

GIGABYTE™

W773-W80

Intel® Xeon® W W7 GPU Workstation

User Manual

Rev. 1.0

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Documentation Classifications

In order to assist in the use of this product, GIGABYTE provides the following types of documentation:

- User Manual: detailed information & steps about the installation, configuration and use of this product (e.g. motherboard, server barebones), covering hardware and BIOS.
- User Guide: detailed information about the installation & use of an add-on hardware or software component (e.g. BMC firmware, rail-kit) compatible with this product.
- Quick Installation Guide: a short guide with visual diagrams that you can reference easily for installation purposes of this product (e.g. motherboard, server barebones).

Please see the support section of the online product page to check the current availability of these documents.

For More Information

For related product specifications, the latest firmware and software, and other information please visit our website at <http://www.gigabyte.com>

For GIGABYTE distributors and resellers, additional sales & marketing materials are available from our reseller portal: <http://reseller.b2b.gigabyte.com>

For further technical assistance, please contact your GIGABYTE representative or visit <https://esupport.gigabyte.com/> to create a new support ticket

For any general sales or marketing enquiries, you may also message GIGABYTE server directly by email: server.grp@gigabyte.com

Conventions

The following conventions are used in this user's guide:

	NOTE! Gives bits and pieces of additional information related to the current topic.
	CAUTION! Gives precautionary measures to avoid possible hardware or software problems.
	WARNING! Alerts you to any damage that might result from doing or not doing specific actions.

Warnings and Cautions

Before installing, be sure that you understand the following warnings and cautions.



WARNING!

To reduce the risk of electric shock or damage to the equipment:

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug all the power cords from the power supplies to disconnect power to the equipment.
- Shock Hazard! Disconnect all power supply cords before servicing.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.



WARNING!

To reduce the risk of personal injury from hot surfaces, allow the drives and the internal system components to cool before touching them.



CAUTION!

- Do not operate the system for long periods with the access panel open or removed. Operating the system in this manner results in improper airflow and improper cooling that can lead to thermal damage.
- Danger of explosion if battery is incorrectly replaced.
- Replace only with the same or equivalent type recommended by the manufacturer.
- Dispose of used batteries according to the manufacturer's instructions.

Electrostatic Discharge (ESD)



CAUTION!

ESD CAN DAMAGE DRIVES, BOARDS, AND OTHER PARTS. WE RECOMMEND THAT YOU PERFORM ALL PROCEDURES AT AN ESD WORKSTATION. IF ONE IS NOT AVAILABLE, PROVIDE SOME ESD PROTECTION BY WEARING AN ANTI-STATIC WRIST STRAP ATTACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

Always handle boards carefully. They can be extremely sensitive to ESD. Hold boards only by their edges without any component and pin touching. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

System power on/off: To remove power from system, you must remove the system from rack. Make sure the system is removed from the rack before opening the chassis, adding, or removing any non hot-plug components.

Hazardous conditions, devices and cables: Hazardous electrical conditions may be present on power, telephone, and communication cables. Turn off the system and disconnect the cables attached to the system before servicing it. Otherwise, personal injury or equipment damage can result.

Electrostatic discharge (ESD) and ESD protection: ESD can damage drives, boards, and other parts. We recommend that you perform all procedures in this chapter only at an ESD workstation. If one is not available, provide some ESD protection by wearing an antistatic wrist strap attached to chassis ground (any unpainted metal surface on the server) when handling parts.

ESD and handling boards: Always handle boards carefully. They can be extremely sensitive to electrostatic discharge (ESD). Hold boards only by their edges. After removing a board from its protective wrapper or from the system, place the board component side up on a grounded, static free surface. Use a conductive foam pad if available but not the board wrapper. Do not slide board over any surface.

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can damage the contacts inside the jumper, causing intermittent problems with the function controlled by that jumper. Take care to grip with, but not squeeze, the pliers or other tool used to remove a jumper, or the pins on the board may bend or break.

**CAUTION!**

Risk of explosion if battery is replaced incorrectly or with an incorrect type. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Regulatory Notices

WEEE Symbol Statement



The symbol shown below is on the product or on its packaging, which indicates that this product must be disposed of with other waste. Instead, the device should be taken to the waste collection centers for activation of the treatment, collection, recycling and disposal procedure. The separate collection and recycling of your waste equipment at the time of disposal will help to conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment.

For more information about where you can drop off your waste equipment for recycling, please contact your local government office, your household waste disposal service or where you purchased the product for details of environmentally safe recycling.

- When your electrical or electronic equipment is no longer useful to you, "take it back" to your local or regional waste collection administration for recycling.

Restriction of Hazardous Substances (RoHS) Directive Statement

GIGABYTE products have not intended to add and safe from hazardous substances (Cd, Pb, Hg, Cr+6, PBDE and PBB). The parts and components have been carefully selected to meet RoHS requirement. Moreover, we at GIGABYTE are continuing our efforts to develop products that do not use internationally banned toxic chemicals.

California Proposition 65 Warning



WARNING!

This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.



Battery WARNING!

This product can expose you to chemicals including Lead, which is known to the State of California to cause cancer, and Bisphenol A (BPA), which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

電器規格及使用溫度：參考以下標示

Rating(交流輸入)	100-240V~, 15-12A, 50-60Hz
Operating Temperature	10°C to 35°C
Non-operating temperature	-40°C to 60°C
Operating humidity	8%-80% (non-condensing)
Non-operating humidity	20%-95% (non-condensing)

伺服器相關警告與注意事項



警告

為了避免電擊危險或損壞設備請注意：

- 不要切斷電源線的接地端子，接地端子是一個很重要的安全防護。
- 將電源線接到有接地功能的插座，此插座需位於使用者容易使用的範圍。
- 電源線的配線要避免被踩到，被絆到或被過度彎折，重壓。



警告

- 本設備關機後內部仍存在電源，須拔掉電源線才能完全切掉設備內部的電源。
- 更換零件前請確定電源已經完全切斷。
- 電源線、電話線，網路線可能帶電，維修前除了移除電源線外也請移除所有連接線，避免電擊傷害或是設備損壞。
- 維修非支援熱插拔的零件時須將伺服器從機櫃取下才能維修。



警告

- 避免人員燙傷，觸摸磁碟機或是內部零件前請確保該零件已經冷卻。



警告

- 伺服器中有高速風扇，維修時請遠離風扇避免受傷。



警告

- 本設備不能用在有兒童出現的區域。



警告

- 如果更換錯誤電池會產生爆炸，請以相同或同型號電池更換使用。
- 廢電池請回收。



警告：如果更換錯誤電池會產生爆炸 請以相同或同型電池更換使用

廢電池請回收





注意

- 伺服器開機時不要長時間移除蓋子，長時間移除蓋子會造成散熱功能失效造成損壞。



注意

- 靜電會損害電子產品，建議您在符合靜電防護的工作環境操作伺服器，如果無法確定環境的靜電防護。請穿上靜電手環並且將手環接到有接地的金屬表面如機櫃或機殼。
- 拿取電路板時僅觸碰板子的邊緣，不要觸碰連接器。板子從防靜電包裝取出後只能放置在無靜電的桌面，零件面朝上。如果可以，請使用防靜電泡棉。避免使用靜電袋。避免電路板與任何表面摩擦產生靜電。

 WARNING	
<ul style="list-style-type: none"> • INGESTION HAZARD: This product contains a button cell or coin battery. • DEATH or serious injury can occur if ingested. • A swallowed button cell or coin battery can cause Internal Chemical Burns in as little as 2 hours. • KEEP new and used batteries OUT OF REACH of CHILDREN • Seek immediate medical attention if a battery is suspected to be swallowed or inserted inside any part of the body. 	

- Battery type: CR2032, voltage rating: +3VDC.
- Non-rechargeable batteries are not to be recharged.
- Remove and immediately recycle or dispose of used batteries, batteries from equipment not used for an extended period of time according to local regulations and keep away from children. Do NOT dispose of batteries in household trash or incinerate.
- Even used batteries may cause severe injury or death.
- Do not force discharge, recharge, disassemble, heat above (manufacturer's specified temperature rating) or incinerate. Doing so may result in injury due to venting, leakage or explosion resulting in chemical burns.
- For treatment information, call a local poison control center.
- The product contains non-replaceable batteries.

設備名稱：工作站

型號（型式）：W773-W80

單元	限用物質及其化學符號 Restricted substances and its chemical symbols					
	鉛Lead (Pb)	汞 Mercury (Hg)	鎘 Cadmium (Cd)	六價鉻 Hexavalent chromium (Cr+6)	多溴聯苯 Polybrominated biphenyls (PBB)	多溴二苯醚 Polybrominated diphenyl ethers (PBDE)
電路板 總成	—	○	○	○	○	○
冷卻器 (風扇)	—	○	○	○	○	○
鐵殼	○	○	○	○	○	○
電源 供應器	—	○	○	○	○	○
線材	○	○	○	○	○	○

備考1. “超出0.1 wt %”及“超出0.01 wt %”係指限用物質之百分比含量超出百分比含量基準值。

Note 1: “Exceeding 0.1 wt %” and “exceeding 0.01 wt %” indicate that the percentage content of the restricted substance exceeds the reference percentage value of presence condition.

備考2. “○”係指該項限用物質之百分比含量未超出百分比含量基準值。

Note 2: “○” indicates that the percentage content of the restricted substance does not exceed the percentage of reference value of presence.

備考3. “—”係指該項限用物質為排除項目。

Note 3: The “—” indicates that the restricted substance corresponds to the exemption.

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Chapter 1 Hardware Installation

1-1 Installation Precautions

The motherboard/system contain numerous delicate electronic circuits and components which can become damaged as a result of electrostatic discharge (ESD). Prior to installation, carefully read the user manual and follow these procedures:











- Prior to installation, do not remove or break motherboard S/N (Serial Number) sticker or warranty sticker provided by your dealer. These stickers are required for warranty validation.
- Always remove the AC power by unplugging the power cord from the power outlet before installing or removing the motherboard or other hardware components.
- When connecting hardware components to the internal connectors on the motherboard, make sure they are connected tightly and securely.
- When handling the motherboard, avoid touching any metal leads or connectors.
- It is best to wear an electrostatic discharge (ESD) wrist strap when handling electronic components such as a motherboard, CPU or memory. If you do not have an ESD wrist strap, keep your hands dry and first touch a metal object to eliminate static electricity.
- Prior to installing the motherboard, please have it on top of an antistatic pad or within an electrostatic shielding container.
- Before unplugging the power supply cable from the motherboard, make sure the power supply has been turned off.
- Before turning on the power, make sure the power supply voltage has been set according to the local voltage standard.
- Before using the product, please verify that all cables and power connectors of your hardware components are connected.
- To prevent damage to the motherboard, do not allow screws to come in contact with the motherboard circuit or its components.
- Make sure there are no leftover screws or metal components placed on the motherboard or within the computer casing.
- Do not place the computer system on an uneven surface.
- Do not place the computer system in a high-temperature environment.
- Turning on the computer power during the installation process can lead to damage to system components as well as physical harm to the user.
- If you are uncertain about any installation steps or have a problem related to the use of the product, please consult a certified computer technician.

1-2 Product Specifications



NOTE:

We reserve the right to make any changes to the product specifications and product-related information without prior notice.

	System	<ul style="list-style-type: none"> ◆ Pedestal
	Dimension	<ul style="list-style-type: none"> ◆ 726.3 x 218 x 455 mm
	Motherboard	<ul style="list-style-type: none"> ◆ MW83-RP0
	CPU	<ul style="list-style-type: none"> ◆ Intel® Xeon® W-3400 Processors ◆ Single processor, TDP up to 350W
	Socket	<ul style="list-style-type: none"> ◆ 1 x LGA 4677 ◆ Socket E
	Chipset	<ul style="list-style-type: none"> ◆ Intel® W790
	Memory	<ul style="list-style-type: none"> ◆ 8 x DIMM slots ◆ DDR5 memory module supported only ◆ 8-channel memory architecture ◆ RDIMM modules up to 64GB supported ◆ RDIMM-3DS modules up to 256GB supported ◆ Memory speed: up to 4800 MHz
		<p>NOTE: When installing memory modules, make sure to begin with the first socket of each channel, such as DIMM_P0_A0, DIMM_P0_B0, DIMM_P0_C0, DIMM_P0_D0</p>
	LAN	<ul style="list-style-type: none"> ◆ 2 x 10GbE LAN ports (Intel® X710-AT2) ◆ 1 x 10/100/1000 Management LAN (Realtek® RTL8211FD)
	Video	<ul style="list-style-type: none"> ◆ Integrated in Aspeed® AST2600: - 1 x VGA port
	Audio	<ul style="list-style-type: none"> ◆ Realtek® ALC897 HD audio codec ◆ Supports 2/4/5.1/7.1 channel configurations ◆ Rear 3 port Audio Jack (Audio in/Audio out/Mic) ◆ Front 2 port Audio Jack (Audio out/Mic)
	Storage	<ul style="list-style-type: none"> ◆ 4 x 3.5" / 2.5" SATAIII hot-swappable HDD/SSD bays ◆ Additional 4 x 3.5" / 2.5" SATAIII hot-swappable HDD/SSD bays (Option) ◆ 2 x M.2 slot for storage - M-key - PCIe Gen4 x4, from PCH - Supports NGFF-2280 cards
		<p>NOTE: SAS card is required for SAS devices support Storage adapter is required for 2.5" NVMe U.2 SSD installed</p>
	RAID	<ul style="list-style-type: none"> ◆ intel® RAID 0, RAID 1, RAID 5 and RAID 10
	Peripheral Drives	<ul style="list-style-type: none"> ◆ 5.25" space reserved for ODD device



Expansion Slot

- ◆ Slot_7: 1 x PCIe x16 (Gen5 x16 bus) slot, from CPU
- ◆ Slot_6: 1 x PCIe x16 (Gen5 x16 bus) slot, from CPU
- ◆ Slot_5: 1 x PCIe x16 (Gen5 x16 bus) slot, from CPU
- ◆ Slot_4: 1 x PCIe x16 (Gen5 x16 bus) slot, from CPU
- ◆ Slot_3: 1 x PCIe x16 (Gen4 x16 bus) slot, from CPU
- ◆ Slot_2: 1 x PCIe x16 (Gen5 x16 bus) slot, from CPU
- ◆ Slot_1: 1 x PCIe x16 (Gen4 x16 bus) slot, from CPU

- ◆ 2 x M.2 slot for storage:
 - M-key
 - PCIe Gen4 x4 from PCH
 - Supports NGFF-2280 cards



Internal I/O

- ◆ 1 x 24-pin ATX main power connector
- ◆ 2 x 8-pin ATX 12V power connectors for CPU and DDR 12V input
- ◆ 1 x CPU fan header
- ◆ 6 x System fan headers
- ◆ 2 x USB 3.2 Gen1 headers
- ◆ 1 x Front audio header
- ◆ 1 x PMBus connector
- ◆ 1 x Clear CMOS jumper
- ◆ 2 x SlimSAS ports
- ◆ 2 x M.2 slots
- ◆ 1 x Front panel header
- ◆ 1 x Backplane board header
- ◆ 1 x TPM header
- ◆ 1 x VROC connector



Front I/O

- ◆ 2 x USB 3.2 Gen1 Type-A
- ◆ 1 x Power Button
- ◆ 1 x Reset Button
- ◆ 1 x Audio and MIC Jack
- ◆ 1 x Power LED
- ◆ 1 x HDD LED
- ◆ 1 x System LED



Rear I/O

- ◆ 1 x VGA
- ◆ 1 x COM
- ◆ 2 x RJ45
- ◆ 1 x MLAN
- ◆ 3 x USB 3.2 Gen2 Type-A
- ◆ 1 x USB3.2 Gen2x2 Type-C
- ◆ 1 x ID button with LED
- ◆ 3 x Audio jacks



TPM

- ◆ 1 x TPM header with SPI interface
- ◆ Optional TPM2.0 kit: CTM010



Power Supply

- ◆ 1 x 2000W ATX PSU
- ◆ 80 PLUS Gold

- ◆ AC Input:
 - 100-115V / 13A, 50-60Hz, 1200W
 - 115-200V/ 15A, 50-60Hz, 1500W
 - 200-240V/ 12A, 50-60Hz, 2000W

- ◆ DC Output:
 - Max 2000W/ 200-240V
 - +12V/ 166.7A
 - +5Vsb/ 4A

 - Max 1500w / 115-200V
 - +12V/ 125A
 - +5Vsb/ 4A

 - Max 1200W/ 100-115V
 - +12V/ 100A
 - +5Vsb/ 4A

NOTE: Recommended AC input is 220-240V to optimize user experience.



