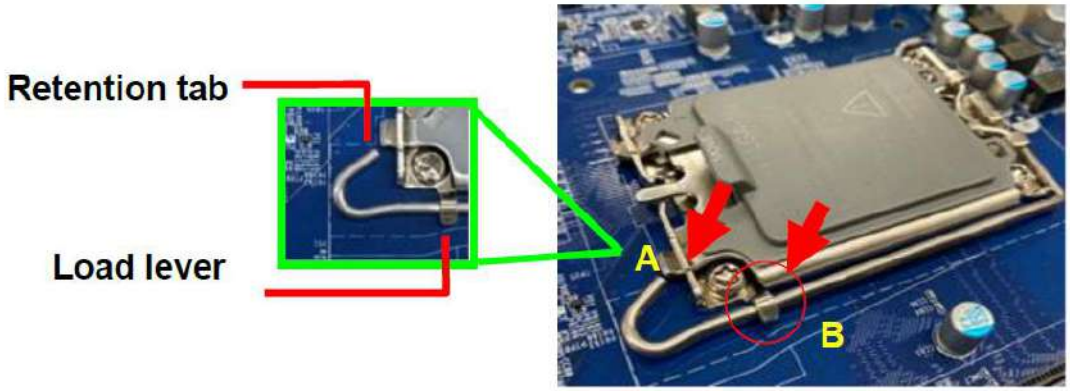
2.3.1 Installing the CPU

1. Locate the CPU socket on the motherboard.



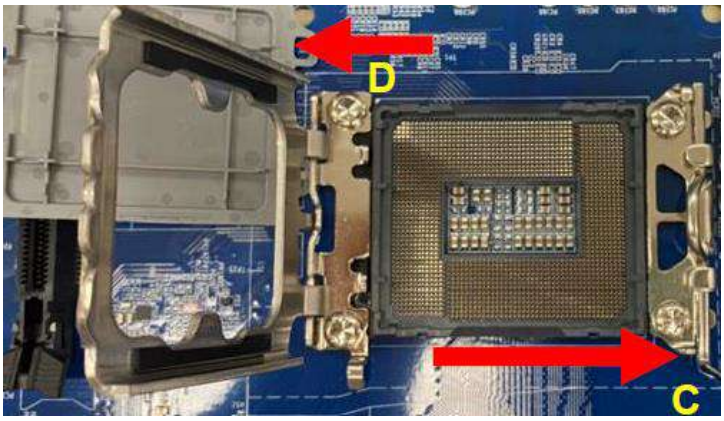
Before installing the CPU, make sure that the socket box is facing towards you and the load lever is on your left.

2. Press the load lever with your thumb (A), then move it to the left (B) until it is released from the retention tab.

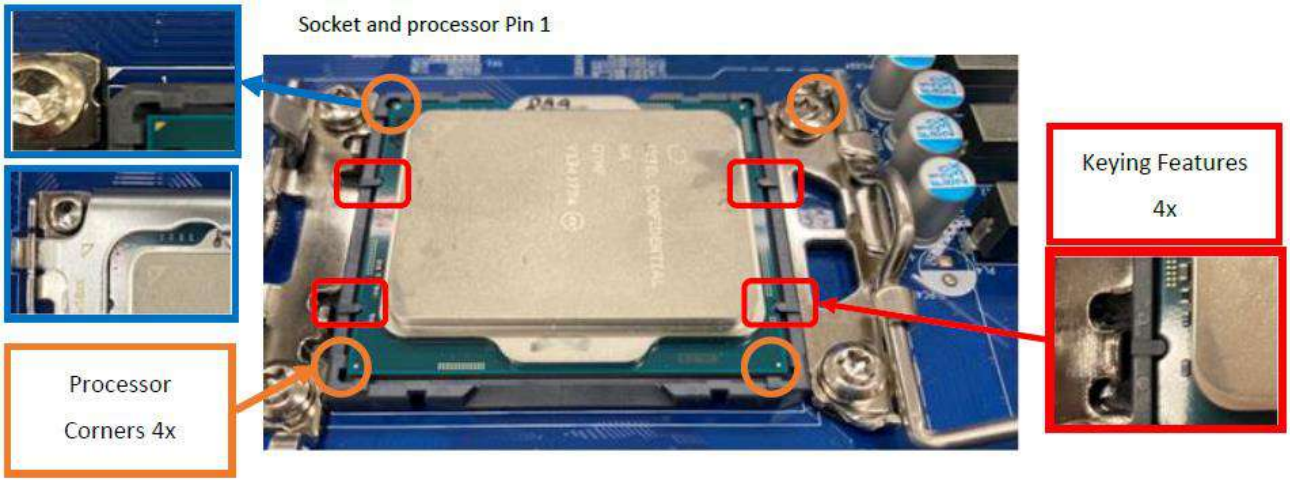


To prevent damage to the socket pins, do not remove the PnP cap unless you are installing a CPU.

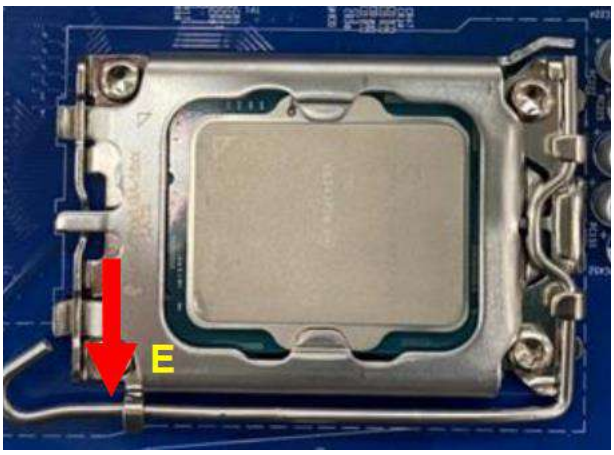
3. Lift the Load lever with your thumb and forefinger to around 180° angle (A), then pull the PnP cap from the CPU socket to remove (B).



4. Position the CPU over the socket, making sure that the gold triangle is on the top-left corner of the socket then fit the socket alignment key into the CPU notch.



5. Pull back the load lever, then push the load lever (A) until it snaps into the retention tab.



The CPU fits in only one correct orientation. DO NOT force the CPU into the socket to prevent bending the connectors on the socket and damaging the CPU!

2.3.2 Installing the CPU Heatsink and Fan

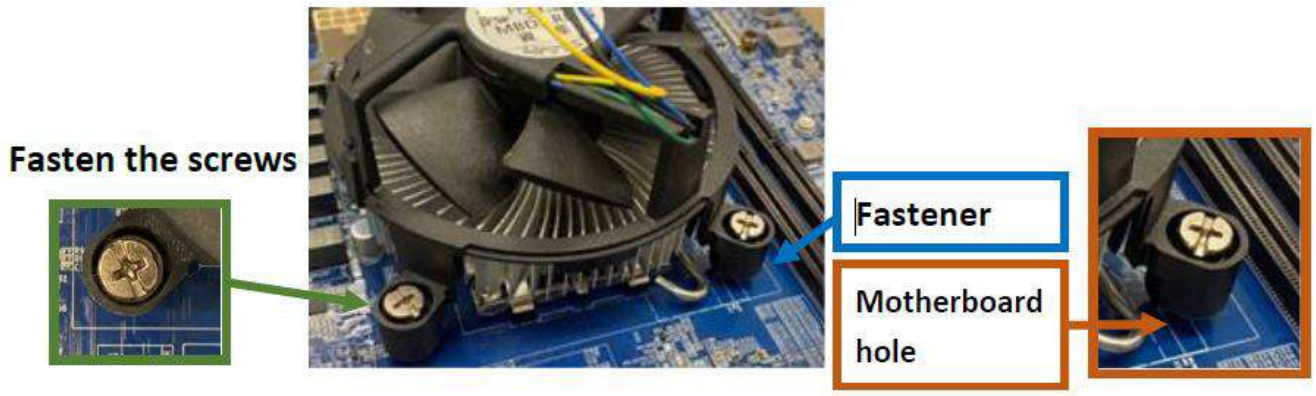
Intel® Core™ i9/ i7/ i5/ i3 LGA1700 processor requires a specially designed heatsink and fan assembly to ensure optimum thermal condition and performance.

- Install the motherboard to the chassis before you install the CPU
- fan and heatsink assembly.
- When you buy a boxed Intel® Core™ i9/ i7/ i5/ i3 LGA1700 processor, the package includes the CPU fan and heatsink assembly. If you buy a CPU separately, make sure that you use only Intel® certified multi-directional heatsink and fan.
- Your Intel® Core™ i9/ i7/ i5/ i3 LGA1700 processor LGA1700 heatsink and fan assembly comes in a push-pin design and requires no tool to install.

If you purchased a separate CPU heatsink and fan assembly, make sure that you have properly applied Thermal Interface Material to the CPU heatsink or CPU before you install the heatsink and fan assembly.

To install the CPU heatsink and fan:

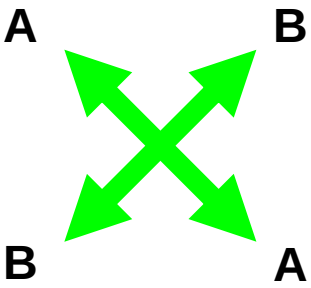
1. Place the heatsink on top of the installed CPU, making sure that the four fasteners match the holes on the motherboard.

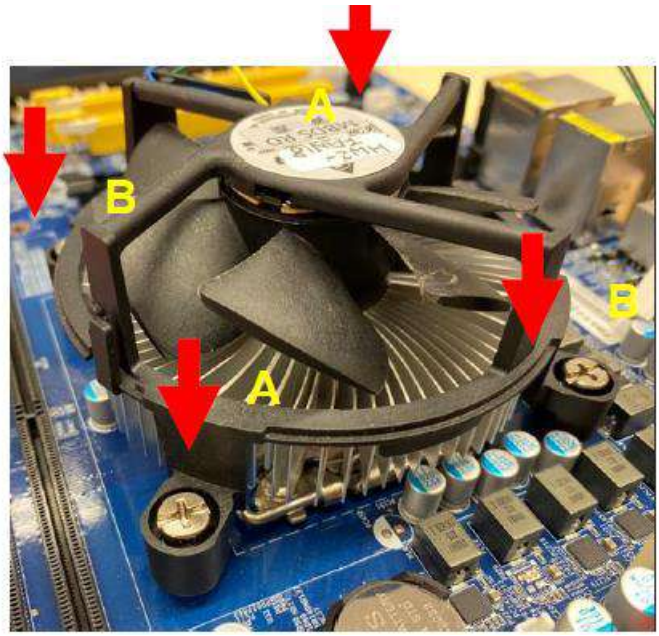


Orient the heatsink and fan assembly such that the CPU fan cable is closest to the CPU fan connector.

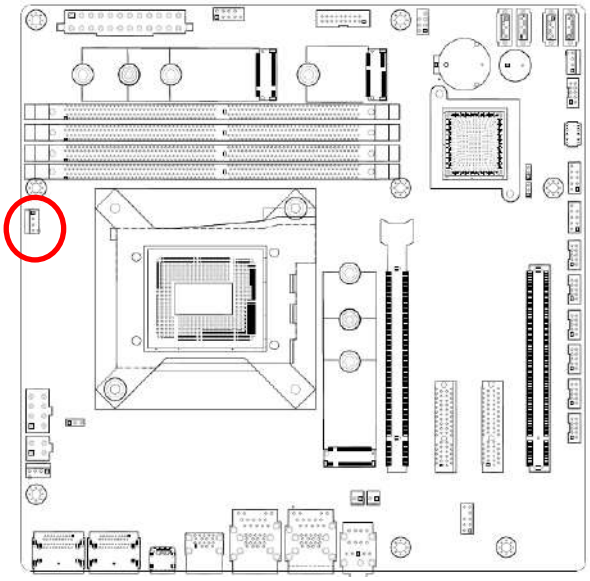
Make sure each fastener is oriented as shown, with the narrow groove directed outward.

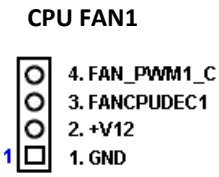
2. Push down two fasteners at a time in a diagonal sequence to secure the heatsink and fan assembly in place.

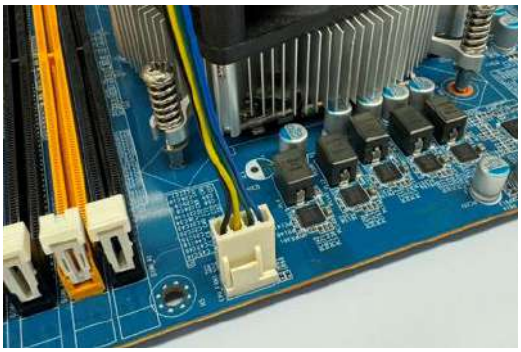




3. Connect the CPU fan cable to the connector on the motherboard labeled CPU_FAN1.





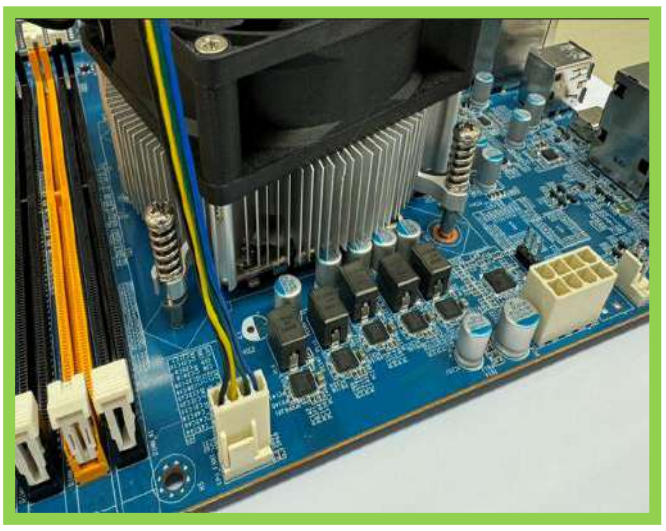


Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.
These are not jumpers! DO NOT place jumper caps on the fan connectors.

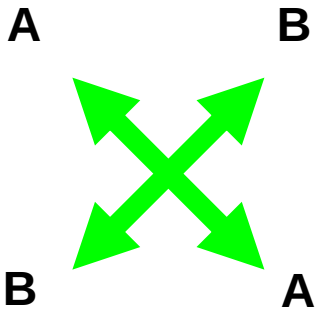
2.3.3 Unstalling the CPU Heatsink and Fan

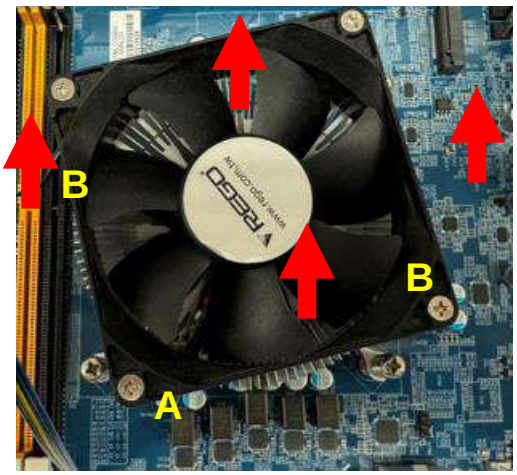
To uninstall the CPU heatsink and fan:

1. Disconnect the CPU fan cable from the connector on the motherboard.
2. Rotate each fastener counterclockwise



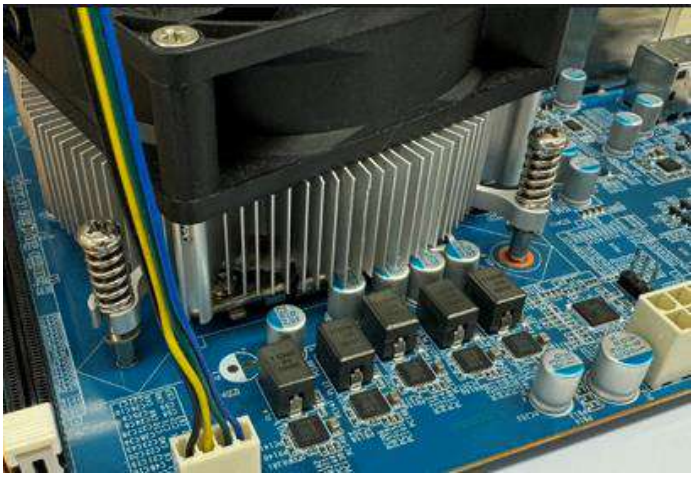
3. Pull up two fasteners at a time in a diagonal sequence to disengage the heatsink and fan assembly





4. Carefully remove the heatsink and fan assembly from the motherboard.

5. Rotate each fastener clockwise to ensure correct orientation when reinstalling.

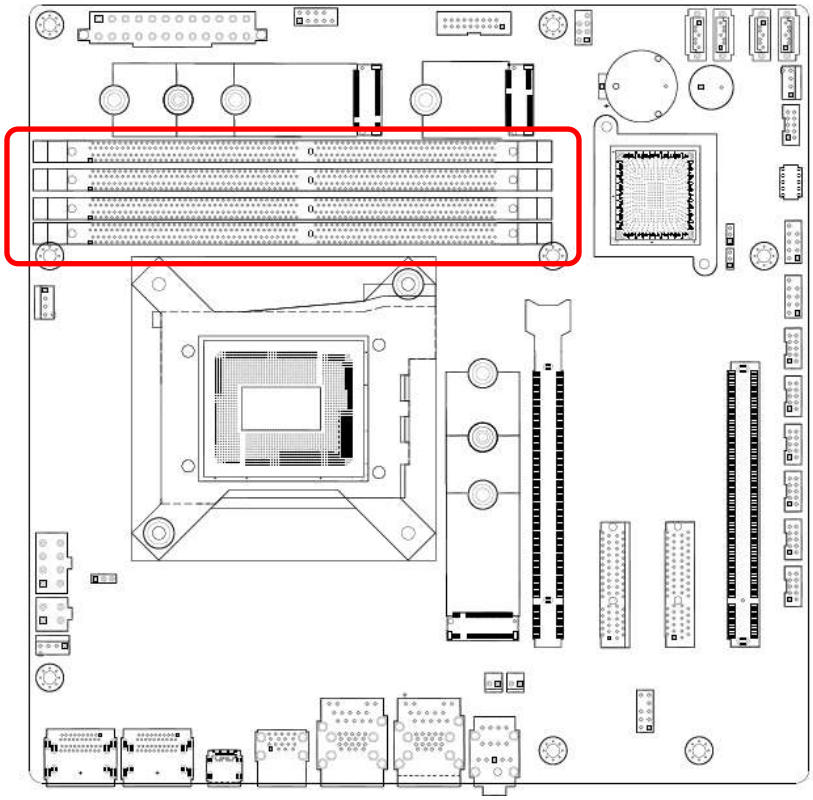


2.4 System Memory

2.4.1 Overview

The motherboard comes with four 288-pin Double Data Rate 4 (DDR4) Dual Inline Memory Modules (DIMM) sockets.

DDR4 SDRAM, an abbreviation for double data rate fourth generation synchronous dynamic random-access memory, is a type of synchronous dynamic random-access memory (SDRAM) with a high bandwidth ("double data rate") interface. The primary advantages of DDR4 over its predecessor, DDR3, include higher module density and lower voltage requirements, coupled with higher data rate transfer speeds. DDR4 memory comes in 288-pin DIMM modules, similar in size to 240-pin DDR3 DIMMs. The pins are spaced more closely (0.85 mm instead of 1.0) to fit the increased amount within the same 5¼ inch (133.35 mm) standard DIMM length but, the height is increased slightly (31.25 mm/1.23 in instead of 30.35 mm/1.2 in) to make signal routing easier, and the thickness is also increased (to 1.2 mm from 1.0) to accommodate more signal layers.DDR4 DIMM modules have a slightly curved edge connector so not all of the pins are engaged at a time during module insertion, lowering the insertion force.

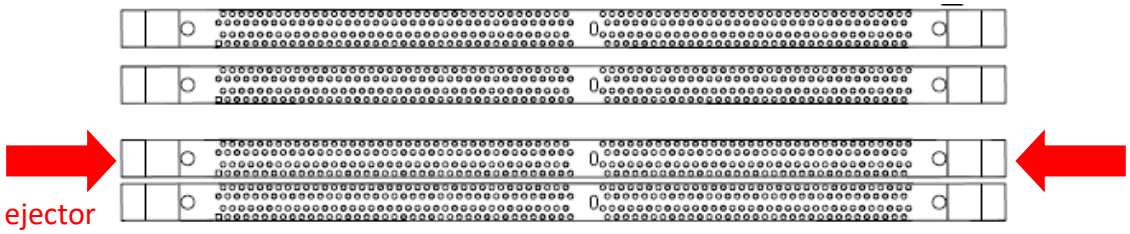


288-Pin DDR4 U-DIMM sockets

2.4.2 Installing a DIMM

Make sure to unplug the power supply before adding or removing DIMMs or other system components. Failure to do so may cause severe damage to both the motherboard and the components.

1. Locate the DIMM socket on the board.
2. Hold two edges of the DIMM module carefully, and keep away of touching its connectors.
3. Align the notch key on the module with the rib on the slot.
4. Firmly press the modules into the socket which will automatically snap into the mounting notch. Do not force the DIMM module in with extra force as the DIMM module only fits in one direction.



- A DDR4 DIMM is keyed with a notch so that it fits in only one direction. DO NOT force a DIMM into a socket to avoid damaging the DIMM.
- The DDR4 DIMM sockets do not support DDR/DDR2/DDR3 DIMMs. DO NOT install DDR/DDR2/DDR3 DIMMs to the DDR4 DIMM socket.

2.4.3 Removing a DDR4 DIMM

1. Press the two ejector tabs on the slot outward simultaneously, and then pull out the DIMM module.

Support the DIMM lightly with your fingers when pressing the ejector tabs. The DIMM might get damaged when it flips out with extra force.

2.5 Expansion Card

In the future, you may need to install expansion cards. The following sub-sections describe the slots and the expansion cards that they support.

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

2.5.1 Installing an Expansion Card

1. Before installing the expansion card, read the documentation that came with it and make the necessary hardware settings for the card.
2. Remove the system unit cover (if your motherboard is already installed in a chassis).
3. Remove the bracket opposite the slot that you intend to use. Keep the screw for later use.
4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
5. Secure the card to the chassis with the screw you removed earlier.
6. Replace the system cover.

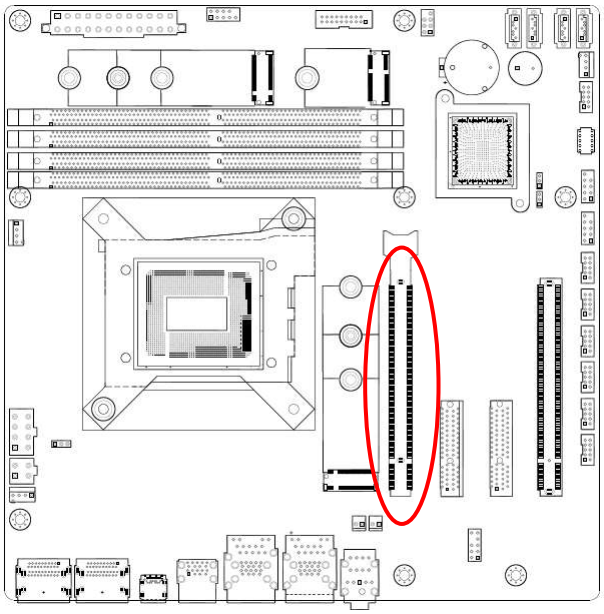
2.5.2 Installing an Expansion Card

After installing the expansion card, configure it by adjusting the software settings.

1. Turn on the system and change the necessary BIOS settings, if any. See Chapter 2 for information on BIOS setup.
2. Assign an IRQ to the card if needed. Refer to the tables on the next page.
3. Install the software drivers for the expansion card.

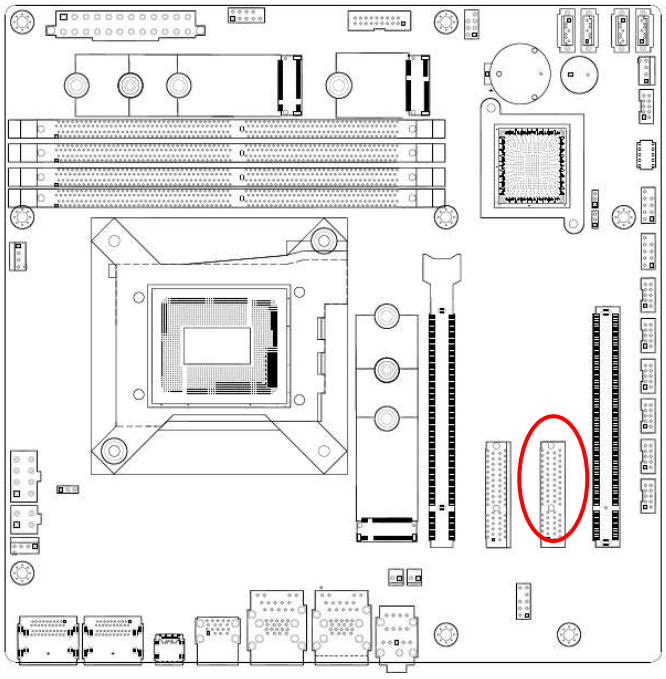
2.5.3 PCI Express x16 Slot

This motherboard supports one PCI Express x16 slot that complies with the PCI Express specifications.



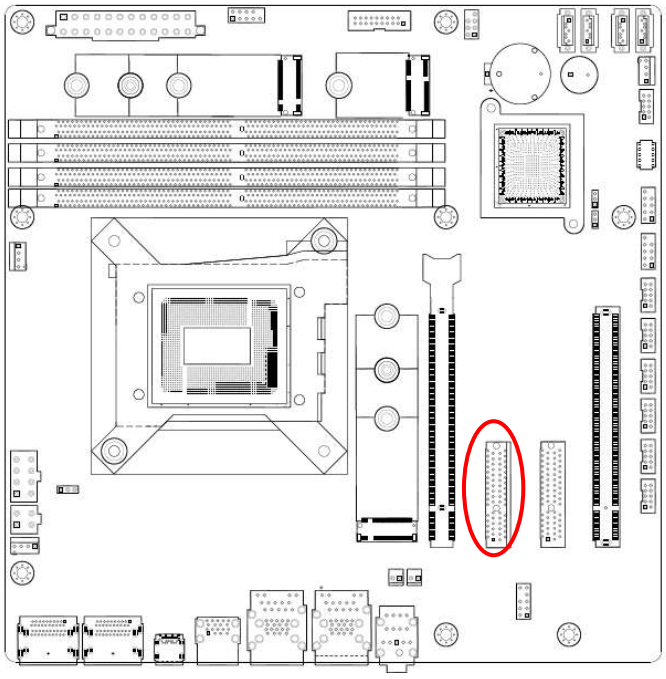
2.5.4 PCI Express x4 GEN4 slot

This motherboard supports one PCIe x4 slot that complies with the PCIex4 specifications..



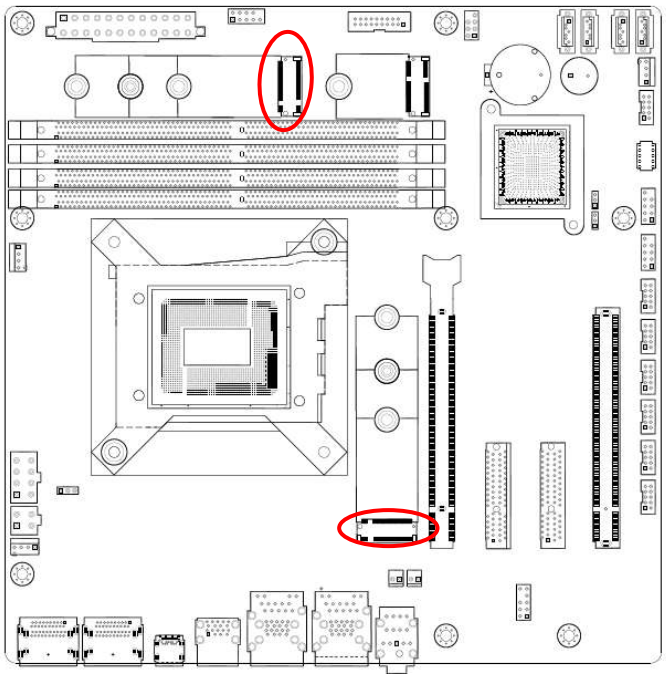
2.5.5 PCI Express x4 GEN 3 slot

This motherboard supports two PCIe x4 slot that complies with the PCIe x4 specifications.



