GIGABYTE™

XL43-ZX0-AAS2

NVIDIA MGX™ Server - AMD EPYC™ 9005
4U DP 8 x PCIe Gen5 GPUs

User Manual

Rev. 1.0

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Disclaimer

Documentation Classifications

In order to assist in the use of this product, Giga Computing 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/Enterprise

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

Conventions

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

	**NOTE!** Pieces of additional information related to the current topic.
	**CAUTION!** Precautionary measures to avoid possible hardware or software problems.
	**WARNING!** Alerts to any damage that might result from doing or not doing specific actions.

Server Warnings and Cautions

Before installing a server, 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 the power cord from the power supply 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.
- 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.

This server is equipped with high speed fans. Keep away from hazardous moving fan blades during servicing.

This equipment is intended to be used in Restrict Access Location. The access can only be gained by Skilled person. Only authorized by well trained professional person can access the restrict access location.

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This equipment is not intended for use by children.

CAUTION!

- Do not operate the server for long periods with the access panel open or removed. Operating the server 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.

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.

Warning Stability hazard

The slide-rail may tip over causing serious personal injury

- Before extending the rack to its installation position, read the installation instructions.
- Do not put any load on the slide-rail mounted equipment in the installation position.
- Do not leave the slide-rail mounted equipment in the installation position.

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 touching any components or connectors. After removing a board from its protective ESD bag 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 ESD bag. Do not slide the board over any surface.

System power on/off: To service components within the server, please ensure the power has been disconnected.
e.g. Remove the node from the server chassis (to disconnect power) or disconnect the power from the server chassis.
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 chassis and disconnect the cables attached to the system before servicing the chassis. 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 sensi-tive 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 fin-gertips 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 dam-age the contacts inside the jumper, causing intermittent problems with the function con-trolled 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.

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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

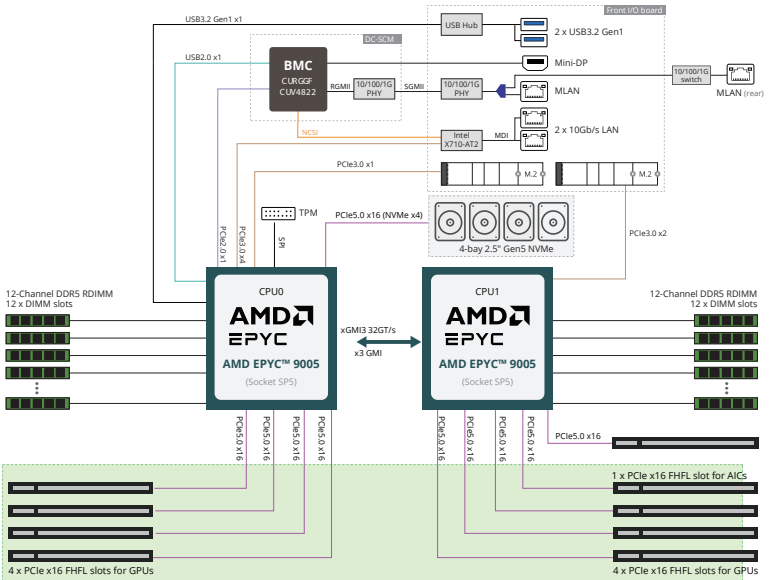
NOTE:

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

System Dimension	◆ 4U ◆ 438 (W) x 176.6 (H) x 802.5 (D) mm
CPU	◆ AMD EPYC™ 9005 Series Processors ◆ Dual processor, cTDP up to 500W [Note] If only 1 CPU is installed, some PCIe or memory functions might be unavailable.
Socket	◆ 2 x LGA 6096 ◆ Socket SP5
Chipset	◆ System on Chip
Memory	◆ 324 x DIMM slots ◆ Support DDR5 RDIMM ◆ 12-Channel memory per processor ◆ Up to 6400 MT/s
LAN	**Front (I/O board - CFPX041):** ◆ 2 x 10Gb/s LAN (1 x Intel® X710-AT2) ◆ Support NCSI function ◆ 1 x 10/100/1000 Mbps Management LAN **Rear (MLAN board - CBG7F):** ◆ 1 x 10/100/1000 Mbps Management LAN [Note] When both MLAN ports are connected with cables, the front MLAN port will be set as the default.
Video	◆ Integrated in ASPEED® AST2600 ◆ 1 x Mini-DP
Storage	**Front hot-swap:** 4 x 2.5" Gen5 NVMe ◆ (NVMe from CPU_0) **Internal M.2 (I/O board - CFPX041):** ◆ 1 x M.2 (2280/22110), PCIe Gen3 x2, from CPU_1 ◆ 1 x M.2 (2280/22110), PCIe Gen3 x1, from CPU_0

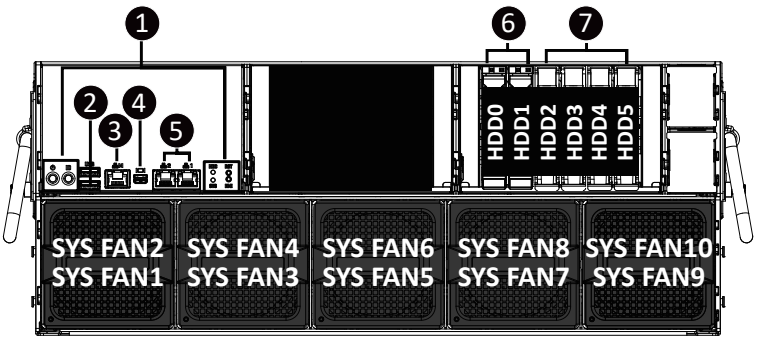
Expansion Slots	**PCIe Cable x 9:** ◆ 4 x FHFL x16 (Gen5 x16), from CPU_0, for GPUs ◆ 4 x FHFL x16 (Gen5 x16), from CPU_1, for GPUs ◆ 1 x FHFL x16 (Gen5 x16), from CPU_1
Front I/O	**I/O board - CFPX041:** ◆ 2 x USB 3.2 Gen1 ports (Type-A) ◆ 1 x Mini-DP ◆ 2 x RJ45 ports ◆ 1 x MLAN port (default) ◆ 1 x Power button with LED ◆ 1 x ID button with LED ◆ 1 x NMI button ◆ 1 x Reset button ◆ 1 x Storage activity LED ◆ 1 x System status LED
Rear I/O	**MLAN board - CBG7F:** ◆ 1 x MLAN port
Security Modules	◆ 1 x TPM header with SPI interface ◆ **Optional** TPM2.0 kit: CTM012
Power Supply	◆ 4 x 3200W 80 PLUS Titanium redundant power supply [1] [1] The system power supply requires C19 power cord. [Note] Please refer to GIGABYTE Website for detail power supply specification.
Operating Properties	◆ Operating temperature: 10°C to 30°C ◆ Operating humidity: 8% to 80% (non-condensing) ◆ Non-operating temperature: -40°C to 60°C ◆ Non-operating humidity: 20% to 95% (non-condensing)

1-3 System Block Diagram



Chapter 2 System Appearance

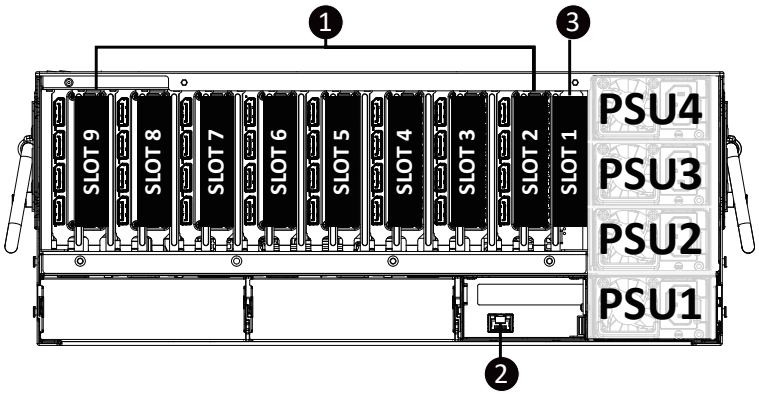
2-1 Front View



No.	Description
1.	Front Panel LEDs and Button
2.	USB 3.2 Gen1 Port X 2
3.	Management LAN Port
4.	Mini DisplayPort
5.	Data LAN Port x 2
6.	2.5" Hard Drives
7.	Dummy Slots

- When a RAID card is installed, the dummy slot corresponding to HDD4 and HDD5 will become visible.
- Refer to section **2-3 Front Panel LEDs and Buttons** for a detailed description of the function of the LEDs.
- Refer to section **2-4 Front System LAN LEDs** for a detailed description of the function of the LEDs.

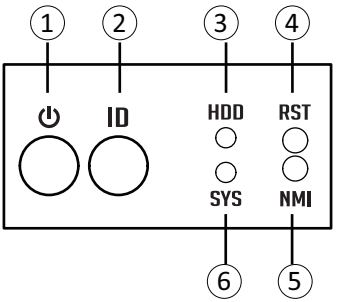
2-2 Rear View



No.	Description
1.	GPUCard Slot x 8
2.	Management LAN Port
3.	BlueField-3 NIC Card

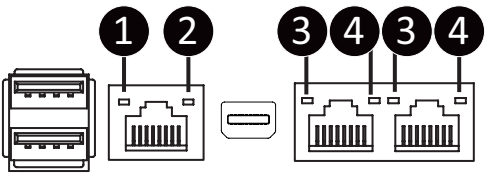
- Refer to section **2-5 Rear System LAN LEDs** for a detailed description of the function of the LEDs.

2-3 Front Panel LEDs and Buttons



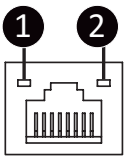
No.	Name	Color	Status	Description
1.	Power button with LED	Green	On	Indicates the system is powered on.
		N/A	Off	System is not powered on or in ACPI S5 state (power off)
2.	ID Button with LED	Blue	On	System identification is active.
		N/A	Off	System identification is disabled.
3.	HDD Status LED	Green	On	Indicates locating the HDD.
			Blink	Indicates accessing the HDD.
		Amber	On	Indicates HDD error.
		Green/ Amber	Blink	Indicates HDD rebuilding.
		N/A	Off	Indicates no HDD access or no HDD error.
4.	System Status LED	Green	Solid On	System is operating normally.
		Amber	Solid On	Critical condition, may indicate: System fan failure System temperature
			Blink	Non-critical condition, may indicate: Redundant power module failure Temperature and voltage issue Chassis intrusion
		N/A	Off	System is not ready, may indicate: POST error NMI error Processor or terminator missing
5.	Reset Button	--	--	Press this button to reset the system.
6.	NMI button	--	--	Press this button for the server to generate a NMI to the processor. If multiple-bit ECC errors occur, the server will effectively be halted.

2-4 Front System LAN LEDs



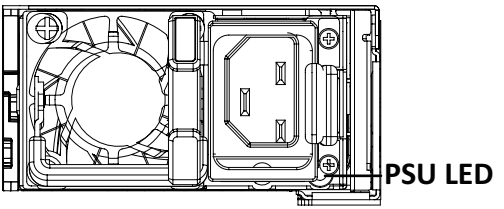
No.	Name	Color	Status	Description
1.	1 GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1 GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission or reception is occurring.
3	10 GbE Speed LED	Yellow	On	10 Gbps data rate
		Green	On	1 Gbps data rate
		N/A	Off	100 Mbps data rate
4.	10 GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission or reception is occurring.