System Management

- ◆ ASPEED® AST2600 Management Controller
- ◆ GIGABYTE Management Console (AMI MegaRAC SP-X) web interface
- ◆
- ◆ Dashboard
- ◆ HTML5 KVM
- ◆ Sensor Monitor (Voltage, RPM, Temperature, CPU Status ...etc.)
- ◆ Sensor Reading History Data
- ◆ FRU Information
- ◆ SEL Log in Linear Storage / Circular Storage Policy
- ◆ Hardware Inventory
- ◆ Fan Profile
- ◆ System Firewall
- ◆ Power Consumption
- ◆ Power Control
- ◆ LDAP / AD / RADIUS Support
- ◆ Backup & Restore Configuration
- ◆ Remote BIOS/BMC/CPLD Update
- ◆ Event Log Filter
- ◆ User Management
- ◆ Media Redirection Settings
- ◆ PAM Order Settings
- ◆ SSL Settings
- ◆ SMTP Settings

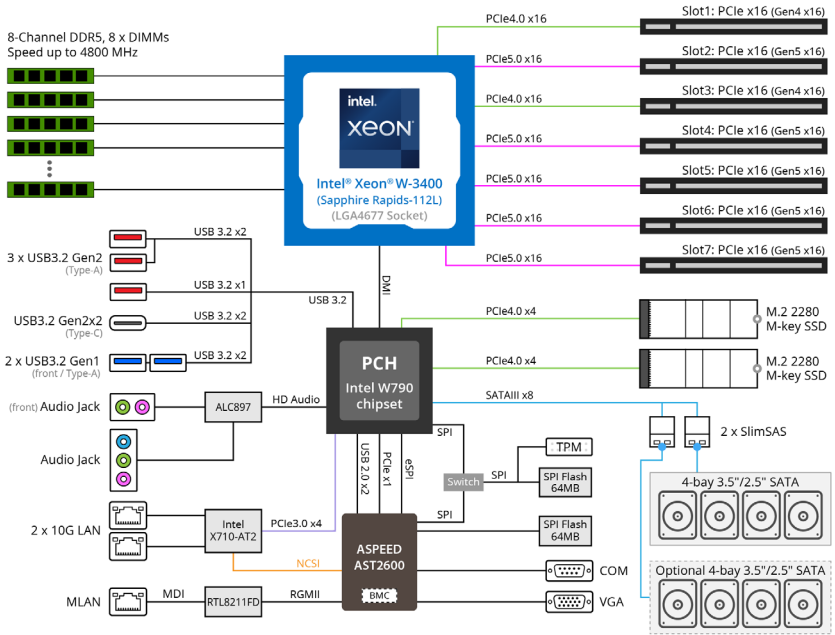


Operating Properties

- ◆ Operating temperature: 10°C to 30°C
- ◆ Operating humidity: 8-80% (non-condensing)
- ◆ Non-operating temperature: -40°C to 60°C
- ◆ Non-operating humidity: 20%-95% (non-condensing)

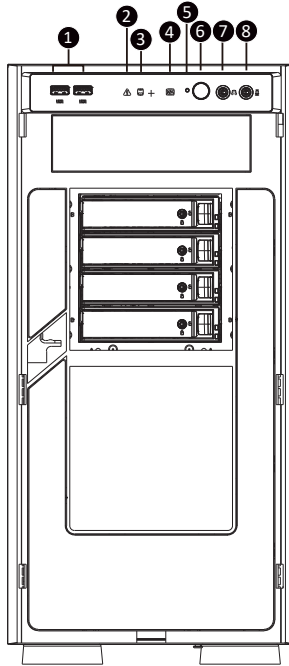
1-3 System Block Diagram

W773-W80 Block Diagram



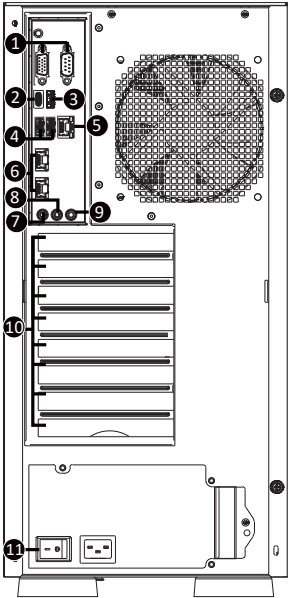
Chapter 2 System Appearance

2-1 Front View



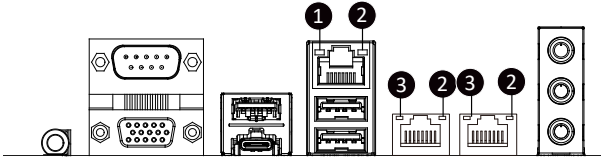
No.	Description	No.	Description
1.	USB 3.2 Gen1	5.	Reset
2.	System LED	6.	Power Button
3.	HDD LED	7.	Earphone
4.	Power LED	8.	MIC

2-2 Rear View



No.	Description	No.	Description
1.	VGA/COM Port	7.	MIC-IN (Pink)
2.	USB 3.2 Ports (Type C)	8.	LINE-OUT (Green)
3.	USB 3.2 Ports (Type A)	9.	LINE-IN (Blue)
4.	USB 3.2 Ports (Type A)	10.	PCIe Card Bay
5.	MLAN	11.	PSU (AC 220V)
6.	10Gbe LAN Port #1		

2-3 Rear Panel System LAN LEDs



No.	Name	Color	Status	Description
1.	1GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
			Off	No data transmission or reception is occurring.
3.	10GbE Speed LED	Yellow	On	5, 2.5, 1Gbps data rate
		Green	On	10 Gbps data rate
		N/A	Off	100 Mbps data rate

Chapter 3 System Hardware Installation



Pre-installation Instructions

Computer components and electronic circuit boards can be damaged by electrostatic discharge. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple guidelines below to avoid damage to your computer or injury to yourself.

- Always disconnect the computer from the power outlet whenever you are working inside the computer case.
- If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal system of the computer case, or the bare metal body of any other grounded appliance.
- Hold electronic circuit boards by the edges only. Do not touch the components on the board unless it is necessary to do so. Do not flex or stress the circuit board.
- Leave all components inside the static-proof packaging until you are ready to use the component for the installation.

3-1 Removing and Installing the Chassis Cover

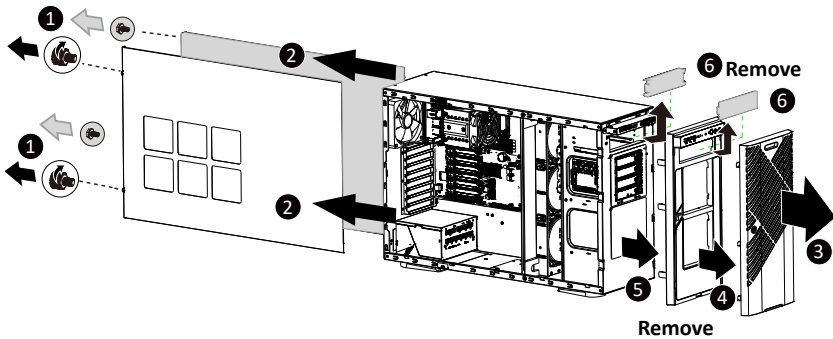


Before you remove or install the chassis cover

- Make sure the system is not turned on or connected to AC power.

Follow these instructions to remove/install the chassis side cover and front bezel:

1. Remove the screw securing the chassis side cover.
2. Slide the cover towards the rear of the system and then remove the cover in the direction indicated by the arrow.
3. Remove the front bezel.
4. Remove the dummy cover.
5. Remove the EMI shielding.
6. Reinstall the front bezel.
7. Follow steps 1-2 in reverse order to re-install the chassis side cover.



3-2 Installing the CPU



Read the following guidelines before you begin to install the CPU:

- Make sure that the motherboard supports the CPU.
- Always turn off the computer and unplug the power cord from the power outlet before installing the CPU to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open the system according to the instructions.

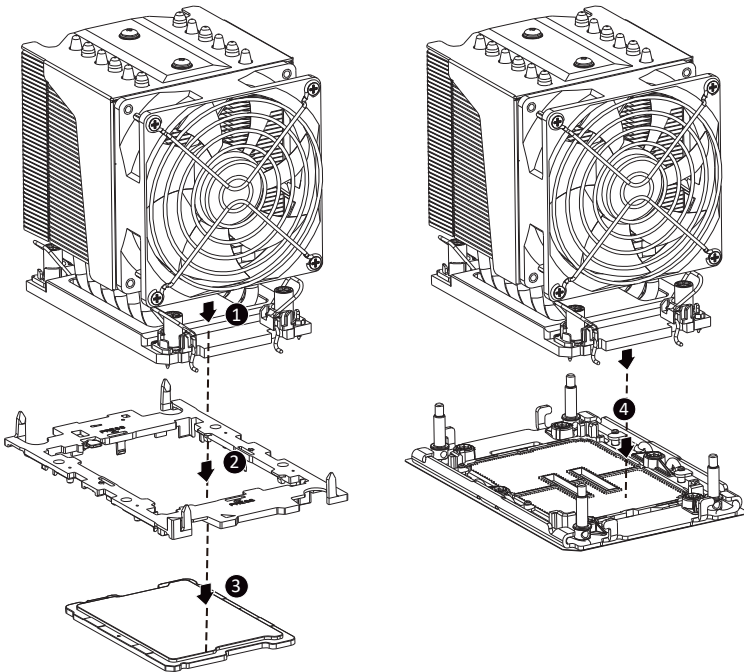


WARNING!

Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Follow these instructions to Install the CPU:

1. Lift up the CPU socket locking lever.
2. Align the CPU pin one (triangle marking) with the pin one corner of the CPU socket. Install the CPU onto the socket.
3. Ensure the CPU is positioned into its socket and secure the CPU socket lever.



3-3 Installing the Memory

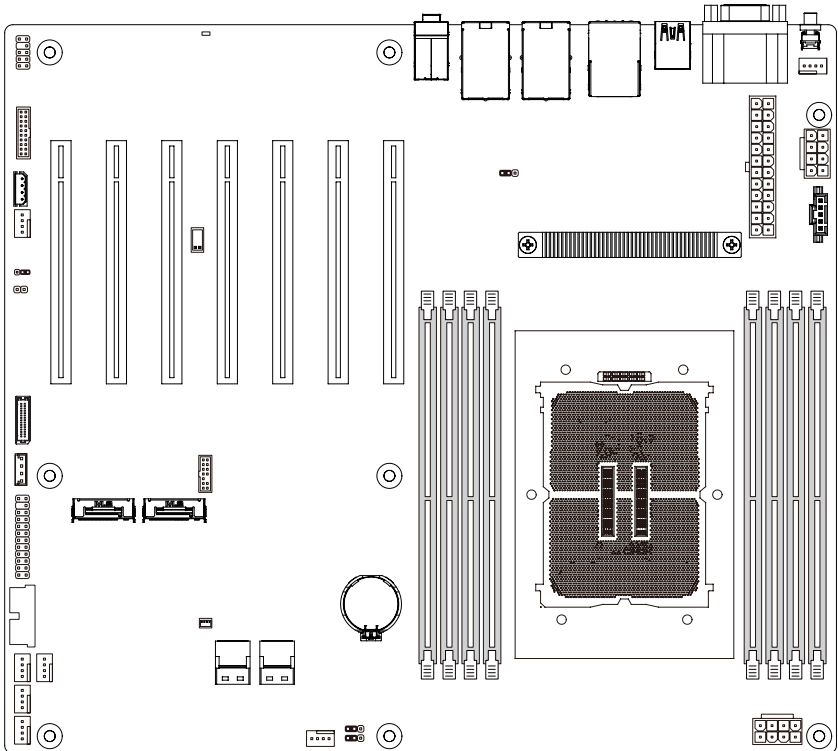


Read the following guidelines before you begin to install the memory:

- Make sure that the motherboard supports the memory. It is recommended that memory of the same capacity, brand, speed, and chips be used.
- Always turn off the computer and unplug the power cord from the power outlet before installing the memory to prevent hardware damage.
- Memory modules have a foolproof design. A memory module can be installed in only one direction. If you are unable to insert the memory, switch the direction.

3-3-1 EightChannel Memory Configuration

This motherboard provides 8 DDR5 memory slots and supports Eight Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.



3-3-2 Installing the Memory

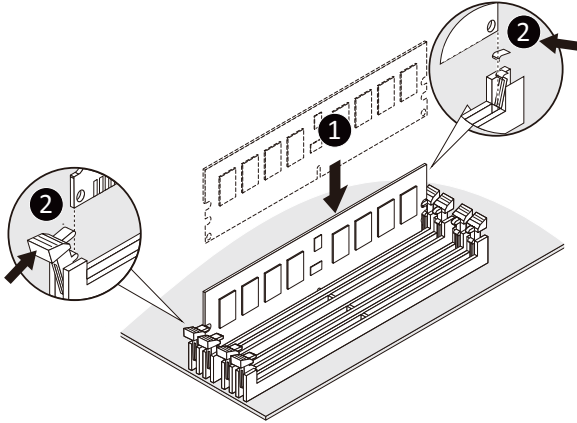


Before installing a memory module, make sure to turn off the computer and unplug the power cord from the power outlet to prevent damage to the memory module.

Be sure to install DDR5 DIMMs on this motherboard.

Follow these instructions to install the Memory:

1. Insert the DIMM memory module vertically into the DIMM slot, and push it down.
2. Close the plastic clip at both edges of the DIMM slots to lock the DIMM module.
3. Reverse the installation steps when you want to remove the DIMM module.



Type	Ranks Per DIMM and Data Width	DIMM Capacity (GB)	Speed (MT/s); Voltage (V); DIMM per Channel (DPC)	
			1DPC*	1.1V
RDIMM	SRx8 (RC D)	16GB	4800	
	SRx4 (RC C)	32GB		
	SRx4 (RC F) 9x4	32GB		
	DRx8 (RC E)	32GB		
	DRx4 (RC A)	64GB		
RDIMM 3DS	DRx4 (RC B) 9x4	64GB		
	(4R/8R)x4 (RC A)	2H-128GB 4H-256GB		

*1DPC applies to 1SPC or 2SPC implementations (SPC - Sockets Per Channel)



Warning:

To avoid any potential short circuit of the DIMM slots, please remove any stand-offs from the chassis that will be located underneath the DIMM slots, before installing the motherboard into the chassis.

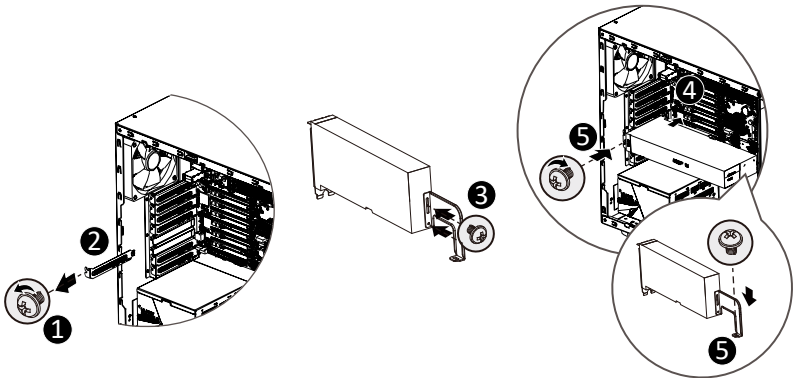
3-4 Installing the PCI Expansion Card



- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to installing a PCIe card.
- Failure to observe these warnings could result in personal injury or damage to equipment.

Follow these instructions to install the PCI Expansion card:

1. Use a screw driver to push the slot cover.
2. Remove the slot cover from the PCIe bracket.
3. Align the PCIe card onto the slot and push in the direction of the arrow until the PCIe card sits in the PCIe card connector.
4. Secure the PCIe card with the screw.
5. Reverse the previous steps to remove the PCIe card.



3-5 Installing the Hard Disk Drive

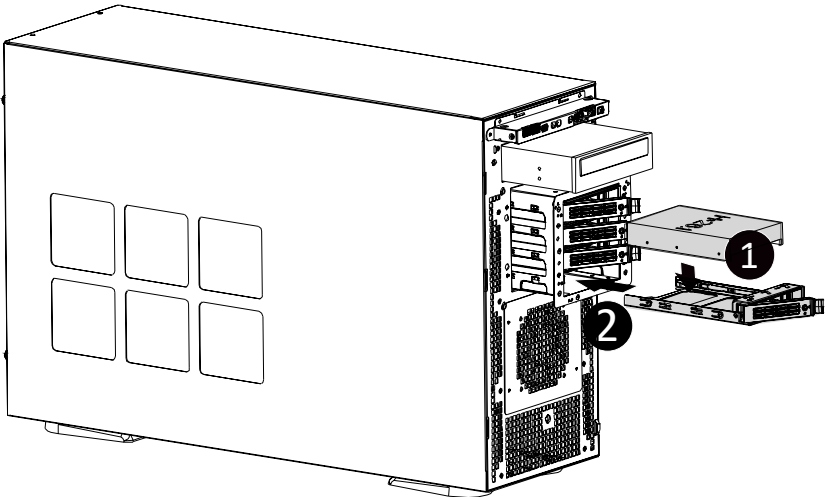


Read the following guidelines before you begin to install the hard disk drive:

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.
- Make sure that the hard disk drive is connected to the hard disk drive connector on the backplane.

Follow these instructions to install 3.5" hard disk drives:

1. Remove both side covers.
2. Slide the first hard disk drive into the slot.
3. Mount it with two screws on each side.
4. Slide the second hard disk drive into the dedicated HDD tray. (Note: Connect your GIGABYTE sales representative with any order requests.)
5. Screw the hard disk drive with four screws.
6. Insert the HDD tray into the slot.
7. Mount it with two screws on each side.
8. Reinstall both side covers.

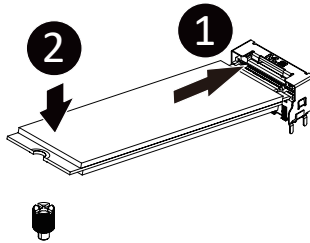


3-6 Installing and Removing the M.2 SSD Module

Follow the steps below to install an optional M.2 SSD module on your motherboard.

Step1. Insert the M.2 SSD module into the slot.

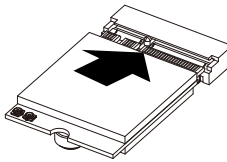
Step2. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



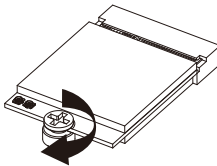
3-7 Installing and Removing the M.2 WiFi Module

Follow the steps below to install a M.2 WiFi module on your motherboard.