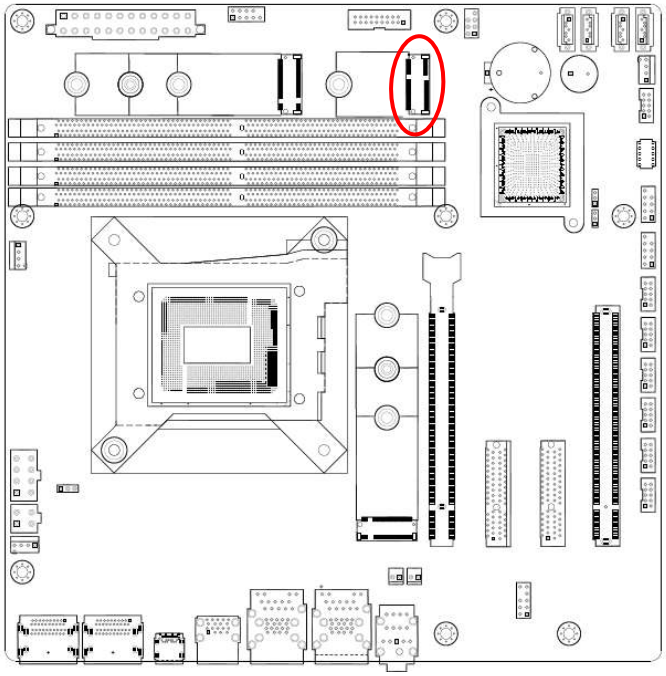
2.5.6 M.2 M Key slot

Support PCIe and SATA interface of this connector.



2.5.7 M.2 E key slot

Support PCIe and USB interface of this connector.



2.6 Jumpers

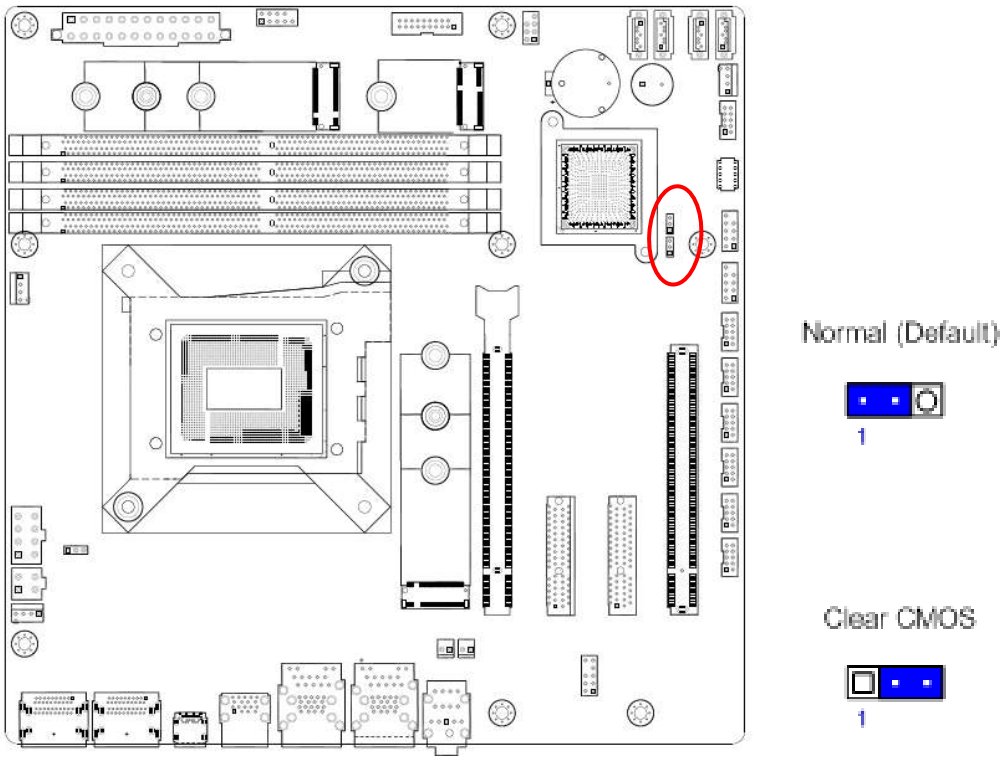
2.6.1 Clear CMOS (JCMOS1)

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 includes system setup information such as system passwords.

To erase the RTC RAM:

1. Turn OFF the computer and unplug the power cord.
2. Remove the onboard battery.
3. 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.
4. Re-install the battery.
5. Plug the power cord and turn ON the computer.
6. Hold down the <Del> key during the boot process and enter BIOS setup to re-enter data.

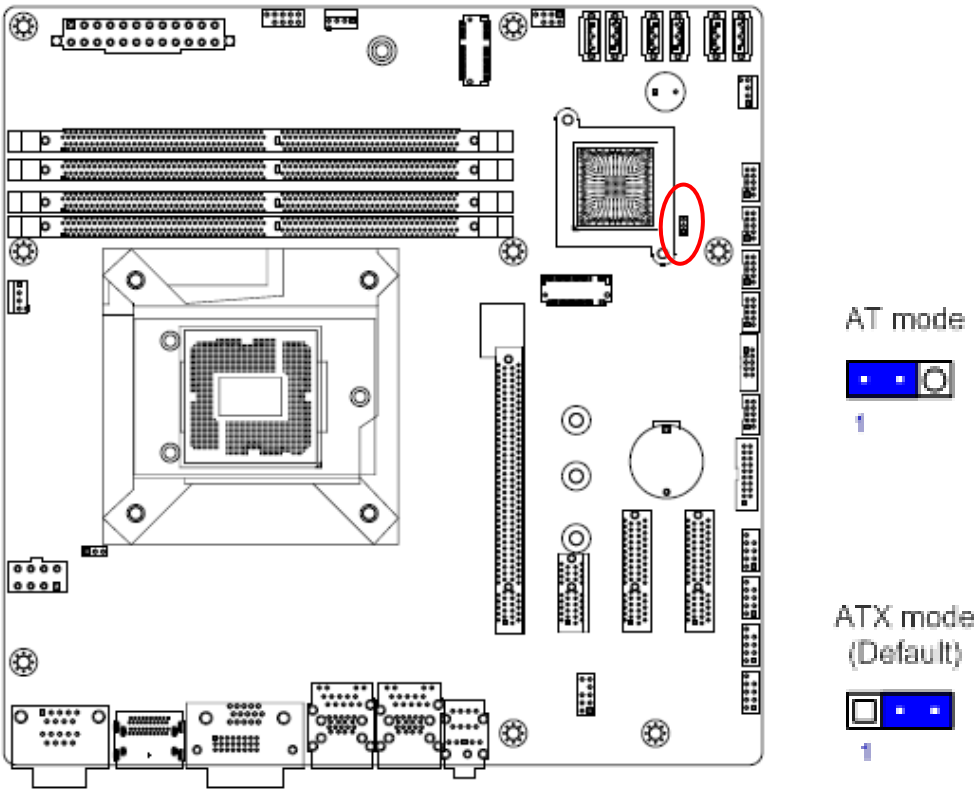
Except when clearing the RTC RAM, never remove the cap on CLRTC jumper default position. Removing the cap will cause system boot failure!



You do not need to clear the RTC when the system hangs due to overclocking. For system failure due to overclocking, use the C.P.R. (CPU Parameter Recall) feature. Shut down and reboot the system so the BIOS can automatically reset parameter settings to default values.

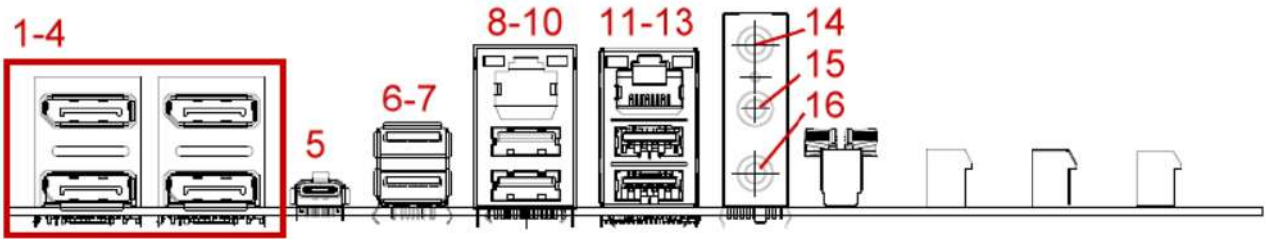
2.6.2 AT/ATX Power Mode Select (JPSON1)

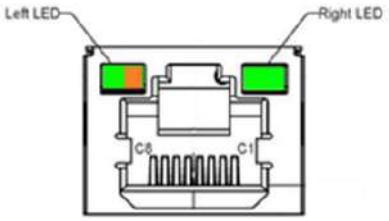
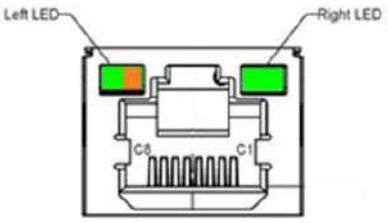
This jumper allows you to select ATX Mode or AT mode



2.7 Connectors

2.7.1 Rear panel connectors

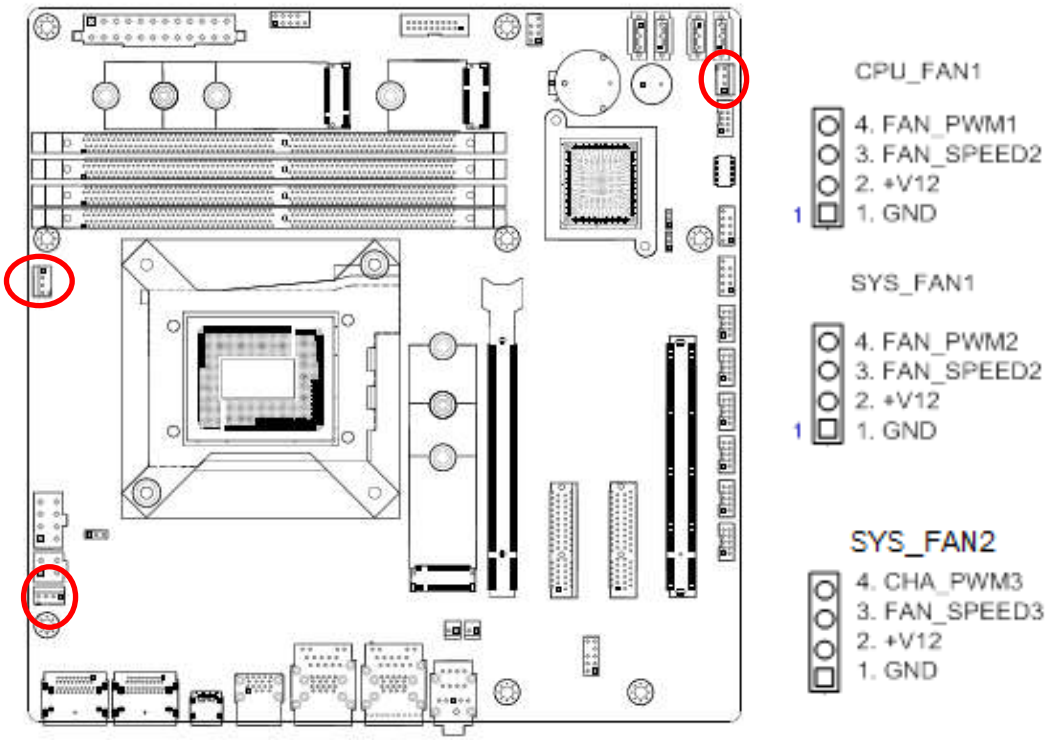


Item	Name	Function	Description
1-4	DP1-4	Display Port	The DP port connector
5	USB-C	USB 3.2 Gen 2x2	Type-C Connector (Optional)
6-7	USB	USB 3.1 Gen 2x1	Type-A Connectors
8	LAN1	Gigabit LAN (RJ-45) Connectors	This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. 
9-10	USB1-2	USB 3.1 Gen2	Two port USB3.1 Gen2 Connectors
11	LAN2	Gigabit LAN (RJ-45) Connectors	This port allows Gigabit connection to a Local Area Network (LAN) through a network hub. Refer to the table below for the LAN port LED indications. 

Item	Name	Function	Description
12-13	USB3-4	USB 3.1 Gen2	Two port USB3.1 Gen2 Connectors
14	AUDIO1	Line-in port (Light blue)	This port connects a tape, CD, DVD player, or other audio sources.
15	AUDIO1	Line-out port (Lime)	This port connects a headphone or a speaker. In 4-channel, 6-channel, and 8-channel configuration, the function of this port becomes Front Speaker Out.
16	AUDIO1	Microphone port (Pink)	This port connects a microphone.

2.7.2 CPU and System fan connectors (CPU_FAN1, SYS_FAN1, SYS_FAN2)

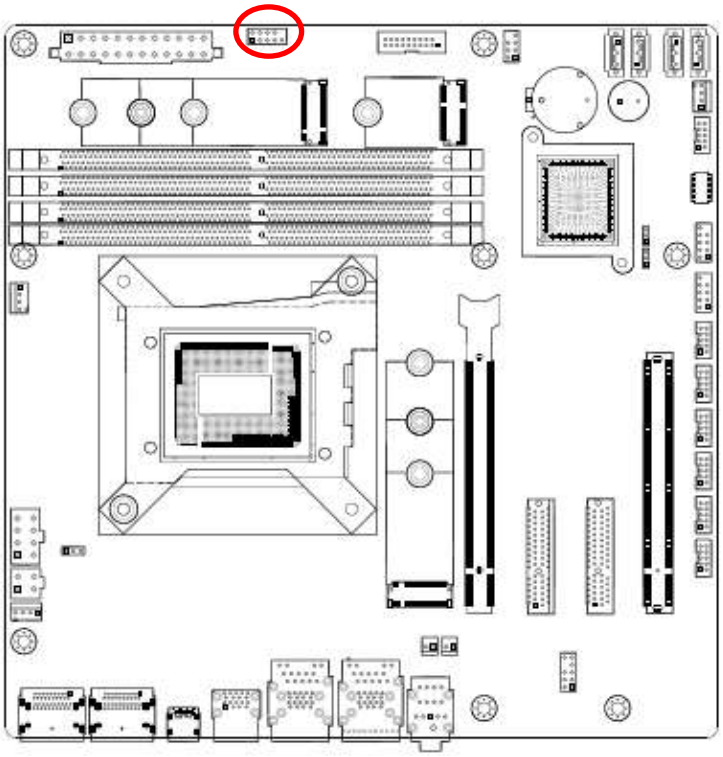
The fan connectors support cooling fans of 280mA (3.36 W max.) at 4800rpm or a total of 1A~2.22A (26.64W max.) at +12V. Connect the fan cables to the fan connectors on the motherboard, making sure that the black wire of each cable matches the ground pin of the connector.

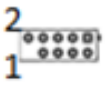


Do not forget to connect the fan cables to the fan connectors. Insufficient air flow inside the system may damage the motherboard components.
These are not jumpers! DO NOT place jumper caps on the fan connectors.

2.7.3 System Panel (F_PANEL1)

This connector is for a chassis-mounted front panel. The functions are as following.





1.Key	2.NC
3.GND	4.FP_RESET#
5.PANSWIN#	6.GND
7.SUP_LED	8.HDD_Act_LED
9.PWR_LED	10.HDD_PWR_LED

- **ATX Power Button/Soft-off Button (Pin 3-5)**

  This 2-pin connector is for the system power button. Pressing the power button turns the system on or puts the system in sleep or soft-off mode depending on the BIOS settings. Pressing the power switch and holding it for more than four seconds while the system is ON turns the system OFF.

- **Reset Button (Pin 4-6)**

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

- **Power LED (Pin 7-9)**

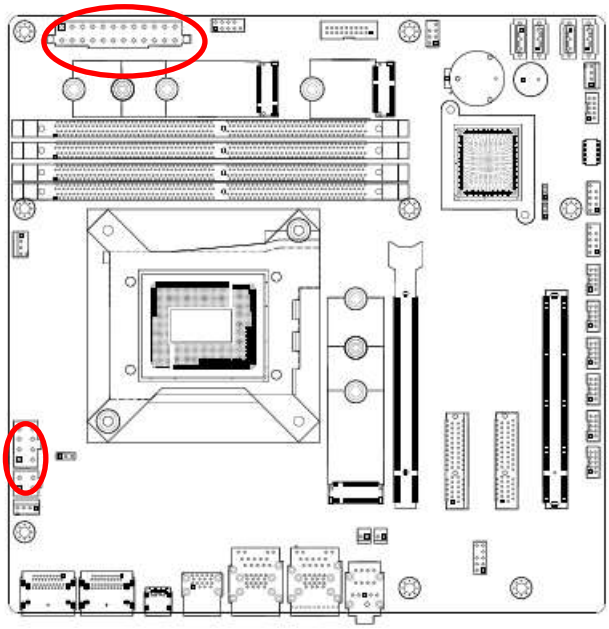
  This 2-pin connector is for the system power LED. Connect the chassis power LED cable to this connector. The system power LED lights up when you turn on the system power, and blinks when the system is in sleep mode.

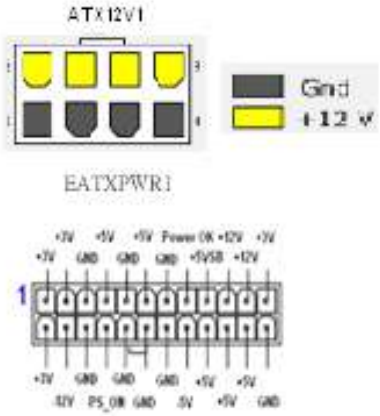
- **Hard Disk Drive Activity LED (Pin 8-10)**

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

2.7.4 ATX power connectors (EATXPWR1 & ATX12V1)

The connector is 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.

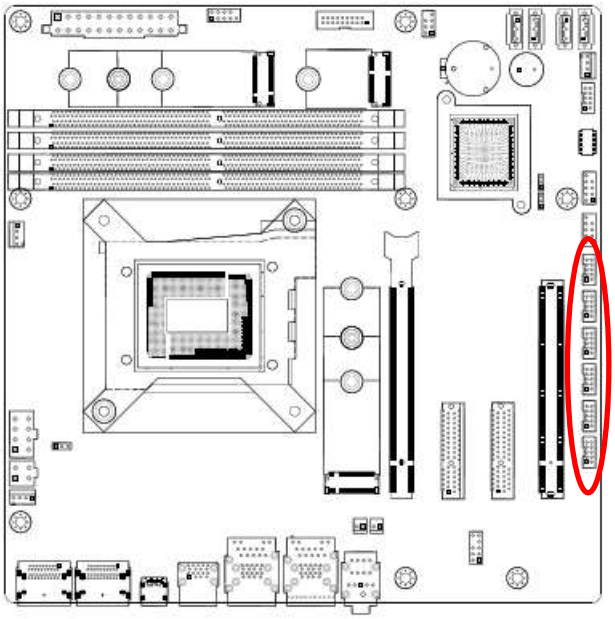


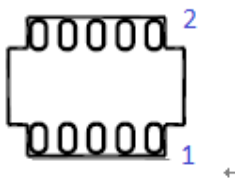


- Use of a PSU with a higher power output is recommended when configuring a system with more power-consuming devices. The system may become unstable or may not boot up if the power is inadequate.
- Make sure that your power supply unit (PSU) can provide at least the minimum power required by your system. See the table below for details.

2.7.5 Serial Port connectors (COM3~6)

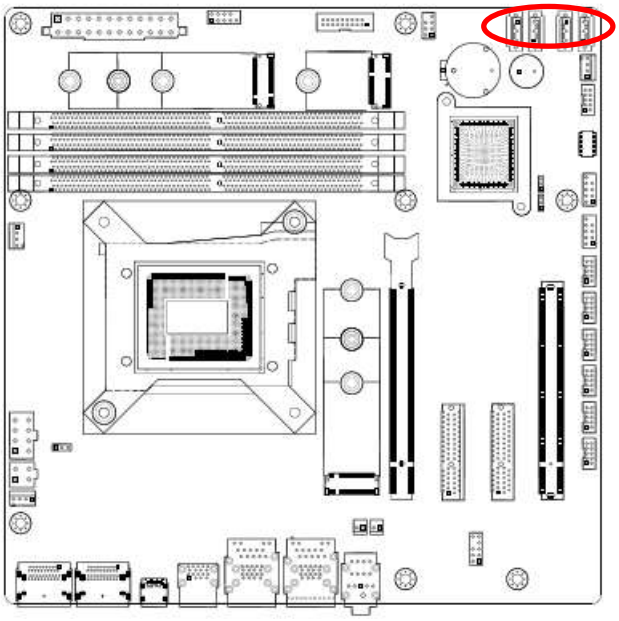
This connector is for a serial (COM) port. Connect the serial port module cable to this connector, then install the module to a slot opening at the back of the system chassis.

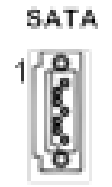




1.DCD	2.DSR
3.RX	4.RTS
5.TX	6.CTS
7.DTR	8.RI#
9.GND	10.Key

2.7.6 Serial ATA Connector (SATA1~4)

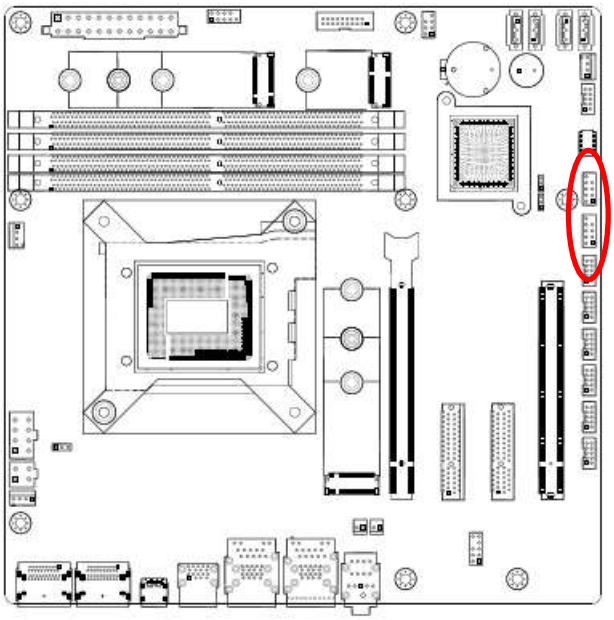




1. GND
2. TX+
3. TX-
4. GND
5. RX-
6. RX+
7. GND

2.7.7 USB Connectors (USB10~13)

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

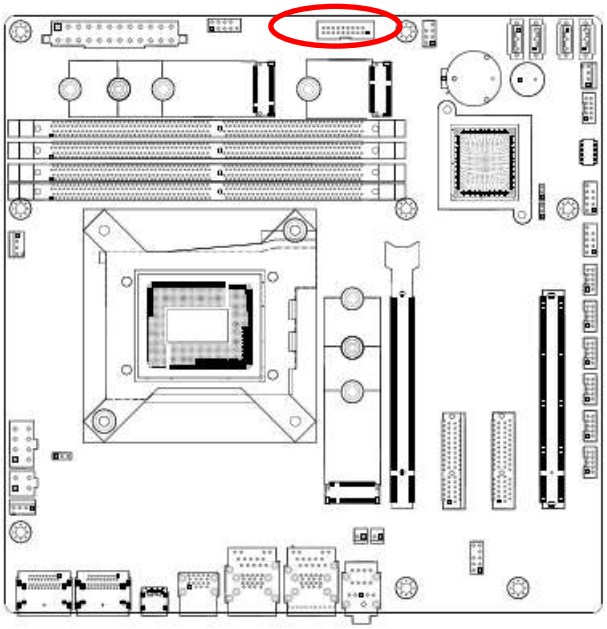


Never connect a 1394 cable to the USB connectors. Doing so will damage the motherboard!

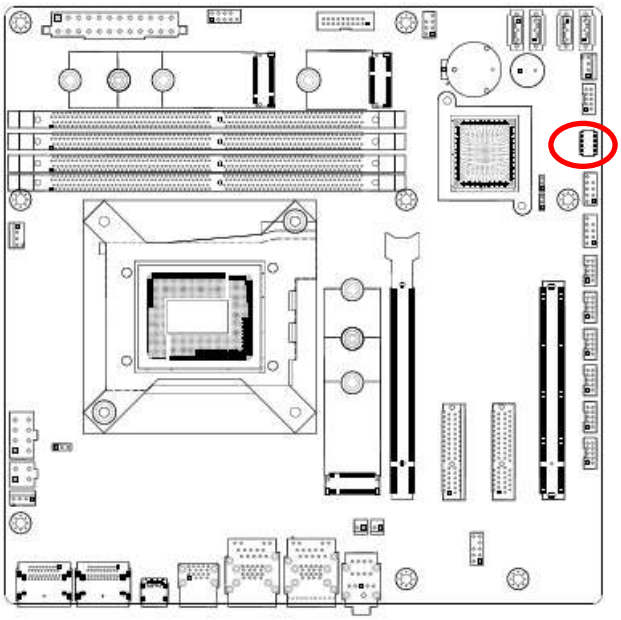
The USB module is purchased separately.

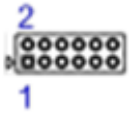
2.7.8 USB3.1 Connector (USB5-6)

This connector provides 2 port USB3.1 Gen1 port. Connect the optional USB module cable to any of these connectors, then install the module to a slot opening at the back of the system chassis. These USB connectors comply with USB 3.1 Gen1 specification that supports up to 5Gbps connection speed.



2.7.9 8 bit GPIO Header (JDIO1)

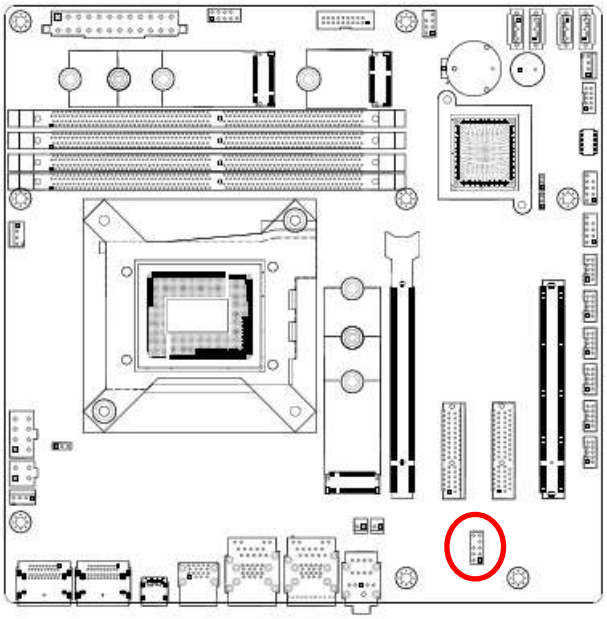




1.+5V	2.GND
3.GPO0	4.GPI0
5. GPO1	6. GPI1
7. GPO2	8. GPI2
9. GPO3	10. GPI3

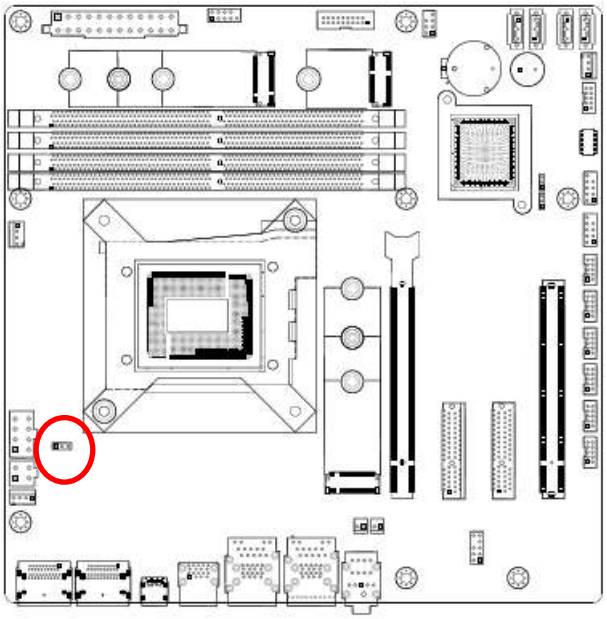
2.7.10 Front Audio Connector (FP_AUDIO1)

This connector is for a chassis-mounted front panel audio I/O module that supports either HD Audio or legacy AC '97 (optional) audio standard.