2-5 Rear System LAN LEDs



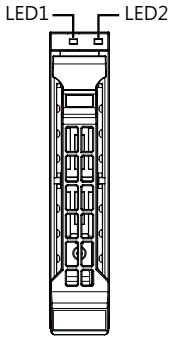
No.	Name	Color	Status	Description
1.	1 GbE Speed LED	Yellow	On	1 Gbps data rate
		Green	On	100 Mbps data rate
		N/A	Off	10 Mbps data rate
2.	1 GbE Link / Activity LED	Green	On	Link between system and network or no access
			Blink	Data transmission or reception is occurring.
		N/A	Off	No data transmission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

2-6 Power Supply Unit LED



State	Description
Off	No AC power to all power supplies
1Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware updating mode
Amber	AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power
	Power supply critical event causing shut down: failure, OCP, OVP, fan failure and UVP
1Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

2-7 Hard Disk Drive LEDs



RAID SKU		LED1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
No RAID configuration (via HBA)	Disk LED (LED on Back Panel)	Green	ON(*1)	OFF		BLINK (*2)	OFF
		Amber	OFF	OFF		OFF	OFF
	Removed HDD Slot (LED on Back Panel)	Green	ON(*1)	OFF		--	--
		Amber	OFF	OFF		--	--
RAID configuration (via HW RAID Card or SW RAID Card)	Disk LED	Green	ON	OFF		BLINK (*2)	OFF
		Amber	OFF	ON	(Low Speed: 2 Hz)	OFF	OFF
	Removed HDD Slot	Green	ON(*1)	OFF	(*3)	--	--
		Amber	OFF	ON	(*3)	--	--

LED 2	HDD Present	No HDD
Green	ON	OFF

NOTE:

*1: Depends on HBA/Utility Spec.

*2: Blink cycle depends on HDD's activity signal.

*3: If HDD is pulled out during rebuilding, the disk status of this HDD is regarded as faulty.

Chapter 3 System Hardware Installation

Pre-installation Instructions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. 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.

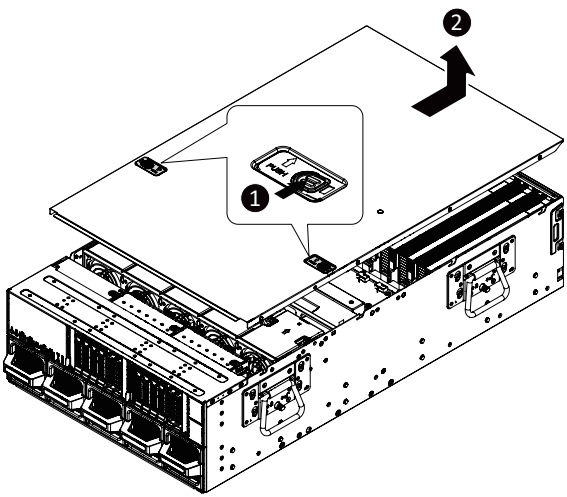
3-1 Removing and Installing the Chassis Cover

Before you remove or install the system cover

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

Follow these instructions to remove the chassis cover:

1. Unlock the plastic handle and pull the grip handle to open the panel cover.
2. Slide the cover cover to the rear of the system and then remove the cover in the direction indicated by the arrow.
3. To reinstall the chassis cover follow steps 1-4 in reverse order.



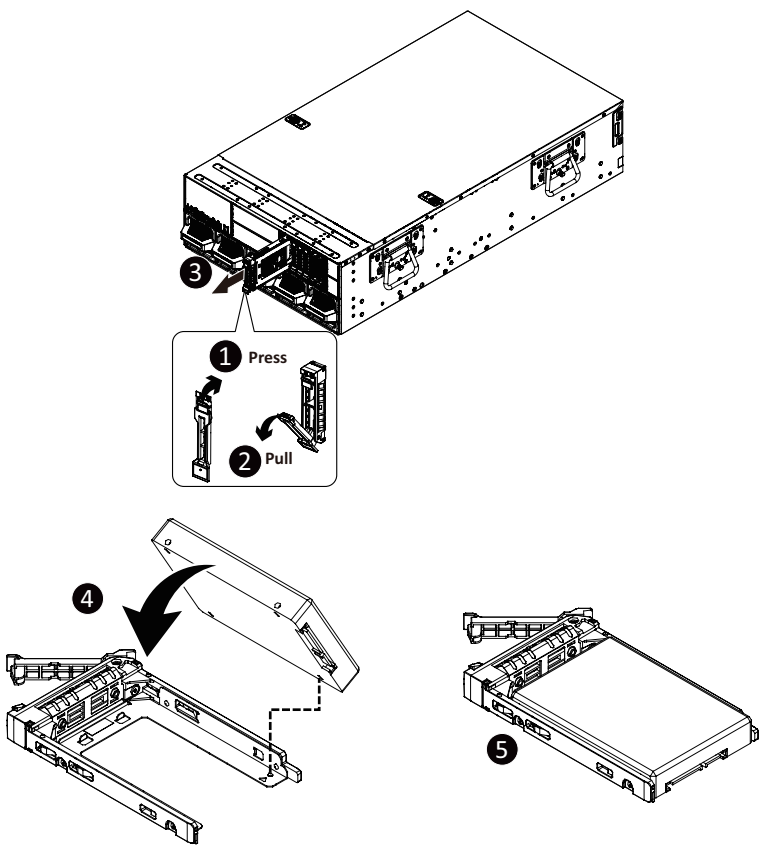
3-2 Removing and Installing the Hard Disk Drive

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

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

Follow these instructions to install a 2.5" hard disk drive:

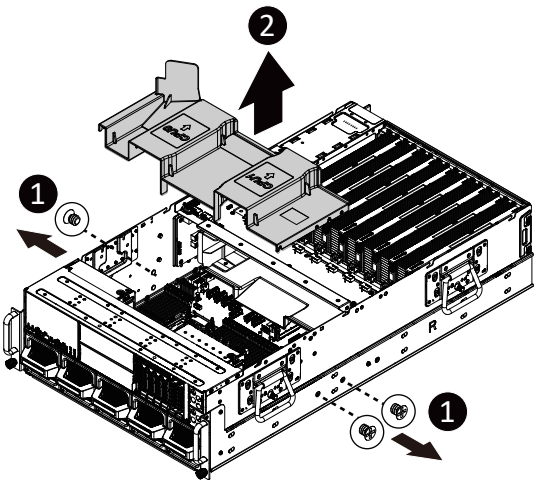
1. Press the release button.
2. Extend the locking lever.
3. Pull the locking lever in the direction indicated to remove the 3.5" HDD tray.
4. Pull the sides of the HDD tray in the direction indicated.
5. Slide the hard disk drive into the HDD tray.
6. Push the sides of the HDD tray back in the direction indicated to secure the hard disk drive in place.
7. Reinsert the HDD tray into the slot and close the locking lever.



3-3 Removing and Installing the Fan Duct

Follow these instructions to remove the fan duct:

1. Remove the three screws from the chassis.
2. Lift up to remove the fan duct.
3. To reinstall the fan duct, align the fan duct with the guiding groove. Push down the fan duct until it is firmly seated on the system and follow steps 1-2 in reverse order.



3-4 Removing and Installing the Heat Sink

Read the following guidelines before you begin to install the heat sink:

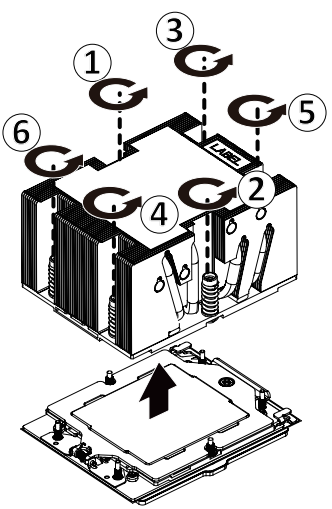
- Always turn off the computer and unplug the power cord from the power outlet before installing the heat sink to prevent hardware damage.
- Unplug all cables from the power outlets.
- Disconnect all telecommunication cables from their ports.
- Place the system unit on a flat and stable surface.
- Open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

WARNING!

Failure to 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 heat sink:

1. Loosen the screws securing the heat sink in place in reverse order (6→5→4→3→2→1).
2. Lift and remove the heat sink from the system.
3. To install the heat sink, reverse steps 1-2 while ensuring that you tighten the captive screws in sequential order (1→2→3→4→5→6) as seen in the image below.



3-5 Removing and 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.

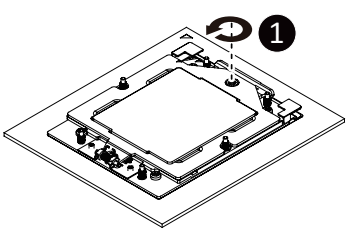
WARNING!

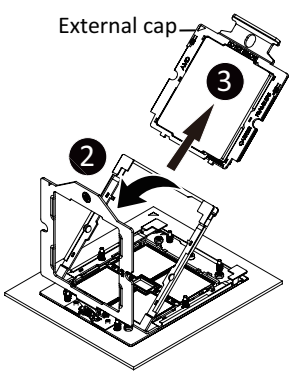
Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

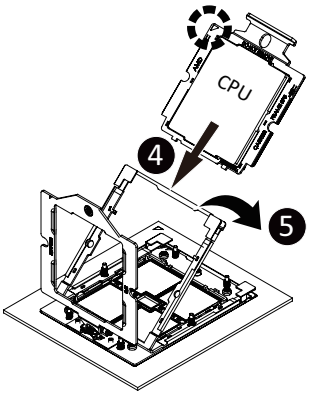
Follow these instructions to install the CPU:

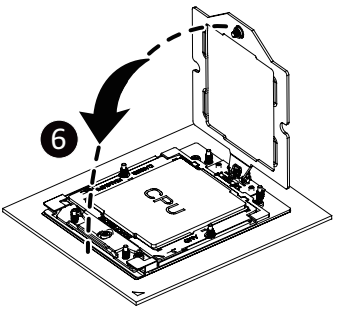
1. Loosen the three captive screws securing the CPU cover.
2. Flip open the CPU cover.
3. Remove the CPU carrier from the CPU frame using the handle on the CPU carrier.
4. Using the handle on the CPU carrier insert the new CPU carrier with CPU installed into the CPU frame.

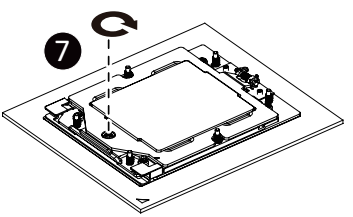
   NOTE: Ensure the CPU is installed in the CPU carrier in the correct orientation, with the triangle on the CPU aligned to the top left corner of the CPU carrier.
5. Flip the CPU frame with CPU installed into place in the CPU socket.
6. Flip the CPU cover into place over the CPU socket.
7. Tighten the CPU cover screw to secure the CPU cover in place.
8. Repeat steps 1-7 for the second CPU.
9. To remove the CPUs, follow steps 1-7 in reverse order.