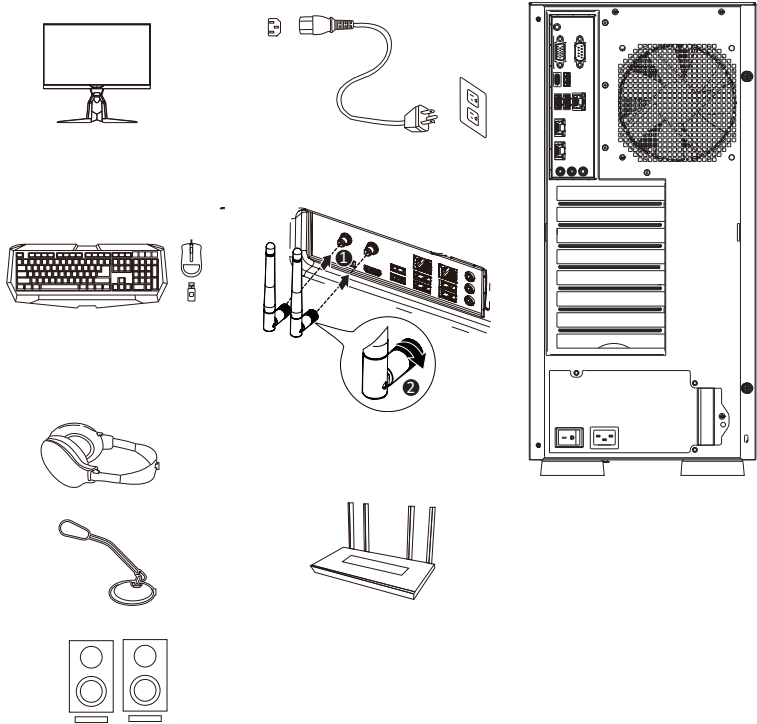
Step1. Carefully Insert the M.2 WiFi module into the slot.



Step2. Secure it with the screw, tightening as necessary to fasten the M.2 WiFi module in place.

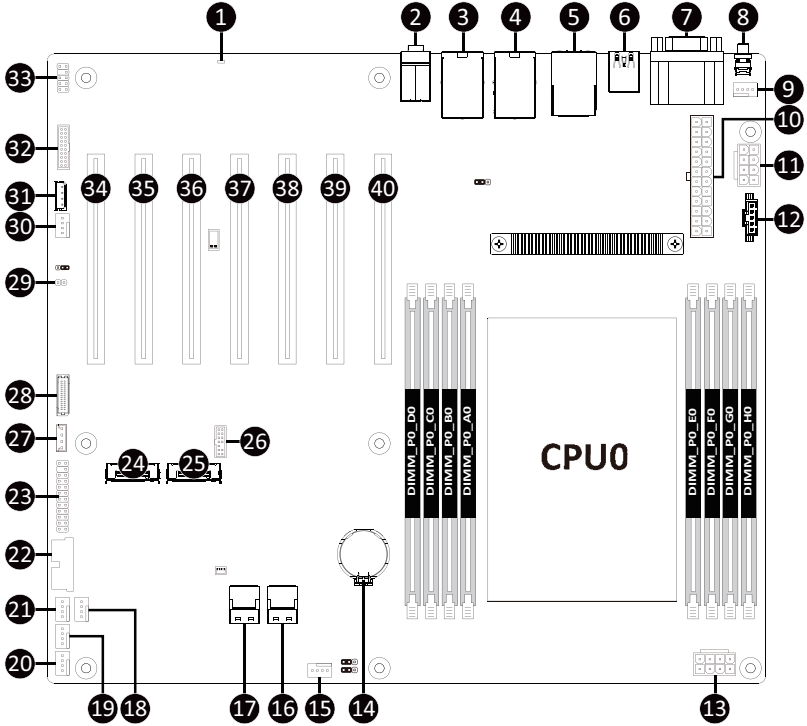


3-8 Peripheral Devices Connection



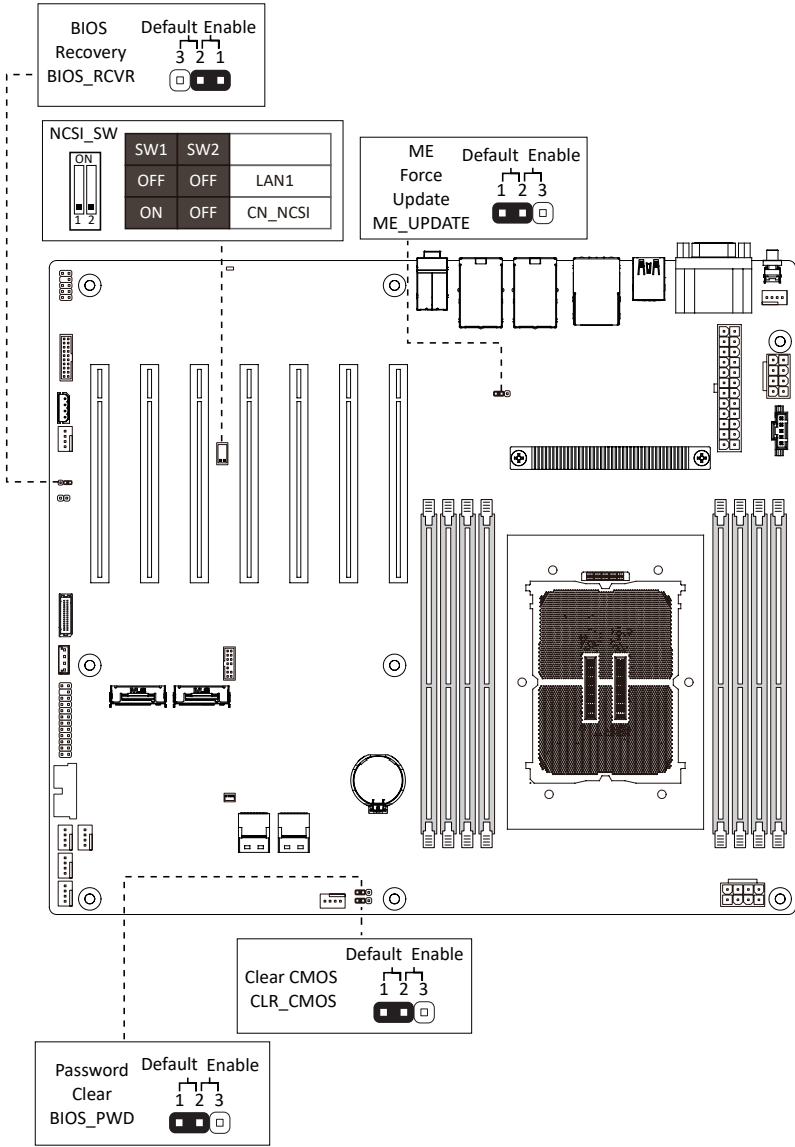
Chapter 4 Motherboard Components

4-1 Motherboard Components



Item	Description
1	LED_BMC
2	AUDIO
3	LAN1
4	LAN2
5	USB3_MLAN
6	USB32A/USB32C
7	COM1_VGA
8	SW_ID
9	CPU0_FAN
10	ATX1
11	P12V_AUX2
12	PMBUS
13	P12V_AUX1
14	BAT
15	SYS_FAN5
16	SL_SATA2
17	SL_SATA1
18	SYS_FAN2
19	SYS_FAN1
20	SYS_FAN3
21	SYS_FAN4
22	F_USB3
23	FP_1
24	M2_0
25	M2_1
26	SPI_TPM
27	SW_RAID
28	BP_1
29	CASE_OPEN
30	SYS_FAN6
31	IPMB
32	CN_NCSI
33	F_AUDIO1
34	PCIE_1
35	PCIE_2
36	PCIE_3
37	PCIE_4
38	PCIE_5
39	PCIE_6
40	PCIE_7

4-2 Jumper Setting



Chapter 5 BIOS Setup

BIOS (Basic Input and Output System) records hardware parameters of the system in the EFI on the motherboard. Its major functions include conducting the Power-On Self-Test (POST) during system startup, saving system parameters, loading the operating system etc. The BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

To access the BIOS Setup program, press the key during the POST when the power is turned on.



- BIOS flashing is potentially risky, if you do not encounter any problems when using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system instability or other unexpected results. Inadequately altering the settings may result in system's failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values. (Refer to the **Exit** section in this chapter or introductions of the battery/clearing CMOS jumper in Chapter 1 for how to clear the CMOS values.)

BIOS Setup Program Function Keys

<<-><->>	Move the selection bar to select the screen
<↑><↓>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<Enter>	Execute command or enter the submenu
<Esc>	Main Menu: Exit the BIOS Setup program Submenus: Exit current submenu
<F1>	Show descriptions of general help
<F3>	Restore the previous BIOS settings for the current submenus
<F9>	Load the Optimized BIOS default settings for the current submenus
<F10>	Save all the changes and exit the BIOS Setup program

■ **Main**

This setup page includes all the items of the standard compatible BIOS.

■ **Advanced**

This setup page includes all the items of AMI BIOS special enhanced features.

(ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)

■ **Chipset**

This setup page includes all the submenu options for configuring the functions of the Platform Controller Hub.

■ **Server Management**

Server additional features enabled/disabled setup menus.

■ **Security**

Change, set, or disable supervisor and user password. Configuration supervisor password allows you to restrict access to the system and BIOS Setup.

A supervisor password allows you to make changes in BIOS Setup.

A user password only allows you to view the BIOS settings but not to make changes.

■ **Boot**

This setup page provides items for configuration of the boot sequence.

■ **Save & Exit**

Save all the changes made in the BIOS Setup program to the CMOS and exit BIOS Setup. (Pressing <F10> can also carry out this task.)

Abandon all changes and the previous settings remain in effect. Pressing <Y> to the confirmation message will exit BIOS Setup. (Pressing <Esc> can also carry out this task.)

5-1 The Main Menu

Once you enter the BIOS Setup program, the Main Menu (as shown below) appears on the screen. Use arrow keys to move among the items and press <Enter> to accept or enter other sub-menu.

Main Menu Help

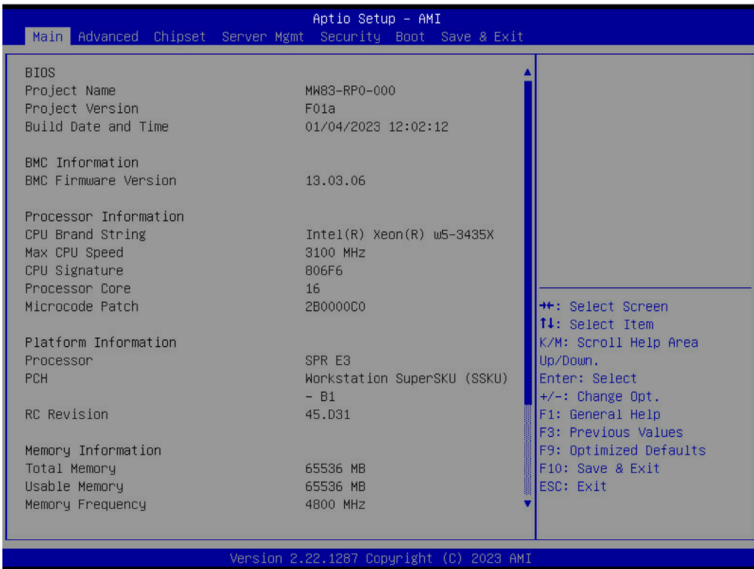
The on-screen description of a highlighted setup option is displayed on the bottom line of the Main Menu.

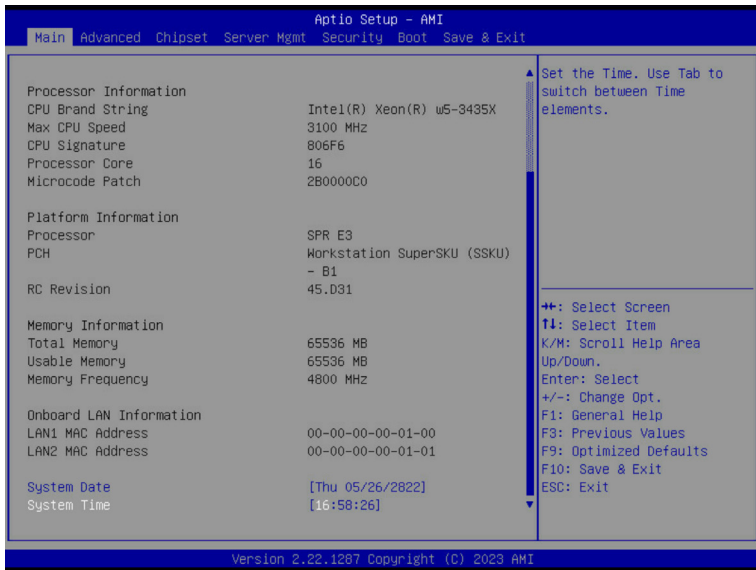
Submenu Help

While in a submenu, press <F1> to display a help screen (General Help) of function keys available for the menu. Press <Esc> to exit the help screen. Help for each item is in the Item Help block on the right side of the submenu.



- When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.
- The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.





Parameter	Description
BIOS Information	
Project Name	Displays the project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information^(Note1)	
BMC Firmware Version ^(Note1)	Displays BMC firmware version information.
Processor Information	
CPU Brand String / Max CPU Speed / CPU Signature / Processor Core / Microcode Patch	Displays the technical information for the installed processor(s).
Platform Information	
Processor/ PCH/ RC Revision	Displays the information of the installed processor(s) and PCH.
Memory Information^(Note2)	
Total Memory	Displays the total memory size of the installed memory.
Usable Memory	Displays the usable memory size of the installed memory.

(Note1) Functions available on selected models.

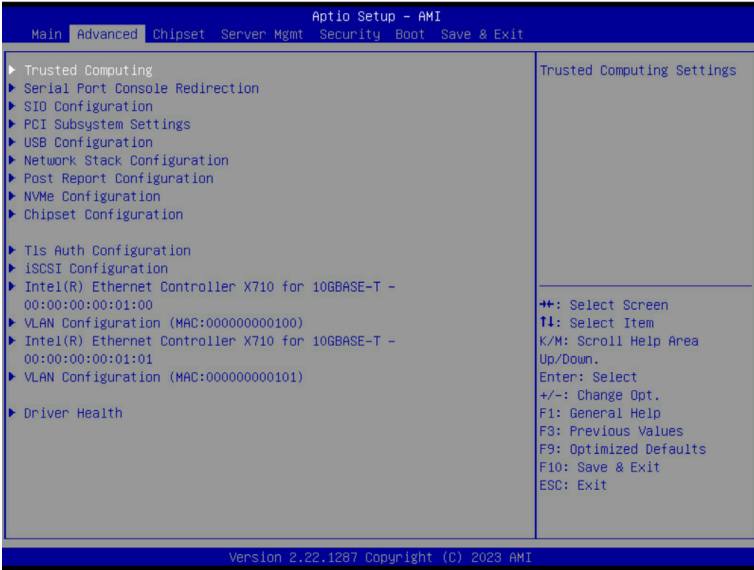
(Note2) This section will display capacity and frequency information of the memory that the customer has installed.

Parameter	Description
Memory Frequency	Displays the frequency information of the installed memory.
Onboard LAN Information ^(Note3)	
LAN# MAC Address	Displays LAN MAC address information.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

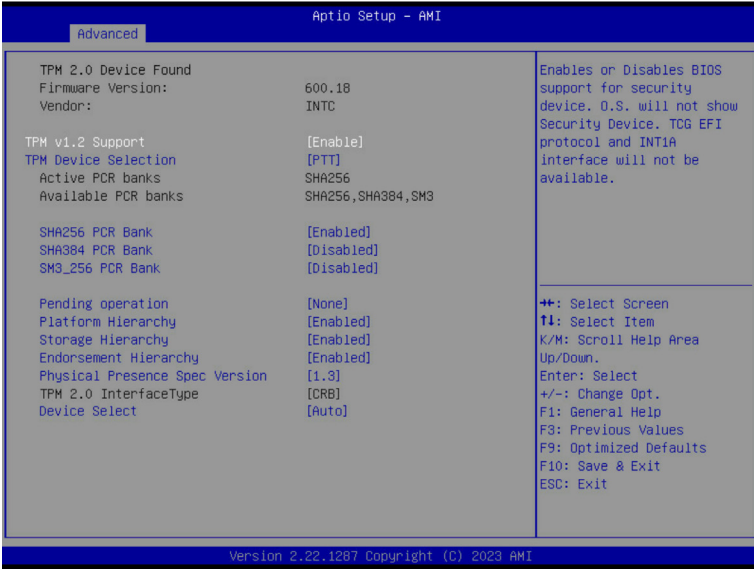
(Note3) The number of LAN ports listed will depend on the motherboard / system model.

5-2 Advanced Menu

The Advanced Menu displays submenu options for configuring the function of various hardware components. Select a submenu item, then press <Enter> to access the related submenu screen.



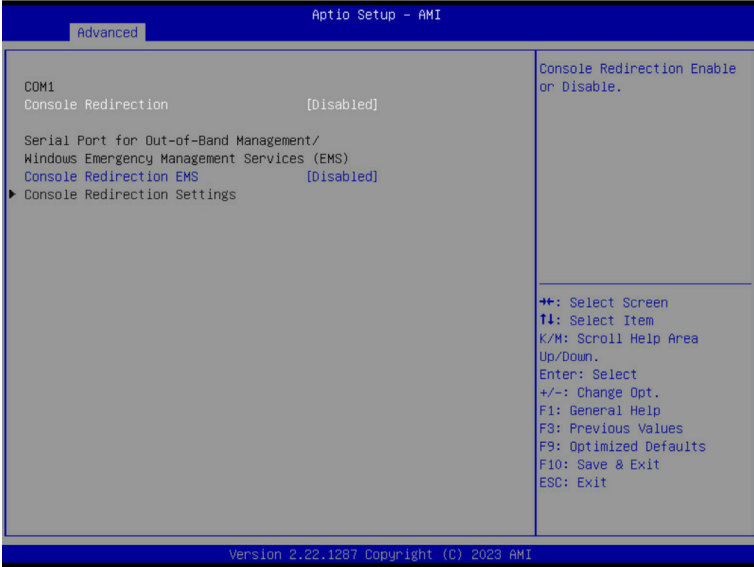
5-2-1 Trusted Computing



Parameter	Description
TPM 2.0 Device Found	
Firmware Version/ Vendor	Displays the firmware version and Vendor information.
TPM v1.2 Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Disable, Enable. Default setting is Enable .
TPM Device Selection	Selects TPM device. Options available: dTPM, PTT. Default setting is PTT .
Active PCR banks/ Available PCR banks	Displays active/available Platform Configuration Register (PCR) banks.
SHA256 PCR Bank	Enable/Disable SHA256 PCR bank. Options available: Disabled, Enabled. Default setting is Enabled .
SHA384 PCR Bank	Enable/Disable SHA384 PCR bank. Options available: Disabled, Enabled. Default setting is Disabled .
SM3_256 PCR Bank	Enable/Disable SM3_256 PCR bank. Options available: Disabled, Enabled. Default setting is Disabled .