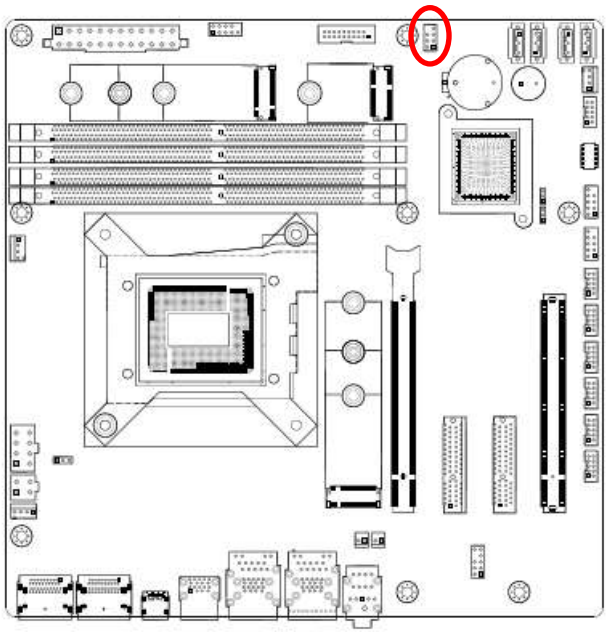


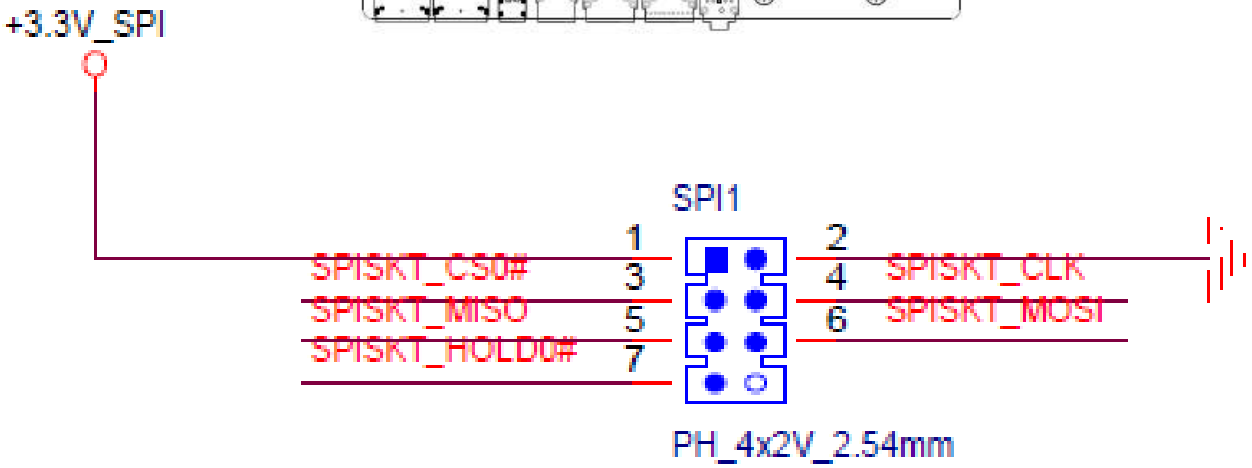
2.7.11 SM Bus Connector (JSMB1)

For RD develop use only.



2.7.12 SPI Connector (SPI1)





Chapter 3

System Setup

Set torque force to 3.5 kgf-cm to execute all the screwing and unscrewing.

3.1 Removing Top Cover Chassis

WARNING

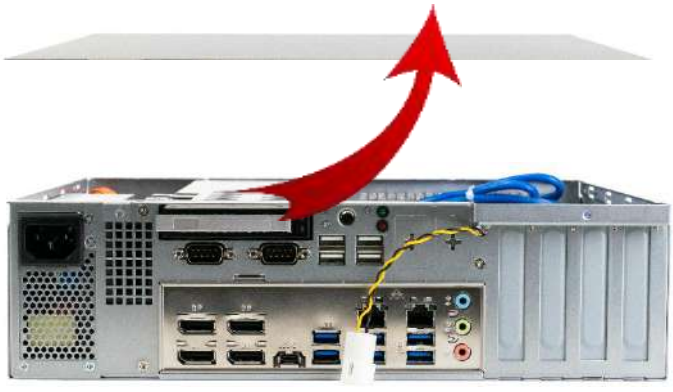
In order to prevent electric shock or system damage, before removing the chassis cover, must turn off power and disconnect the unit from power source.

1. Unscrew the screws as shown below.

KCO-2000-RPL

KCO-3000-RPL

2. Remove the top chassis cover.



KCO-2000-RPL

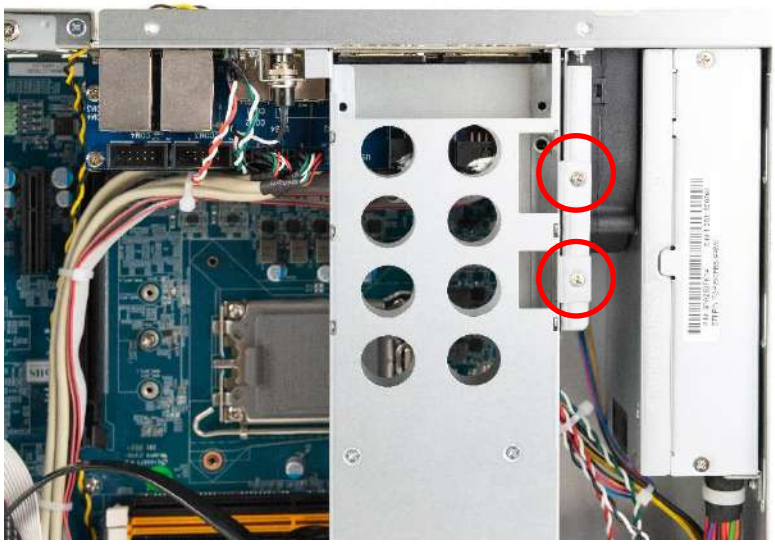
KCO-3000-RPL

3.2 Removing Internal Chassis

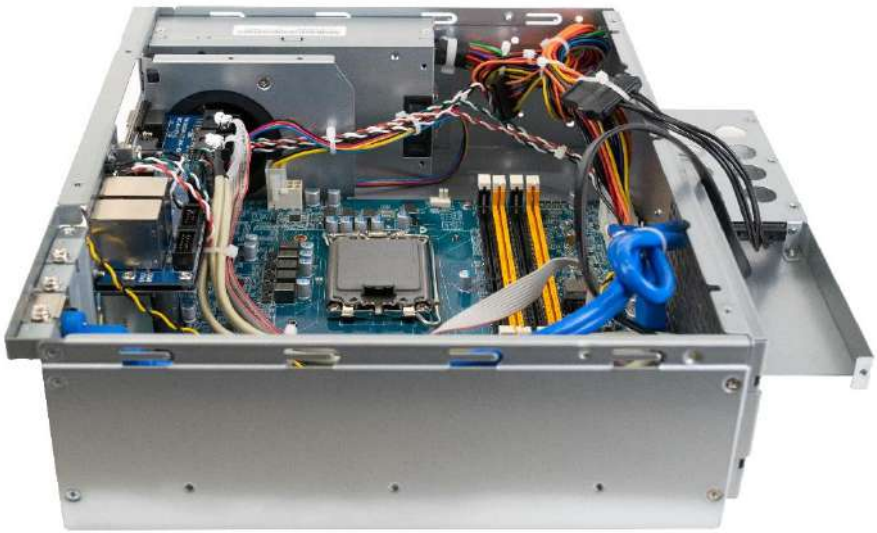
- **KCO-2000-RPL Series**

1. Remove the two screws as shown below.

2. Remove the drive bay tray first and then remove the two screws as shown below.



3. The outcome should look like the picture below.



Removing Internal Chassis

- **KCO-3000-RPL Series**

Remove the screws from the front and rear as shown below.

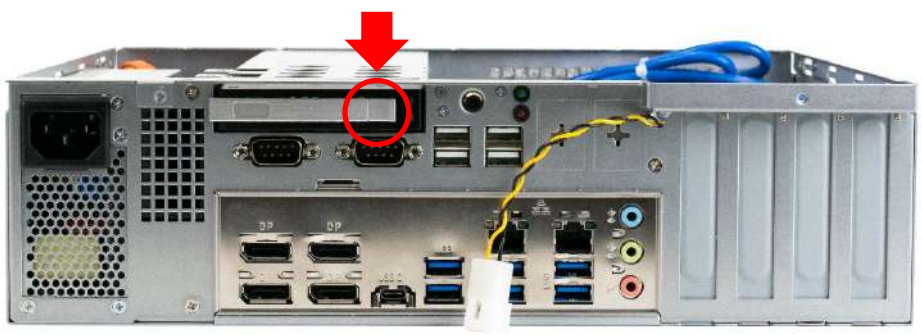
3.3 Installing M.2 M Key Card

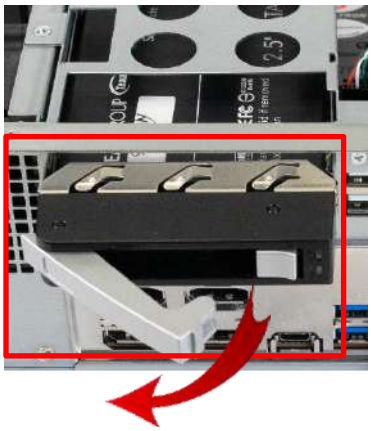
1. The KCO series PCBA features two M.2 M Key slots on the top, which supports NVMe Module and NVMe/SATA module.

2. Insert M.2 M Key card at a 45 degree angle and then press the M.2 M Key card down and secure it with one screw (M3x5L).

3.4 Installing SSD on removable SATA Drive bay (KCO-2000-RPL Only)

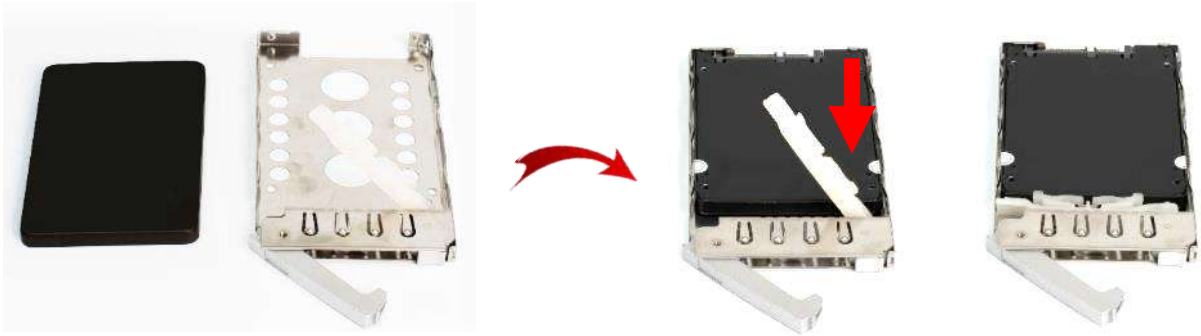
1. To unlock the tray lock press the location highlighted at the red circle below and pull the tray towards you to remove the SATA HDD/SSD bay.



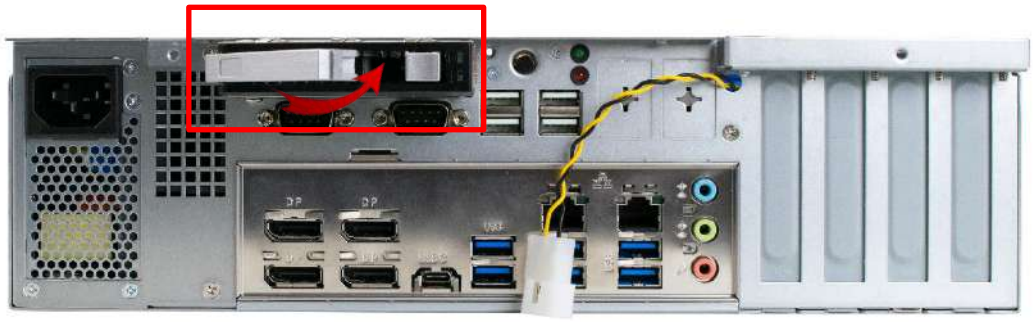


2. Unlock the drive lock by lifting the it up as shown below and insert the HDD/SSD card.

3. Secure the drive lock by pushing it back down as shown below

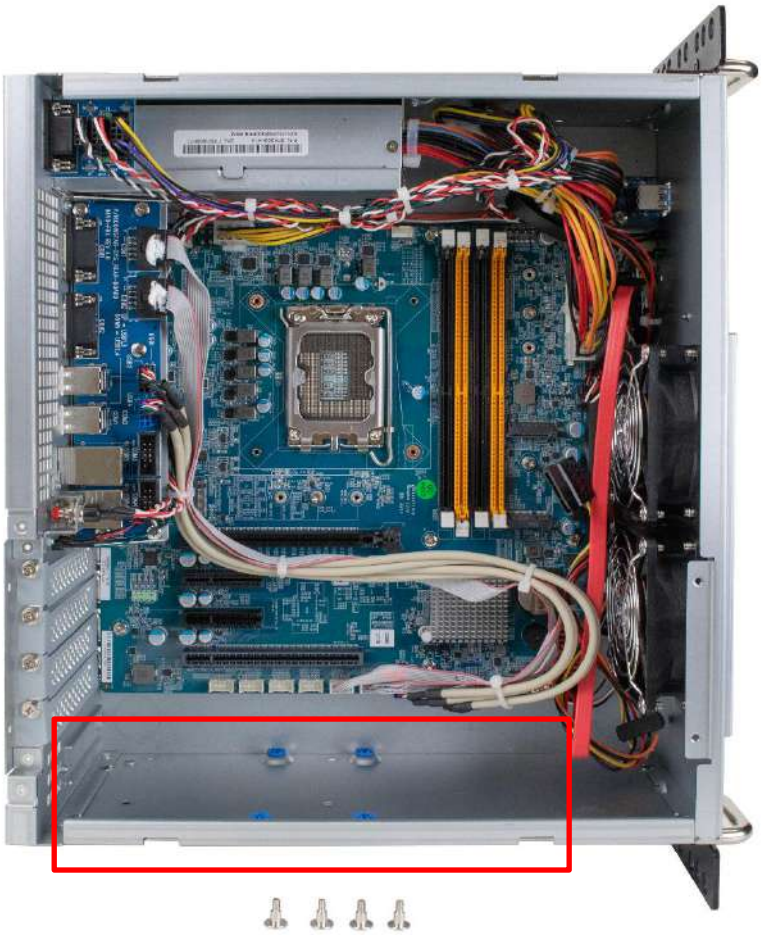


4. Once the SSD card is secure, place the tray back into the bay and secure the tray lock.



3.5 Installing SATA SSD/HDD Drive (KCO-3000-RPL Only)

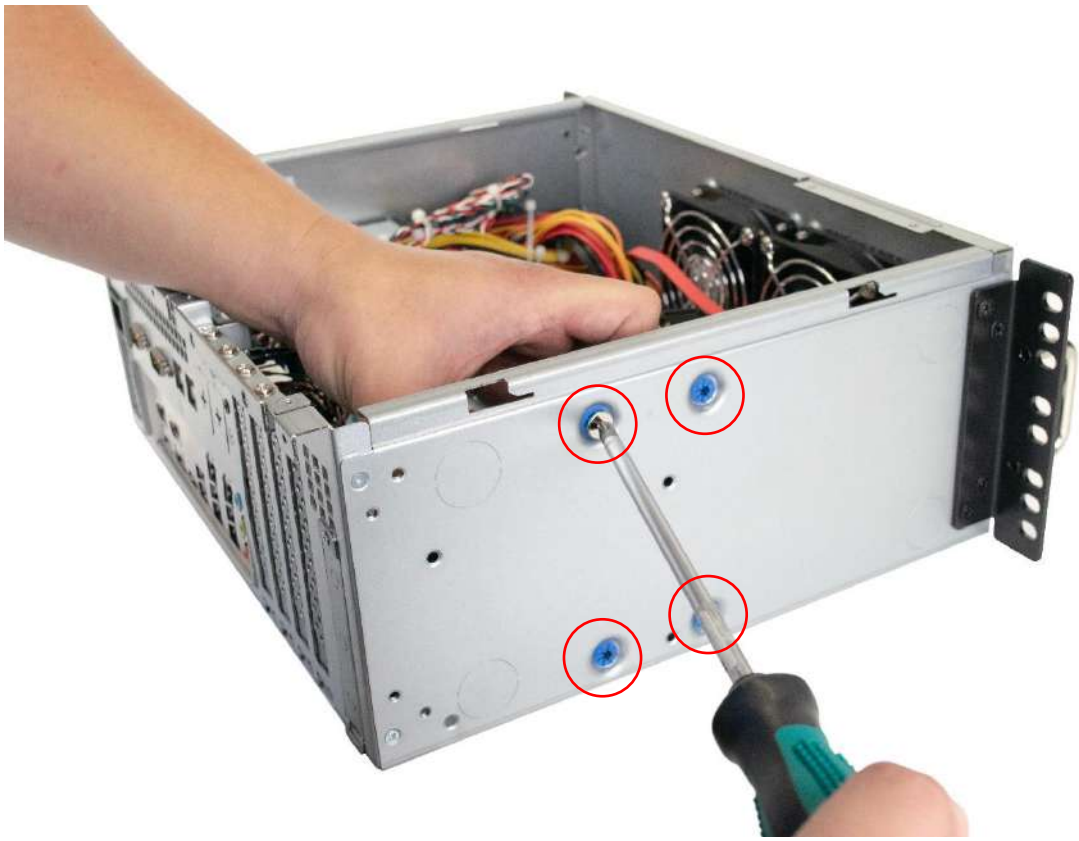
The KCO-3000-RPL comes equipped with a SATA drive kit (Cable, Screws, Bracket).



1. Secure the 2x 2.5" Drive or 1x 3.5" Drive on the bracket

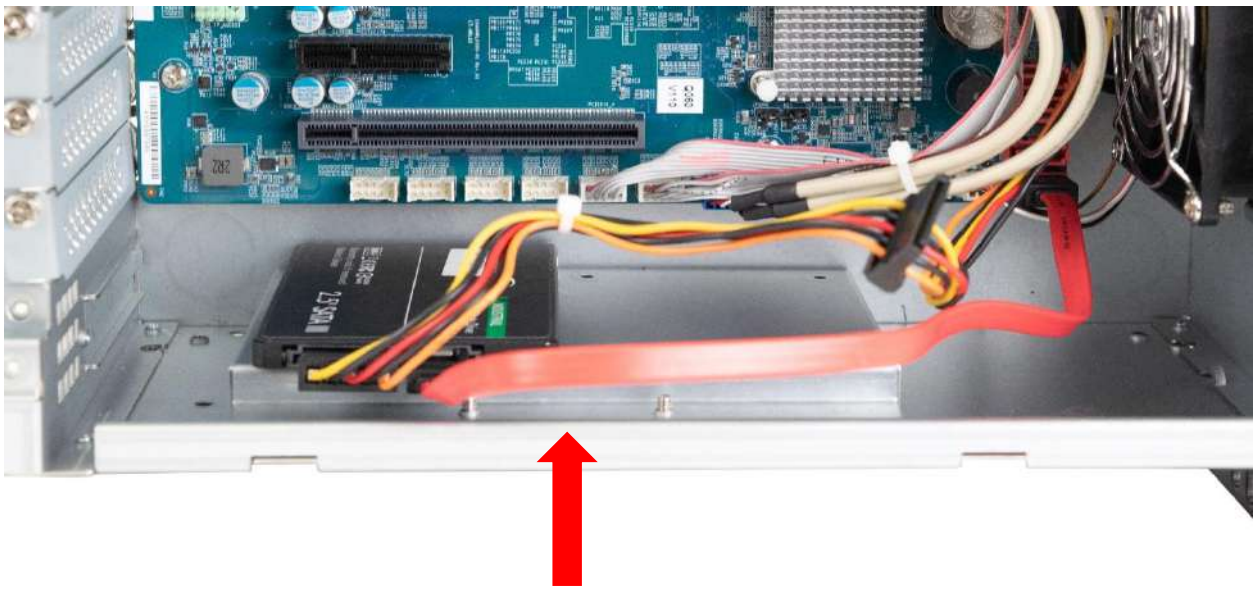
2. Place the drive on the rear chassis

3. Secure the drive the four screws provided



4. Once it's secured, connect the drive to the SATA connector using SATA cable.

5. The outcome should look like this.



3.6 Installing Slide Rail Mount Bracket (KCO-2000-RPL)

The KCO-2000-RPL comes with two slide rail mount brackets.

1. Place the slide rail mount brackets on the left and right side of KCO-2000-RPL respectively.
2. Secure with the screws.

3. Repeat the other side.

Chapter 4

BIOS Setup

This chapter tells how to change the system settings through the BIOS Setup menus.
Detailed descriptions of the BIOS parameters are also provided.

4.1 General Features

General Features		
Item	**Description**	**Remarks**
BIOS Sign On	**** CT-MRL01 BIOS VX. XX (MM/DD/YYYY) ****	
Boot Block	BIOS Boot Block function support When BIOS is crash, BIOS can be recovered according below steps. 1. Put the original BIOS file in the USB disk, and install the USB disk into the system. 2. Boot the system, and system will boot to recovery page. 3. Choose recovery item to start BIOS recovery action. 4. BIOS recover name is "BIOS.BIN".	This feature is used to update a BIOS image without the need to boot to an operating system
Flash Utility	BIOS update through Flash utility in UEFI	
Onboard Devices Control	Enable/Disable onboard devices (VGA, NIC, Audio, USB, SATA, and COM, LPT) with BIOS Setup options.	
System Info	System information (File name, BIOS release date, product name) display in BIOS Setup	
Debug mode	Support LPC 80 port for debug	
PLED	PLED S0:Light S3:Blinking Delay4s,S4,S5,DOS off :Dark for single color LED	
Clear CMOS	Show warning message and stop at post screen until press <F1> skip,<DEL> or <ESC> enter setup.	

4.2 POST Error Beep Requirements

POST Error Beep Requirements		
Item	**Description**	**Remarks**
System	System is OK (After enable VGA at post)	One short beep
Memory	System memory error/not installed.	One long beep
VGA	Graphics card error/not installed graphics card	Five long beeps then still boot
USB	When plug device in USB port or plug out.	One short beep
Boot Block	When run boot block.	Two short beep

4.3 BIOS Hotkey Requirements

The table below lists the BIOS hotkey requirements.

BIOS Hotkey Requirements	
	Hot Key
Enter BIOS Setup	DEL / ESC

4.4 South Bridge Features

POST Error Beep Requirements		
Item	Description	Remarks
PCI Express	• PCIE LAN by root port control enable/disable. • PCIE RAID, LAN onboard devices must included option ROM and add control item in BIOS	
SATA & RAID	• Supports RAID and AHCI configuration and can operate in both legacy and native modes. • Support over 2T capacity HDD.	
PCI Bus Interface	• Onboard PCI LAN can enable/disable by BIOS. • PCI RAID, LAN onboard devices must included option ROM and add control item in BIOS	
USB Interface	• Support USB 2.0 (High Speed) • Support USB 3.0 (Super High Speed) • Per-Port-Disable /Enable Capability • Support Keyboard/Mouse wake-up from sleeping S3/S4 by OS. • Support legacy Keyboard/Mouse software • Support legacy Keyboard Hot-Plug function • Support maximal 8 USB devices in Boot Option Priority.	
Real-Time Clock	• System can be wake up from S5 by RTC. • User can set day and time to active RTC function. • RTC time can't be clear when short RTCRST# • RTC works even power has been loss.	

4.5 ACPI function

Wake-up Devices and Events		
These devices/events can wake up the computer…	**from this state**	**Remarks**
PCIE LAN	S3, S4, S5	• The LAN adapter monitors network traffic at the Media Independent Interface • Supports LAN wake capabilities with ACPI by Ping or Magic Packet • S3-S4 by OS • S5 by BIOS item control
Intel GBE	S3, S4, S5	• S3-S5 BIOS control.
PME# signal	S3, S4, S5	• PME# signal on the PCI bus • S3-S4 by OS control • S5 by BIOS item control
Wake# signal	S3, S4, S5	• WAKE# signal on the PCI Express bus • S3-S4 by OS control • S5 by BIOS item control
Power switch	S3, S4, S5	
RTC alarm	S5	
USB	S3, S4	• Press any key or move can wake up system • S3, S4 by OS control
Notes: • Does not apply to shutdown system by delay 4 seconds.		

Sleep State / Wake Source	S1	S3	S4	S5
PCIE LAN	x	◎	◎	△
Gbe LAN	x	△	△	△
PME#/WAKE#	x	◎	◎	△
Power Button	x	◎	◎	◎
RTC Alarm	x	x	x	△/◎
USB	x	◎	◎	x
x : No Support. △ : Controlled by BIOS Item. ◎ : Controlled by OS/Driver.				

4.6 OEM full screen logo

BIOS support the following format OEM full screen logo and user can insert it by utility that provided from BIOS vendor.

BMP :800x600 24bits, JEPG:800x600 24bits, PCX:800x600 24bits

4.7 SuperIO Feature Support

SuperIO Feature Support		
Item	**Description**	**Remarks**
Serial Port	• Each UART includes a 128-byte send/receive FIFO, a programmable baud rate generator, complete modem-control capability, and a processor interrupt system. • The UART supports legacy speeds up to 115.2K bps as well as even higher baud rates of 460K, or 921K bps to support higher speed modems. • Default COM1=3F8/IRQ4,COM2=2F8/IRQ3,COM3=3E8/IRQ5,COM4=2E8/IRQ5,COM5=2E0/IRQ10,COM6=3E0/IRQ10	
Case Open	• The purpose of Case open function is used to detect whether the computer case is opened. • This feature must be able to function even when there is no 3VSB power. • Once the case is opened, the beep will be active at next boot. The buzzer works and show error message will stop at post screen by press Del until user disables the function in BIOS setup.	
Watchdog	• BIOS provide 0 to 255 seconds or minutes watchdog reset function. • If user set to 0, it will disable watchdog function. • If user writes any non-zero value to this register causes the counter to load this value into the Watchdog Timer counter and start counting down. System will be reset if Watch Dog Timer counts down to zero.	
Brightness Control	• BIOS provide DC output to control panel brightness. • The brightest DC output generally. But it still dependent on hardware design or inverter of panel.	
Smart Fan	• BIOS provide CPU and System smart fan function for noise consideration. • Depend on Super IO support Manual, Thermal Cruise, SMART FAN IV and Disable mode.	

4.8 Boot Option

Boot Option		
Item	**Description**	**Remarks**
Setup Prompt Timeout	The item controls the delay time (in seconds) in the POST screen until user press DEL / ESC key to enter BIOS setup menu. The range for the value is from 1 to 65535.	
Quite Boot	When Quite Boot is Disabled, the BIOS information will be shown in the POST screen. When Quite Boot is Enabled, the Black Logo will be shown in the POST screen.	

4.9 Trust Computing

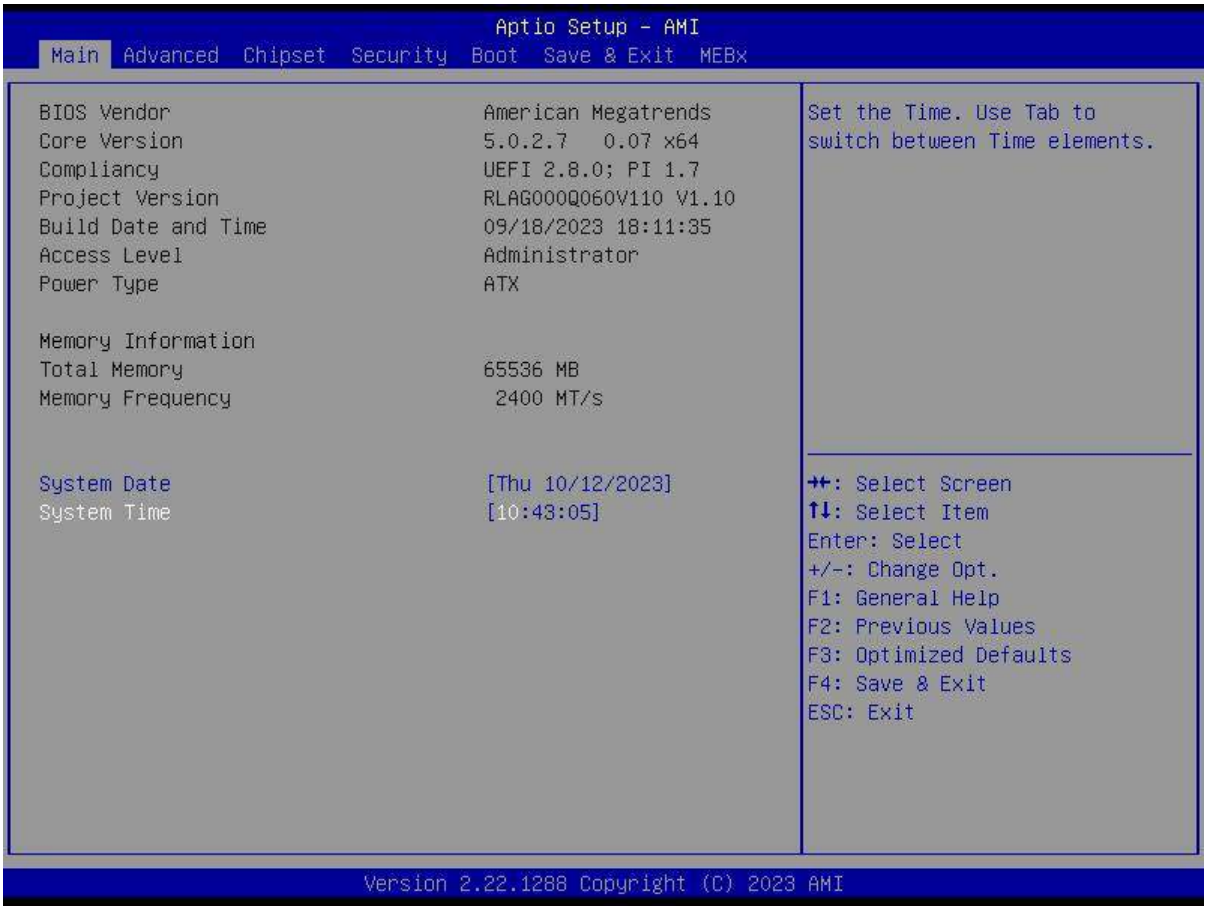
Trust Computing		
Item	**Description**	**Remarks**
TCG/TPM Support	• Support TPM/TCG 2.0 • This is the main item to control whether the TPM function is supported or not.	
Execute TPM Command	• Activate or Deactivate command to TPM • Three commands are supported, Don't Change, Enabled, and Disabled.	
Clearing the TPM	• Clearing the TPM is the process of returning the TPM to factory defaults. It is possible the platform owner will change when in this state.	