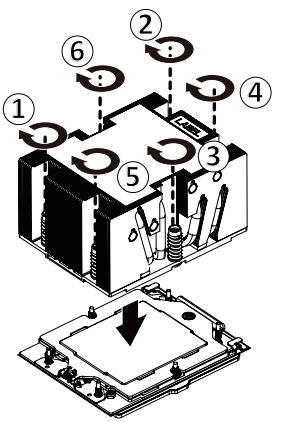












- Lock the CPU by using a Torx T20 screwdriver to tighten screw.
- When installing the heatsink to CPU, use a Torx T20 screwdriver to tighten 6 captive nuts in sequence as 1-6.
- The screw tightening torque: 13.5 ± 0.5 kgf-cm.
- To ensure the system operates properly, make sure the heatsink is seated on the processor firmly.

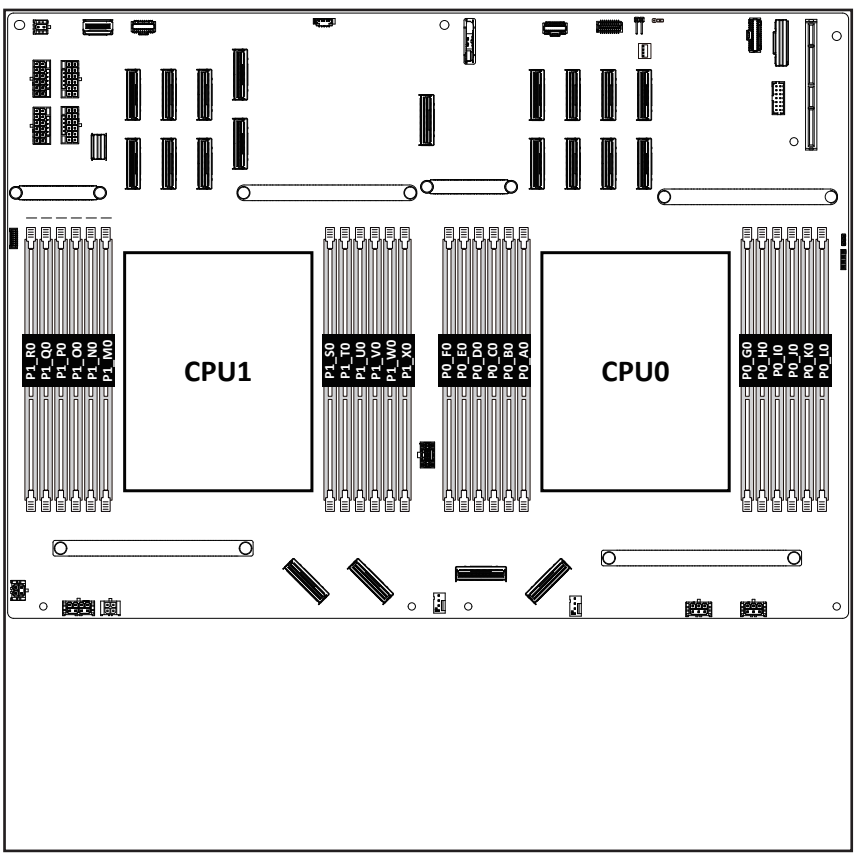
3-6 Removing and Installing Memory

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.

3-6-1 Twelves Channel Memory Configuration

This motherboard provides 24 DDR5 memory sockets and supports Twelves Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.

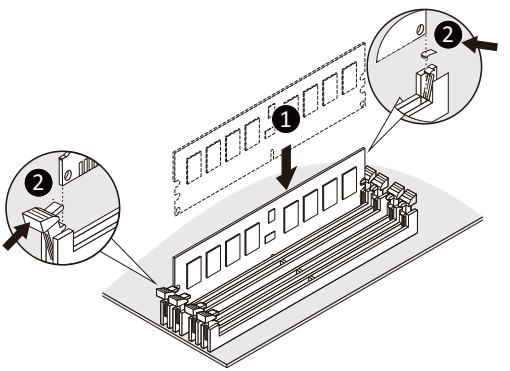


3-6-2 Removing and Installing a Memory Module

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 to this motherboard.

Follow these instructions to install a DIMM module:

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.



3-6-3 Processor and Memory Module Matrix Table

Memory Q'ty for each CPU	CPU0												CPU1											
	F0	E0	D0	C0	B0	A0	G0	H0	I0	J0	K0	L0	R0	Q0	P0	O0	N0	M0	S0	T0	U0	V0	W0	X0
1 DIMM						v												v						
2 DIMM						v	v											v	v					
4 DIMM				v		v	v		v							v		v	v		v			
6 DIMM				v	v	v	v	v	v							v	v	v	v	v	v			
8 DIMM		v		v	v	v	v	v	v		v			v		v	v	v	v	v	v		v	
10 DIMM		v	v	v	v	v	v	v	v	v	v			v	v	v	v	v	v	v	v	v	v	
12 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v

3-6-4 Memory Population Table

EPYC Memory Speed based on DIMM Population (One DIMM per Channel)

DIMM Type	DIMM Population	EPYC 9004
	DIMM 0	DDR5 Frequency (MT/s)
RDIMM	1R (1 Rank)	4800
	2R (2 Ranks)	4800
3DS RDIMM	2S2R (4 Ranks)	4800
	2S4R (8 Ranks)	4800
	2S8R (16 ranks)	4800

DIMM Type	DIMM Population	EEPYC 9005 DDR5 Frequency MT/s		
		6400 MT/s Grade DIMM	5600 MT/s Grade DIMM	4800 MT/s Grade DIMM
RDIMM	1R (1 rank)	6400[1]	5600	4800
	2R (2 ranks)	6400[1]	5600	4800
3DS RDIMM*	2R xH	6400[1]	5600	4800
MRDIMM (1:1)[2]	4R (4 ranks)	6400		

*For 3DS RDIMM[2]	When x = 2	DIMM Ranks = 4
	When x =4	DIMM Ranks = 8
	When x = 8[3]	DIMM Ranks = 16

Note:

- When only one DIMM is used, it must be populated in memory slot DIMM1.

1. 6400 MT/s supported with specific DIMMs listed in product page QVL.
2. MRDIMM will be evaluated as a post-PR feature, pending ecosystem readiness.
3. 3DS RDIMM at 2 Rank (8H DRAM Pkgs) will be a post-PR feature, pending ecosystem readiness.

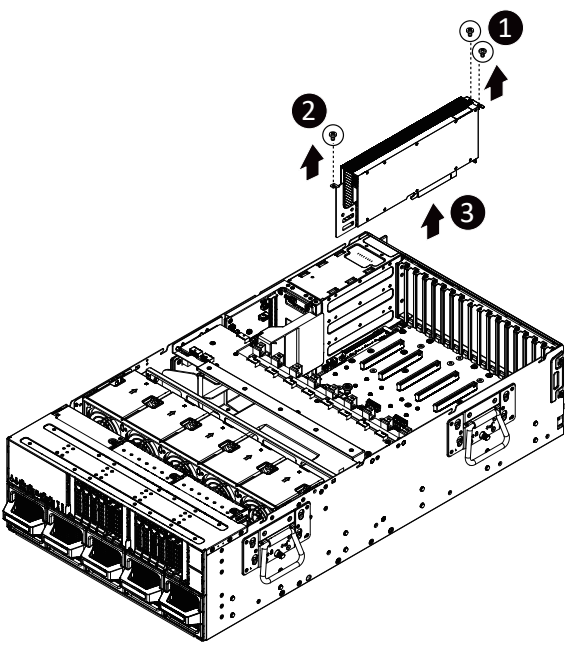
3-7 Replacing and Installing the GPU Card

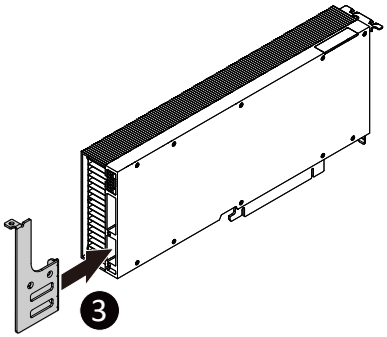
- Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered off and all power sources have been disconnected from the server prior to installing a GPU card.
- Failure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

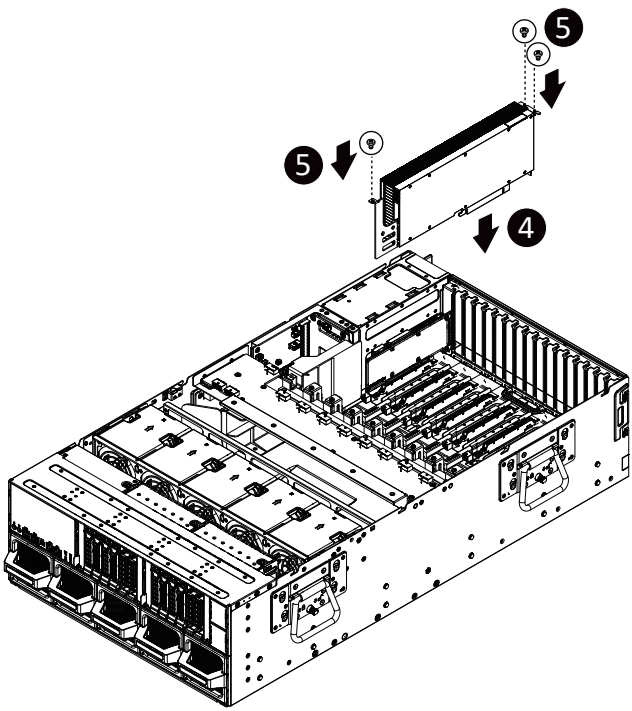
- The GPU riser assembly does not include a support bracket as standard. To install a GPU card, a support bracket must be installed.

Follow these instructions to replace a GPU card:

1. Remove screws securing the two GPU card brackets.
2. Lift up the GPU card out of system.
3. Attach the GPU card support bracket.
4. Orient the GPU card with the riser guide slot and push in the direction of the arrow until the GPU card sits in the card connector.
5. Secure the GPU card support bracket and GPU card with screws.
6. Repeat steps 1-5 to replace the GPU card into the system.




3


5
5
4

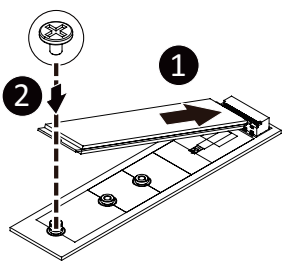
3-8 Installing the M.2 Device and Heat Sink

CAUTION

The position of the stand-off screw will depend on the size of the M.2 device. The stand-off screw is pre-installed for 22110 cards as standard. Refer to the size of the M.2 device and change the position of the stand-off screw accordingly.

Follow these instructions to install the M.2 device:

1. Insert the M.2 SSD module into the slot.
2. Secure it with the screw, tightening as necessary to fasten the M.2 SSD module in place.