Parameter	Description
Pending operation	Schedule an operation for the security device. NOTE: Your computer will reboot during restart in order to change the state of a security device. Options available: None, TPM Clear. Default setting is None .
Platform Hierarchy	Enable/Disable platform hierarchy. Options available: Disabled, Enabled. Default setting is Enabled .
Storage Hierarchy	Enable/Disable storage hierarchy. Options available: Disabled, Enabled. Default setting is Enabled .
Endorsement Hierarchy	Enable/Disable endorsement hierarchy. Options available: Disabled, Enabled. Default setting is Enabled .
Physical Presence Spec Version	Selects the physical presence spec version. Options available: 1.2, 1.3. Default setting is 1.3 .
TPM 20 InterfaceType	Displays the TPM 2.0 interface type.
Device Select	Selects the TPM device. Options available: TPM 1.2, TPM 2.0, Auto. Default setting is Auto .

5-2-2 Serial Port Console Redirection



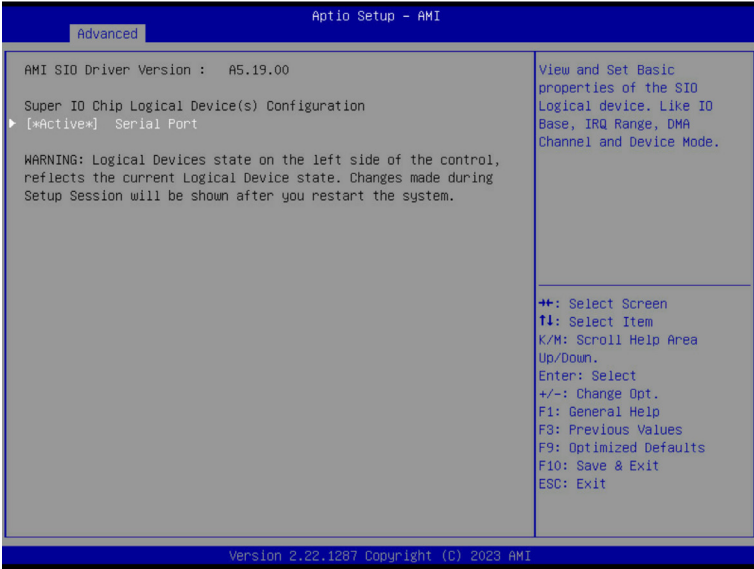
Parameter	Description
COM1 Console Redirection ^(Note)	<p>Console redirection enables the users to manage the system from a remote location.</p> <p>Options available: Enabled, Disabled. Default setting is Disabled.</p>
COM1 Console Redirection Settings	<p>Press [Enter] to configure advanced items.</p> <p>Please note that this item is configurable when COM1 Console Redirection is set to Enabled.</p> <ul style="list-style-type: none"> ◆ Terminal Type <ul style="list-style-type: none"> – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is VT100PLUS. ◆ Bits per second <ul style="list-style-type: none"> – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200. ◆ Data Bits <ul style="list-style-type: none"> – Selects the number of data bits used for console redirection. – Options available: 7, 8. Default setting is 8.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
COM1 Console Redirection Settings (continued)	<ul style="list-style-type: none"> ◆ Parity <ul style="list-style-type: none"> – A parity bit can be sent with the data bits to detect some transmission errors. – Even: parity bit is 0 if the num of 1's in the data bits is even. – Odd: parity bit is 0 if num of 1's in the data bits is odd. – Mark: parity bit is always 1. Space: Parity bit is always 0. – Mark and Space Parity do not allow for error detection. – Options available: None, Even, Odd, Mark, Space. Default setting is None. ◆ Stop Bits <ul style="list-style-type: none"> – Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit. – Options available: 1, 2. Default setting is 1. ◆ Flow Control <ul style="list-style-type: none"> – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. – Options available: None, Hardware RTS/CTS. Default setting is None. ◆ VT-UTF8 Combo Key Support <ul style="list-style-type: none"> – Enable/Disable the VT-UTF8 Combo Key Support. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Recorder Mode <ul style="list-style-type: none"> – When this mode enabled, only texts will be send. This is to capture Terminal data. – Options available: Enabled, Disabled. Default setting is Disabled. ◆ Resolution 100x31 <ul style="list-style-type: none"> – Enable/Disable extended terminal resolution. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Putty Keypad <ul style="list-style-type: none"> – Selects Function Key and Keypad on Putty. – Options available: VT100, LINUX, XTERMR6, SC0, ESCN, VT400. Default setting is VT100.

Parameter	Description
Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS) Console Redirection ^(Note)	<p>EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management.</p> <p>Options available: Enabled, Disabled. Default setting is Disabled.</p>
Serial Port for Out-of-Band EMS Console Redirection Settings	<p>Press [Enter] to configure advanced items.</p> <p>Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled.</p> <ul style="list-style-type: none"> ◆ Out-of-Band Mgmt Port <ul style="list-style-type: none"> – Microsoft Windows Emergency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port. – Default setting is COM1. ◆ Terminal Type EMS <ul style="list-style-type: none"> – Selects a terminal type to be used for console redirection. – Options available: VT100, VT100PLUS, VT-UTF8, ANSI. Default setting is VT100PLUS. ◆ Bits per second EMS <ul style="list-style-type: none"> – Selects the transfer rate for console redirection. – Options available: 9600, 19200, 57600, 115200. Default setting is 115200. ◆ Flow Control EMS <ul style="list-style-type: none"> – Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals. – Options available: None, Hardware RTS/CTS, Software Xon/Xoff. Default setting is None.

5-2-3 SIO Configuration



Parameter	Description
AMI SIO Driver Version	Displays the AMI SIO driver version information.
Super IO Chip Logical Device(s) Configuration	Press [Enter] to configure advanced items.
[*Active*] Serial Port	<ul style="list-style-type: none"> ◆ Use This Device <ul style="list-style-type: none"> – When set to Enabled allows you to configure the serial port settings. When set to Disabled, displays no configuration for the serial port. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Logical Device Settings/Current: <ul style="list-style-type: none"> – Displays the serial port base I/O address and IRQ. ◆ Possible: <ul style="list-style-type: none"> – Configures the serial port base I/O address and IRQ. <ul style="list-style-type: none"> Use Automatic Settings IO=3F8h; IRQ=4; DMA; IO=3F8h; IRQ=4; DMA; IO=2F8h; IRQ=4; DMA; IO=3E8h; IRQ=4; DMA; IO=2E8h; IRQ=4; DMA; Default setting is Use Automatic Settings.

5-2-4 PCI Subsystem Settings

Aptio Setup - AMI

Advanced

PCI Bus Driver Version	A5.01.29	▲ Enable/Disable PCIe_1 I/O ROM ▼ ⇄: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
PCIE_1 I/O ROM	[Enabled]	
PCIE_1 Lanes	[Auto]	
PCIE_1 Max Link Speed	[Auto]	
PCIE_2 I/O ROM	[Enabled]	
PCIE_2 Lanes	[Auto]	
PCIE_2 Max Link Speed	[Auto]	
PCIE_3 I/O ROM	[Enabled]	
PCIE_3 Lanes	[Auto]	
PCIE_3 Max Link Speed	[Auto]	
PCIE_4 I/O ROM	[Enabled]	
PCIE_4 Lanes	[Auto]	
PCIE_4 Max Link Speed	[Auto]	
PCIE_5 I/O ROM	[Enabled]	
PCIE_5 Lanes	[Auto]	
PCIE_5 Max Link Speed	[Auto]	
PCIE_6 I/O ROM	[Enabled]	
PCIE_6 Lanes	[Auto]	
PCIE_6 Max Link Speed	[Auto]	

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Aptio Setup - AMI

Advanced

PCIE_4 Max Link Speed	[Auto]	▲ If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root ID Virtualization Support. ▼ ⇄: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
PCIE_5 I/O ROM	[Enabled]	
PCIE_5 Lanes	[Auto]	
PCIE_5 Max Link Speed	[Auto]	
PCIE_6 I/O ROM	[Enabled]	
PCIE_6 Lanes	[Auto]	
PCIE_6 Max Link Speed	[Auto]	
PCIE_7 I/O ROM	[Enabled]	
PCIE_7 Lanes	[Auto]	
PCIE_7 Max Link Speed	[Auto]	
Onboard LAN1 & LAN2 Controller	[Enabled]	
Onboard LAN1 I/O ROM	[Enabled]	
Onboard LAN2 I/O ROM	[Enabled]	
PCI Devices Common Settings:		
Above 4G Decoding	[Enabled]	
SR-IOV Support	[Enabled]	

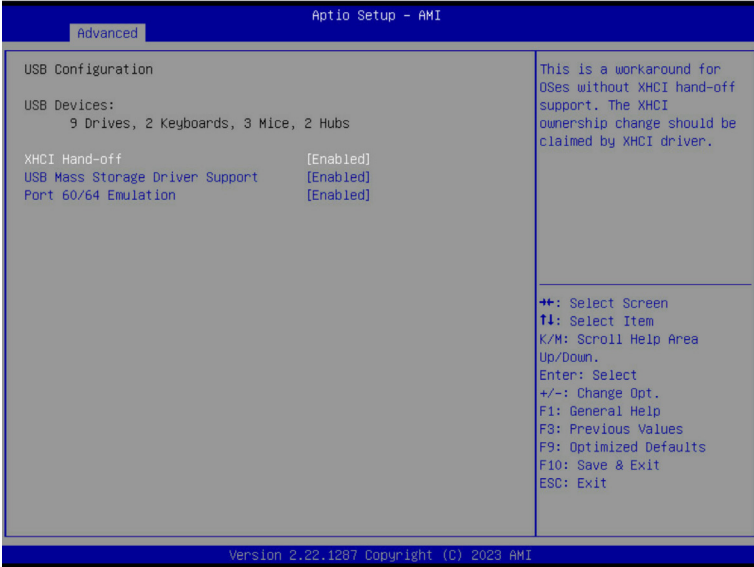
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Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
PCIE_# I/O ROM ^(Note1)	When enabled, this setting will initialize the device expansion ROM for the related PCI-E slot. Options available: Enabled, Disabled. Default setting is Enabled .
PCIE_# Lanes ^(Note1)	Change the PCIe lanes. Default setting is Auto .
PCIE_#_Max Link Speed ^(Note1)	Configure PCIe max link speed. Options available: Auto, Gen1, Gen2, Gen3, Gen4, Gen5. Default setting is Auto .
Onboard LAN1 & LAN2 Controller ^(Note3)	Enable/Disable the onboard LAN devices. Options available: Enabled, Disabled. Default setting is Enabled .
Onboard LAN1/ LAN2 I/O ROM ^(Note2)	Enable/Disable the onboard LAN devices, and initializes device expansion ROM. Options available: Enabled, Disabled. Default setting is Enabled .
PCI Devices Common Settings	
Above 4G Decoding	Enable/Disable memory mapped I/O to 4GB or greater address space (Above 4G Decoding). Options available: Enabled, Disabled. Default setting is Enabled .
SR-IOV Support	If the system has SR-IOV capable PCIe devices, this item Enable/Disable Single Root IO Virtualization Support. Options available: Enabled, Disabled. Default setting is Enabled .

(Note1) This section is dependent on the available PCIe Slot.

(Note2) This section is dependent on the available LAN controller.

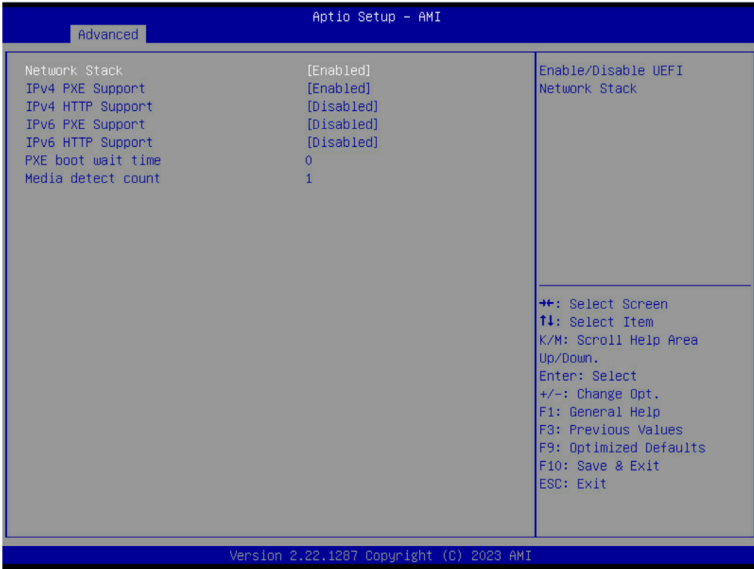
5-2-5 USB Configuration



Parameter	Description
USB Configuration	
USB Devices:	Displays the USB devices connected to the system.
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support. Options available: Enabled, Disabled. Default setting is Enabled .
USB Mass Storage Driver Support ^(Note)	Enable/Disable the USB Mass Storage Driver Support. Options available: Enabled, Disabled. Default setting is Enabled .
Port 60/64 Emulation	Enables the I/O port 60h/64h emulation support. This should be enabled for the complete USB Keyboard Legacy support for non-USB aware OSes. Options available: Enabled, Disabled. Default setting is Enabled .

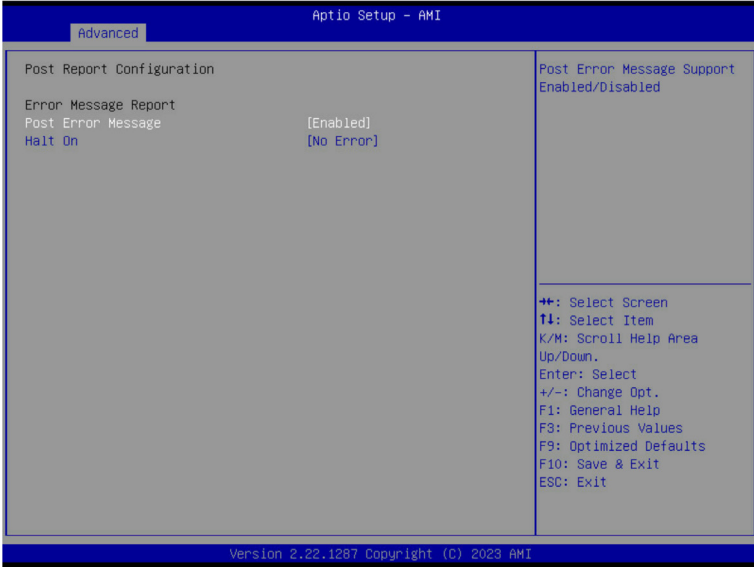
(Note) This item is present only if you attach USB devices.

5-2-6 Network Stack Configuration



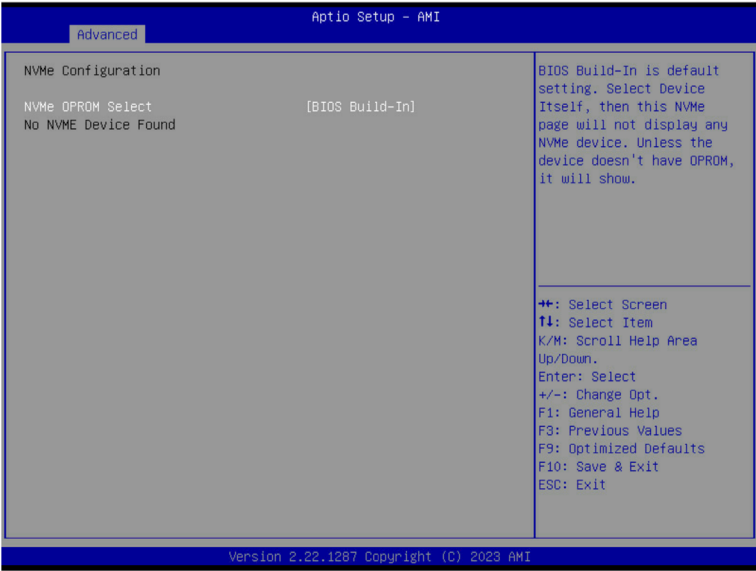
Parameter	Description
Network Stack	Enable/Disable the UEFI network stack. Options available: Enabled, Disabled. Default setting is Enabled .
Ipv4 PXE Support	Enable/Disable the Ipv4 PXE feature. Options available: Enabled, Disabled. Default setting is Enabled .
Ipv4 HTTP Support	Enable/Disable the Ipv4 HTTP feature. Options available: Enabled, Disabled. Default setting is Disabled .
Ipv6 PXE Support	Enable/Disable the Ipv6 PXE feature. Options available: Enabled, Disabled. Default setting is Disabled .
Ipv6 HTTP Support	Enable/Disable the Ipv6 HTTP feature. Options available: Enabled, Disabled. Default setting is Disabled .
PXE boot wait time	Wait time in seconds to press ESC key to abort the PXE boot. Press the <+> / <-> keys to increase or decrease the desired values.
Media detect count	Number of times the presence of media will be checked. Press the <+> / <-> keys to increase or decrease the desired values.