4.10 BIOS Setup Menu

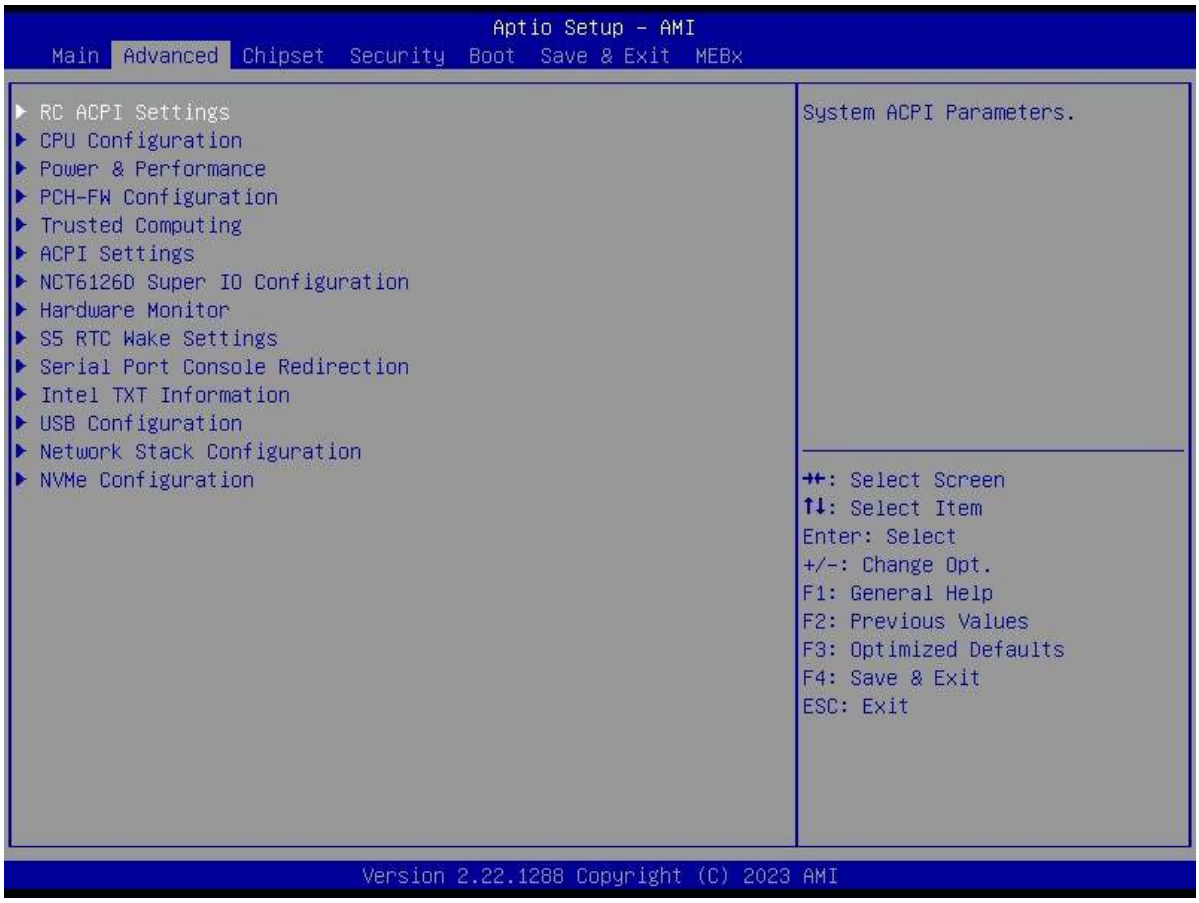
Title Menu

Setup Menu	Note
Main	
Advanced	
Chipset	
Security	
Boot	
Save & Exit	

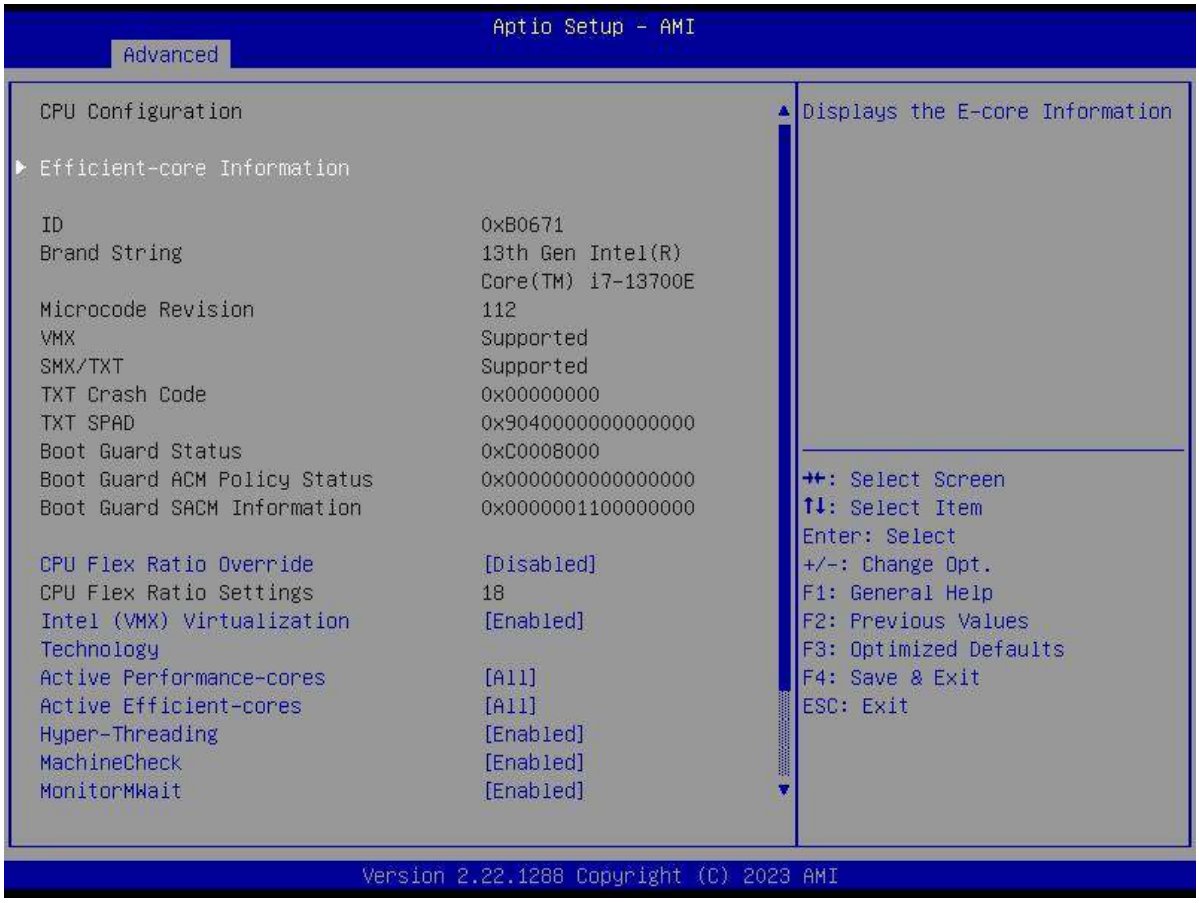
Main Menu



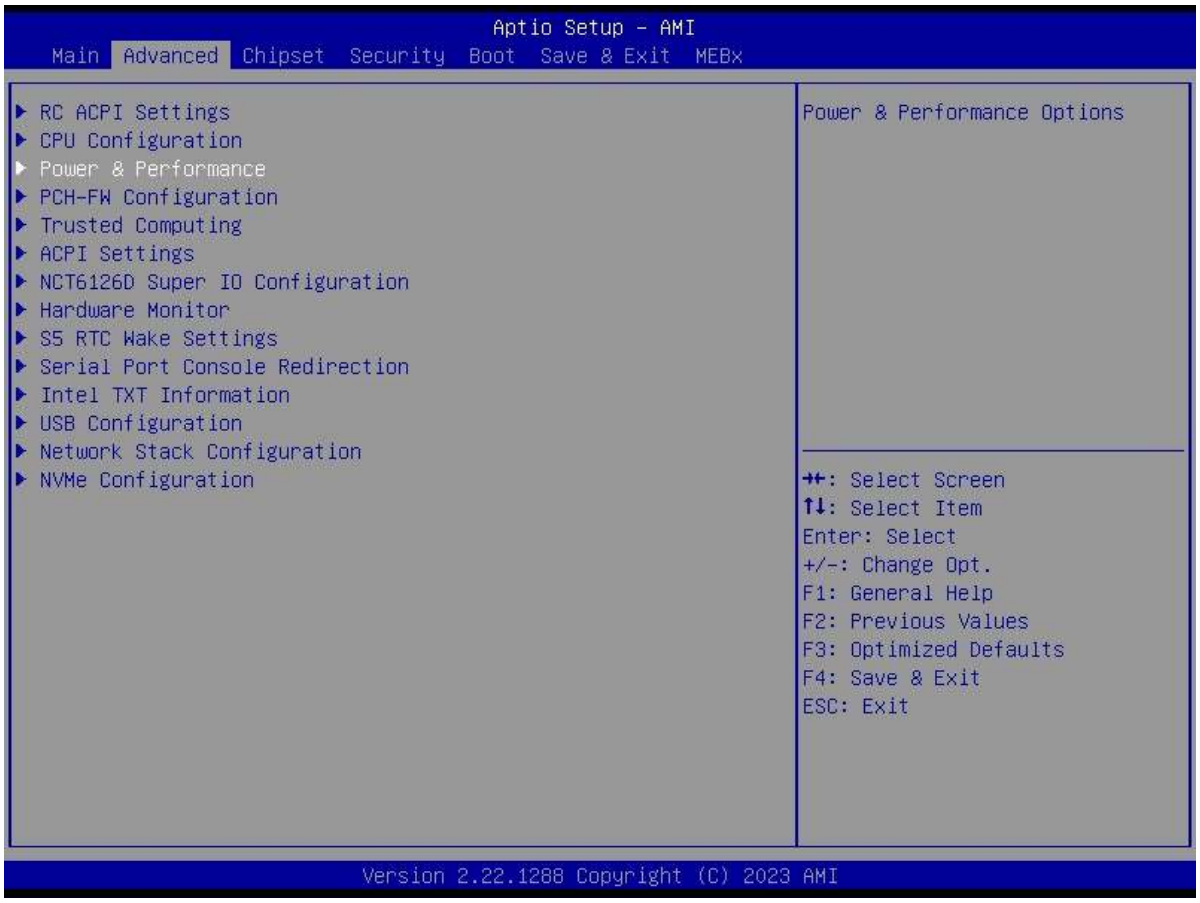
4.11 Advanced Menu

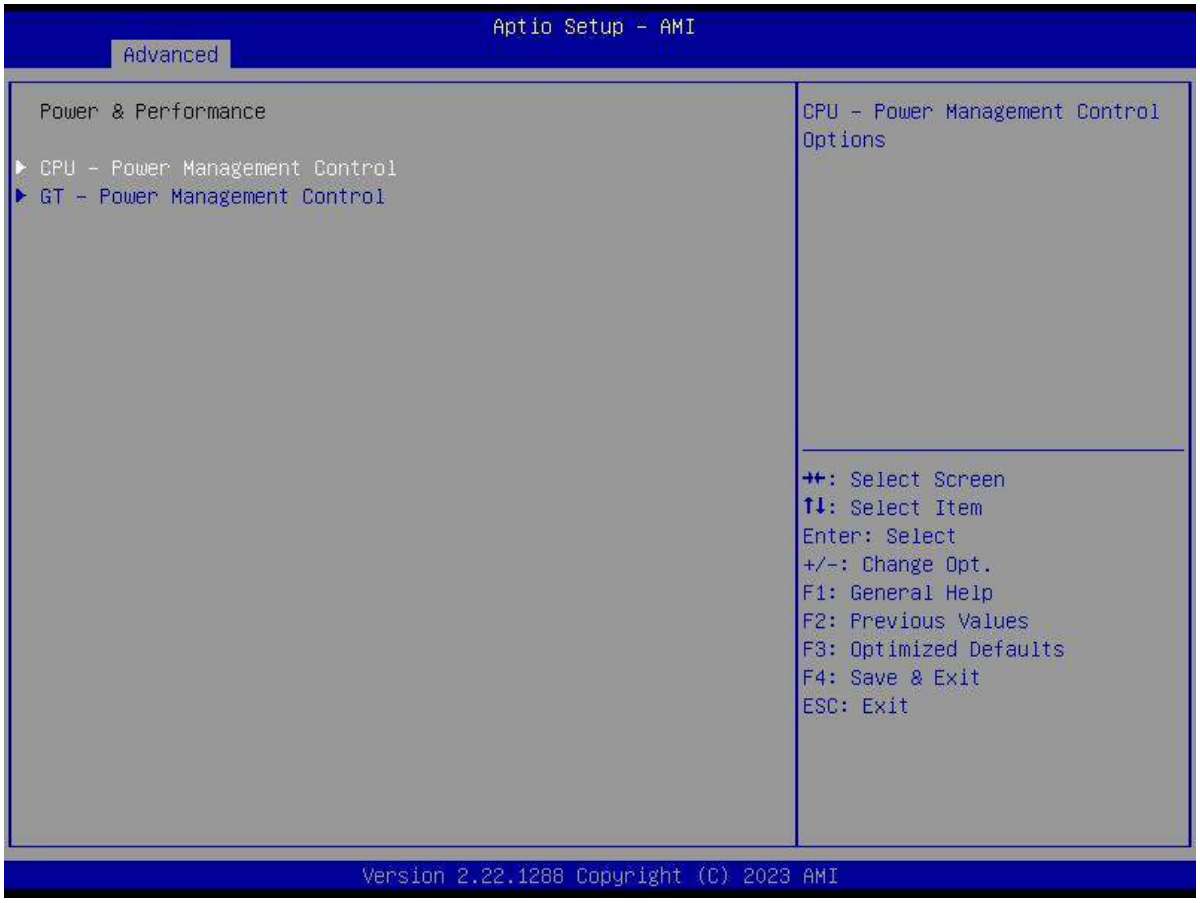


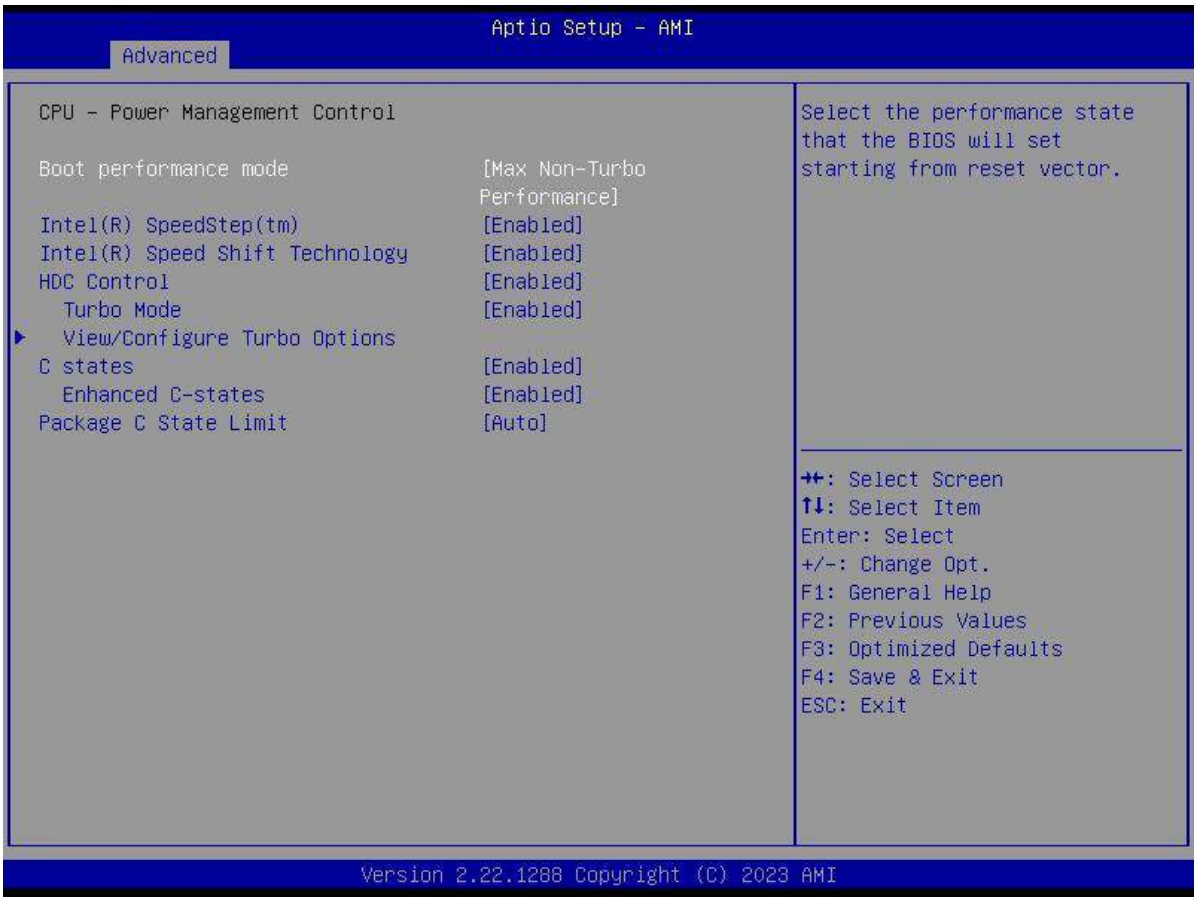
4.11.1 CPU Configuration



4.11.2 Power & Performance



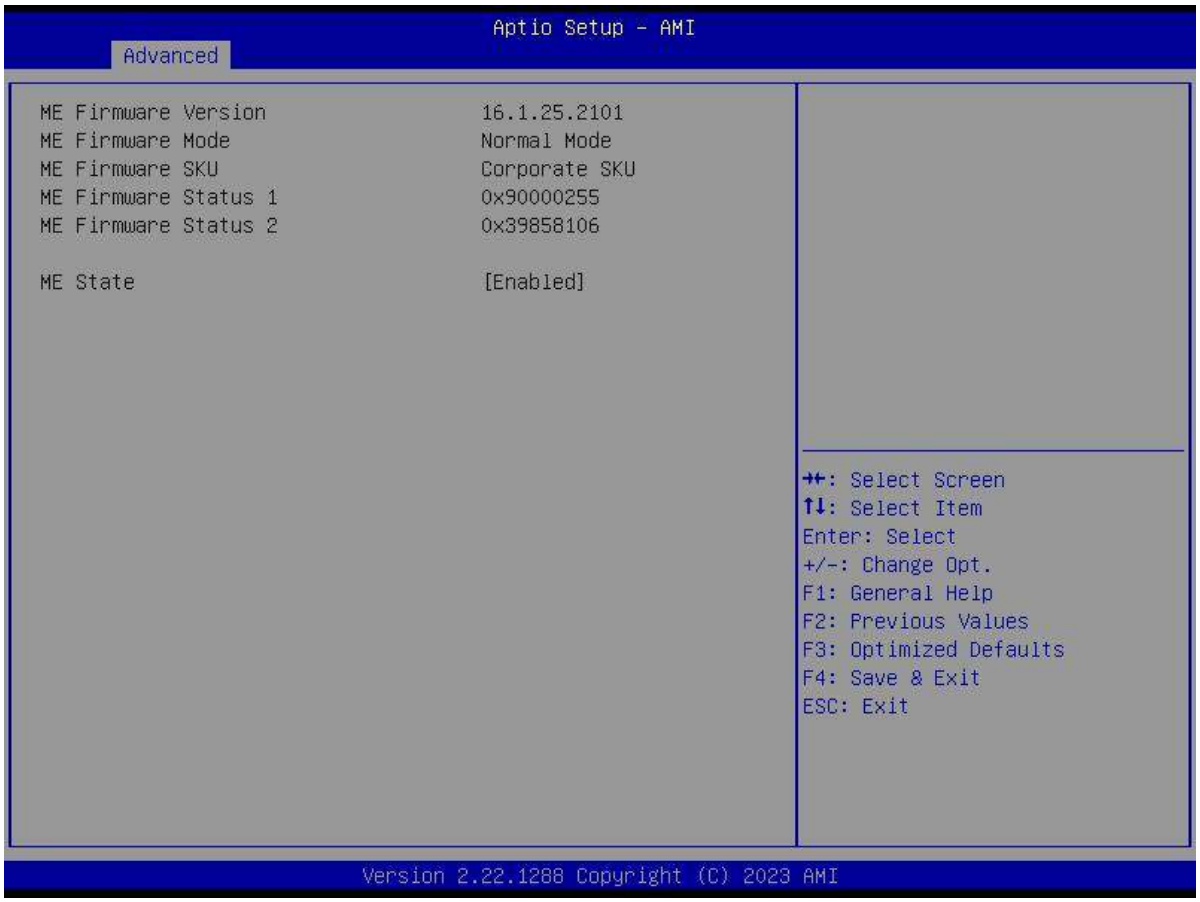



Aptio Setup – AMI
Advanced
CPU – Power Management Control
Boot performance mode [Max Non-Turbo Performance]
Intel(R) SpeedStep(tm) [Enabled]
Intel(R) Speed Shift Technology [Enabled]
HDC Control [Enabled]
Turbo Mode [Enabled]
View/Configure Turbo Options
C states [Enabled]
Enhanced C-states [Enabled]
Package C State Limit [Auto]
Select the performance state that the BIOS will set starting from reset vector.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

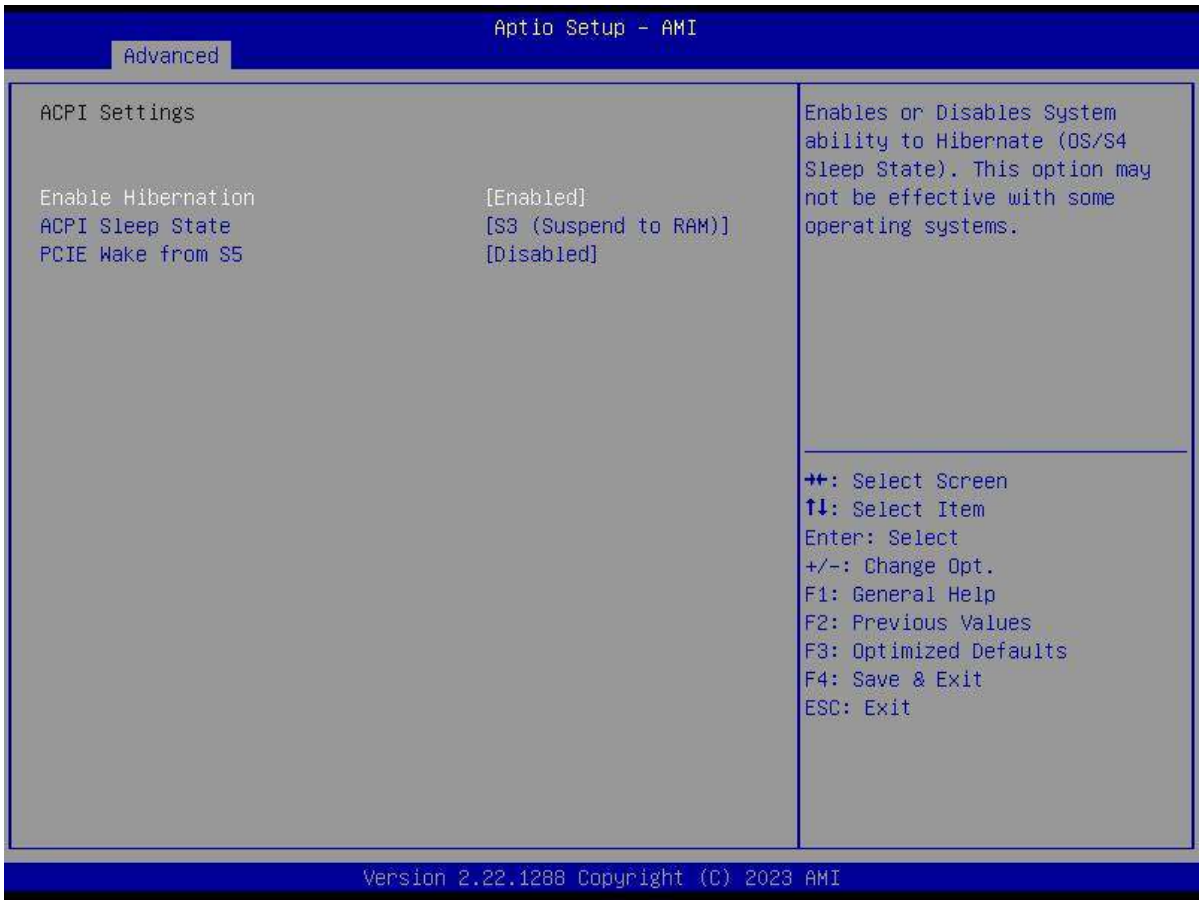

Aptio Setup – AMI
Advanced
Power & Performance
CPU – Power Management Control
GT – Power Management Control
GT – Power Management Control Options
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI


Aptio Setup – AMI
Advanced
GT – Power Management Control
RC6(Render Standby) [Enabled]
Check to enable render standby support.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