3-8-1 M.2 device with Heatsink

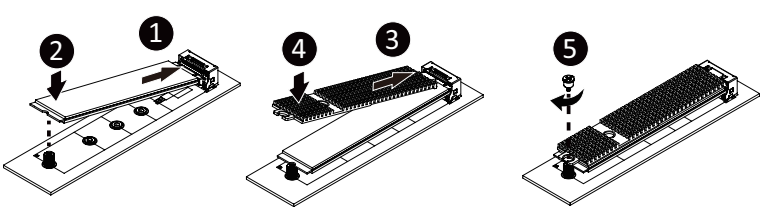
WARNING:

Please ensure a heatsink is attached to any M.2 device installed into the system. Installing an M.2 device without any heatsink may result in the system overheating or system performance being throttled.

- Please Go to for specific M.2 Slot location.
- To install/remove the M.2 module and Heatsink use a No. 1 Phillips-head screwdriver with a screw torque of 1.5 ± 0.2 kgf*cm

Follow these instructions to install the M.2 device and heat sink:

1. Insert the M.2 device into the M.2 connector.
2. Press down on the M.2 device.
3. Install the thermal pad of the M.2 device to the M.2 device.
4. Press down on the thermal pad.
5. Secure the M.2 device and its thermal pad to the motherboard with a single screw.
6. Reverse steps 1-2 to remove the M.2 device.



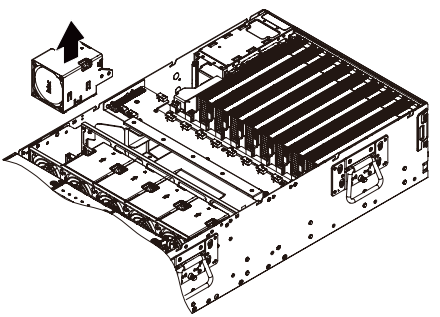
3-9 Replacing the Fan Assembly

- 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 replacing a system fan.

Failure to observe these warnings could result in personal injury or damage to equipment.

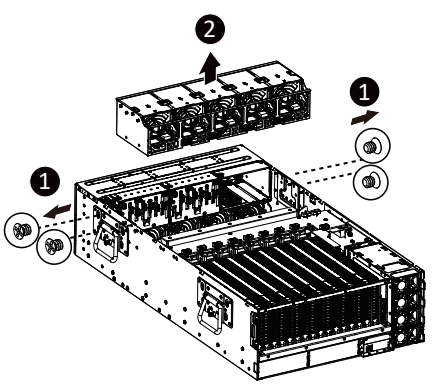
Follow these instructions to replace a fan assembly:

1. Using the latches, lift up the fan assembly from the chassis.
2. Reverse the previous steps to install the replacement fan assembly.



Follow these instructions to replace a system fan wall assembly:

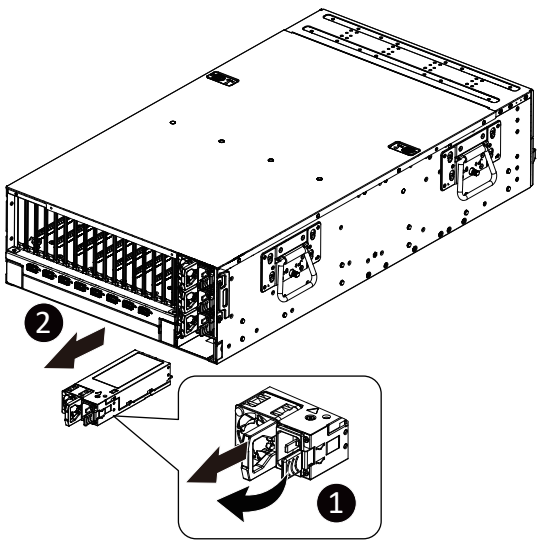
1. Remove the screws securing the fan wall assembly.
2. Lift up the fan wall assembly from the chassis.
3. Reverse the previous steps to install the replacement fan assembly.



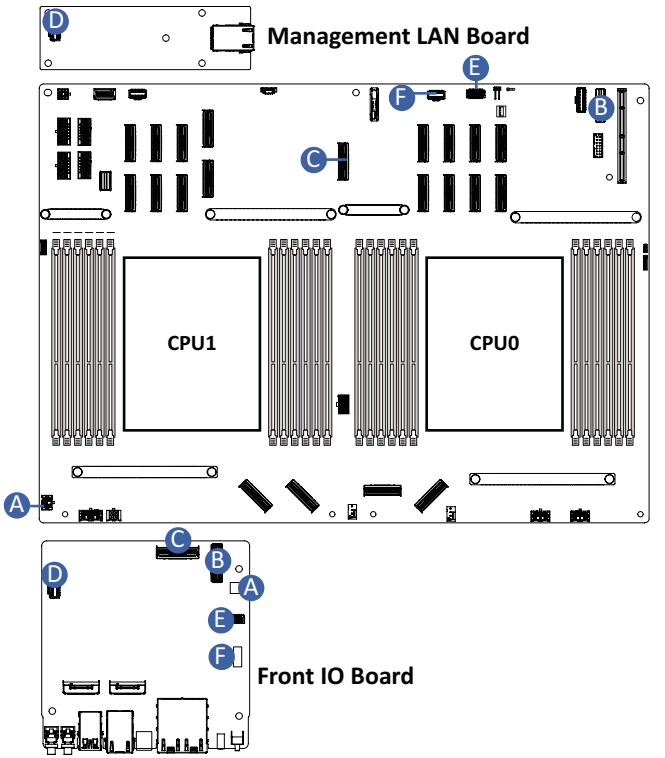
3-10 Removing and Installing the Power Supply

Follow these instructions to replace the power supply:

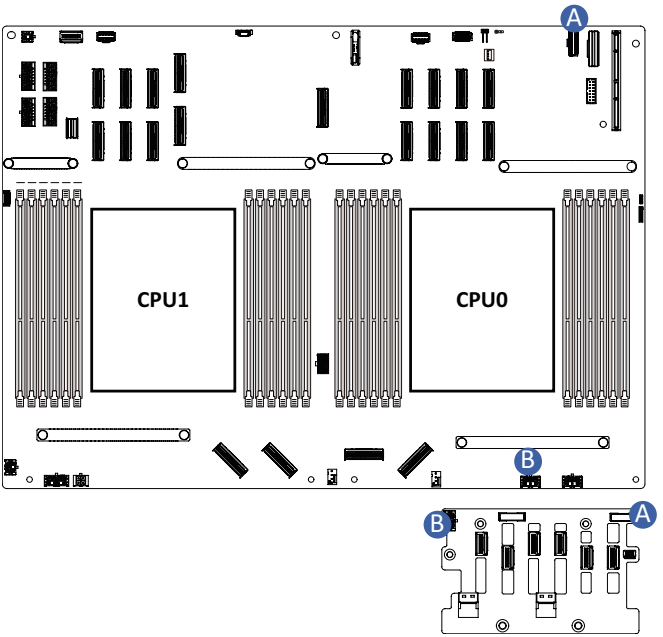
1. Flip up and then grasp the power supply handle.
2. Press the retaining clip on the right side of the power supply unit in the direction indicated.
3. Pull out the power supply unit using the handle.
4. Insert the replacement power supply unit firmly into the chassis. Connect the AC power cord to the replacement power supply.
5. Repeat steps 1-4 for replacement of the second power supply.



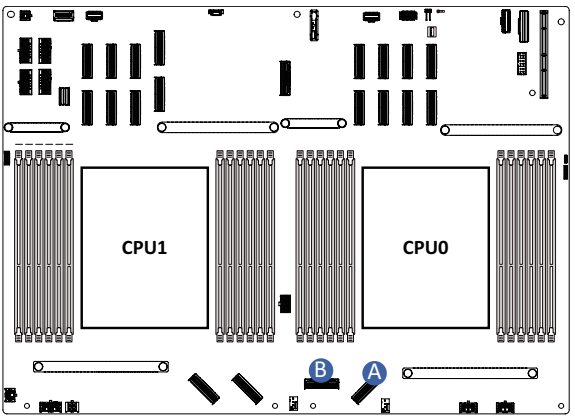
3-11 Cable Routing

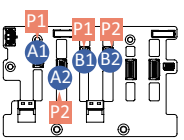


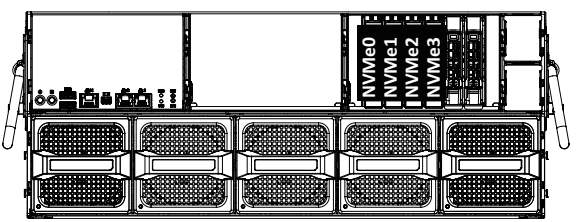
A	Front IO Power Cable	Motherboard: IO_PWR
		Front IO Board: PWR_FP
B	Front IO Signal Cable	Motherboard: IO_SLIM
		Front IO Board: FP_IO
C	Front IO MICO Signal Cable	Motherboard: IO_MCIO
		Front IO Board: MCIO
D	Management LAN Cable	Front IO Board: REAR_LAN
		Management LAN Board: CN_LAN1
E	JLFP Cable	Motherboard: JLFP
		Front IO Board: JLFP
F	NCSI Cable	Motherboard: NCSI_CONN
		Front IO Board: NCSI



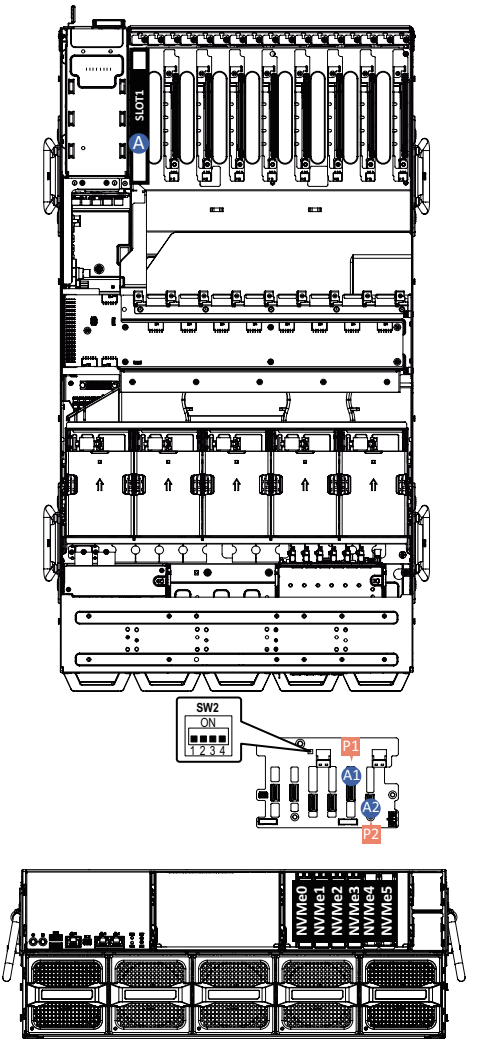
A	HDD Backplane Board Signal Cable	Motherboard: BP_1
		Front Left HDD Board: BP_1
B	HDD Backplane Board Power Cable	Motherboard: BP_PWR1
		Front Right HDD Board: BP_PWR