5-2-7 Post Report Configuration



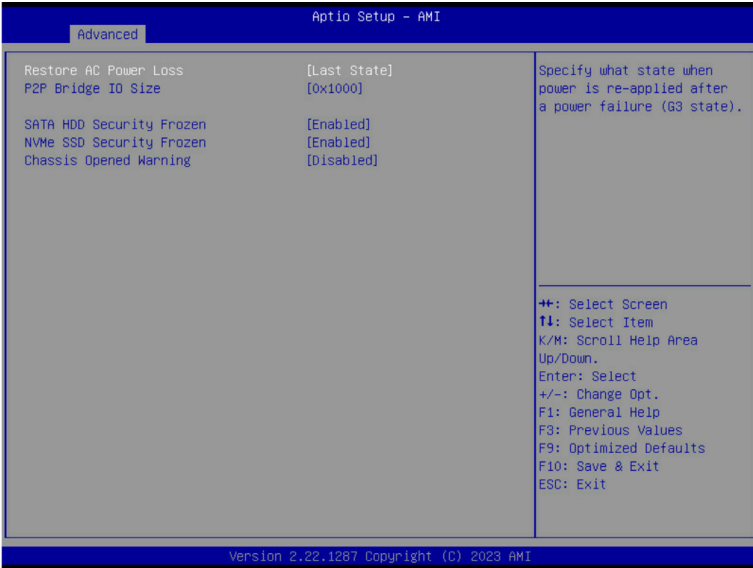
Parameter	Description
Post Report Configuration	
Error Message Report	
Post Error Message	Enable/Disable the POST Error Message support. Options available: Enabled, Disabled. Default setting is Enabled .
Halt On	Options available: No Error, All Error. Default setting is No Error .

5-2-8 NVMe Configuration



Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.
NVMe OPROM Select	Options available: BIOS Build-In, NVMe Device. Default setting is BIOS Build-In .

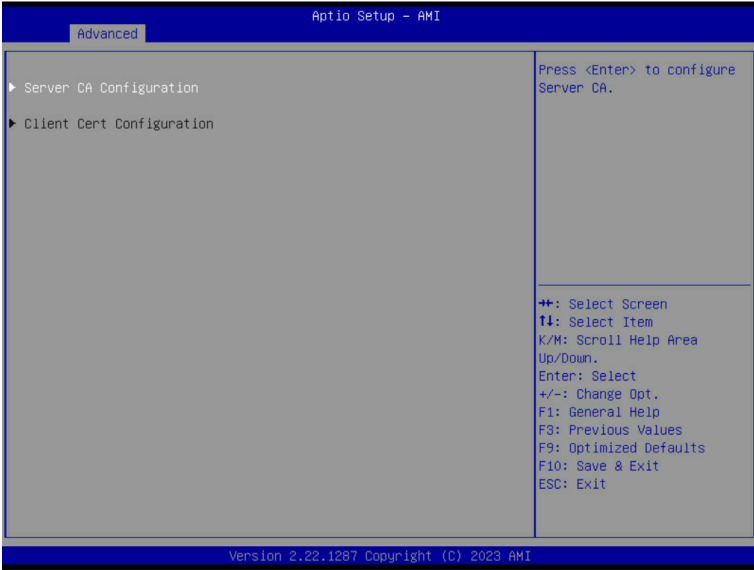
5-2-9 Chipset Configuration



Parameter	Description
Restore on AC Power Loss ^(Note)	Defines the power state to resume to after a system shutdown that is due to an interruption in AC power. When set to Last State, the system will return to the active power state prior to shutdown. When set to Power Off, the system remains off after power shutdown. Options available: Last State, Power Off, Power On, Unspecified. The default setting depends on the BMC setting.
P2P Bridge IO Size	Specifies P2P Bridge IO aligned to the size. Options available: 0x100, 0x150, 0x1000. Default setting is 0x1000 .
SATA HDD Security Frozen	Enable/Disable this item to send freeze lock command to SATA HDD. Options available: Enabled, Disabled. Default setting is Enabled .
NVMe SSD Security Frozen	Attempt to send freeze lock command to NVMe SSDs during boot. Options available: Enabled, Disabled. Default setting is Enabled .
Chassis Opened Warning	Enable/Disable the chassis intrusion alert function. Options available: Enabled, Disabled, Clear. Default setting is Disabled .

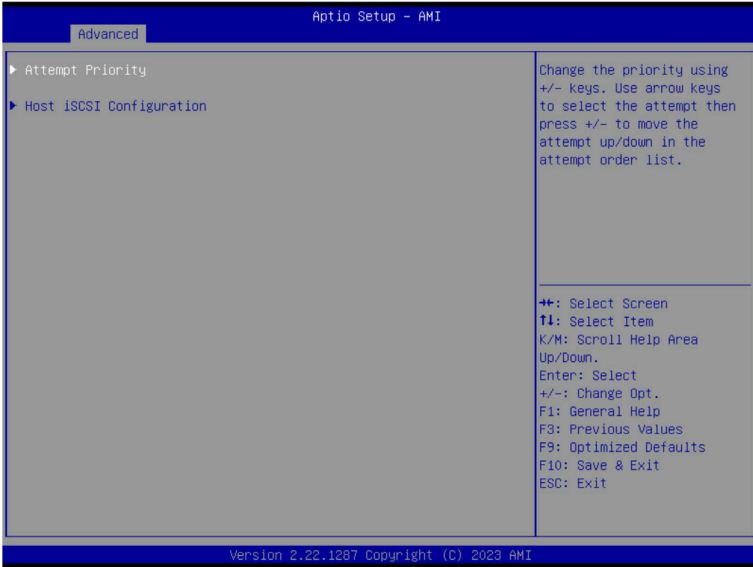
(Note) When the power policy is controlled by BMC, please wait for 15-20 seconds for BMC to save the last power state.

5-2-10 Tls Auth Configuration



Parameter	Description
Server CA Configuration	<p>Press [Enter] for configuration of advanced items.</p> <ul style="list-style-type: none"> ◆ Enroll Cert <ul style="list-style-type: none"> – Press [Enter] to enroll a certificate <ul style="list-style-type: none"> • Enroll Cert Using File • Cert GUID Input digit character in 1111111-2222-3333-4444-1234567890ab format. – Commit Changes and Exit – Discard Changes and Exit ◆ Delete Cert
Client Cert Configuration	Press [Enter] for configuration of advanced items.

5-2-11 iSCSI Configuration



Parameter	Description
Attempt Priority	<p>Press [Enter] configure advanced items.</p> <ul style="list-style-type: none"> ◆ Attempt Priority <ul style="list-style-type: none"> – Use arrow keys to select the attempt, then press +/- keys to move the attempt up/down in the attempt order list. ◆ Commit Changes and Exit
Host iSCSI Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ iSCSI Initiator Name <ul style="list-style-type: none"> – Only IQN format is accepted. Range: from 4 to 223 ◆ Add an Attempt ◆ Delete Attempts ◆ Change Attempt Order

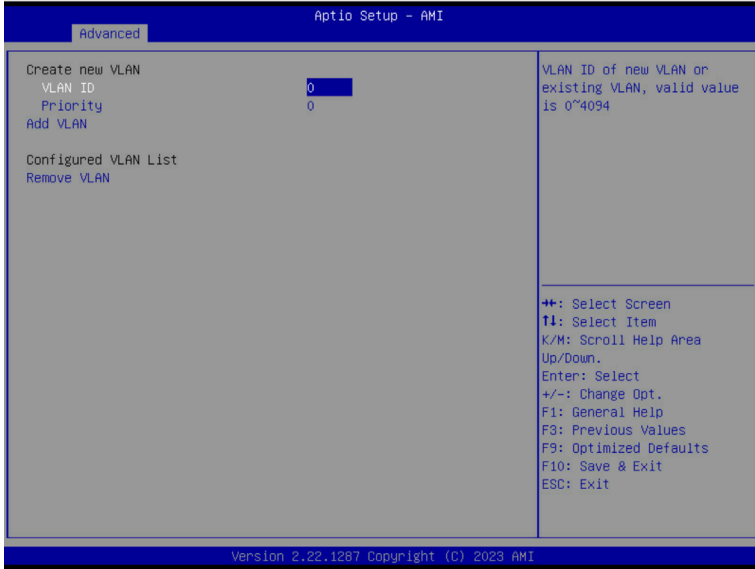
5-2-12 Intel(R) Ethernet Controller X710 for 10GBASE-T

Aptio Setup - AMI	
Advanced	
<p>▶ NIC Configuration</p> <p>Blink LEDs 0</p> <p>UEFI Driver Intel(R) 40GbE 3.5.23 Adapter PBA H64862-000 Device Name Intel(R) Ethernet Controller X710 for 10GBASE-T</p> <p>Chip Type Intel X710 PCI Device ID 15FF PCI Address 01:00:00</p> <p>Link Status [Connected]</p> <p>MAC Address 00:00:00:00:01:00 Virtual MAC Address 00:00:00:00:00:00</p>	
<p>Click to configure the network device port.</p>	
<p>++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</p>	
Version 2.22.1287 Copyright (C) 2023 AMI	

Aptio Setup - AMI	
Advanced	
<p>Link Speed [Auto Negotiated]</p> <p>Wake On LAN [Enabled]</p> <p>LLDP Agent [Enabled]</p>	
<p>Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states.</p>	
<p>++: Select Screen T1: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F8: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</p>	
Version 2.22.1287 Copyright (C) 2023 AMI	

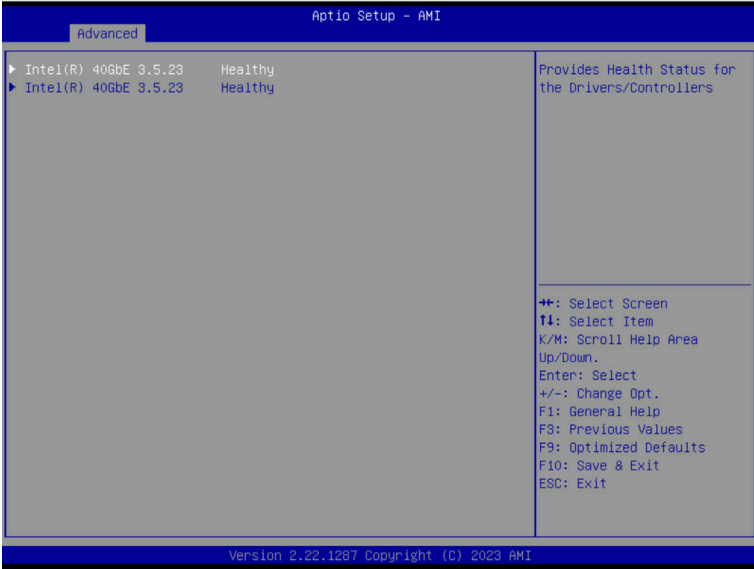
Parameter	Description
NIC Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Link Speed <ul style="list-style-type: none"> – Default setting is Auto Negotiated. ◆ Wake On LAN <ul style="list-style-type: none"> – Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ LLDP Agent <ul style="list-style-type: none"> – Enable/Disable firmware's LLDP Agent. – Options available: Enabled, Disabled. Default setting is Enabled
Blink LEDs	<p>Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values (up to 15 seconds).</p>
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

5-2-13 VLAN Configuration



Parameter	Description
Enter Configuration Menu	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Create new VLAN ◆ VLAN ID <ul style="list-style-type: none"> – Sets VLAN ID for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 4094. ◆ Priority <ul style="list-style-type: none"> – Sets 802.1Q Priority for a new VLAN or an existing VLAN. – Press the <+> / <-> keys to increase or decrease the desired values. – The valid range is from 0 to 7. ◆ Add VLAN <ul style="list-style-type: none"> – Press [Enter] to create a new VLAN or update an existing VLAN. ◆ Configured VLAN List ◆ Remove VLAN <ul style="list-style-type: none"> – Press [Enter] to remove an existing VLAN.

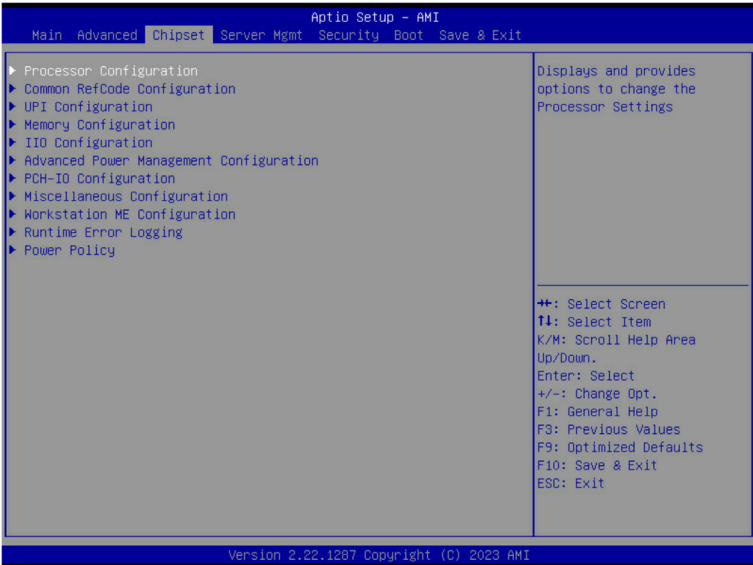
5-2-14 Driver Health



Parameter	Description
Driver Health	Displays driver health status of the devices/controllers if installed.

5-3 Chipset Menu

Chipset Setup menu displays submenu options for configuring the function of Platform Controller Hub(PCH). Select a submenu item, then press <Enter> to access the related submenu screen.



5-3-1 Processor Configuration

Chipset Aptio Setup - AMI

Processor Configuration		Change Per-Socket Settings

▶ Per-Socket Configuration		
Processor Socket	Socket 0	++: Select Screen ↑↓: Select Item K/M: Scroll Help Area Up/Down. Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Processor ID	000806F6*	
Processor Die Type	XCC	
Processor Frequency	3.100GHz	
Processor Max Ratio	1FH	
Processor Min Ratio	06H	
Microcode Revision	2B0000C0	
L1 Cache RAM(Per Core)	80KB	
L2 Cache RAM(Per Core)	2048KB	
L3 Cache RAM(Per Package)	46080KB	
Processor 0 Version	Intel(R) Xeon(R) w5-343 5X	
Enable LP [Global]	[ALL LPs]	
Hardware Prefetcher	[Enable]	
L2 RFO Prefetch Disable	[Disable]	
Adjacent Cache Prefetch	[Enable]	
DCU Streamer Prefetcher	[Enable]	
DCU IP Prefetcher	[Enable]	
Extended APIC	[Enable]	
Enable Intel(R) TXT	[Disable]	
VMX	[Enable]	

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Chipset Aptio Setup - AMI

L3 Cache RAM(Per Package)	46080KB	Displays and provides option to change the Processor CFR Settings
Processor 0 Version	Intel(R) Xeon(R) w5-343 5X	
Enable LP [Global]	[ALL LPs]	
Hardware Prefetcher	[Enable]	
L2 RFO Prefetch Disable	[Disable]	
Adjacent Cache Prefetch	[Enable]	
DCU Streamer Prefetcher	[Enable]	
DCU IP Prefetcher	[Enable]	
Extended APIC	[Enable]	
Enable Intel(R) TXT	[Disable]	
VMX	[Enable]	
Enable SMX	[Disable]	
AES-NI	[Enable]	

TME, TME-MT, TDX		
Memory Encryption (TME)	[Disabled]	
SGX hardware configuration preconditions for enabling were NOT met. SGX is NOT supported by the hardware.		
SGX setup configuration preconditions for enabling were NOT met. Please check TME, MirrorMode or Extended APIC settings.		

▶ Processor CFR Configuration		

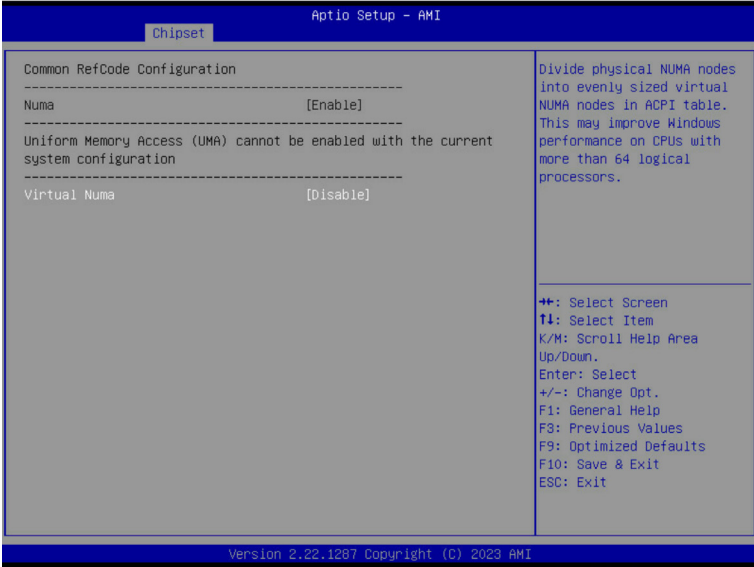
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Parameter	Description
Processor Configuration	
Pre-Socket Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ CPU Socket 0 Configuration <ul style="list-style-type: none"> – Core Disable Bitmap(Hex) <ul style="list-style-type: none"> • Number of Cores to enable. 0 means all cores. FFFFFFFF means to disable all cores. The maximum value depends on the number of CPUs available. Press the numeric keys to adjust desired values.
Processor Socket / Processor ID / Processor Die Type / Processor Frequency / Processor Max Ratio / Processor Min Ratio / Microcode Revision / L1 Cache RAM(Per Core) / L2 Cache RAM(Per Core) / L3 Cache RAM(Per Package) / Processor # Version	Displays the technical specifications for the installed processor(s).
Enable LP [Global]	<p>Enables Logical processor (Software Method to Enable/Disable Logical Processor threads).</p> <p>Options available: ALL LPs, Single LP. Default setting is ALL LPs.</p>
Hardware Prefetcher	<p>Select whether to enable the speculative prefetch unit of the processor.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
L2 RF0 Prefetch Disable	Options available: Enable, Disable. Default setting is Disable .
Adjacent Cache Prefetch	<p>When enabled, cache lines are fetched in pairs. When disabled, only the required cache line is fetched.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
DCU Streamer Prefetcher	<p>Enable/Disable DCU streamer prefetcher.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
DCU IP Prefetcher	<p>Enable/Disable DCU IP Prefetcher.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Extended APIC	<p>Enable/Disable extended APIC support. Note: The VT-d will be enabled automatically when x2APIC is enabled.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Enable Intel(R) TXT	<p>Enable/Disable the Intel Trusted Execution Technology support function.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>
VMX	<p>Enable/Disable the Vanderpool Technology. This will take effect after rebooting the system.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>
Enable SMX	<p>Enable/Disable the Safer Mode Extensions (SMX) support function.</p> <p>Options available: Enable, Disable. Default setting is Disable.</p>
AES-NI	<p>Enable/Disable the AES-NI support.</p> <p>Options available: Enable, Disable. Default setting is Enable.</p>

Parameter	Description
Memory Encryption (TME) ^(Note)	Enable/Disable memory encryption (TME). Options available: Enabled, Disabled. Default setting is Disabled .
Total Memory Encryption Multi-Tenant (TME-MT)	Options available: Enabled, Disabled. Default setting is Disabled .
Processor CFR Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Provision S3M CFR <ul style="list-style-type: none"> – Options available: Disable, Enable. Default setting is Enable. ◆ Manual Commit S3M FW CFR <ul style="list-style-type: none"> – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ Provision PUcode CFR <ul style="list-style-type: none"> – Options available: Disable, Enable. Default setting is Enable. ◆ Manual Commit PUcode CFR <ul style="list-style-type: none"> – Options available: Enable, Disable, Auto. Default setting is Auto. ◆ Socket0 CFR Revision Info <ul style="list-style-type: none"> – Displays CFR Revision information of the socket.