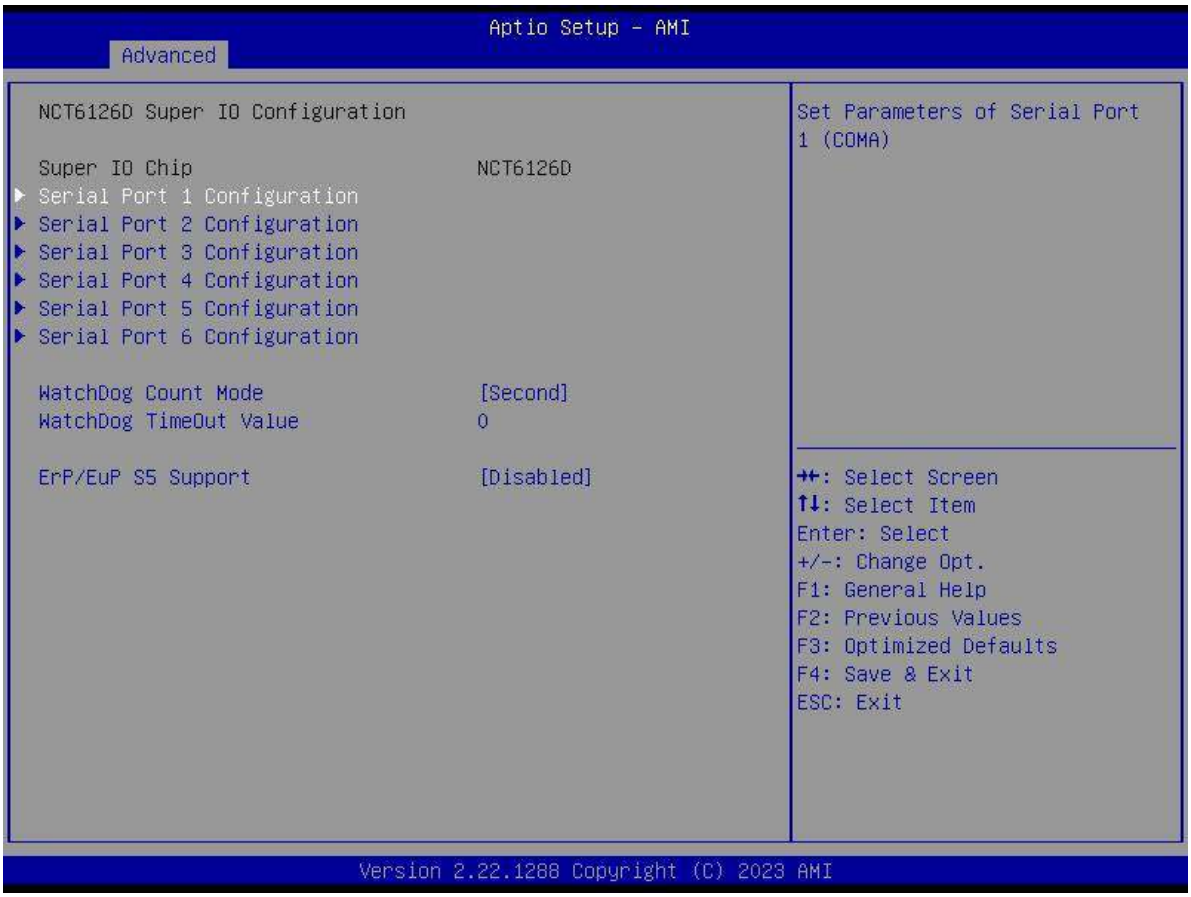
4.11.3 PCH-FW Configuration

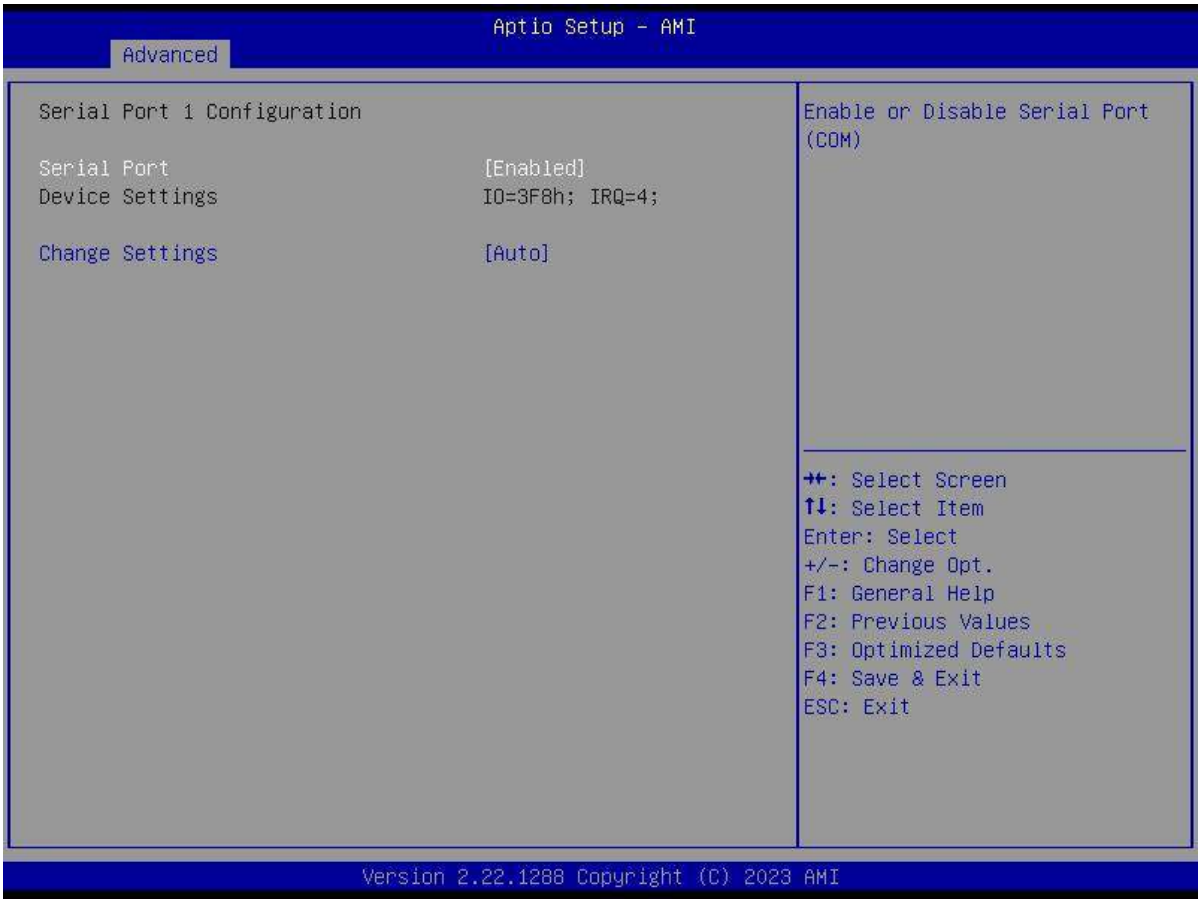


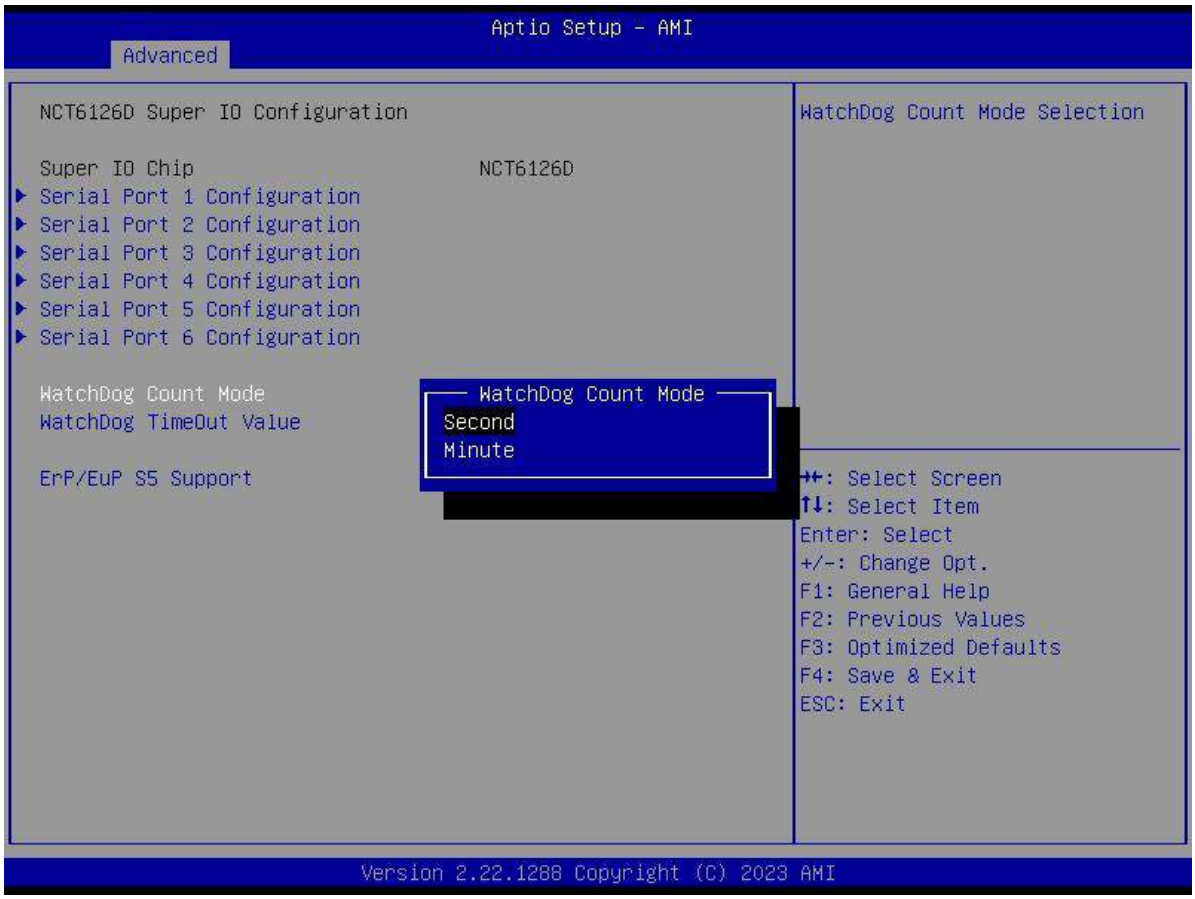
4.11.4 ACPI Settings



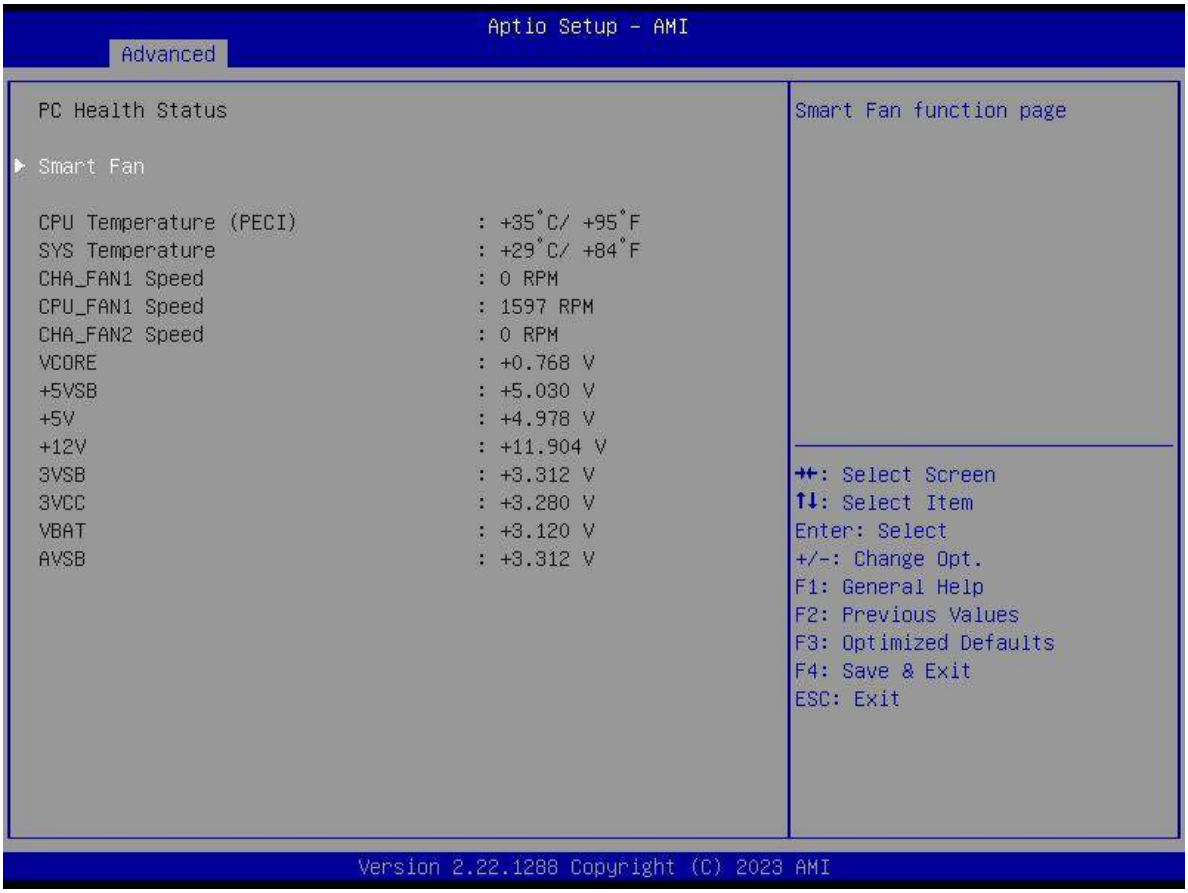
4.11.5 NCT6106D Super IO Configuration



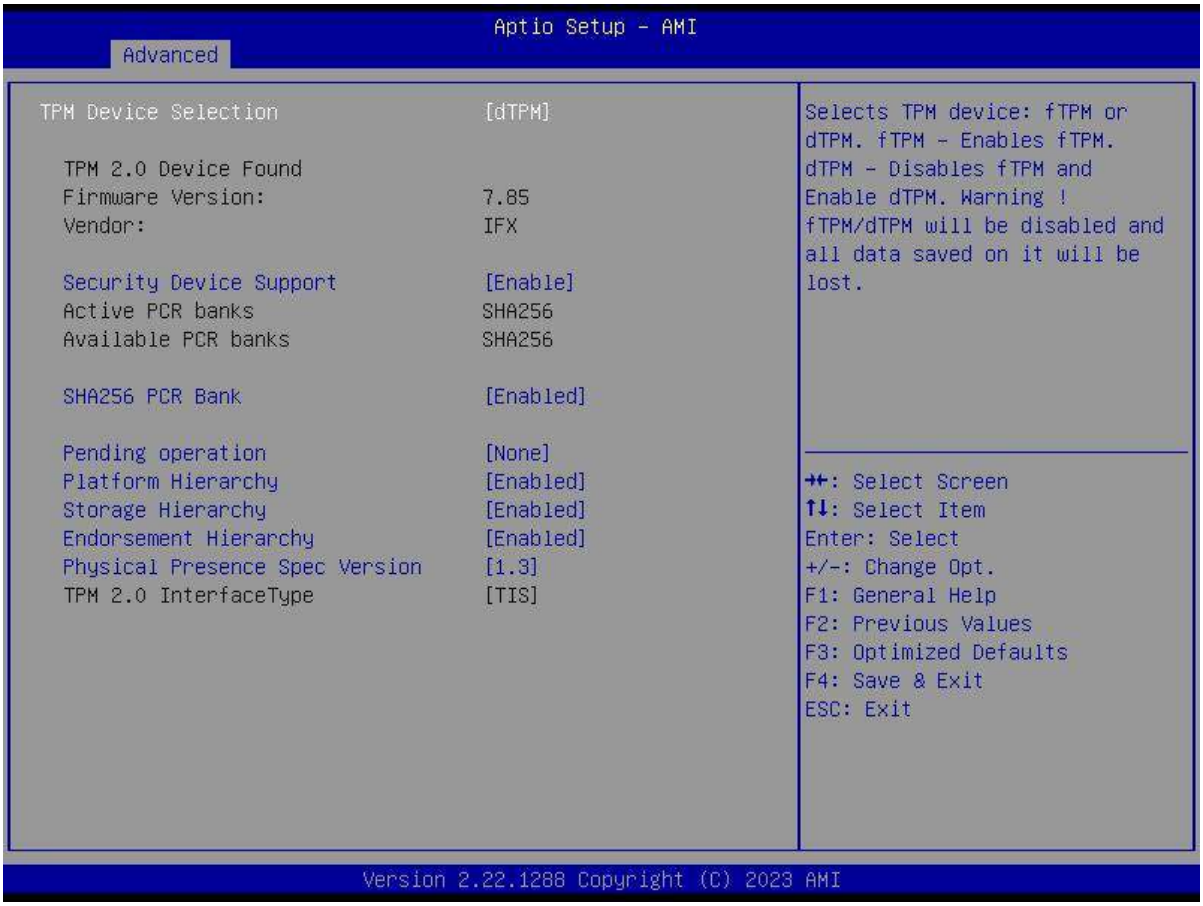



Aptio Setup – AMI
Advanced
NCT6126D Super IO Configuration
Super IO Chip NCT6126D
Serial Port 1 Configuration
Serial Port 2 Configuration
Serial Port 3 Configuration
Serial Port 4 Configuration
Serial Port 5 Configuration
Serial Port 6 Configuration
WatchDog Count Mode
WatchDog TimeOut Value
ErP/EuP S5 Support
WatchDog Count Mode
Second
Minute
WatchDog Count Mode Selection
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