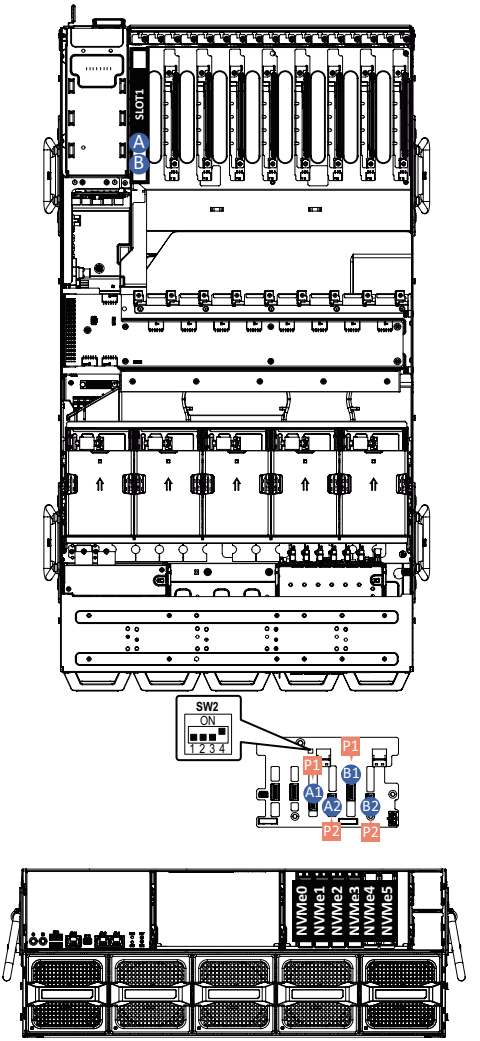




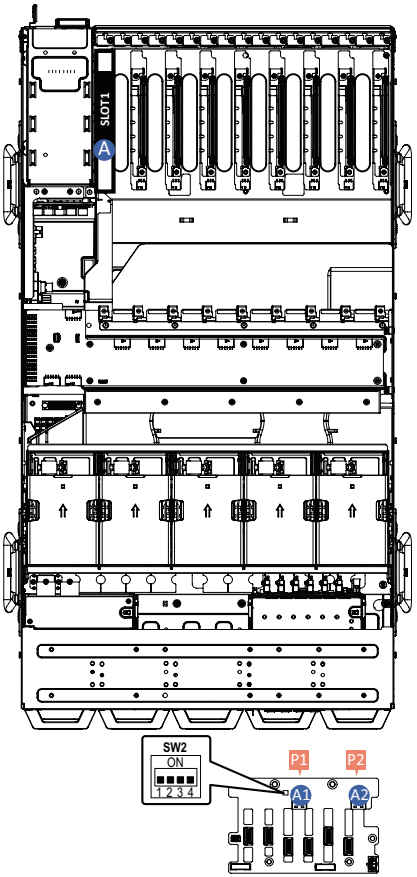
A	NVMe 0-1 Cable	Motherboard: U2_P0_G3_0	**B**	NVMe 2-3 Cable	Motherboard: UU2_P0_G3_1
		Front HDD Board: A1: U.2_0 A2: U.2_1			Front HDD Board: B1: U.2_0 B2: U.2_1

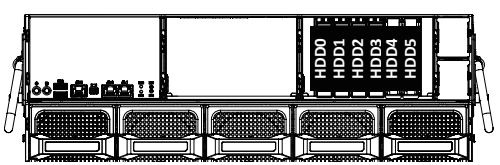


A	NVMe 8i Tri-Mode RAID Card Cable	RAID Card: C0
		Front HDD Board: A1: U.2_4 A2: U.2_5
Front HDD Board: SW2 Pin 4 set to OFF		

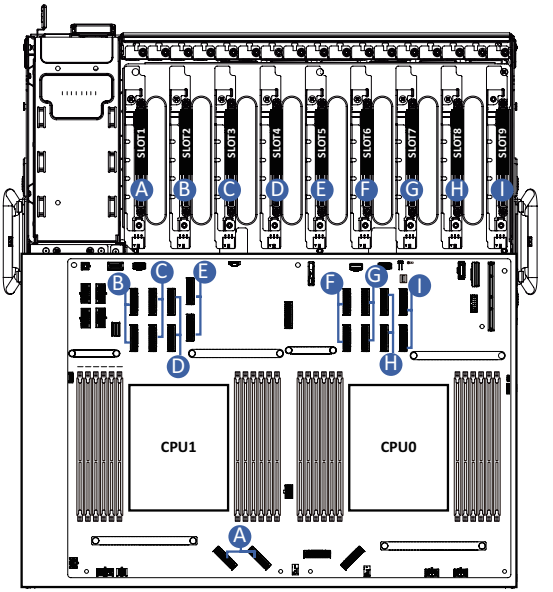


A	NVMe 16i Tri-Mode RAID Card Cable	RAID Card: C0
		Front HDD Board: A1: U.2_2 / A2: U.2_3
B		RAID Card: C1
		Front HDD Board: B1: U.2_4 / B2: U.2_5
Front HDD Board: SW2 Pin 4 set to ON		





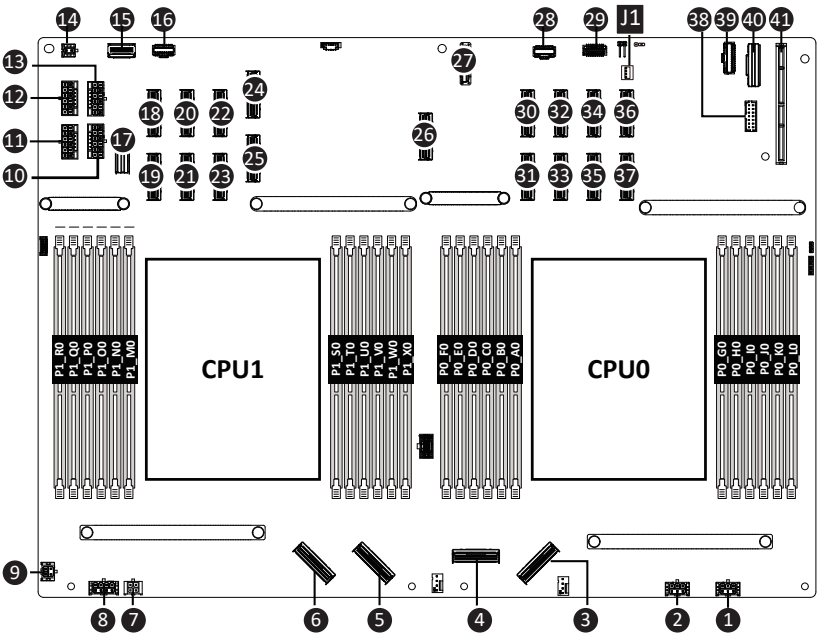
A	SATA 8i Tri-Mode Card HDD 0-5	RAID Card: C0
		Front HDD Board: A1: SL_SAS0 A2: SL_SAS1
Front HDD Board: SW2 Pin 4 set to OFF		



A	PCIe Signal Cable	Motherboard: Left: U2_P1_G1_1 Right: U2_P1_G1_0	F	PCIe Signal Cable	Motherboard: Top: U2_P0_P0_0 Bottom: U2_P0_P0_1
		PCIe Slot 1			PCIe Slot 6
B	PCIe Signal Cable	Motherboard: Top: U2_P1_P0_0 Bottom: U2_P1_P0_1	G	PCIe Signal Cable	Motherboard: Top: U2_P0_P1_0 Bottom: U2_P0_P1_1
		PCIe Slot 2			PCIe Slot 7
C	PCIe Signal Cable	Motherboard: Top: U2_P1_P2_0 Bottom: U2_P1_P2_1	H	PCIe Signal Cable	Motherboard: Top: U2_P0_P2_0 Bottom: U2_P0_P2_1
		PCIe Slot 3			PCIe Slot 8
D	PCIe Signal Cable	Motherboard: Top: U2_P1_P3_0 Bottom: U2_P1_P3_1	I	PCIe Signal Cable	Motherboard: Top: U2_P0_P3_0 Bottom: U2_P0_P3_0
		PCIe Slot 4			PCIe Slot 9
E	PCIe Signal Cable	Motherboard: Top: U2_P1_P3_0 Bottom: U2_P1_P3_0	--		
		PCIe Slot 5			

Chapter 4 Motherboard Components

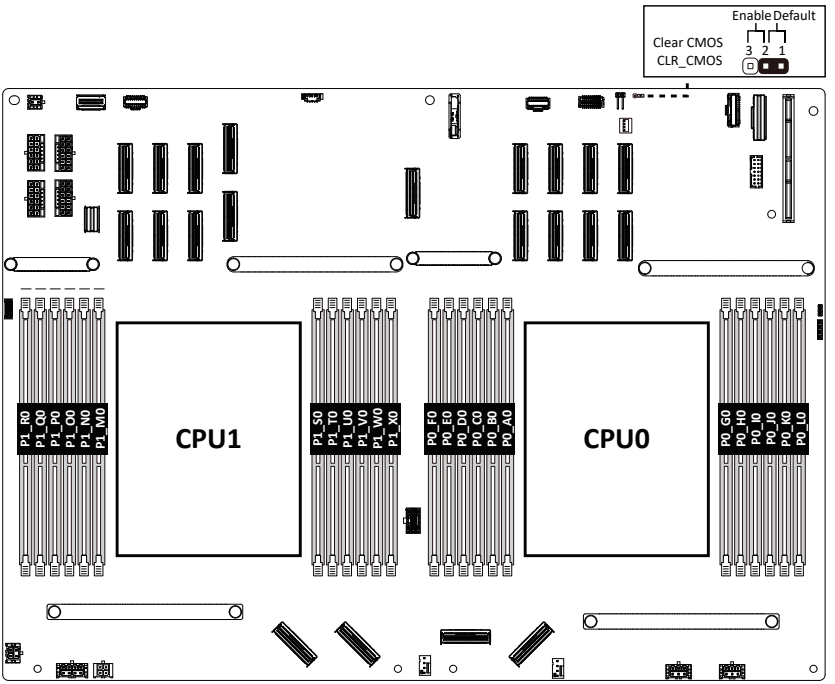
4-1 Motherboard Components



Item	Description
1	HDD Back Plane Board Power Connector (BPB_PWR2)
2	HDD Back Plane Board Power Connector (BPB_PWR1)
3	MCIO Connector (U2_P0_G3_0)
4	MCIO Connector (U2_P0_G3_1)
5	MCIO Connector (U2_P1_G1_0)
6	MCIO Connector (U2_P1_G1_1)
7	HDD Back Plane Board Power Connector (BP_PWR_E1S)
8	FAN Power Connector (For Front IO Board/IO_FAN_PWR)
9	IO Board Power Connector (IO_PWR)
10	GPU Power Connector (P12V_IN3)
11	GPU Power Connector (P12V_IN1)
12	GPU Power Connector (P12V_IN2)
13	GPU Power Connector (P12V_IN4)
14	12V Standby Power Connector (PWR_STBY)