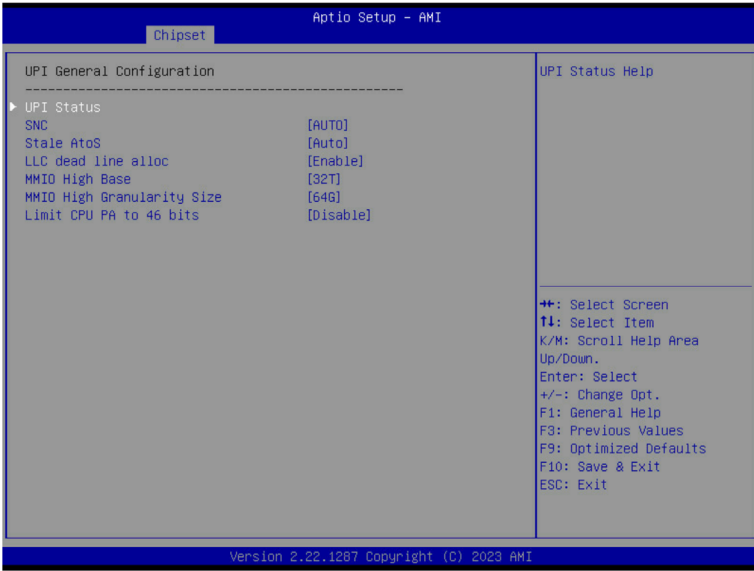
(Note) Advanced items prompt when this item is defined.

5-3-2 Common RefCode Configuration



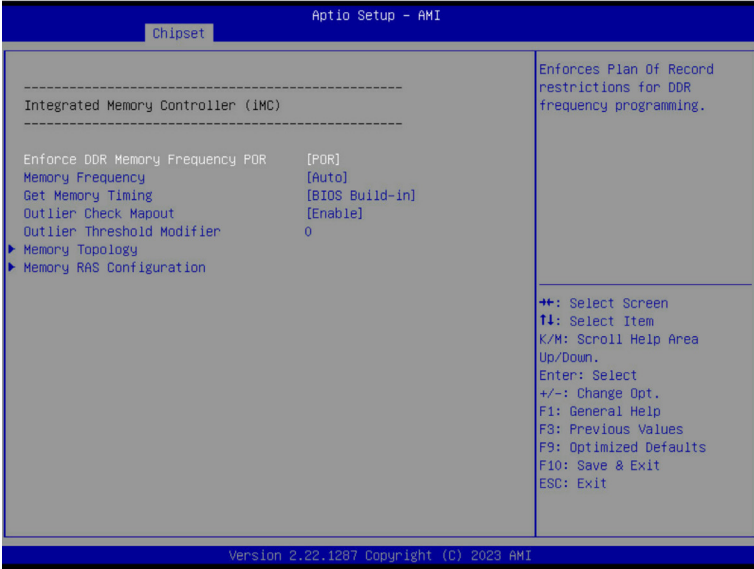
Parameter	Description
Common RefCode Configuration	
Numa	Default setting is Enable .
Virtual Numa	Divide physical NUMA nodes into evenly sized virtual NUMA nodes in ACPI table. This may improve Windows performance on CPUs with more than 64 logical processors. Options available: Enable, Disable. Default setting is Disable .

5-3-3 UPI Configuration



Parameter	Description
UPI General Configuration	Press [Enter] to configure advanced items.
	<ul style="list-style-type: none"> ◆ UPI Status <ul style="list-style-type: none"> – Press [Enter] to view the Uncore status. ◆ SNC <ul style="list-style-type: none"> – Enable/Disable Sub NUMA Cluster function. – Options available: Auto, Disable, Enable SNC2 (2-clusters), Enable SNC4 (4-clusters). Default setting is Auto. ◆ Stale AtoS <ul style="list-style-type: none"> – Enable/Disable Stale A to S directory optimization. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ LLC dead line alloc <ul style="list-style-type: none"> – Enable/Disable fill dead lines in LLC. – Options available: Disable, Enable, Auto. Default setting is Enable. ◆ MMIO High Base <ul style="list-style-type: none"> – Options available: 56T, 40T, 32T, 24T, 16T, 4T, 2T, 1T, 512G, 3584T. Default setting is 32T. ◆ MMIO High Granularity Size <ul style="list-style-type: none"> – Selects the allocation size used to assign mmioh resources. – Options available: 1G, 4G, 16G, 64G, 256G, 1024G. Default setting is 64G. ◆ Limit CPU PA to 46 bits <ul style="list-style-type: none"> – Options available: Disable, Enable. Default setting is Disable.

5-3-4 Memory Configuration



Parameter	Description
Integrated Memory Controller (iMC)	
Enforce DDR Memory Frequency POR	When set to Enable, the system enforces Plan Of Record restrictions for DDR frequency programming. Options available: POR, Disable. Default setting is POR .
Memory Frequency	Configures the maximum memory frequency. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support). Default setting is Auto .
Get Memory Timing	Auto is the detected SPD value and use it, otherwise use BIOS Build-in. Options available: Auto, BIOS Build-in. Default setting is BIOS Build-in .
Outlier Check Mapout	Enable/Disable Vendor Specific DIMM Outlier check and mapout. Options available: Enable, Disable. Default setting is Enable .
Outlier Threshold Modifier	Specifies how much to modify the base outlier threshold. Default setting is 0 .
Memory Topology	Press [Enter] to view memory topology with DIMM population information.

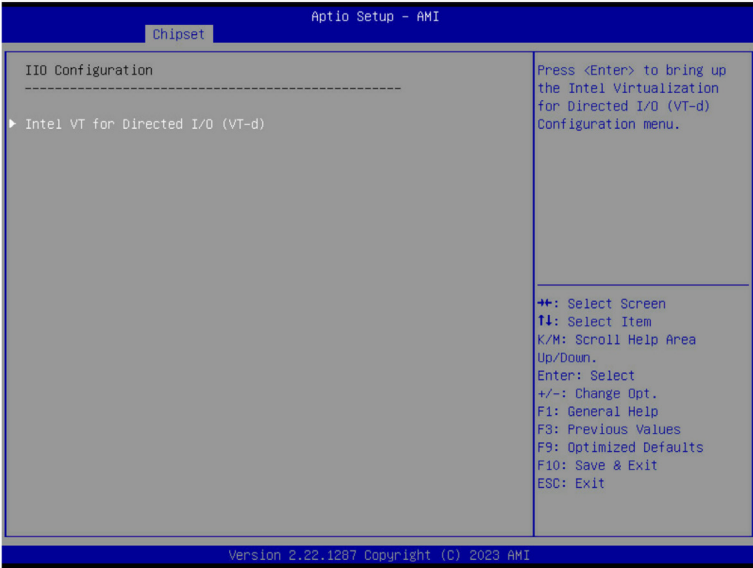
Parameter	Description
Memory RAS Configuration	<p data-bbox="391 142 724 166">Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> <li data-bbox="391 169 953 341">◆ Mirror Mode^(Note) <ul style="list-style-type: none"> <li data-bbox="426 200 953 279">– Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half. Enables the Mirror Mode will disable the XPT Prefetch. <li data-bbox="426 286 953 341">– Options available: Disabled, Full Mirror Mode, Partial Mirror Mode. Default setting is Disabled. <li data-bbox="391 349 953 396">◆ Partial Mirror 1 Size (GB) <ul style="list-style-type: none"> <li data-bbox="426 381 953 396">– Selects multiplier of 1GB for the size of the SAD to be created. <li data-bbox="391 404 953 482">◆ Memory Correctable Error Flood Policy <ul style="list-style-type: none"> <li data-bbox="426 435 953 482">– Options available: Disable, Once, Frequency. Default setting is Frequency. <li data-bbox="391 490 953 631">◆ Correctable Error Threshold <ul style="list-style-type: none"> <li data-bbox="426 522 953 569">– Correctable Error Threshold (0x01-0x7fff) used for sparing, and leaky bucket. <li data-bbox="426 577 953 631">– Press the <+> / <-> keys to increase or decrease the desired values. <li data-bbox="391 639 953 741">◆ Trigger SW Error Threshold^(Note) <ul style="list-style-type: none"> <li data-bbox="426 671 953 686">– Enable/Disable Sparing trigger SW Error Match Threshold. <li data-bbox="426 694 953 741">– Options available: Disabled, Enabled. Default setting is Disabled. <li data-bbox="391 749 953 890">◆ SW Per Bank Threshold <ul style="list-style-type: none"> <li data-bbox="426 780 953 827">– SW Per Bank Threshold (1-0x7FFF) used for DDR bank level error. <li data-bbox="426 835 953 890">– Press the <+> / <-> keys to increase or decrease the desired values. <li data-bbox="391 898 953 1008">◆ SW Correctable Error Time Window <ul style="list-style-type: none"> <li data-bbox="426 929 953 945">– SW Correctable Error time window based interface in hour (0-24). <li data-bbox="426 953 953 1008">– Press the <+> / <-> keys to increase or decrease the desired values. <li data-bbox="391 1016 953 1125">◆ Leaky bucket time window based interface <ul style="list-style-type: none"> <li data-bbox="426 1047 953 1063">– Enable/Disable leaky bucket time window based interface. <li data-bbox="426 1070 953 1125">– Options available: Disabled, Enabled. Default setting is Disabled. <li data-bbox="391 1133 953 1274">◆ Leaky bucket time window based interface Hour <ul style="list-style-type: none"> <li data-bbox="426 1165 953 1212">– Leaky bucket time window based interface hour used for DDR (0-24). <li data-bbox="426 1219 953 1274">– Press the <+> / <-> keys to increase or decrease the desired values.

(Note) Advanced items prompt when this item is defined.

Parameter	Description
Memory RAS Configuration (continued)	<ul style="list-style-type: none"> ◆ Leaky bucket time window based interface Minute <ul style="list-style-type: none"> – Leaky bucket time window based interface minute used for DDR (0-60). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Leaky bucket low bit <ul style="list-style-type: none"> – Configures leaky bucket low bit (0x1 - 0x29). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ Leaky bucket high bit <ul style="list-style-type: none"> – Configures leaky bucket high bit (0x1 - 0x29). – Press the <+> / <-> keys to increase or decrease the desired values. ◆ ADDDC Sparing^(Note) <ul style="list-style-type: none"> – Enable/Disable ADDDC Sparing. – Options available: Disabled, Enabled. Default setting is Disabled. ◆ Enable ADDDC Error Injection <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Enabled. ◆ Patrol Scrub <ul style="list-style-type: none"> – Options available: Disabled, Enable at End of POST. Default setting is Enable at End of POST. ◆ Patrol Scrub Interval <ul style="list-style-type: none"> – Selects the number of hours (1-24) required to complete full scrub. A value of zero means auto. ◆ DDR5 ECS <ul style="list-style-type: none"> – Options available: Disabled, Enabled, Enable ECS with Result Collection. Default setting is Enabled.

(Note) Advanced items prompt when this item is defined.

5-3-5 I/O Configuration

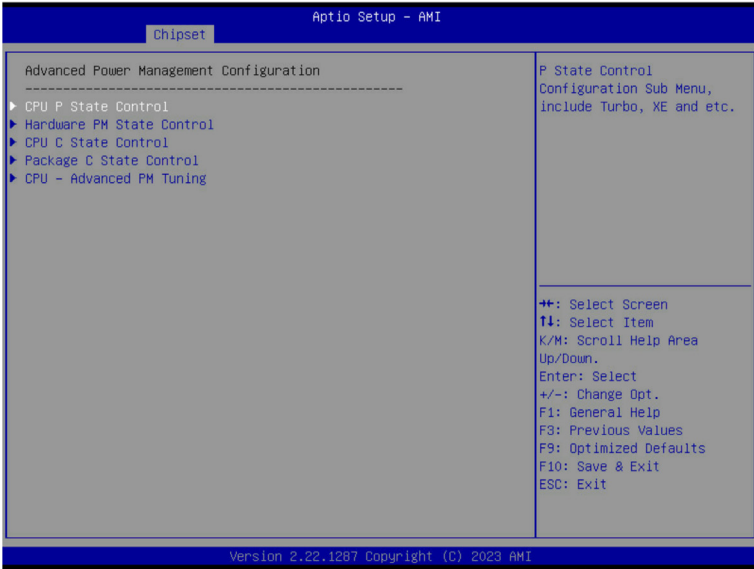


Parameter	Description
I/O Configuration	Press [Enter] to configure advanced items.
Intel® VT for Directed I/O (VT-d)	<ul style="list-style-type: none"> ◆ Intel® VT for Directed I/O <ul style="list-style-type: none"> – Enable/Disable the Intel VT for Directed I/O (VT-d) support function by reporting the I/O device assignment to VMM through DMAR ACPI Tables. – Options available: Enable, Disable. Default setting is Enable. ◆ ACS Control <ul style="list-style-type: none"> – Enable: Programs ACS only to Chipset PCIe Root Ports Bridges. – Disable: Programs ACS to all PCIe bridges. – Default setting is Enable. ◆ Cache Allocation <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Enable. ◆ DevTLB Invalidation Timeout Configuration <ul style="list-style-type: none"> – Options available: Auto, 68s to 103s, 8s to 12s, 268ms to 402ms, 8ms to 12ms, 131us to 196us. Default setting is Auto. ◆ Opt-Out Illegal MSI Mitigation <ul style="list-style-type: none"> – Enable/Disable Opt-Out Illegal 0xFEE Platform Mitigation. – Options available: Disable, Enable. Default setting is Disable.

Parameter	Description
	<ul style="list-style-type: none"> ◆ DMA Control Opt-In Flag <ul style="list-style-type: none"> – Enable/Disable DMA_CTRL_PLATFORM_OPT_IN_FLAG in DMAR table in ACPI. Not compatible with Direct Device Assignment (DDA). – Options available: Enable, Disable. Default setting is Disable. ◆ Interrupt Remapping <ul style="list-style-type: none"> – Enable/Disable the interrupt remapping support function. – Options available: Auto, Enable, Disable. Default setting is Auto ◆ x2APIC Opt Out <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Disable. ◆ Pre-boot DMA Protection <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Disable. ◆ SATC Support <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Enable. ◆ RHSA Support <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Enable. ◆ PCIe ACSCTL <ul style="list-style-type: none"> – Options available: Enable, Disable. Default setting is Disable. ◆ Source Validation^(Note) <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Disabled. ◆ Translation Blocking^(Note) <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Disabled. ◆ P2P Request Redirect^(Note) <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Enabled. ◆ P2P Completion Redirect^(Note) <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Enabled. ◆ Upstream Forwarding Enable^(Note) <ul style="list-style-type: none"> – Options available: Disabled, Enabled. Default setting is Enabled.

(Note) This item is configurable when **PCIe ACSCTL** is set to **Enable**.

5-3-6 Advanced Power Management Configuration

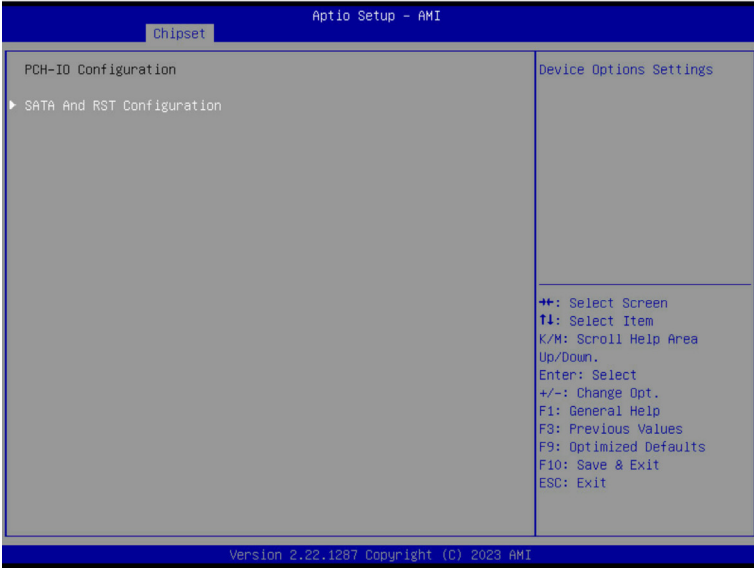


Parameter	Description
CPU P State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ SpeedStep (Pstates) <ul style="list-style-type: none"> – Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. – Options available: Enable, Disable. Default setting is Enable. ◆ Turbo Mode <ul style="list-style-type: none"> – When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. – Options available: Enable, Disable. Default setting is Enable.
Hardware PM State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Hardware P-States <ul style="list-style-type: none"> – When this item is disabled, the processor hardware chooses a P-state based on OS Request (Legacy P-States). – In Native mode, the processor hardware chooses a P-state based on OS guidance. – In Out of Band mode, the processor hardware autonomously chooses a P-state (with no OS guidance). – Options available: Disable, Native Mode, Out of Band Mode, Native Mode with No Legacy Support. Default setting is Native Mode.