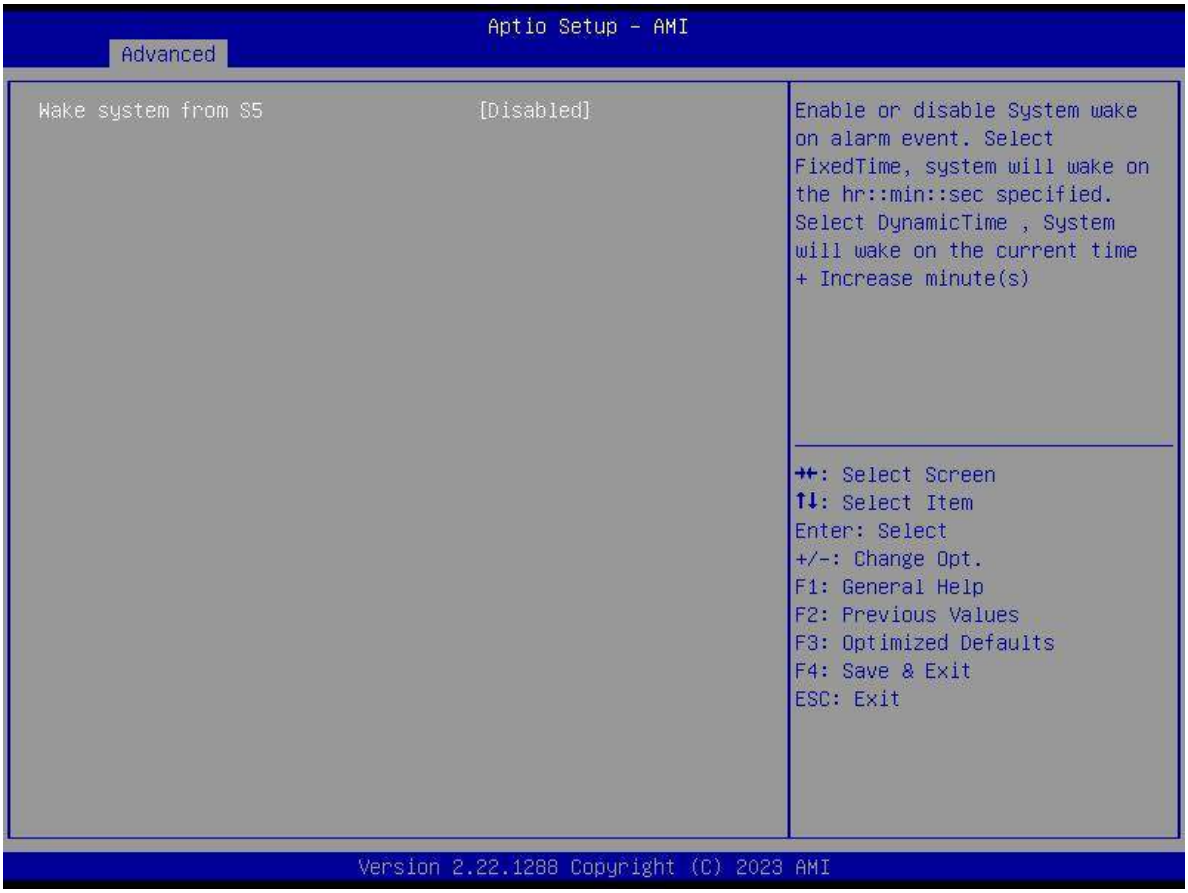
4.11.6 NCT6106D HW Monitor



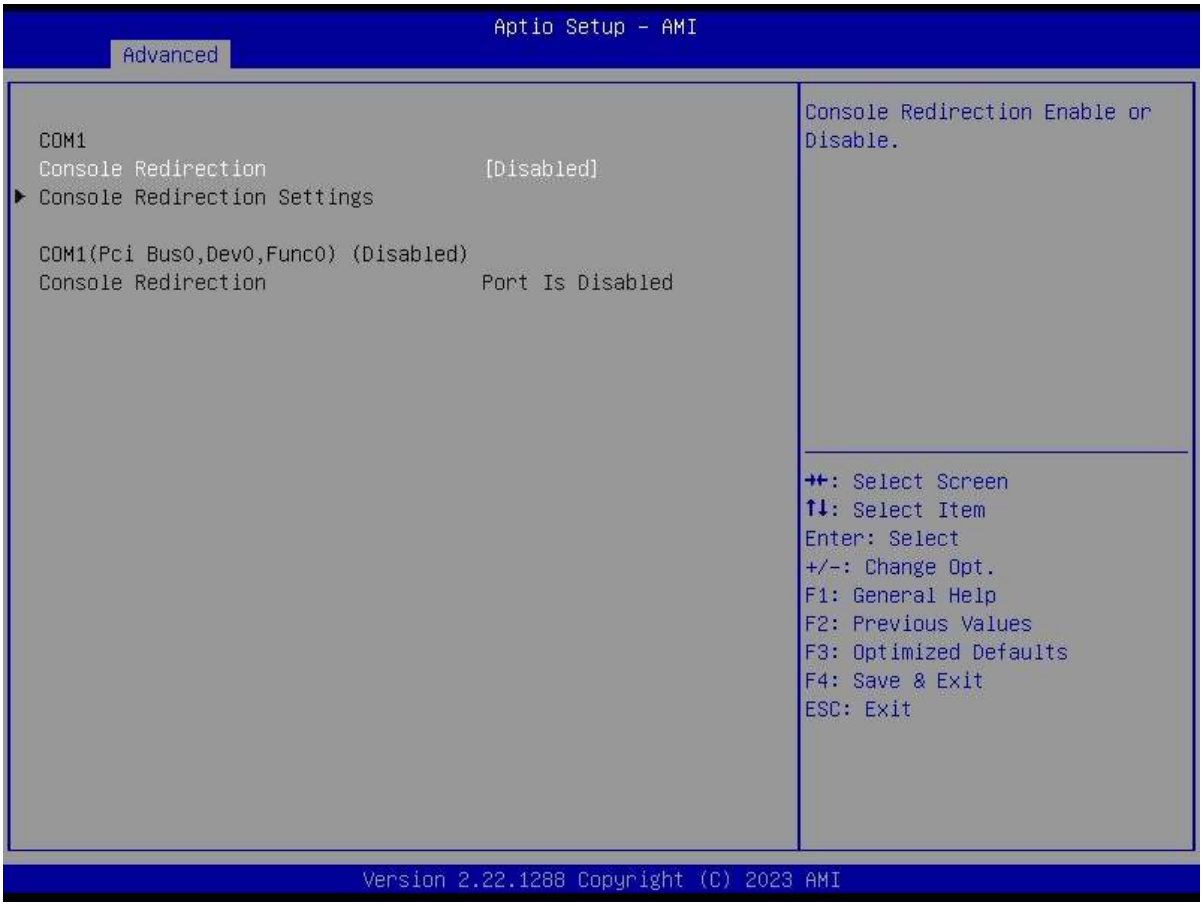
4.11.7 Trusted Computing



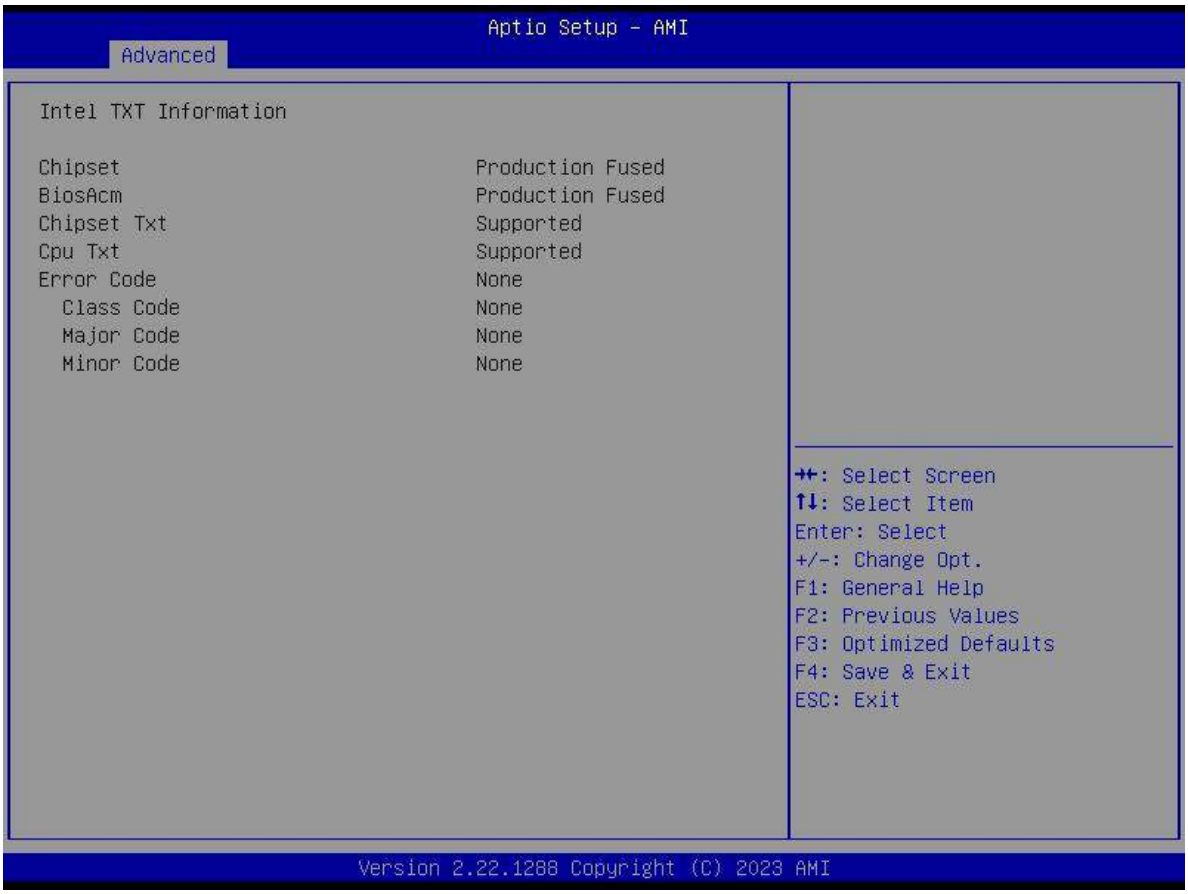
4.11.8 S5 RTC Wake Setting



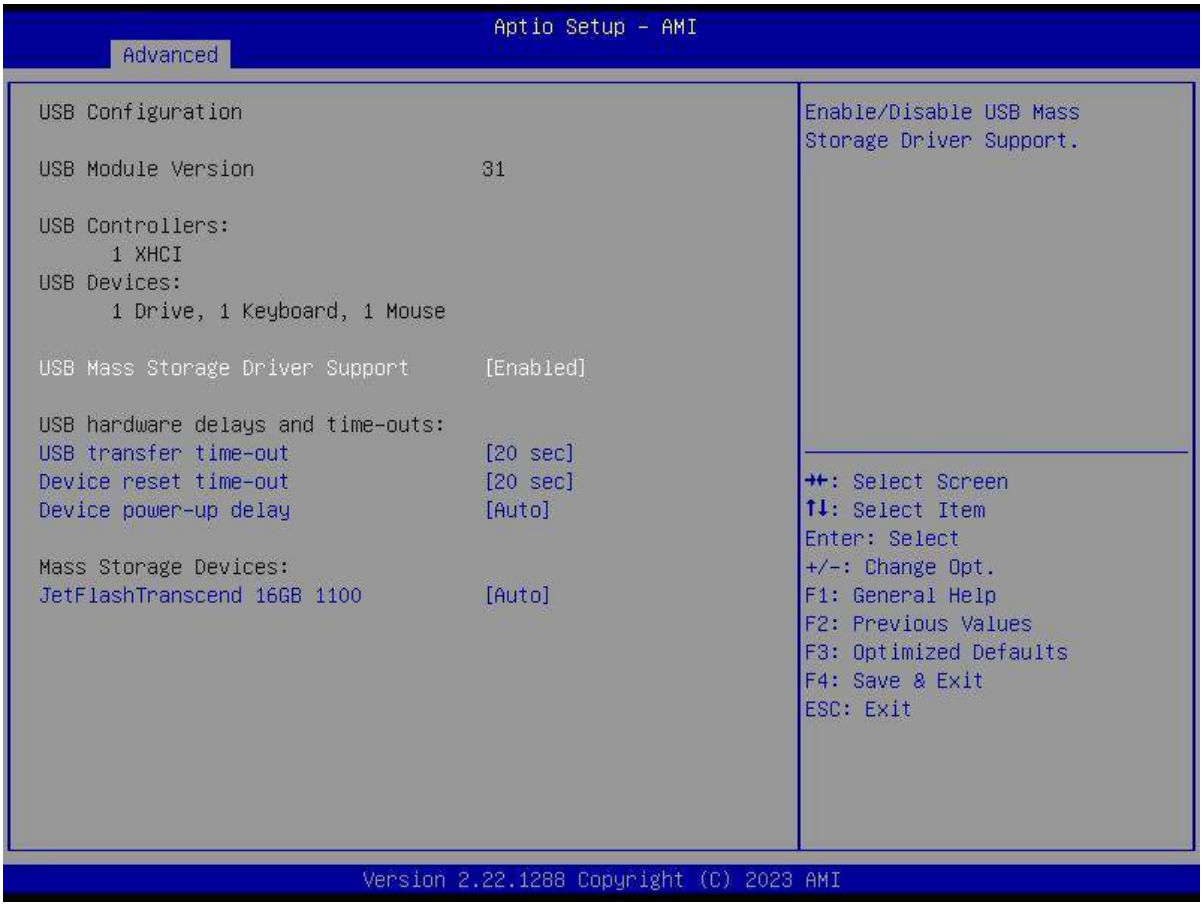
4.11.9 Serial Port Console Redirection



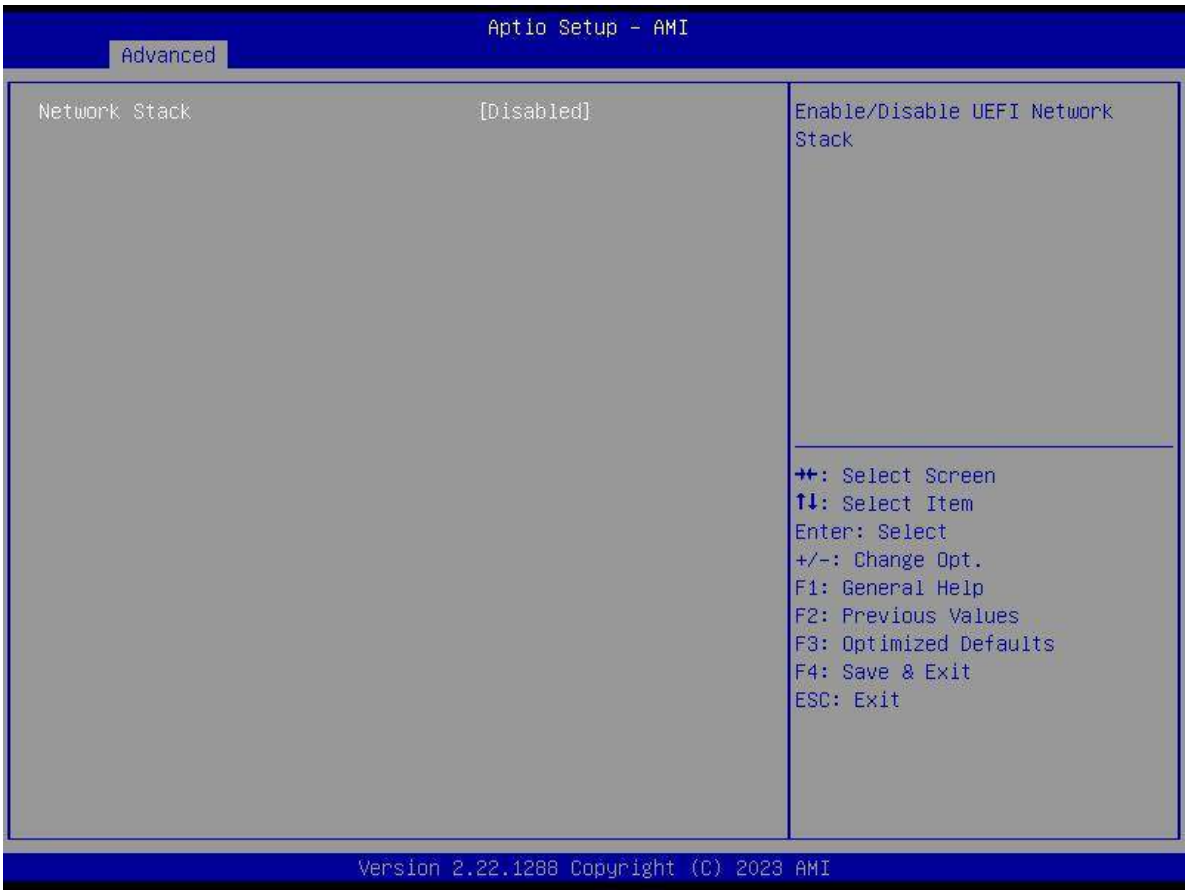
4.11.10 Intel TXT Information



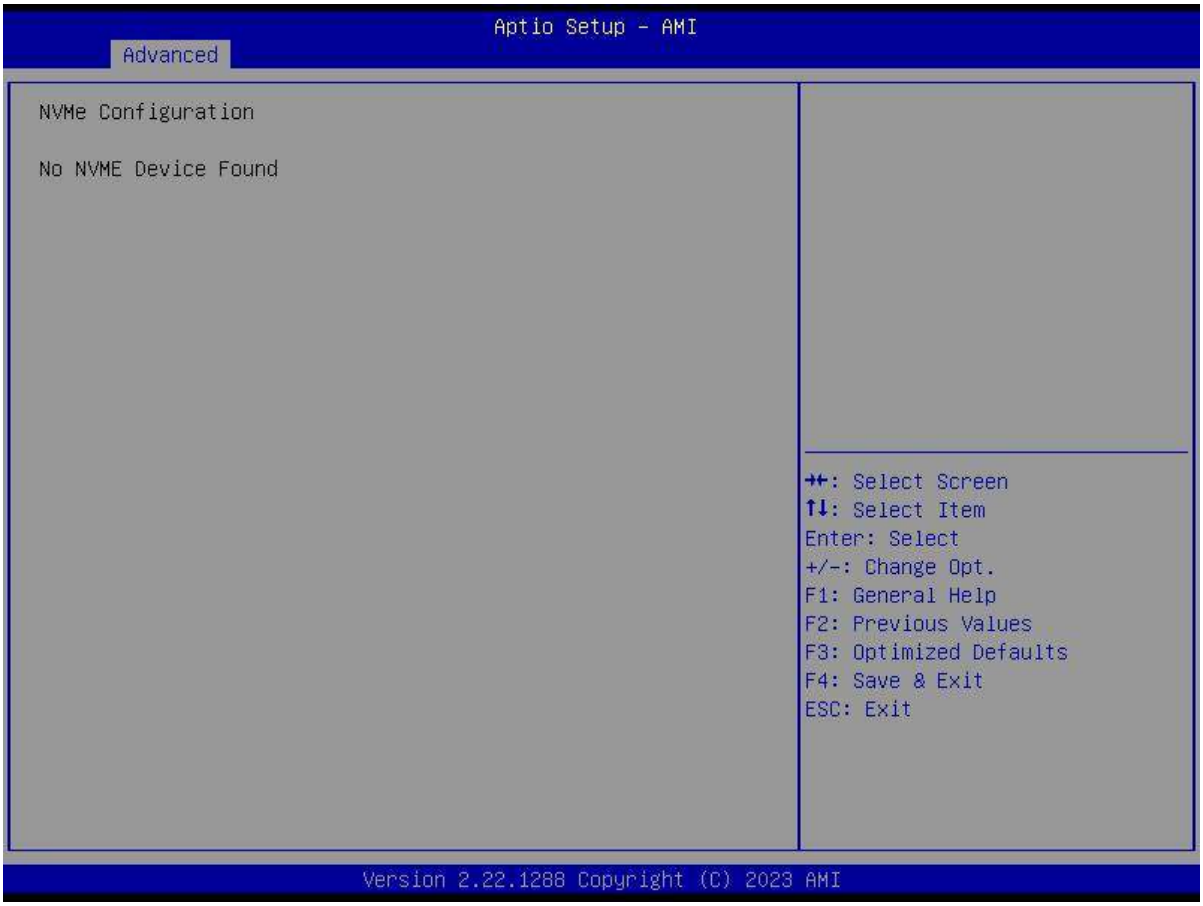
4.11.11 USB Configuration



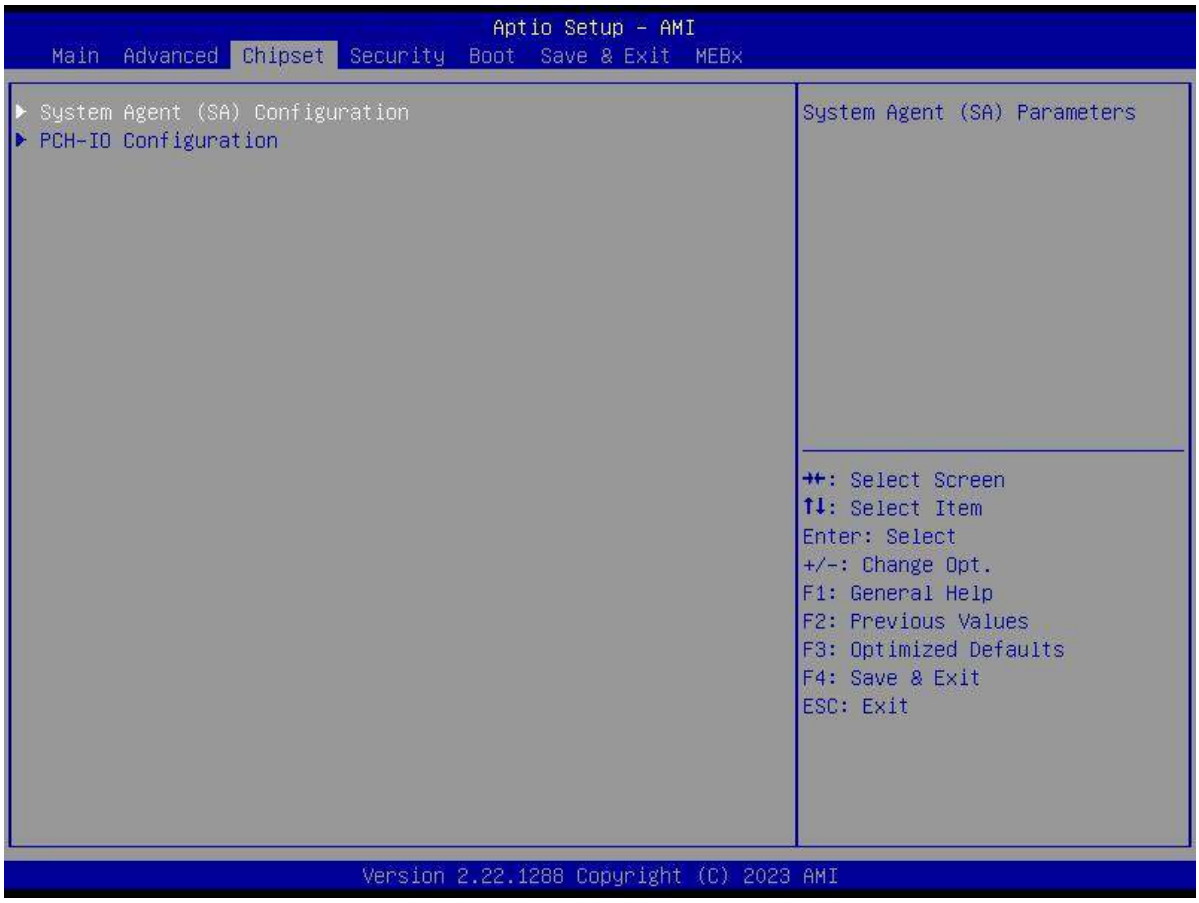
4.11.12 Network Stack Configuration



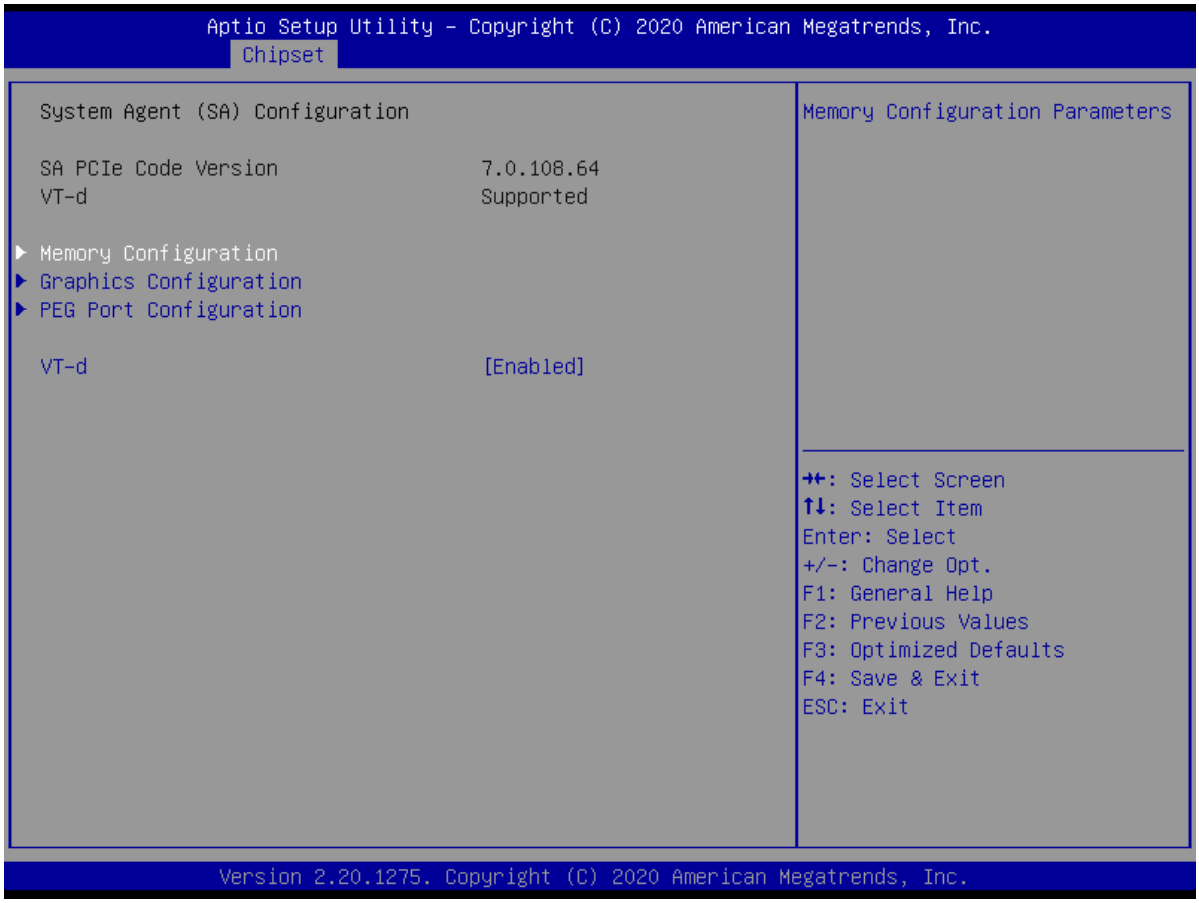
4.11.13 NVME Configuration

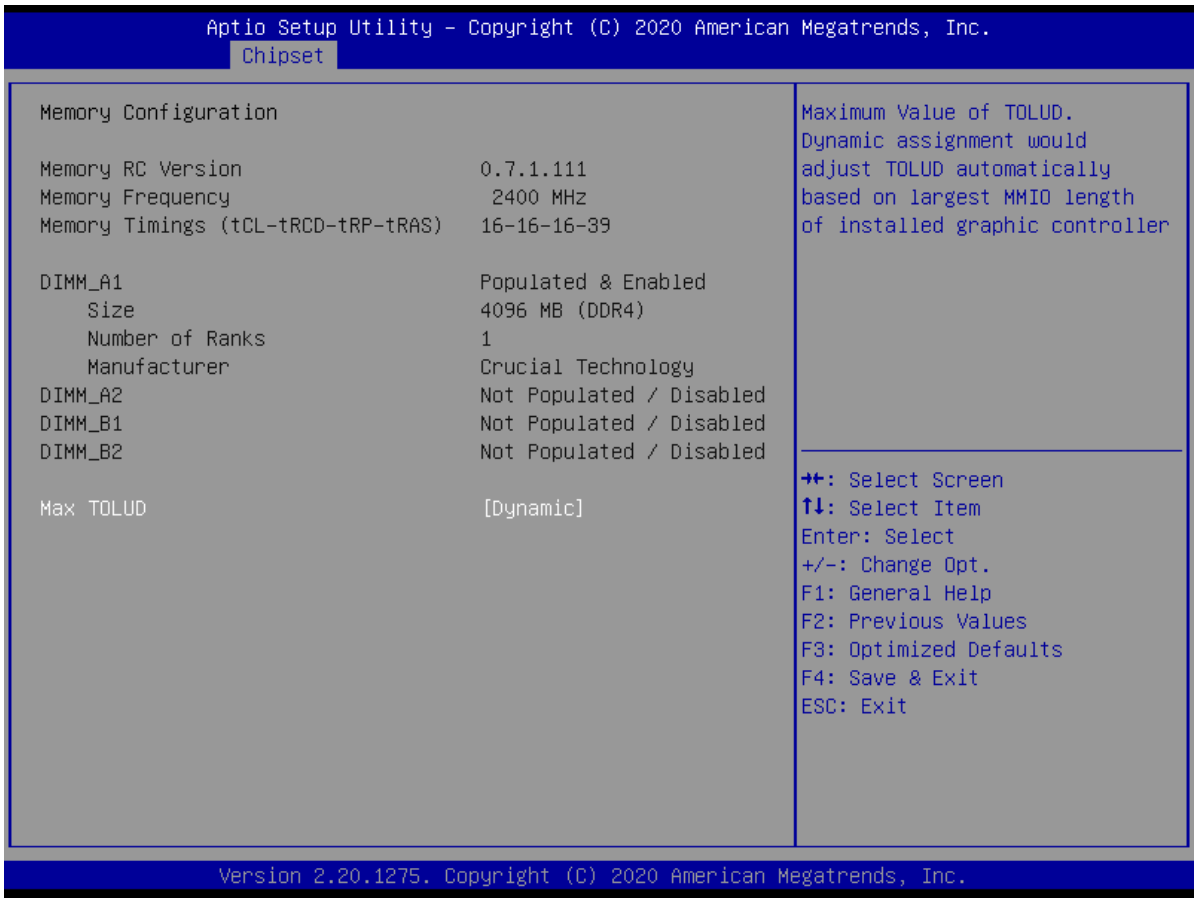


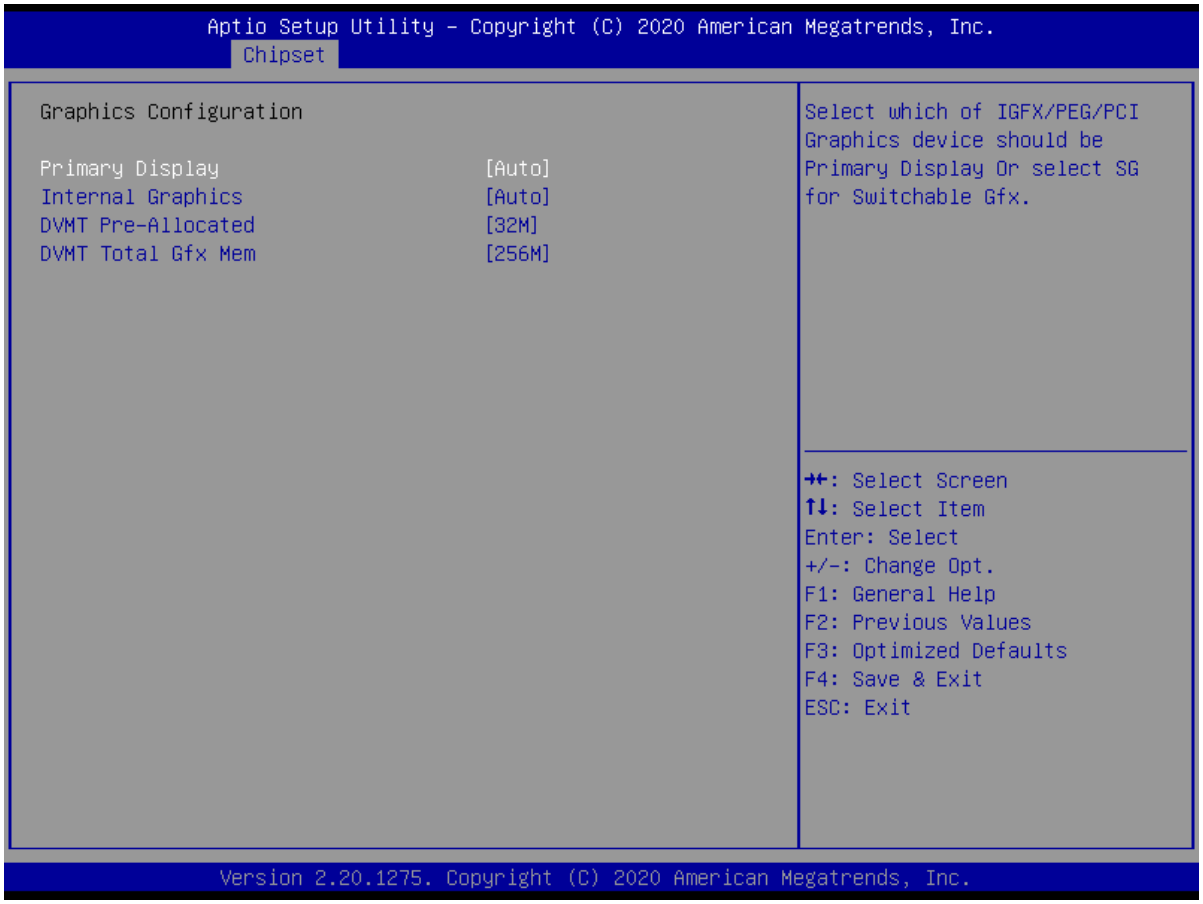
4.12 Chipset Menu

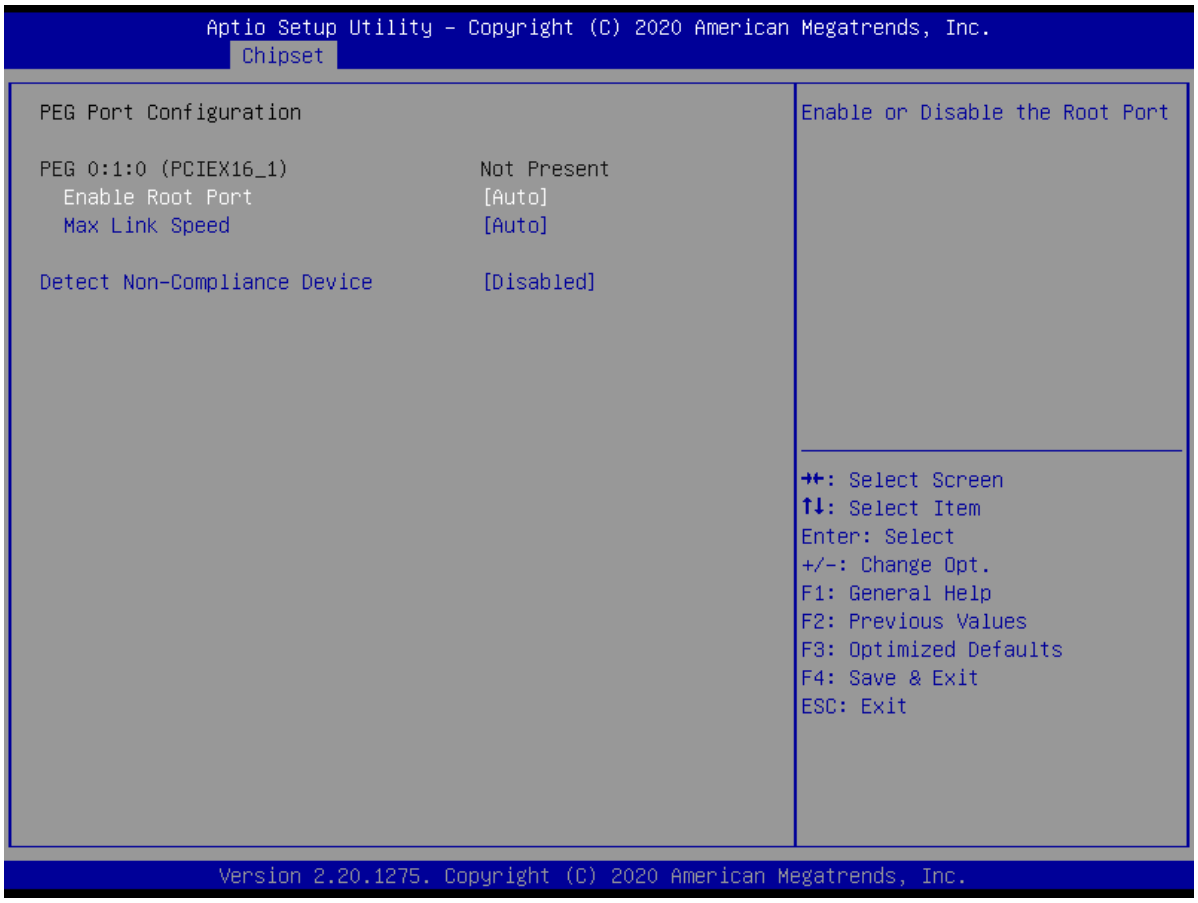


4.12.1 System Agent (SA) Configuration

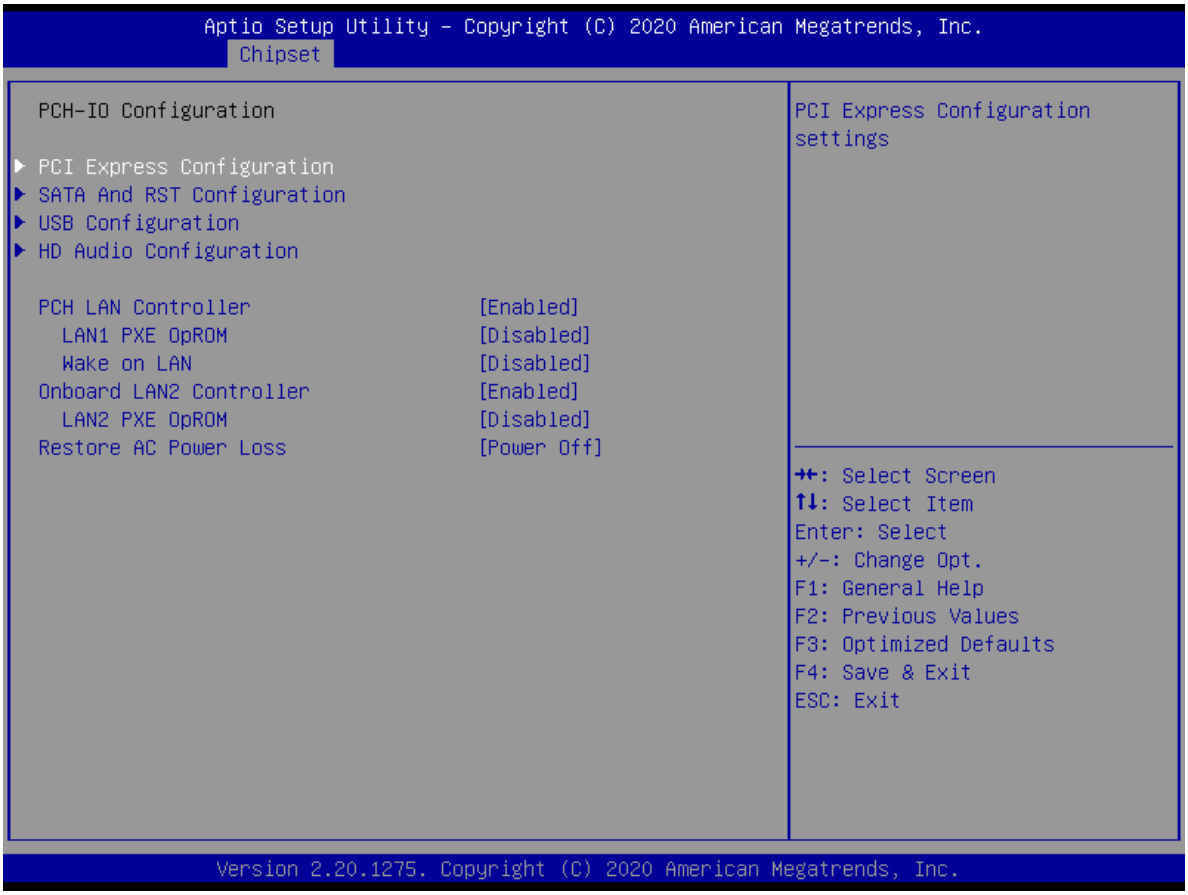


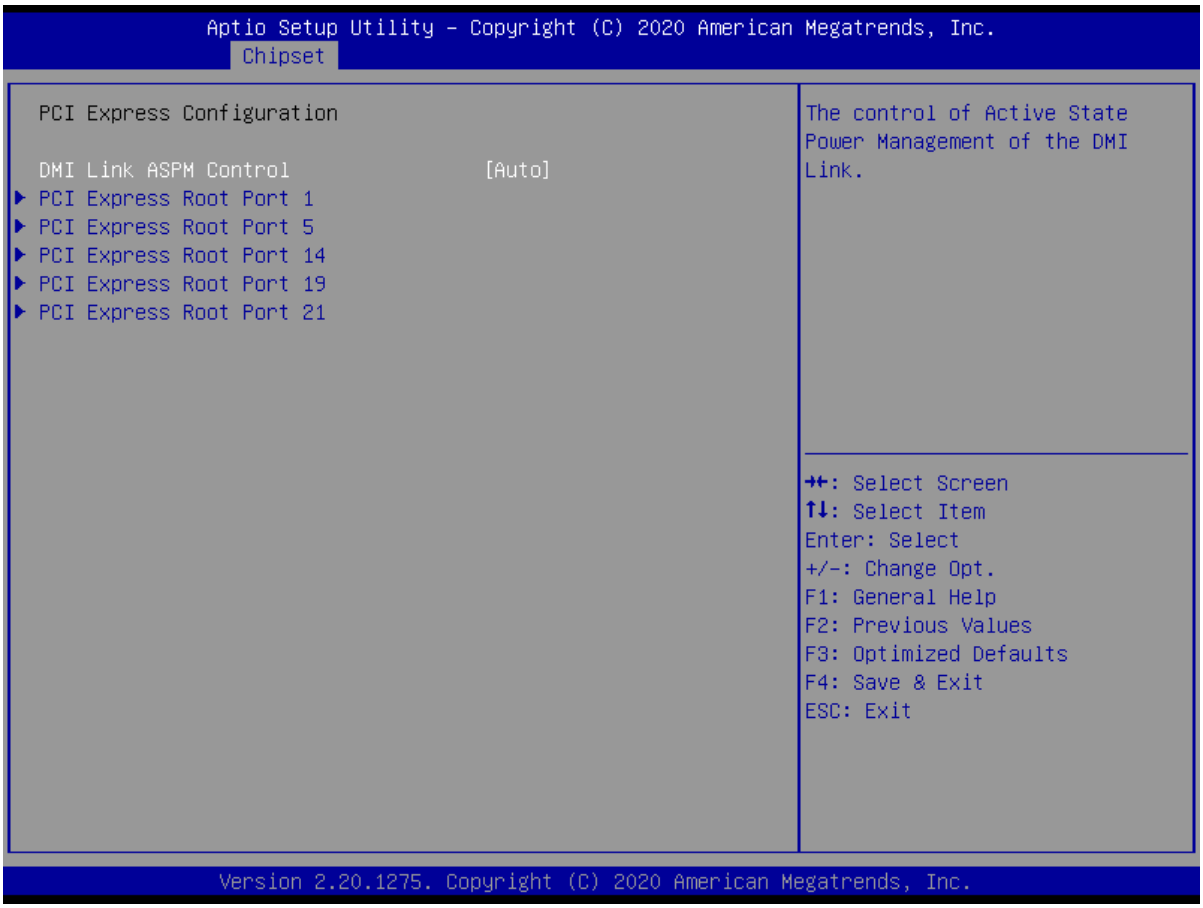

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
Memory Configuration
Memory RC Version 0.7.1.111
Memory Frequency 2400 MHz
Memory Timings (tCL-tRCD-tRP-tRAS) 16-16-16-39
DIMM_A1 Populated & Enabled
Size 4096 MB (DDR4)
Number of Ranks 1
Manufacturer Crucial Technology
DIMM_A2 Not Populated / Disabled
DIMM_B1 Not Populated / Disabled
DIMM_B2 Not Populated / Disabled
Max TOLUD [Dynamic]
Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