Item	Description
15	MICO 4i Connector (PDB_IO)
16	Motherboard Power Connector (MB_PSU_CON)
17	SlimLine 4i Connector (NVLINK)
18	MCIO Connector (U2_P1_P0_0)
19	MCIO Connector (U2_P1_P0_1)
20	MCIO Connector (U2_P1_P1_0)
21	MCIO Connector (U2_P1_P1_1)
22	MCIO Connector (U2_P1_P2_0)
23	MCIO Connector (U2_P1_P2_1)
24	MCIO Connector (U2_P1_P3_0)
25	MCIO Connector (U2_P1_P3_1)
26	MCIO Connector (for IO Board/IO_MCIOI)
27	System Battery Socket
28	NCSI Connector (for Front IO Board)
29	JLFP Connector (for Front IO Board)
30	MCIO Connector (U2_P0_P0_0)
31	MCIO Connector (U2_P0_P0_1)
32	MCIO Connector (U2_P0_P1_0)
33	MCIO Connector (U2_P0_P1_1)
34	MCIO Connector (U2_P0_P2_0)
35	MCIO Connector (U2_P0_P2_1)
36	MCIO Connector (U2_P0_P3_0)
37	MCIO Connector (U2_P0_P3_1)
38	TPM Module Connector
39	HDD Back Plane Board Signal Connector (BP_1)
40	SlimLine 8i Connector (IO_SLIM)
41	DC-SCM (BMC Module) Connector (DC_SCI)

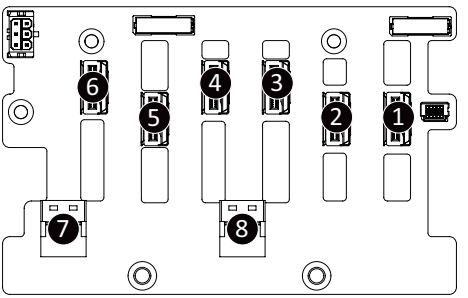
4-2 Jumper Setting



J1		ON	OFF
1	--	--	--
2	--	--	--
3	BIOS_RCVR	BIOS recovery mode	Normal [Default]
4	BIOS_PWD	Clear supervisor password	Normal [Default]

4-3 Backplane Board Storage Connector

4-3-1 CBPX060



Item	Description
1	MCIO 4i (SFF-TA1016/U_2_0)
2	MCIO 4i (SFF-TA1016/U_2_1)
3	MCIO 4i (SFF-TA1016/U_2_2)
4	MCIO 4i (SFF-TA1016/U_2_3)
5	MCIO 4i (SFF-TA1016/U_2_4)
6	MCIO 4i (SFF-TA1016/U_2_5)
7	SlimSAS Connector (SFF-8654/SL_SAS0)
8	SlimSAS Connector (SFF-8654/SL_SAS1)

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 <DEL> 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 4 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>	Search setup items.
<F9>	Restore the previous BIOS 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 Insyde BIOS special enhanced features.
  (ex: Auto detect fan and temperature status, automatically configure hard disk parameters.)
- **AMD CBS**
  This setup page includes the common items for configuration of AMD motherboard-related information.
- **AMD PBS**
  This setup page includes the common items for configuration of AMD CPM RAS related settings.
- **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.
- **Power**
  This setup page provides items for power configuration.
- **Boot**
  This setup page provides items for configuration of the boot sequence.
- **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.

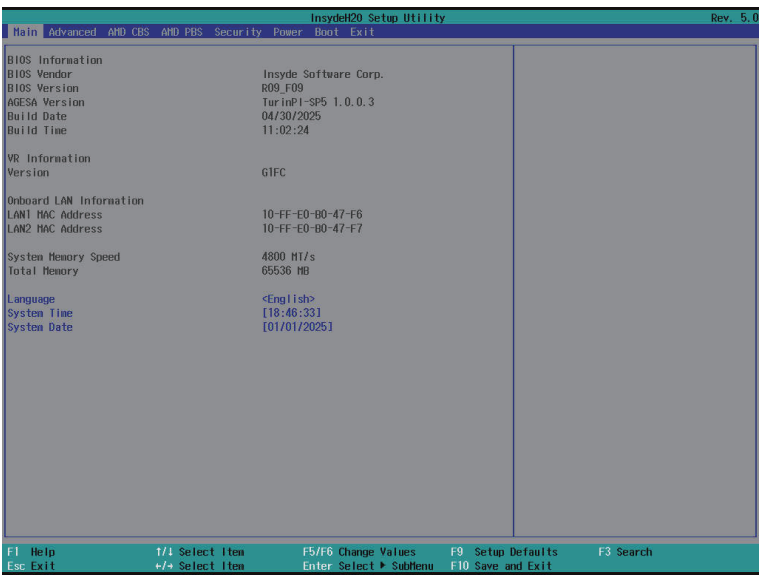
Main Menu Help

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.

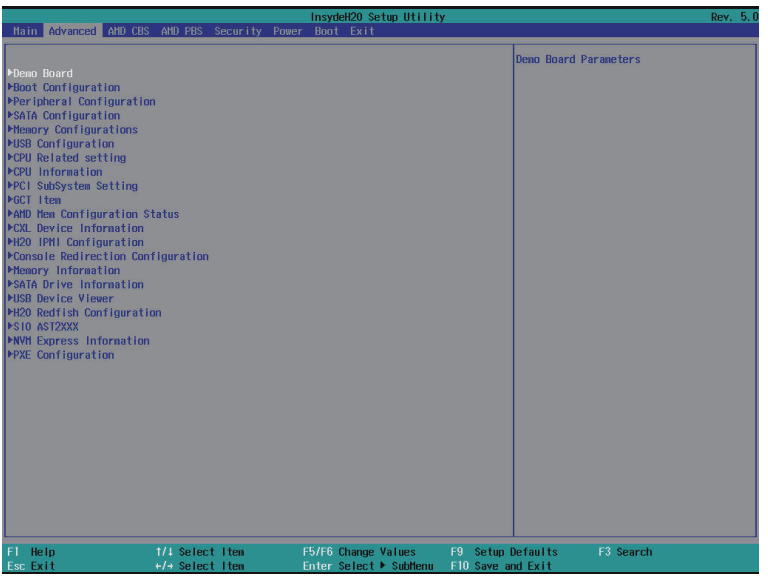


Parameter	Description
BIOS Information	
BIOS Vendor/BIOS Version/AGESA Version	Displays the BIOS related information.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
VR Information Version	Displays VR version information.
Onboard LAN Information	
LAN1/LAN2 MAC Address(Note)	Displays LAN MAC address information.
System Memory Speed	Displays the frequency information of the installed memory.
Total Memory	Displays the total memory size of the installed memory.
Language	Configure the preference language.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

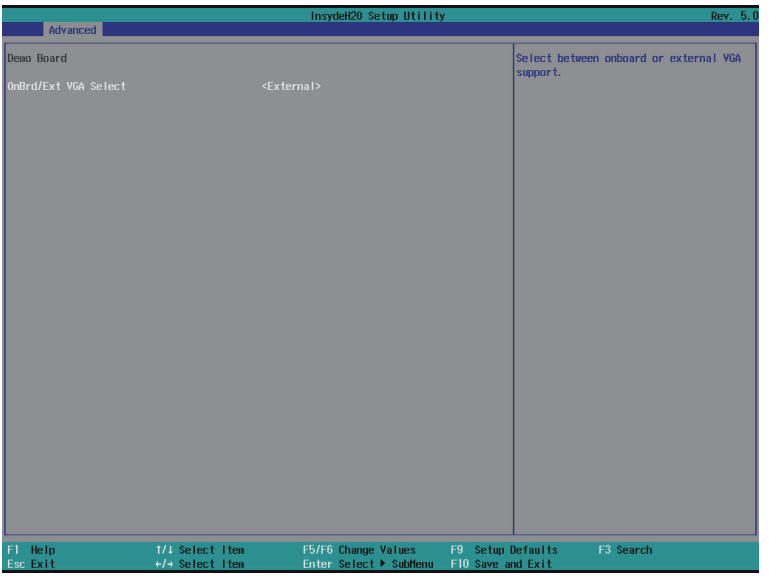
(Note) The number of LAN ports listed will depend on the motherboard / system model.

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.

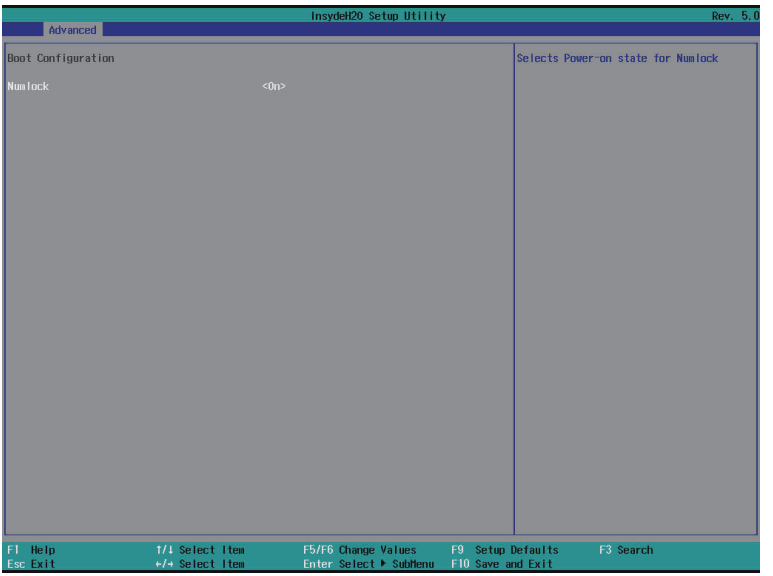


5-2-1 Demo Board



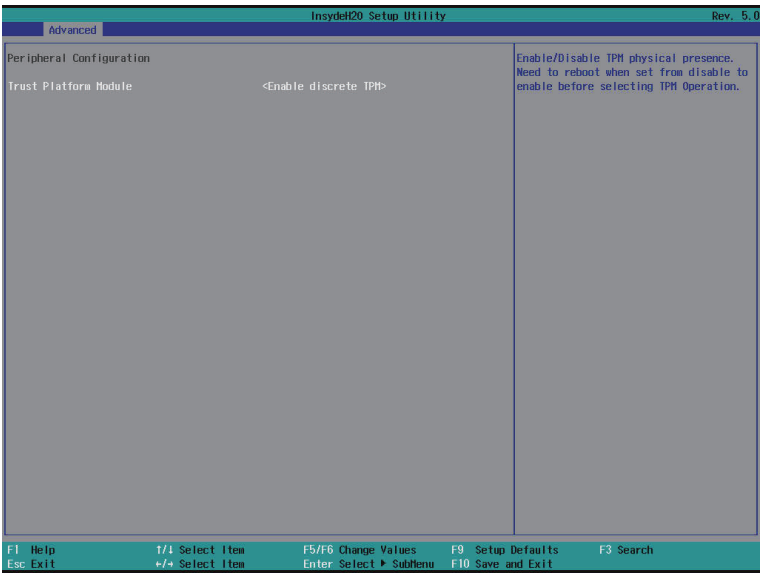
Parameter	Description
OnBrd/Ext VGA Select	Selects between onboard or external VGA support. Options available: **Auto**, Onboard, External.