Parameter	Description
CPU C State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Enable Monitor MWAIT <ul style="list-style-type: none"> – Allows Monitor and MWAIT instructions. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ CPU C6 Report <ul style="list-style-type: none"> – Enable/Disable CPU C6(ACPI C3) report to OS. – Options available: Disable, Enable, Auto. Default setting is Auto. ◆ Enhanced Halt State (C1E) <ul style="list-style-type: none"> – Core C1E auto promotion control. Takes effect after reboot. – Options available: Enable, Disable. Default setting is Enable.
Package C State Control	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Package C State <ul style="list-style-type: none"> – Configures the state for the C-State package limit. – Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto. Default setting is Auto.
CPU - Advanced PM Tuning	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Energy Perf BIAS <ul style="list-style-type: none"> – Press [Enter] to configure advanced items. <ul style="list-style-type: none"> • Power Performance Tuning <ul style="list-style-type: none"> » Options available: OS Controls EPB, BIOS Controls EPB, PECI Controls EPB. Default setting is OS Controls EPB. • Energy_PERF_BIAS_CFG mode^(Note) <ul style="list-style-type: none"> » Options available: Performance, Balanced Performance, Balanced Power, Power. Default setting is Balanced Performance.

(Note) This item is configurable when **Power Performance Tuning** is set to **BIOS Controls EPB**.

5-3-7 PCH Configuration



Parameter	Description
PCH-IO Configuration	
SATA And RST Configuration	<ul style="list-style-type: none"> ◆ SATA Controller And RST Configuration <ul style="list-style-type: none"> – Press [Enter] to configure advanced items. • SATA Configuration <ul style="list-style-type: none"> » Enable/Disable SATA controller. » Options available: Enabled, Disabled. Default setting is Enabled. • SATA Mode Selection <ul style="list-style-type: none"> » Configures on chip SATA type. » AHCI Mode: When set to AHCI, the SATA controller enables its AHCI functionality. Then the RAID function is disabled and cannot be access the RAID setup utility at boot time. » RAID Mode: When set to RAID, the SATA controller enables both its RAID and AHCI functions. You will be allowed to access the RAID setup utility at boot time. » Options available: AHCI, RAID. Default setting is AHCI. • RAID Device ID^(Note) <ul style="list-style-type: none"> » Choose RAID Device ID. » Options available: Client, Alternate, Server. Default setting is Server.

(Note) Only appears when HDD sets to **RAID Mode**.

Parameter	Description
SATA And RST Configuration(continued)	<ul style="list-style-type: none"> • SATA Port 0/1/2/3/4/5/6/7 <ul style="list-style-type: none"> » The category identifies SATA hard drives that are installed in the computer. System will automatically detect HDD type. • Port 0/1/2/3/4/5/6/7 <ul style="list-style-type: none"> » Enable/Disable Port 0/1/2/3/4/5/6/7 device. » Options available: Enabled, Disabled. Default setting is Enabled. • Hot Plug (for Port 0/1/2/3/4/5/6/7) <ul style="list-style-type: none"> » Enable/Disable HDD Hot-Plug function. » Options available: Enabled, Disabled. Default setting is Enabled. • Spin Up Device (for Port 0/1/2/3/4/5/6/7) <ul style="list-style-type: none"> » If enabled for any of ports staggered spin up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot. » Options available: Enabled, Disabled. Default setting is Disabled. ◆ Low Power S0 Idle Capability <ul style="list-style-type: none"> – Options available: Enabled, Disabled. Default setting is Disabled. ◆ PUIS Enable^(Note) <ul style="list-style-type: none"> – Options available: Enabled, Disabled. Default setting is Disabled.

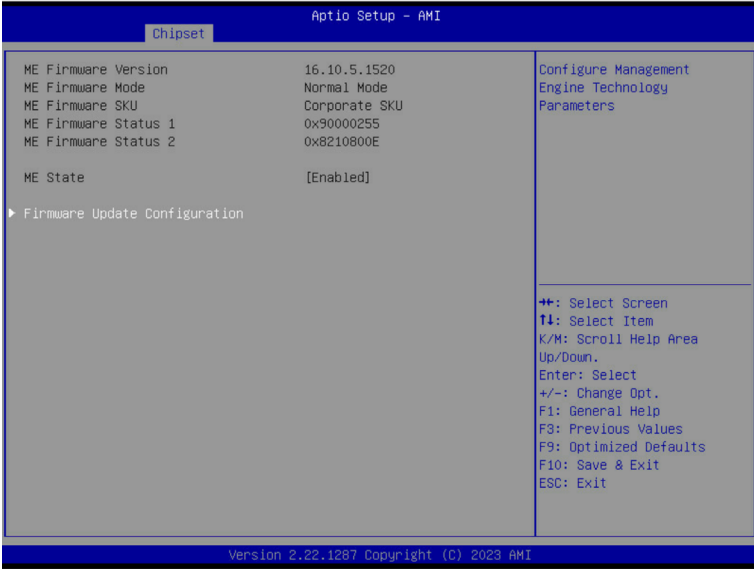
(Note) This item is configurable when **Low Power S0 Idle Capability** is set to **Enabled**.

5-3-8 Miscellaneous Configuration



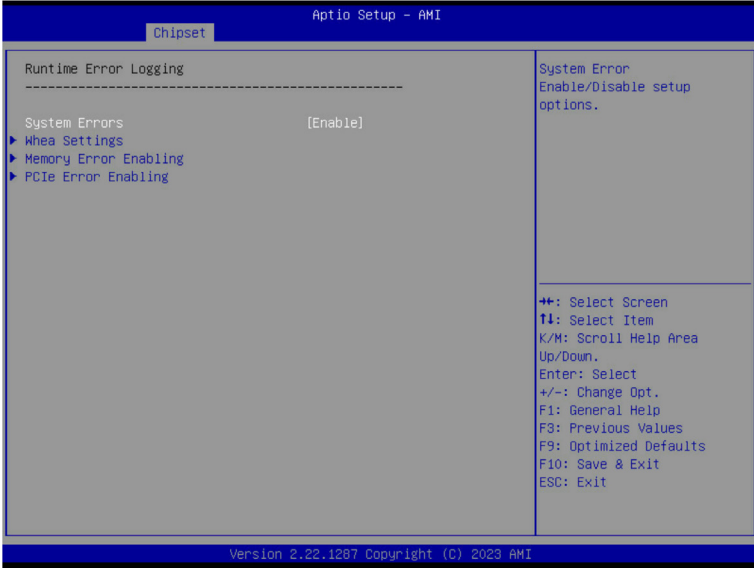
Parameter	Description
Miscellaneous Configuration	
Active Video	Selects the active video type. Options available: Auto, Onboard Device, PCIE Device, Specific PCIE Device. Default setting is Auto .
Disable IO decode for Second GPU	Enables this knob to disable IO decode on second GPU in a Dual GPU ML Config. Options available: Enabled, Disabled. Default setting is Disabled .

5-3-9 Server ME Configuration



Parameter	Description
ME Firmware Version	Displays the operational firmware version.
ME Firmware Mode	Displays the operational firmware mode.
ME Firmware SKU	Displays ME firmware sku information.
ME Firmware Status #1/#2	Displays ME firmware status information.
ME State	Default setting is Enabled .
Firmware Update Configuration	<p>Press [Enter] to configure advanced items.</p> <ul style="list-style-type: none"> ◆ Me FW Image Re-Flash <ul style="list-style-type: none"> – Enable/Disable ME firmware image re-flash function. – Options available: Disabled, Enabled. Default setting is Disabled.

5-3-10 Runtime Error Logging Settings



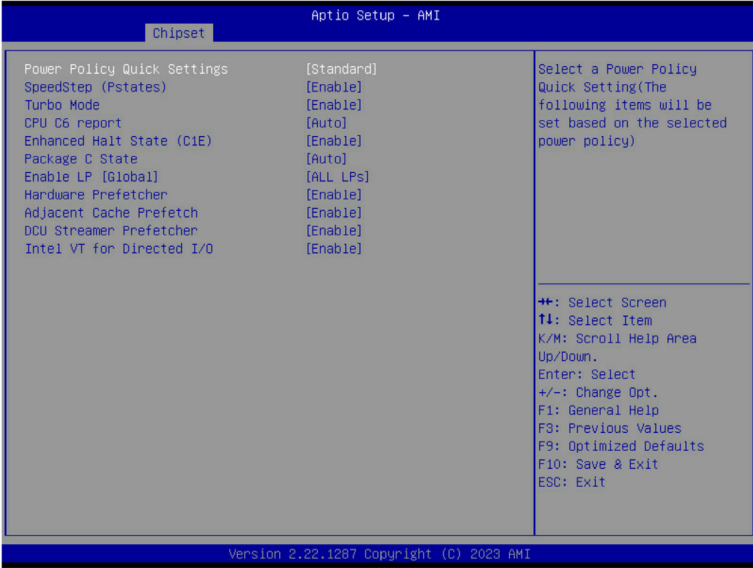
Parameter	Description
Runtime Error Logging	
System Errors	Enable/Disable system error logging function. Options available: Enable, Disable. Default setting is Enable .
Whea Settings	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ WHEA (Windows Hardware Error Architecture) Support <ul style="list-style-type: none"> – Enable/Disable WHEA Support. – Options available: Enable, Disable. Default setting is Enable.
Memory Error Enabling	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ Memory Corrected Error <ul style="list-style-type: none"> – Enable/Disable Memory Corrected Error. – Options available: Enable, Disable. Default setting is Enable. ◆ Uncorrected Error disable Memory <ul style="list-style-type: none"> – Enable/Disable the Memory that triggers Uncorrected Error. – Options available: Enable, Disable. Default setting is Disable.
PCIe Error Enabling	Press [Enter] to configure advanced items. <ul style="list-style-type: none"> ◆ PCIe Error <ul style="list-style-type: none"> – Enable/Disable PCIe error. – Options available: Enable, Disable. Default setting is Disable. ◆ Corrected Error^(Note) <ul style="list-style-type: none"> – Enables and escalates Correctable Errors to error pins. – Options available: Enable, Disable. Default setting is Disable.

(Note) This item appears when **PCIe Error** is set to **Enable**.

Parameter	Description
PCIe Error Enabling	<ul style="list-style-type: none"> ◆ Uncorrected Error^(Note) <ul style="list-style-type: none"> – Enables and escalates Uncorrectable/Recoverable Errors to error pins. – Options available: Enable, Disable. Default setting is Enable. ◆ Fatal Error Enable^(Note) <ul style="list-style-type: none"> – Enables and escalates Fatal Errors to error pins. – Options available: Enable, Disable. Default setting is Enable. ◆ Assert NMI on SERR^(Note) <ul style="list-style-type: none"> – Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a system error (SERR) occurs. – Options available: Enabled, Disabled. Default setting is Enabled. ◆ Assert NMI on PERR^(Note) <ul style="list-style-type: none"> – Enable/Disable BIOS generates a non-maskable interrupt (NMI) and logs an error when a processor bus parity error (PERR) occurs. – Options available: Enabled, Disabled. Default setting is Enabled.

(Note) This item appears when **PCI Error** is set to **Enable**.

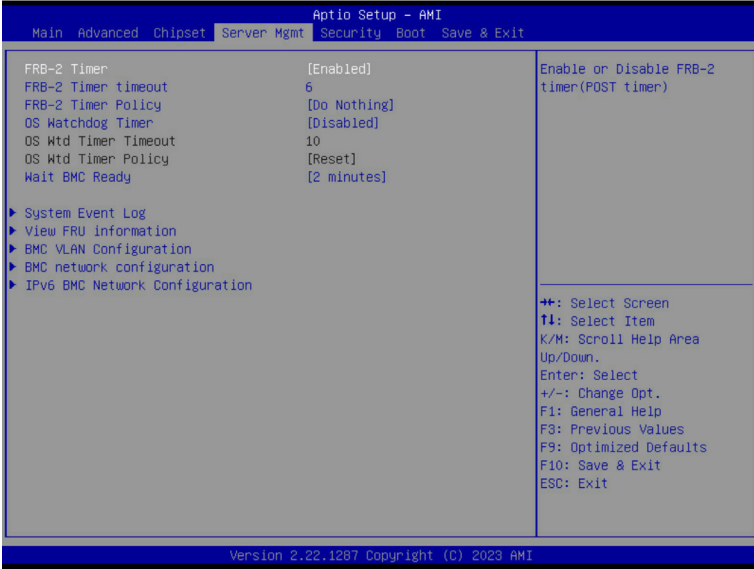
5-3-11 Power Policy



Parameter	Description
Power Policy Quick Settings	Selects a Power Policy Quick Setting. Options available: Standard, Best Performance, Energy Efficient. Default setting is Standard .
SpeedStep (Pstates)	Conventional Intel SpeedStep Technology switches both voltage and frequency in tandem between high and low levels in response to processor load. Options available: Enable, Disable. Default setting is Enable .
Turbo Mode	When this item is enabled, the processor will automatically ramp up the clock speed of 1-2 of its processing cores to improve its performance. When this item is disabled, the processor will not overclock any of its core. Options available: Enable, Disable. Default setting is Enable .
CPU C6 report	Enable/Disable the BIOS to enable the report from the CPU C6 state (ACPI C3) to the OS. Options available: Disable, Enable, Auto. Default setting is Auto .
Enhanced Halt State (C1E)	Enable/Disable the C1E support for lower power consumption. Takes effect after reboot. Options available: Enable, Disable. Default setting is Enable .
Package C State	Configures the C-State package limit. Options available: C0/C1 state, C2 state, C6(non Retention) state, C6(Retention) state, No Limit, Auto. Default setting is Auto .

Parameter	Description
Enable LP [Global]	Enables Logical processor (Software Method to Enable/Disable Logical Processor threads). Options available: ALL LPs, Single LP. Default setting is ALL LPs .
Hardware Prefetcher	Options available: Enable, Disable. Default setting is Enable .
Adjacent Cache Prefetch	Options available: Enable, Disable. Default setting is Enable .
DCU Streamer Prefetcher	Options available: Enable, Disable. Default setting is Enable .
Intel® VT for Directed I/O	Enable/Disable the Intel VT for Directed I/O (VT-d) support function by reporting the I/O device assignment to VMM through DMAR ACPI Tables. Options available: Enable, Disable. Default setting is Enable .

5-4 Server Management Menu



Parameter	Description
FRB-2 Timer	Enable/Disable FRB-2 timer (POST timer). Options available: Enabled, Disabled. Default setting is Enabled .
FRB-2 Timer ^(Note1) timeout	Configures the FRB2 Timer timeout. The value is between 1 to 30 minutes. Default setting is 6 minutes .
FRB-2 Timer Policy ^(Note1)	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down, Power Cycle. Default setting is Do Nothing .
OS Watchdog Timer	Enable/Disable OS Watchdog Timer function. Options available: Enabled, Disabled. Default setting is Disabled .
OS Wtd Timer Timeout ^(Note2)	Configures OS Watchdog Timer. The value is between 1 to 30 minutes. Default setting is 10 minutes .
OS Wtd Timer Policy ^(Note2)	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down, Power Cycle. Default setting is Reset .
Wait BMC Ready	POST wait BMC ready and reboot system. Options available: Disabled, 2 minutes, 4 minutes, 6 minutes. Default setting is 2 minutes .

(Note1) This item is configurable when **FRB-2 Timer** is set to **Enabled**.

(Note2) This item is configurable when **OS Watchdog Timer** is set to **Enabled**.

Parameter	Description
System Event Log	Press [Enter] to configure advanced items.
View FRU Information	Press [Enter] to view the FRU information.
BMC VLAN Configuration	Press [Enter] to configure advanced items.
BMC network Configuration	Press [Enter] to configure advanced items.
IPv6 BMC Network Configuration	Press [Enter] to configure advanced items.

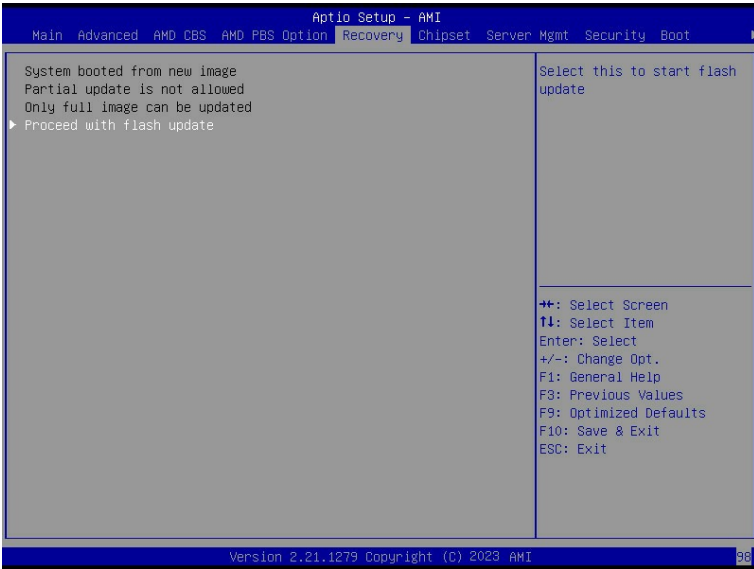
5-4-1 System Event Log



Parameter	Description
Enabling / Disabling Options	
SEL Components	Change this item to enable or disable all features of System Event Logging during boot. Options available: Enabled, Disabled. Default setting is Enabled .
Erasing Settings	
Erase SEL	Choose options for erasing SEL. Options available: No, Yes, On next reset, Yes, On every reset. Default setting is No .
When SEL is Full	Choose options for reactions to a full SEL. Options available: Do Nothing, Erase Immediately, Delete Oldest Record. Default setting is Do Nothing .
Custom EFI Logging Options	
Log EFI Status Codes	Enable/Disable the logging of EFI Status Codes (if not already converted to legacy). Options available: Disabled, Both, Error code, Progress code. Default setting is Error code .