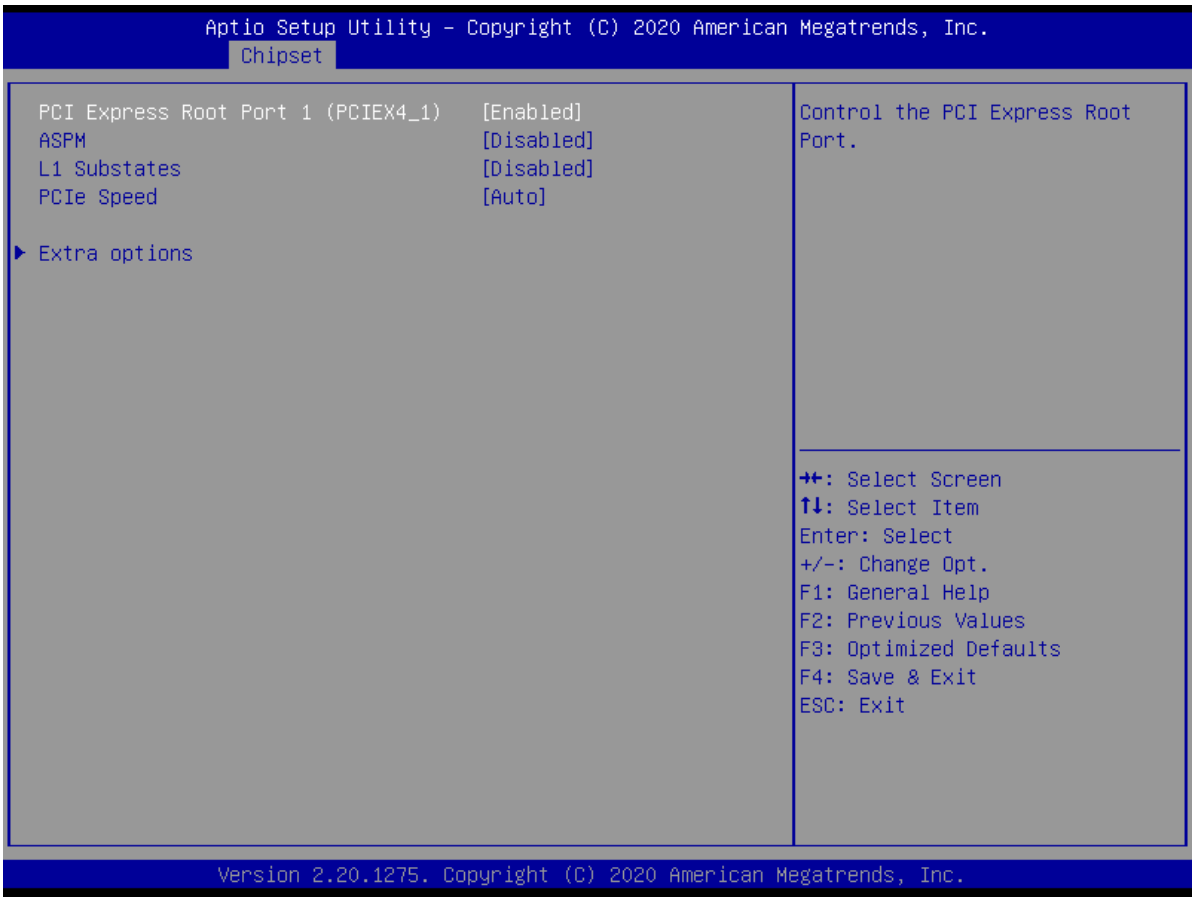

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
Graphics Configuration
Primary Display [Auto]
Internal Graphics [Auto]
DVMT Pre-Allocated [32M]
DVMT Total Gfx Mem [256M]
Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select SG for Switchable Gfx.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

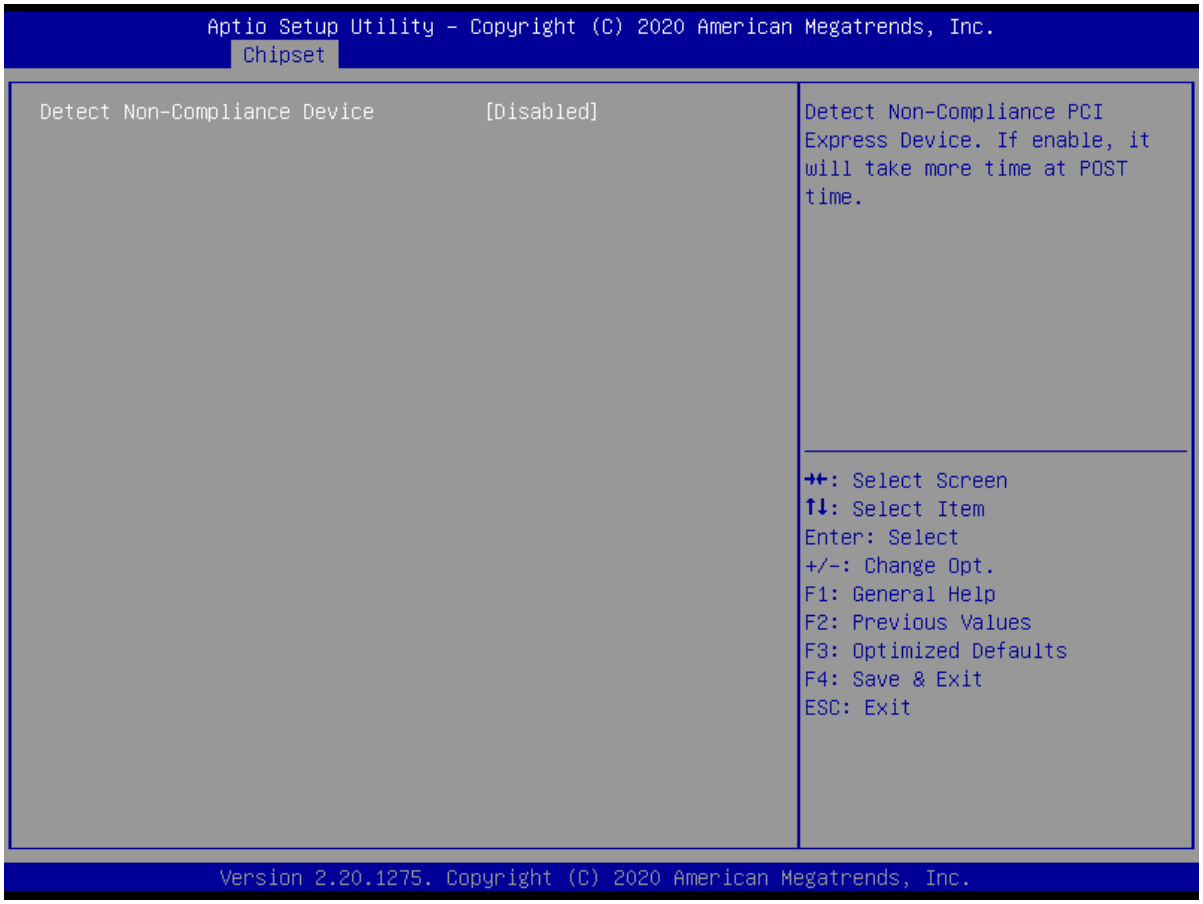

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PEG Port Configuration
PEG 0:1:0 (PCIEX16_1) Not Present
Enable Root Port [Auto]
Max Link Speed [Auto]
Detect Non-Compliance Device [Disabled]
Enable or Disable the Root Port
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

4.12.2 PCH-IO Configuration






Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PCI Express Root Port 1 (PCIEX4_1) [Enabled]
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
Extra options
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
Detect Non-Compliance Device [Disabled]
Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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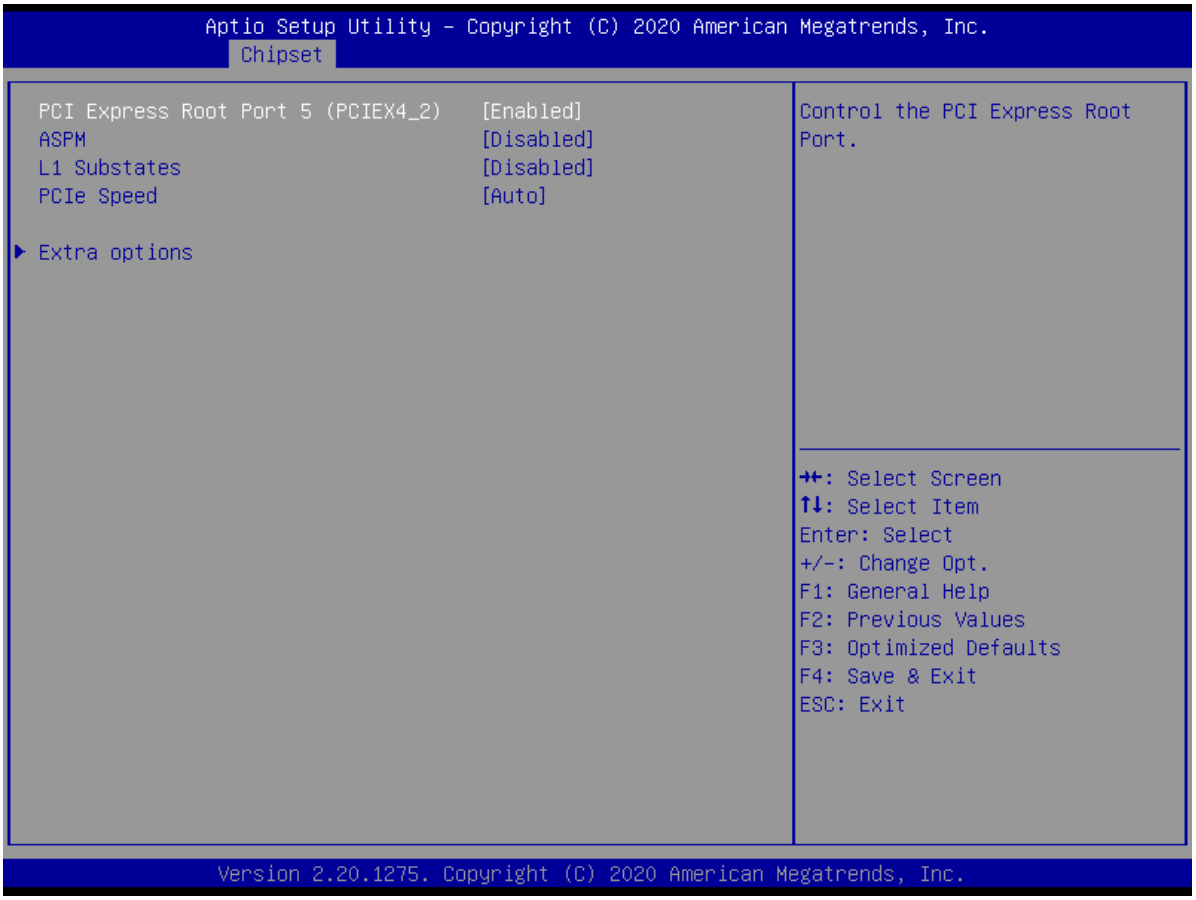
Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PCI Express Root Port 5 (PCIEX4_2) [Enabled]
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
Extra options
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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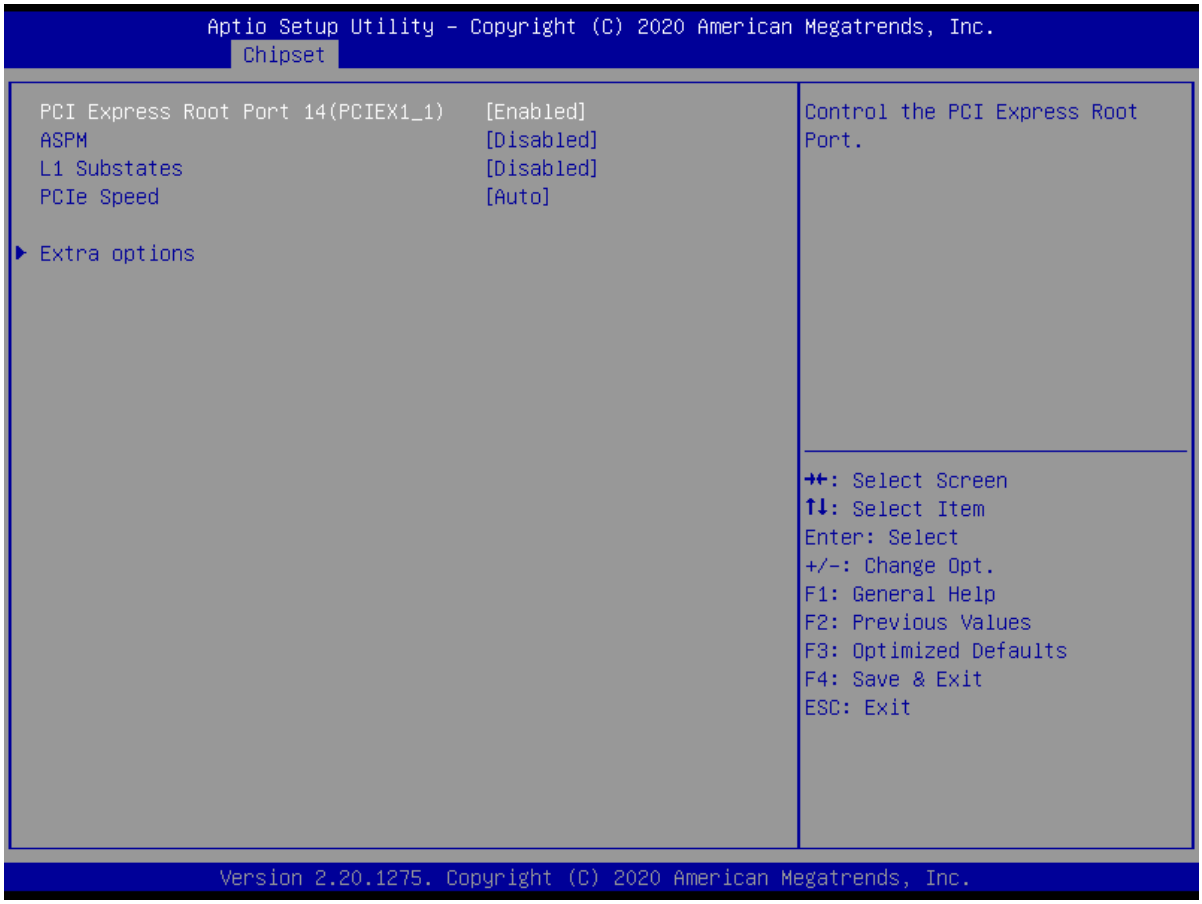
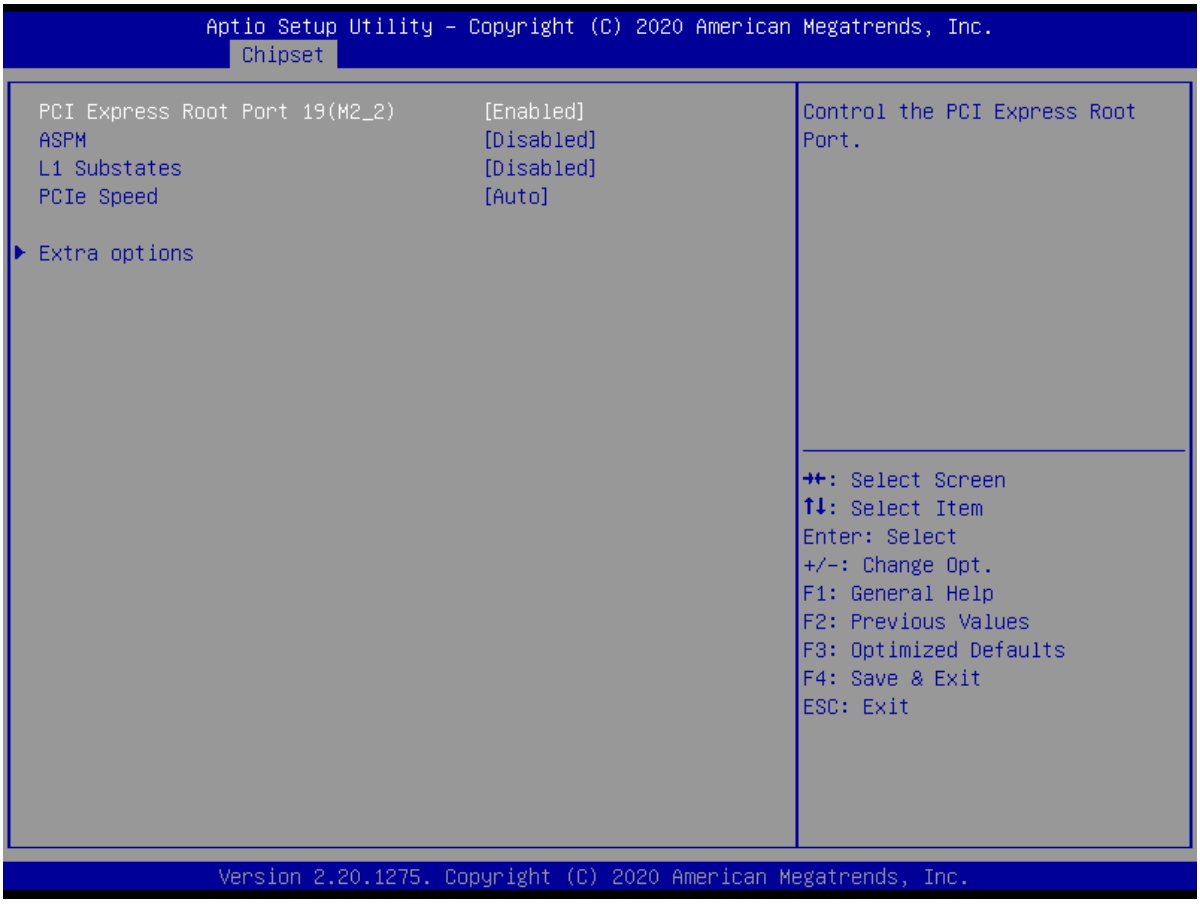
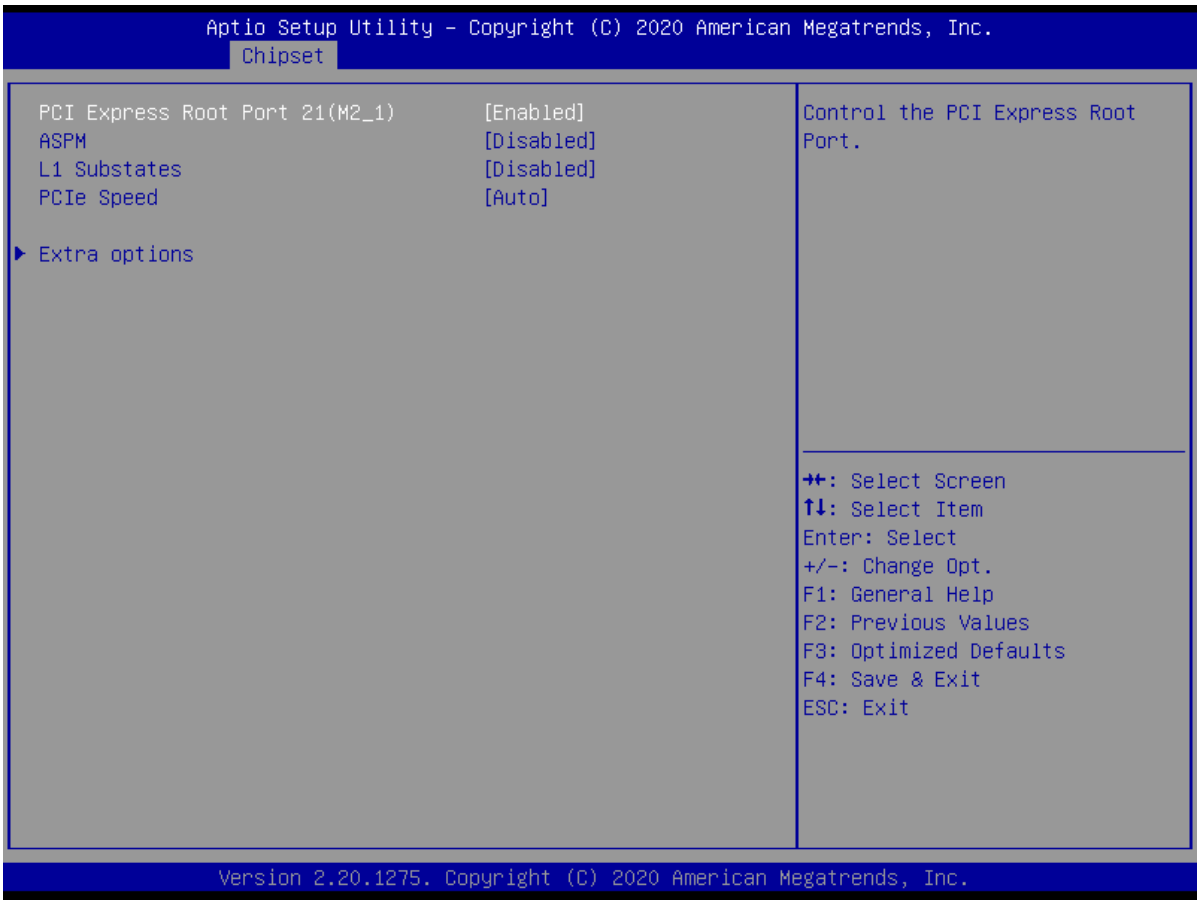
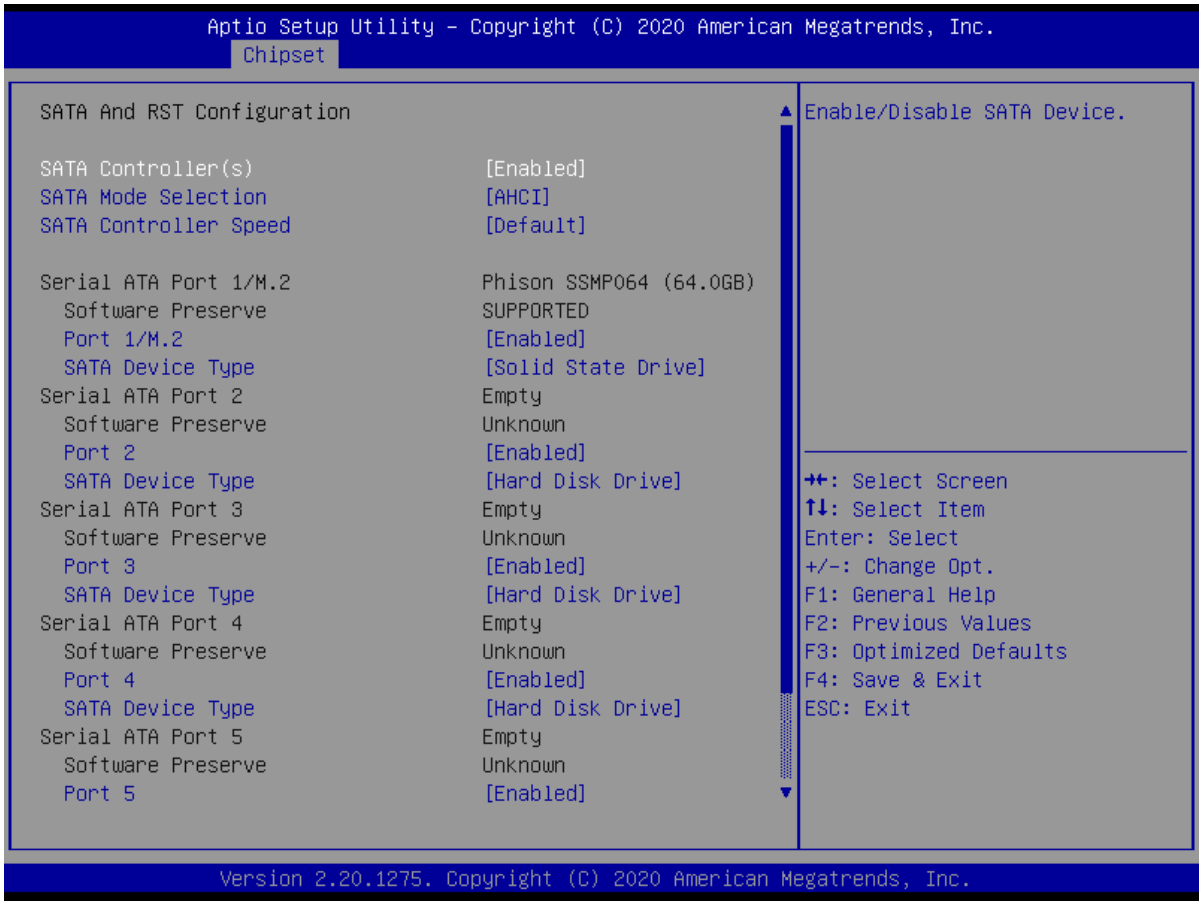
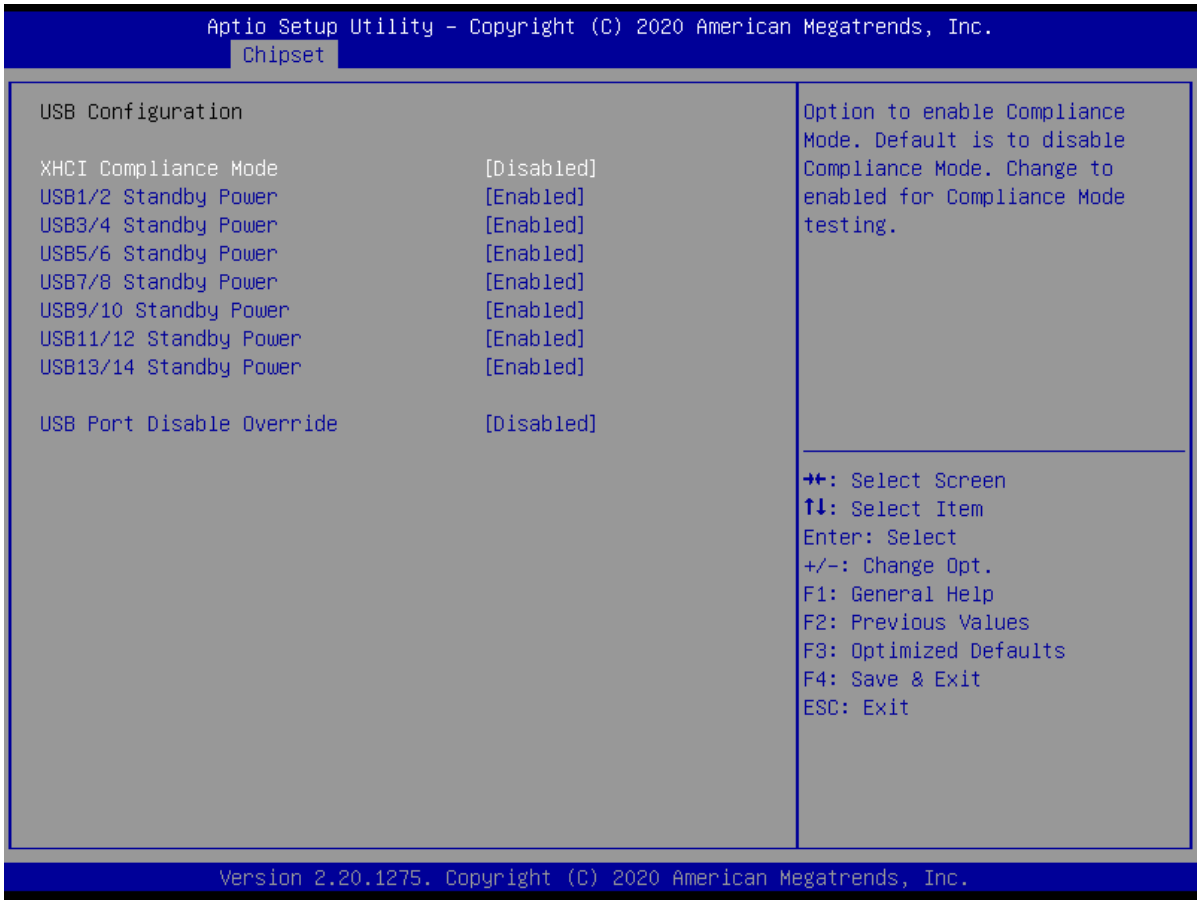
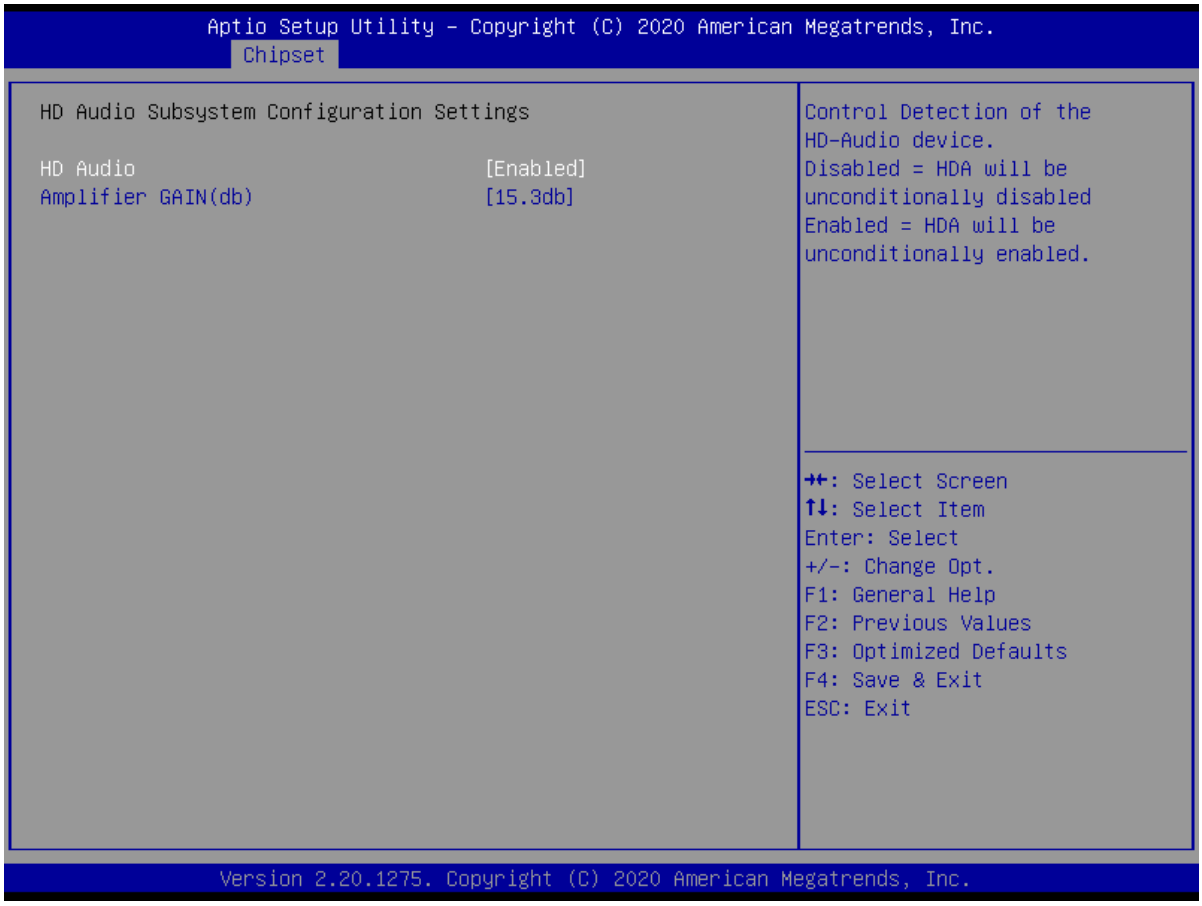