5-2-2 Boot Configuration



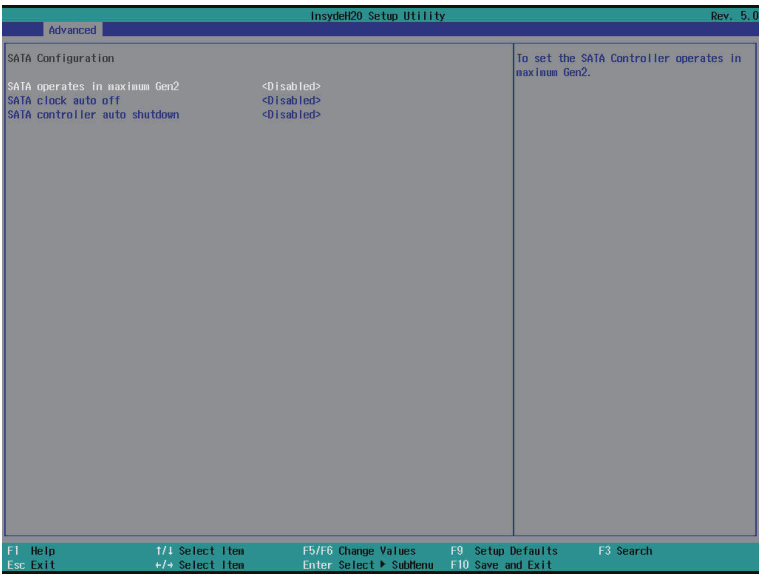
Parameter	Description
Numlock	Select Power-on state for NumLock. Options available: **On**, Off.

5-2-3 Peripheral Configuration



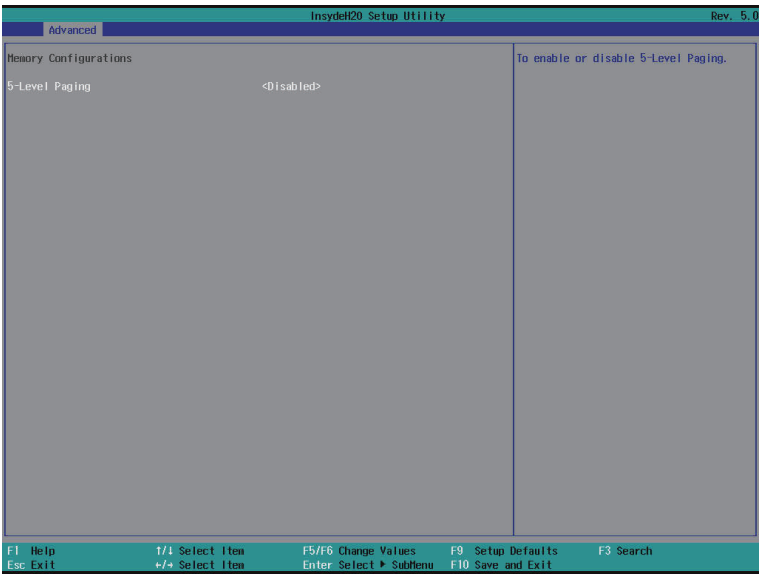
Parameter	Description
Peripheral Configuration	
Trust Platform Module	Enable/Disable BIOS TPM physical presence. Note: Need to reboot when set from disablel to enable before selecting TPM operation. Options available: **Disabled**, Enable discrete TPM.

5-2-4 SATA Configuration



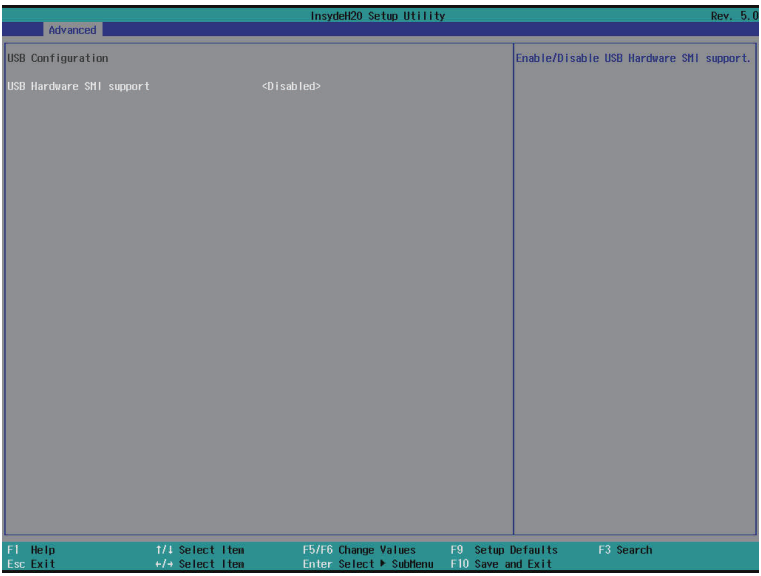
Parameter	Description
SATA Configuration	
SATA operates in maximum Gen2	To set the SATA Controller operates amximum Gen2. Options available: **Disabled**, Enabled.
SATA clock auto off	To set the SATA clock auto off. Options available: **Disabled**, Enabled.
SATA controller auto shutdown	To set the Options available: **Disabled**, Enabled.

5-2-5 Memory Configuration



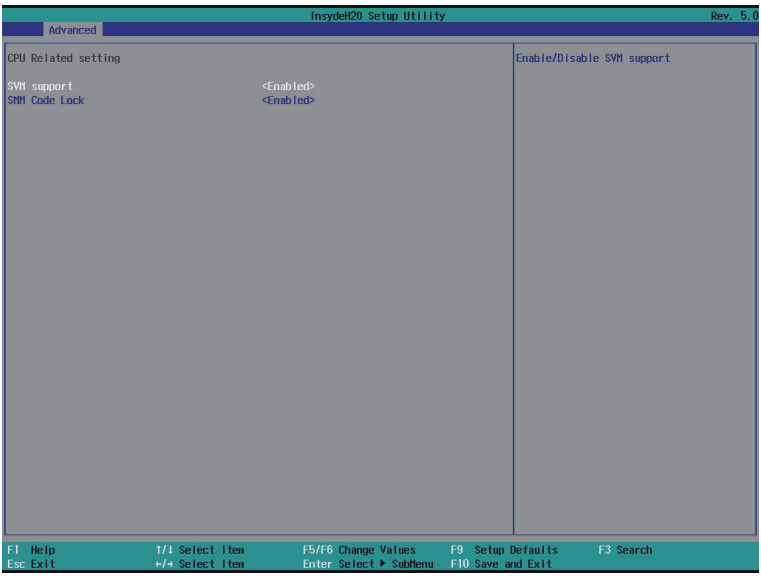
Parameter	Description
Memory Configuration	
5-Level Paging	To enable or disable 5-Level Paging. Options available: **Disabled**, Enabled.

5-2-6 USB Configuration



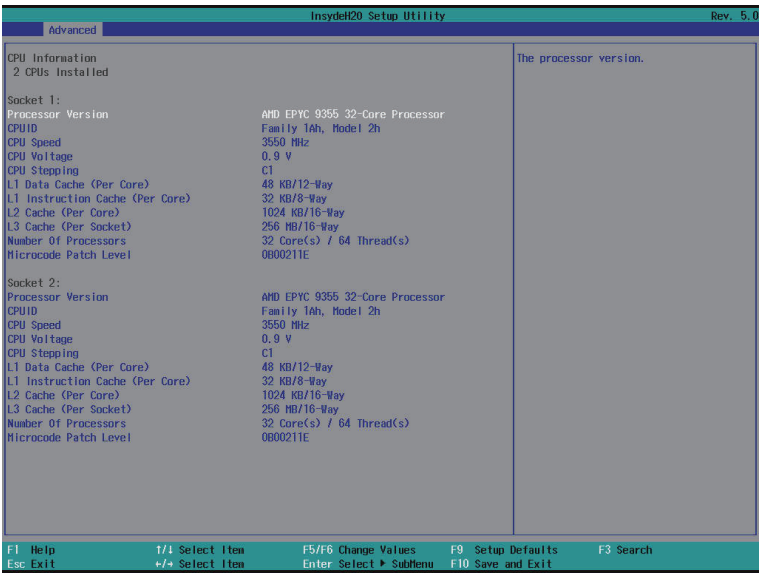
Parameter	Description
USB Configuration	
USB Hardware SMI support	Enable/Disable USB Hardware SMI support. Options available: **Disabled**, Enabled.

5-2-7 CPU Related Configuration



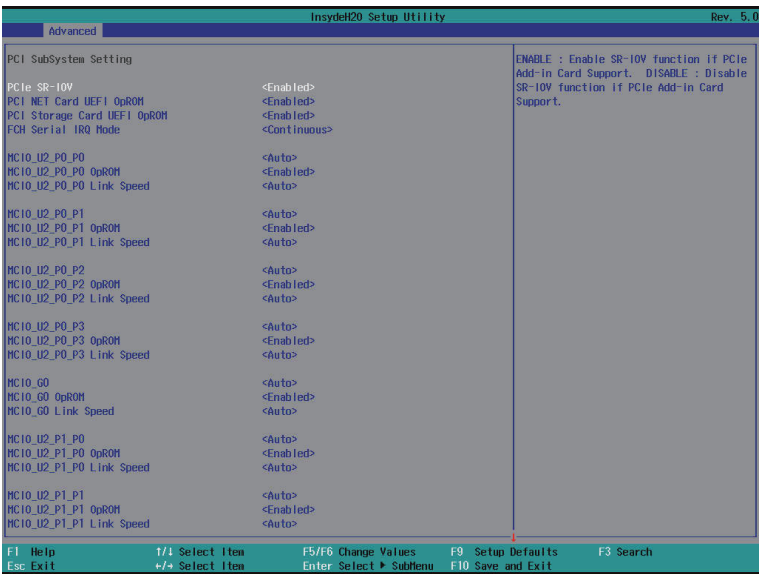
Parameter	Description
CPU Related Configuration	
SVM support	Enable/Disable the CPU Virtualization. Options available: **Enabled**, Disabled.
SMM Code Lock	Enable or disable the SSM (System Management mode) code segment/ registers. Options available: **Enabled**, Disabled.

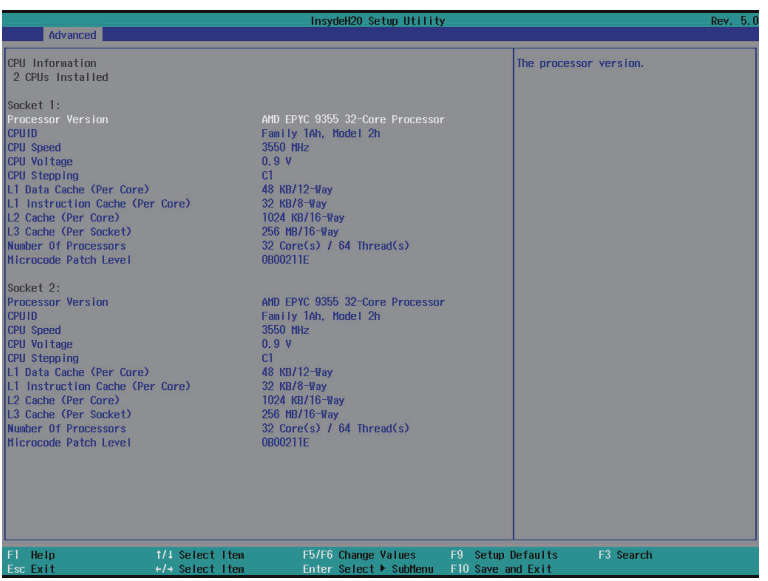
5-2-8 CPU Configuration



Parameter	Description
CPU Information	Displays the installed processor.
Socket 1 Socket 2	
Processor Version CPUID CPU Speed CPU Voltage CPU Stepping L1 Data Cache (Per Core) L1 Instruction Cache Per Core L2 Cache (Per Core) L3 Data Cache (Per Core) Number of Processors Microcode Patch Level	Displays the technical specifications for the installed processor(s).