5-4-2 View FRU Information

The FRU page is a simple display page for basic system ID information, as well as System product information. Items on this window are non-configurable.



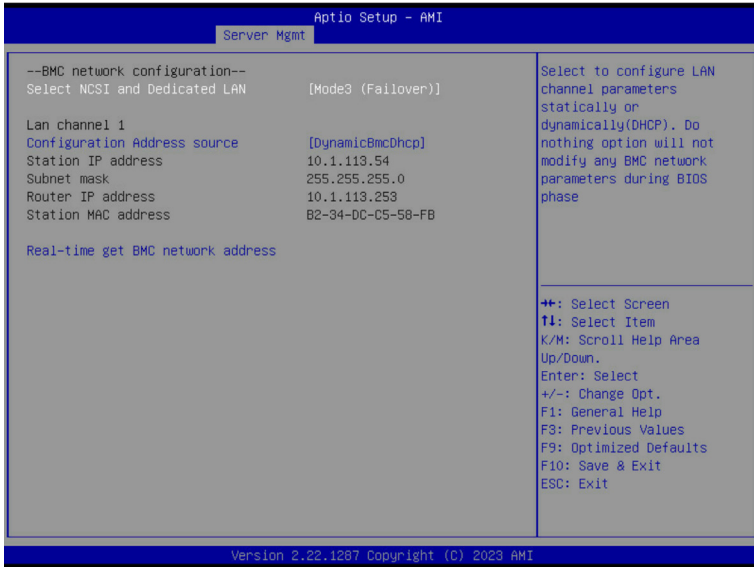
(Note) The model name will vary depends on the product you purchased

5-4-3 BMC VLAN Configuration



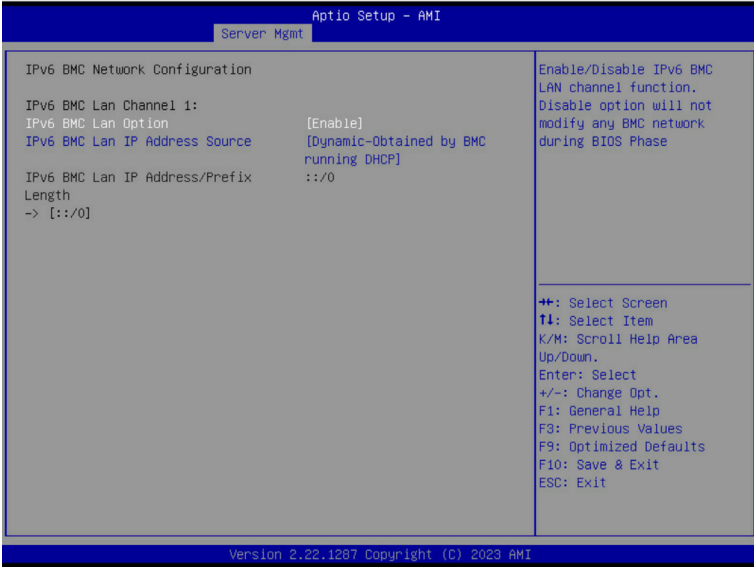
Parameter	Description
BMC VLAN Configuration	
BMC VLAN ID	Select to configure BMC VLAN ID. The valid range is from 0 to 4094. When set to 0, BMC VLAN ID will be disabled.
BMC VLAN Priority	Select to configure BMC VLAN Priority. The valid range is from 0 to 7. When BMC VLAN ID is set to 0, BMC VLAN Priority will not be selected.

5-4-4 BMC Network Configuration



Parameter	Description
BMC network configuration	
Select NCSI and Dedicated LAN	Options available: Do Nothing, Model1(Dedicated), Model2(NCSI), Mode3(Failover). Default setting is Do Nothing .
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (DHCP). Options available: Unspecified, Static, DynamicBmcDhcp. Default setting is DynamicBmcDhcp .
Station IP address	Displays IP Address information.
Subnet mask	Displays Subnet Mask information. Please note that the IP address must be in three digitals, for example, 192.168.000.001.
Router IP address	Displays the Router IP Address information.
Station MAC address	Displays the MAC Address information.
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

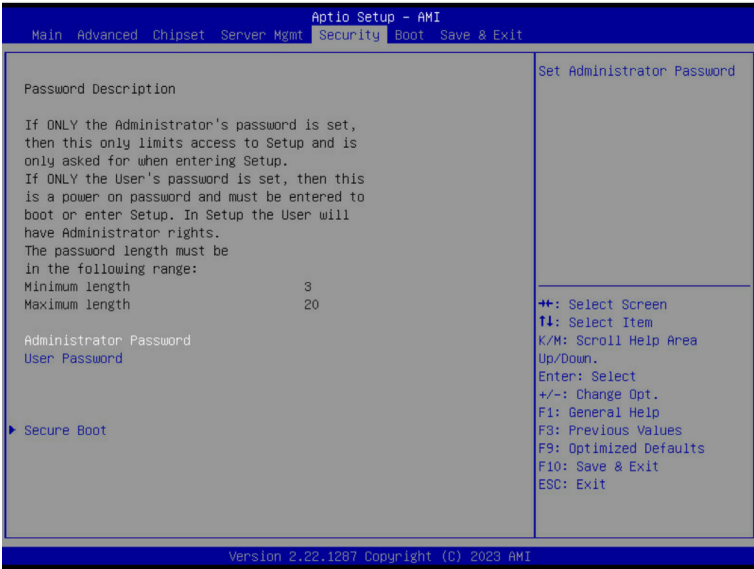
5-4-5 IPv6 BMC Network Configuration



Parameter	Description
IPv6 BMC network configuration	
IPv6 BMC Lan Channel 1	
IPv6 BMC Lan Option	Enable/Disable IPv6 BMC LAN channel function. When this item is disabled, the system will not modify any BMC network during BIOS phase. Options available: Unspecified, Disable, Enable. Default setting is Enable .
IPv6 BMC Lan IP Address Source	Selects to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Options available: Unspecified, Static, Dynamic-Obtained by BMC running DHCP. Default setting is Dynamic-Obtained by BMC running DHCP .
IPv6 BMC Lan IP Address/Prefix Length	Check if the IPv6 BMC LAN IP address matches those displayed on the screen.

5-5 Security Menu

The Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.



There are two types of passwords that you can set:

- Administrator Password
Entering this password will allow the user to access and change all settings in the Setup Utility.
- User Password
Entering this password will restrict a user's access to the Setup menus. To enable or disable this field, a Administrator Password must first be set. A user can only access and modify the System Time, System Date, and Set User Password fields.

Parameter	Description
Administrator Password	Press [Enter] to configure the administrator password.
User Password	Press [Enter] to configure the user password.
Secure Boot	Press [Enter] to configure advanced items.

5-5-1 Secure Boot

The Secure Boot submenu is applicable when your device is installed the Windows® 8 (or above) operating system.



Parameter	Description
System Mode	Displays if the system is in User mode or Setup mode.
Secure Boot	Enable/ Disable the Secure Boot function. Options available: Enabled, Disabled. Default setting is Disabled .
Secure Boot Mode ^(Note)	Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all files being loaded before Windows loads to the login screen have not been tampered with. When set to Standard, it will automatically load the Secure Boot keys form the BIOS databases. When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database. Options available: Standard, Custom. Default setting is Custom .
Restore Factory Keys	Forces the system to user mode and installs factory default Secure Boot key database.
Reset To Setup Mode	Reset the system to Setup Mode.

(Note) Advanced items prompt when this item is set to **Custom**.

Parameter	Description
Key Management	<p data-bbox="335 156 665 180">Press [Enter] to configure advanced items.</p> <p data-bbox="335 185 936 235">Please note that this item is configurable when Secure Boot Mode is set to Custom.</p> <ul style="list-style-type: none"> <li data-bbox="335 243 941 352">◆ Factory Key Provision <ul style="list-style-type: none"> <li data-bbox="367 266 941 321">– Allows to provision factory default Secure Boot keys when system is in Setup Mode. <li data-bbox="367 326 904 352">– Options available: Enabled, Disabled. Default setting is Disabled. <li data-bbox="335 357 925 431">◆ Restore Factory Keys <ul style="list-style-type: none"> <li data-bbox="367 381 925 404">– Installs all factory default keys. It will force the system in User Mode. <li data-bbox="367 409 606 431">– Options available: Yes, No. <li data-bbox="335 435 654 509">◆ Reset To Setup Mode <ul style="list-style-type: none"> <li data-bbox="367 459 654 482">– Reset the system to Setup Mode. <li data-bbox="367 487 606 509">– Options available: Yes, No. <li data-bbox="335 514 899 595">◆ Enroll Efi Image <ul style="list-style-type: none"> <li data-bbox="367 537 899 595">– Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db). <li data-bbox="335 600 936 682">◆ Export Secure Boot variables <ul style="list-style-type: none"> <li data-bbox="367 624 936 682">– Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device. <li data-bbox="335 686 893 736">◆ Secure Boot variable <ul style="list-style-type: none"> <li data-bbox="367 710 893 736">– Displays the current status of the variables used for secure boot. <li data-bbox="335 741 803 846">◆ Platform Key (PK) <ul style="list-style-type: none"> <li data-bbox="367 765 803 788">– Displays the current status of the Platform Key (PK). <li data-bbox="367 793 675 816">– Press [Enter] to configure a new PK. <li data-bbox="367 821 601 846">– Options available: Update. <li data-bbox="335 851 941 987">◆ Key Exchange Keys (KEK) <ul style="list-style-type: none"> <li data-bbox="367 874 941 898">– Displays the current status of the Key Exchange Key Database (KEK). <li data-bbox="367 903 904 956">– Press [Enter] to configure a new KEK or load additional KEK from storage devices. <li data-bbox="367 961 670 987">– Options available: Update, Append. <li data-bbox="335 992 941 1128">◆ Authorized Signatures (DB) <ul style="list-style-type: none"> <li data-bbox="367 1016 904 1039">– Displays the current status of the Authorized Signature Database. <li data-bbox="367 1044 941 1097">– Press [Enter] to configure a new DB or load additional DB from storage devices. <li data-bbox="367 1102 670 1128">– Options available: Update, Append. <li data-bbox="335 1133 899 1270">◆ Forbidden Signatures (DBX) <ul style="list-style-type: none"> <li data-bbox="367 1157 899 1180">– Displays the current status of the Forbidden Signature Database. <li data-bbox="367 1185 893 1238">– Press [Enter] to configure a new dbx or load additional dbx from storage devices. <li data-bbox="367 1243 670 1270">– Options available: Update, Append.

Parameter	Description
Key Management (continued)	<ul style="list-style-type: none"> ◆ Authorized TimeStamps (DBT) <ul style="list-style-type: none"> – Displays the current status of the Authorized TimeStamps Database. – Press [Enter] to configure a new DBT or load additional DBT from storage devices. – Options available: Update, Append. ◆ OsRecovery Signatures <ul style="list-style-type: none"> – Displays the current status of the OsRecovery Signature Database. – Press [Enter] to configure a new OsRecovery Signature or load additional OsRecovery Signature from storage devices. – Options available: Update, Append.

5-6 Boot Menu

The Boot menu allows you to set the drive priority during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

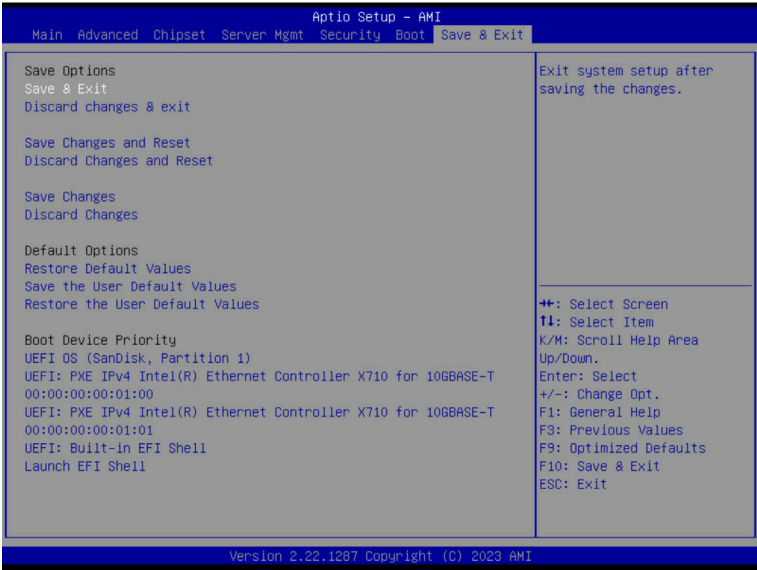


Parameter	Description
Boot Configuration	
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting. Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function. Options available: On, Off. Default setting is On .
Quiet Boot	Enable/Disable showing the logo during POST. Options available: Enabled, Disabled. Default setting is Enabled .
Endless Retry Boot	Options available: Disable, Enable. Default setting is Disable .
Setup Flash	Press [Enter] to run setup flash.
Dump full Setup Data	Press [Enter] to dump full setup data to file.
Dump non-default Setup Data	Press [Enter] to dump non-default setup data to file.
Restore Setup Data	Press [Enter] to restore setup data from file.
Fast Boot	Enable/Disable the fast boot by skipping some drivers. Options available: Disable, Enable. Default setting is Disable .

Parameter	Description
FIXED BOOT ORDER Priorities	
Boot Option #1 / #2 / #3 / #4 / #5	<p>Press [Enter] to configure the boot order priority. By default, the server searches for boot devices in the following sequence:</p> <ol style="list-style-type: none"> 1. Hard drive. 2. CD-COM/DVD drive. 3. USB device. 4. Network. 5. UEFI.
UEFI Network Drive BBS Priorities	Press [Enter] to configure the boot priority.
UEFI Application Boot Priorities	Press [Enter] to configure the boot priority.

5-7 Save & Exit Menu

The Save & Exit menu displays the various options to quit from the BIOS setup. Highlight any of the exit options then press <Enter>.



Parameter	Description
Save Options	
Save and Exit	Saves changes made and closes the BIOS setup. Options available: Yes, No.
Discard changes and exit	Discards changes made and exits the BIOS setup. Options available: Yes, No.
Save Changes and Reset	Restarts the system after saving the changes made. Options available: Yes, No.
Discard Changes and Reset	Restarts the system without saving any changes. Options available: Yes, No.
Save Changes	Saves changes done so far to any of the setup options. Options available: Yes, No.
Discard Changes	Discards changes made and closes the BIOS setup. Options available: Yes, No.
Default Options	

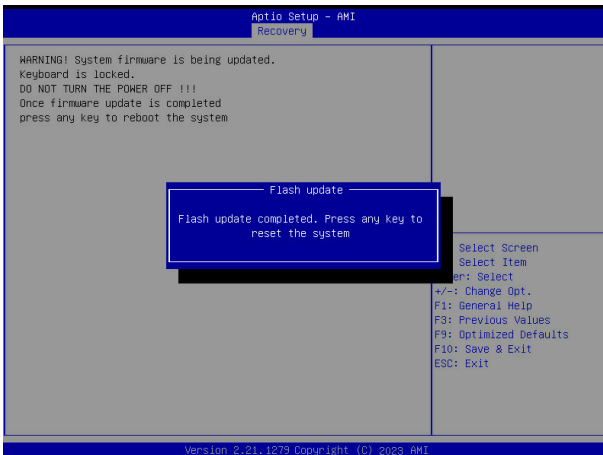
Parameter	Description
Restore Default Values	<p>Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly.</p> <p>Options available: Yes, No.</p>
Save the User Default Values	<p>Saves the changes made as the user default settings.</p> <p>Options available: Yes, No.</p>
Restore the User Default Values	<p>Loads the user default settings for all BIOS setup parameters.</p> <p>Options available: Yes, No.</p>
Boot Device Priority	<p>Press [Enter] to configure the device as the boot-up drive.</p>
Launch EFI Shell	<p>Attempts to Launch EFI Shell application (Shell.efi) from one of the available file system devices.</p>

5-8 BIOS Recovery

The system has an embedded recovery technique. In the event that the BIOS becomes corrupt the boot block can be used to restore the BIOS to a working state. To restore your BIOS, please follow the instructions listed below:

Recovery Instruction:

1. Copy the XXX.rom to USB diskette.
2. Setting BIOS Recovery jump to enabled status.
3. Boot into BIOS recovery.
4. Run Proceed with flash update.
5. BIOS updated.



5-9 BIOS POST Beep code (AMI standard)

5-9-1 PEI Beep Codes

# of Beeps	Description
1	Memory not Installed.
1	Memory was installed twice (InstallPeiMemory routine in PEI Core called twice)
2	Recovery started
3	DXE IPL was not found
3	DXE Core Firmware Volume was not found
4	Recovery failed
4	S3 Resume failed
7	Reset PPI is not available

5-9-2 DXE Beep Codes

# of Beeps	Description
1	Invalid password
4	Some of the Architectural Protocols are not available
5	No Console Output Devices are found
5	No Console Input Devices are found
6	Flash update is failed
7	Reset protocol is not available
8	Platform PCI resource requirements cannot be met