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PCI Express Root Port 14(PCIEX1_1) [Enabled]
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
Extra options
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PCI Express Root Port 19(M2_2) [Enabled]
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
Extra options
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

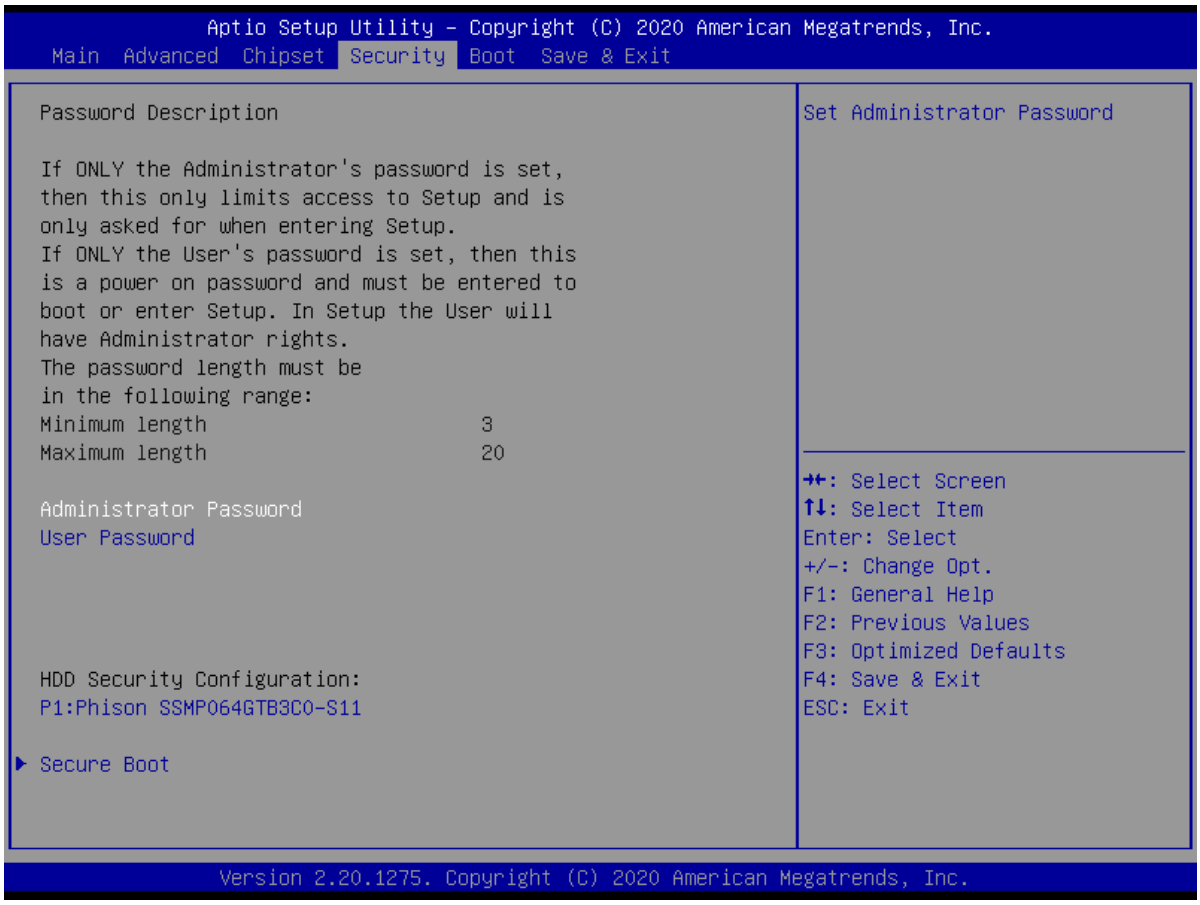

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
PCI Express Root Port 21(M2_1) [Enabled]
ASPM [Disabled]
L1 Substates [Disabled]
PCIe Speed [Auto]
Extra options
Control the PCI Express Root Port.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
SATA And RST Configuration
SATA Controller(s) [Enabled]
SATA Mode Selection [AHCI]
SATA Controller Speed [Default]
Serial ATA Port 1/M.2 Phison SSMP064 (64.0GB)
Software Preserve SUPPORTED
Port 1/M.2 [Enabled]
SATA Device Type [Solid State Drive]
Serial ATA Port 2 Empty
Software Preserve Unknown
Port 2 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 3 Empty
Software Preserve Unknown
Port 3 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 4 Empty
Software Preserve Unknown
Port 4 [Enabled]
SATA Device Type [Hard Disk Drive]
Serial ATA Port 5 Empty
Software Preserve Unknown
Port 5 [Enabled]
Enable/Disable SATA Device.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

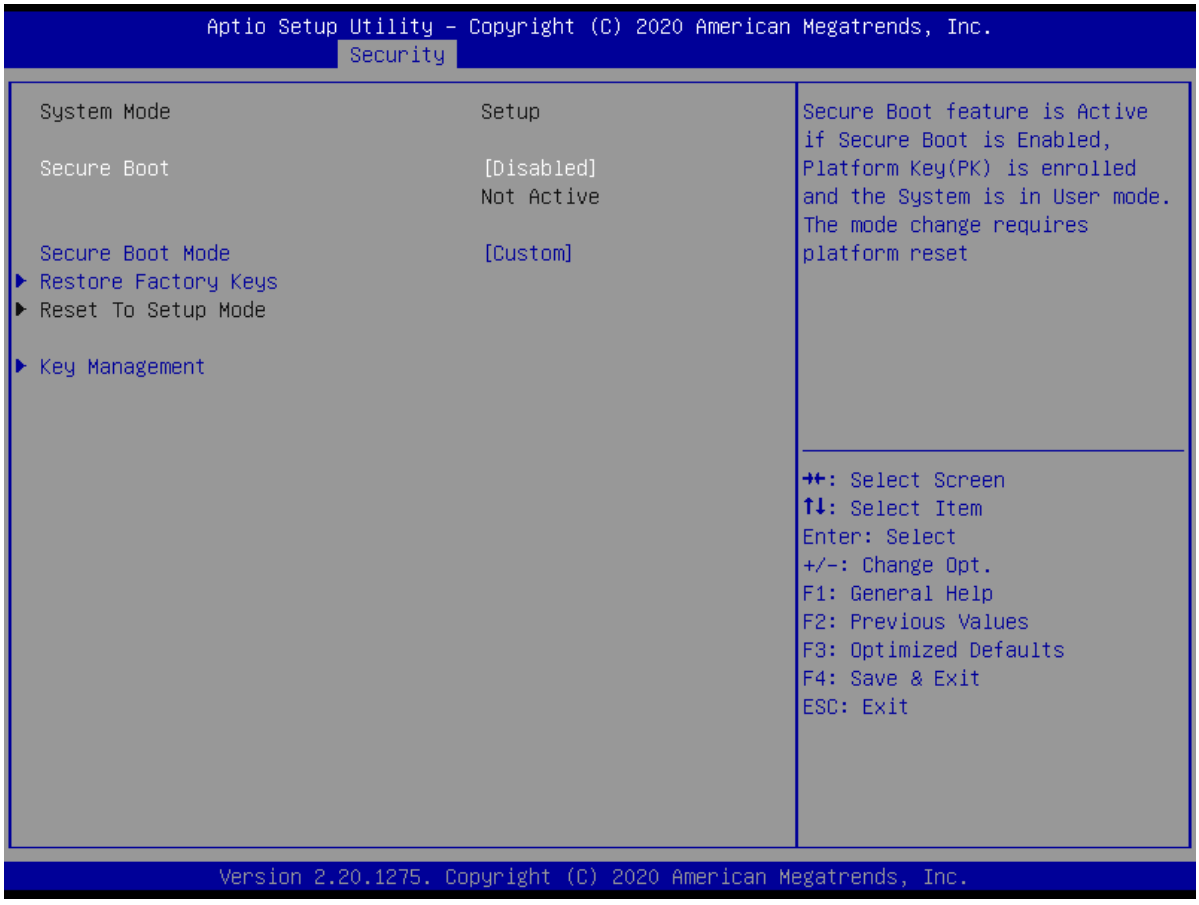

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
USB Configuration
XHCI Compliance Mode [Disabled]
USB1/2 Standby Power [Enabled]
USB3/4 Standby Power [Enabled]
USB5/6 Standby Power [Enabled]
USB7/8 Standby Power [Enabled]
USB9/10 Standby Power [Enabled]
USB11/12 Standby Power [Enabled]
USB13/14 Standby Power [Enabled]
USB Port Disable Override [Disabled]
Option to enable Compliance Mode. Default is to disable Compliance Mode. Change to enabled for Compliance Mode testing.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

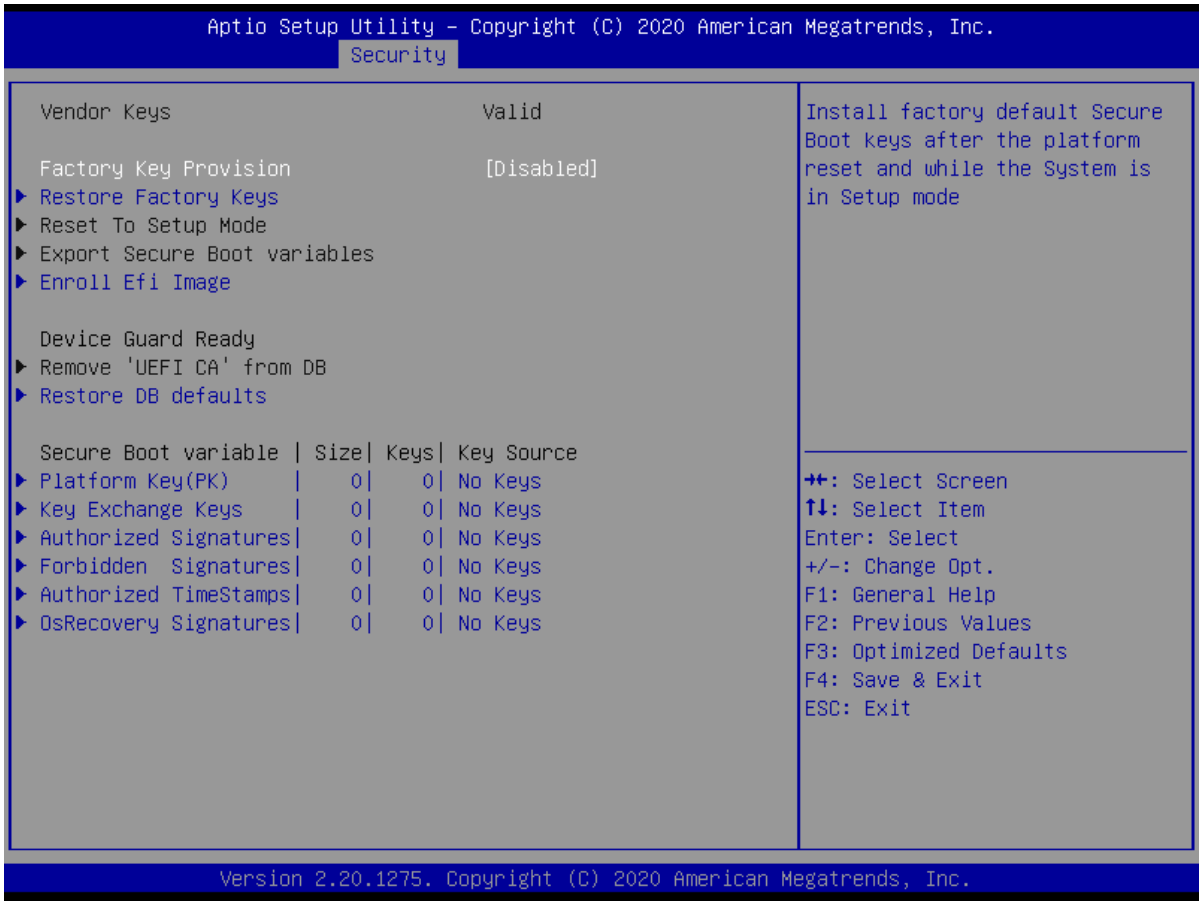

Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Chipset
HD Audio Subsystem Configuration Settings
HD Audio [Enabled]
Amplifier GAIN(db) [15.3db]
Control Detection of the HD-Audio device.
Disabled = HDA will be unconditionally disabled
Enabled = HDA will be unconditionally enabled.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.20.1275. Copyright (C) 2020 American Megatrends, Inc.

4.13 Security Menu



4.13.1 System Agent (SA) Configuration




Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Security
Vendor Keys Valid
Factory Key Provision [Disabled]
Restore Factory Keys
Reset To Setup Mode
Export Secure Boot variables
Enroll Efi Image
Device Guard Ready
Remove 'UEFI CA' from DB
Restore DB defaults
Secure Boot variable | Size| Keys| Key Source
Platform Key(PK) | 0| 0| No Keys
Key Exchange Keys | 0| 0| No Keys
Authorized Signatures| 0| 0| No Keys
Forbidden Signatures| 0| 0| No Keys
Authorized TimeStamps| 0| 0| No Keys
OsRecovery Signatures| 0| 0| No Keys
Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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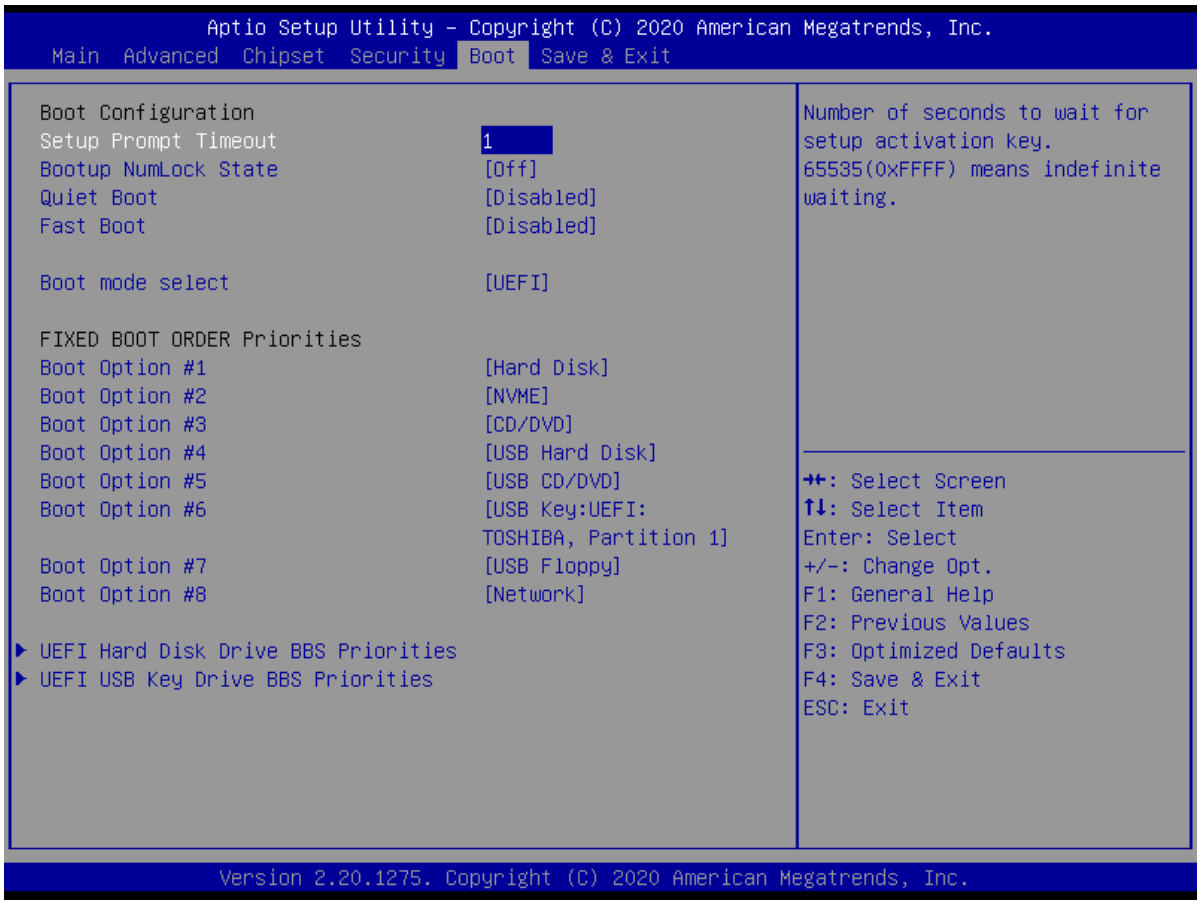
4.14 Boot


Aptio Setup Utility – Copyright (C) 2020 American Megatrends, Inc.
Main Advanced Chipset Security Boot Save & Exit
Boot Configuration
Setup Prompt Timeout 1
Bootup NumLock State [Off]
Quiet Boot [Disabled]
Fast Boot [Disabled]
Boot mode select [UEFI]
FIXED BOOT ORDER Priorities
Boot Option #1 [Hard Disk]
Boot Option #2 [NVME]
Boot Option #3 [CD/DVD]
Boot Option #4 [USB Hard Disk]
Boot Option #5 [USB CD/DVD]
Boot Option #6 [USB Key:UEFI: TOSHIBA, Partition 1]
Boot Option #7 [USB Floppy]
Boot Option #8 [Network]
UEFI Hard Disk Drive BBS Priorities
UEFI USB Key Drive BBS Priorities
Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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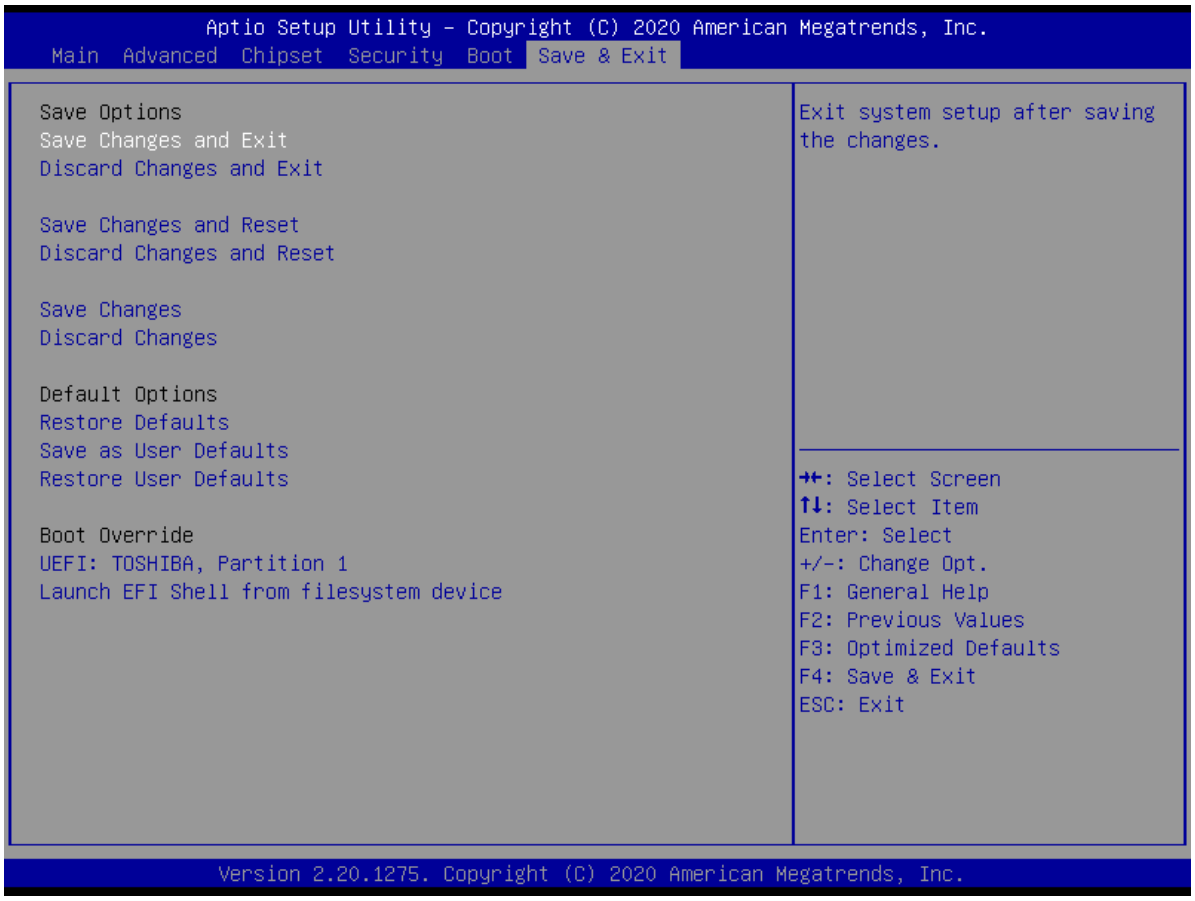
4.15 Save & Exit Menu



Appendix

GPIO & WDT

This appendix provides the sample codes of WDT (Watch Dog Timer) and GPIO (General Purpose Input/ Output).

General Purpose Input Output

GPI and GPO pins may be implemented as GPIO.

Signal	I/O	Description
GPO[0:3]	O	General purpose output pins. Upon a hardware
GPI[0:3]	I	General purpose input pins. Pulled high

GPIO Configuration

Board Design

SIO 6126D GPIO Header

Pin	Buffer Type	Function
GP86	O	Flash overiden (default:0)
GP31	I	AT/ATX mode detect (ATX:0 / AT:1)
GP32	O	COM3 RS232/422/485 mode0 (default:1)
GP33	O	COM3 RS232/422/485 mode1 (default:0)
GP40	O	COM3 Enable (default:0)
GP41	O	COM3 RS422/485 receiver termination Enable (default:1)

Q670E GPIO Configuration

Pin	Buffer Type	Function	
GPP_E13	I	BOARD_ID0	
GPP_E14	I	BOARD_ID1	
GPP_E15	I	BOARD_ID2	0 : ALC888S (default) 1 : ALC897
GPP_B22	O	LAN2_DISABLE#	I225V Lan Disable : 0 : Disable 1 : Enable (default)
GPP_B20	I	RI#	
GPP_D16	I	ATX/AT Mode (reserved)	0 : ATX Mode 1 : AT Mode
GPP_E6	I	SIO_OVT#	
GPP_C23	I	SIO_PME#	
LANPHYPC (GPD11)	O	LAN1_DISABLE#	I219LM Lan Disable : 0 : Disable 1 : Enable (default)
GPP_B19	O	Wifi disable	enable: 1 (default) / disable: 0
GPP_B3	O	BT disable	enable: 1 (default) / disable: 0
GPP_C8 GPP_C9 GPP_C10 GPP_C11 GPP_C12 GPP_C13 GPP_C14 GPP_C15	I/O	8bit GPIO	
GPP_F11	O	PCIE RST C'trl (Slot3)	default :1 (if low pulse => reset device)
GPP_F23	O	PCIE RST C'trl (Slot1,2)	default :1 (if low pulse => reset device)
GPP_F12	O	PCIE RST C'trl (Slot4)	default :1 (if low pulse => reset device)
GPP_G5	O	AUDIO_GAIN0	GAIN1 : GAIN0 = Gain : Gain (GPP_G6) (GPP_G5) (dB) (V/V) 0 0 = 24 : 16 0 1 = 18 : 8 1 0 = 12 : 4 1 1 = 6 : 2
GPP_G6		AUDIO_GAIN1	
GPP_F18	O	USB12 PWR EN	enable: 1 (default) / disable: 0
GPP_G3	O	USB34 PWR EN	enable: 1 (default) / disable: 0
GPP_H1	O	USB89 PWR EN	enable: 1 (default) / disable: 0
GPP_G4	O	USB56 PWR EN	enable: 1 (default) / disable: 0
GPP_H21	O	USB1011 PWR EN	enable: 1 (default) / disable: 0
GPP_H20	O	USB1213 PWR EN	enable: 1 (default) / disable: 0
GPP_F5	I	Front Audio Detect	
GPP_F15	I	SKTOCC#	
GPP_F17	I	TPM IRQ#	

Watchdog Timer

Board Design

The Watchdog Timer (WDT) is implemented by Nuvoton NCT6126D..

Psuedo Code

```
#include<dos.h>
#include<stdio.h>
void main(void){
  // for 2E
  int x,pre_rd,rd,status;
  clrscr();
  outportb(0x2E,0x87);
  outportb(0x2E,0x87);
  outportb(0x2E,0x30); //CR30 bit1=1  pin77 select WDTO#
  outportb(0x2F,0x01);
  outportb(0x2E,0x07);
  outportb(0x2F,0x08); //Logic Device8 (LD8)
  outportb(0x2E,0x30);
  outportb(0x2F,0x01); //Enable WDTO#

  // Reset WDTO# and clear WDTO# timeout event
  outportb(0x2E,0xF6);
  outportb(0x2F,0x00); //Reset WDTO# Timer
  outportb(0x2E,0xF7); //Logic Device 8, CRF7
  outportb(0x2F,0x00); //Write Bit4=0 to clear WDTO# event!

  // Input Timer value
  printf("Enter WDTO# Timer(second):");
  scanf("%d",&x);
  pre_rd = x + 1;
  // Set Timer and Start count
  outportb(0x2E,0xF6); //LD8,CRF6h Set WDTO# Timer
  outportb(0x2F,x);

  // Check the timeout event
  // LDN8 CRF7[4] = 1 (Timeout occur)
  do{
                        // Read Count
                        outportb(0x2E,0xF6); //LD8,CRF6h Set WDTO# Timer
                        rd = inportb(0x2F);
                        // Read Timeout event
                        outportb(0x2E,0xF7); //Logic Device 8, CRF7
                        status = inportb(0x2F);
                        // check pre-status
                        if (rd < pre_rd){
                                        printf("Timer = %d\n",rd);
                                        pre_rd = rd;
                        }
  }while(status != 0x10);
  printf("Timer Timeout.\n");

  printf("Input any key to reset timeout event\n");
  getch();

  // Reset WDTO# and clear WDTO# timeout event
  outportb(0x2E,0xF6);
  outportb(0x2F,0x00); //Reset WDTO# Timer
  outportb(0x2E,0xF7); //Logic Device 8, CRF7
  outportb(0x2F,0x00); //Write Bit4=0 to clear WDTO# event!
```