5-2-9 PCI Subsystem Settings



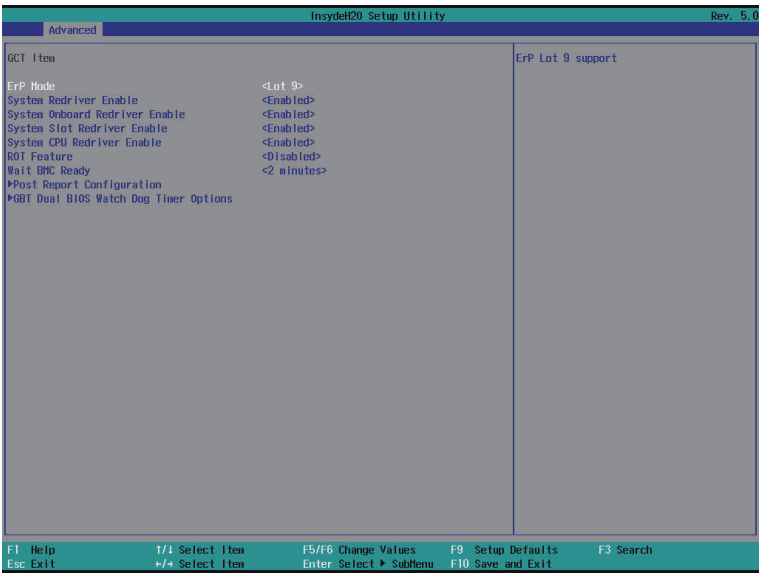


Parameter	Description
PCI Subsystem Setting	Displays the PCI Bus Driver version information.
PCIe SR-IOV	If the system has SR-IOV capable PCIe devices, this item Enable/Disable Single Root IO Virtualization Support. Options available: **Enabled**,Disabled.
PCI NET Card UEFI OpROM	To load PCI network device embedded UEFI Option ROM during POST. Options available: **Enabled**,Disabled.
PCI Storage Card UEFI OpROM	To load PCI storage device embedded UEFI Option ROM during POST. Options available: **Enabled**,Disabled.
FCH Serial IRQ Mode	To set the FCH serial IRQ mode is Continuous mode or quite mode. Options available: **Continuous**, Quite.
MCIO_U2_P0_P# (Note1) MCIO_U2_P1_P# (Note1) MCIO_G1 (Note1)	Change the PCIe lanes. Options available: **Auto**, Disabled, x16, x8x8, x8x4x4, x4x4x8, x4x4x4x4.
MCIO_U2_P0_P# OpROM(Note1) MCIO_U2_P1_P# OpROM(Note1) MCIO_G1 OpROM(Note1)	When enabled, this setting will initialize the device expansion ROM for the related devices. Options available: **Enabled** ,Disabled.
MCIO_U2_P0_P# Link Speed(Note1) MCIO_U2_P1_P# Link Speed(Note1) MCIO_G1 Link Speed(Note1)	Configure the PCIe slot max link speed. Options available: **Auto**, Gen5, Gen4, Gen3, Gen2, Gen1.
Onboard LAN Controller(Note2)	Enable/Disable the onboard LAN devices. Options available: Disabled, Enabled. Default setting is **Enabled**.
Onboard LAN# OpROM ROM(Note2)	Enable/Disable the onboard LAN devices, and initializes device expansion ROM. Options available: **Enabled** ,Disabled.

(Note1) This section is dependent on the available MCIO connector.

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

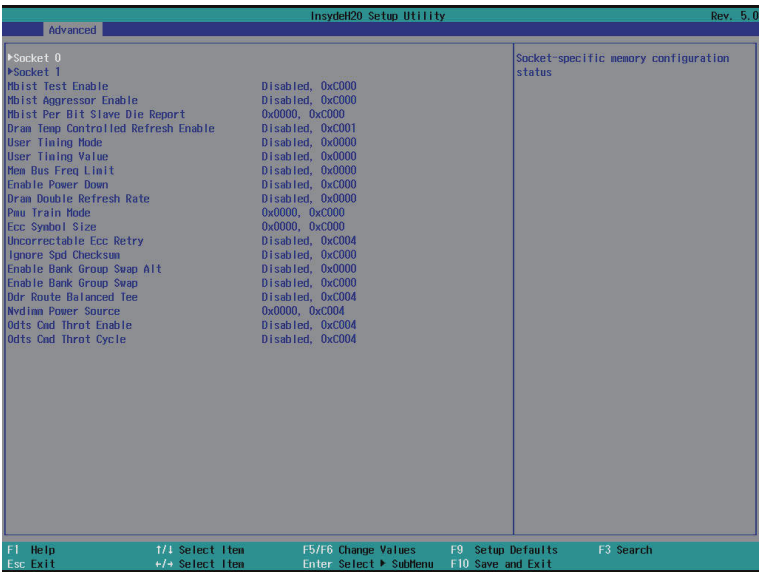
5-2-10 GTC Item



Parameter	Description
GCT Item	Displays the NVMe devices connected to the system.
ErP Mode	ErP Lot 9 support. Options available: **Lot 9**, Disabled..
System Redriver Enable	Enable/Disable system redriver. Options available: **Enabled**, Disabled.
System Onboard Redriver Enable	Enable/Disable system onboard redriver. Options available: **Enabled**, Disabled.
System Slot Redriver Enable	Enable/Disable system slot redriver. Options available: **Enabled**, Disabled.
System CPU Redriver Enable	Enable/Disable system CPU redriver. Options available: **Enabled**, isabled.
ROT Feature	Enable/Disable ROT feature. Options available: **Disabled**, Enabled.
Wait BMC Ready	Post wait BMC ready and reboot system. Options available: **2 minutes**, 4 minutes, 6 minutes, Disabled.
Post Report Configuration	Press [Enter] to configure advanced items. ◆ Halt On – Options available: **No Error**, All Error.

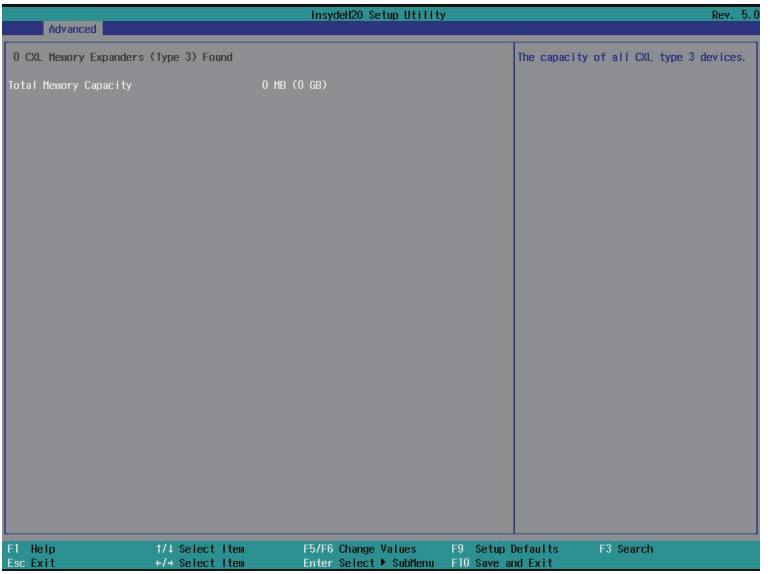
Parameter	Description
GBT Dual BIOS Watchdog Timer Options	Press [Enter] to configure advanced items. ◆ GBT Dual BIOS WDT Enable – Options available: **Enabled**, Disabled. ◆ GBT Dual BIOS WDT Time (Sec) – Configure Dual BIOS WDT Time. ◆ Enable Test Mode in PEI – Options available: **Disabled**, Enabled. ◆ Enable Test Mode in DXE – Options available: **Disabled**, Enabled.

5-2-11 AMD Mem Configuration Status



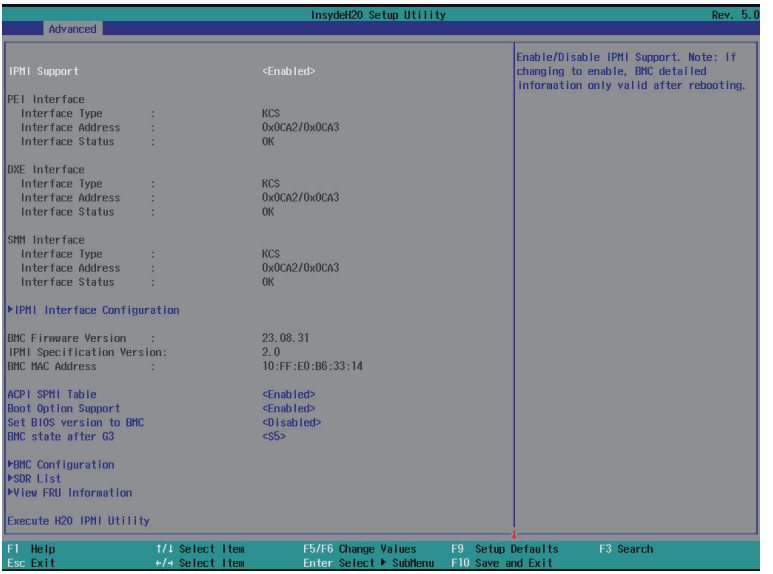
Parameter	Description
Socket 0/1	Press [Enter] to view the memory configuration status related to socket 0/1.

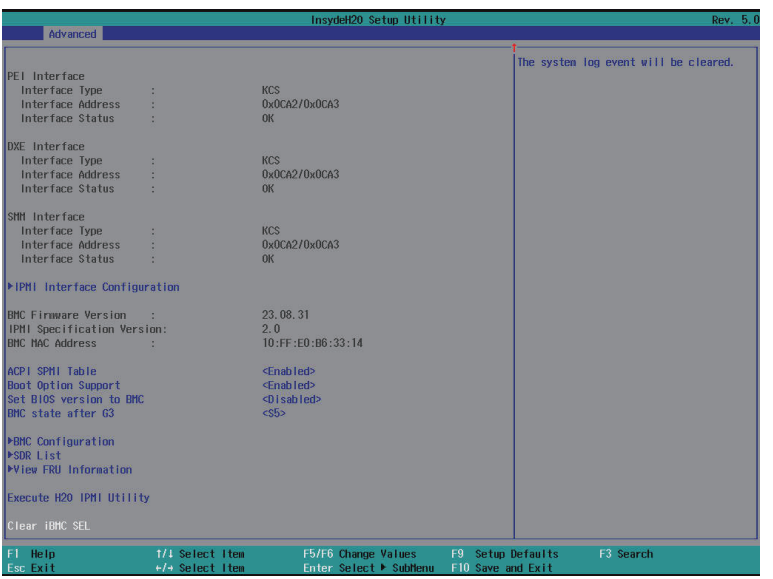
5-2-12 CXL Device Information



Parameter	Description
Total Memory	Displays the capacity of all CXL type 3 device

5-2-13 H20 IPMI Configuration



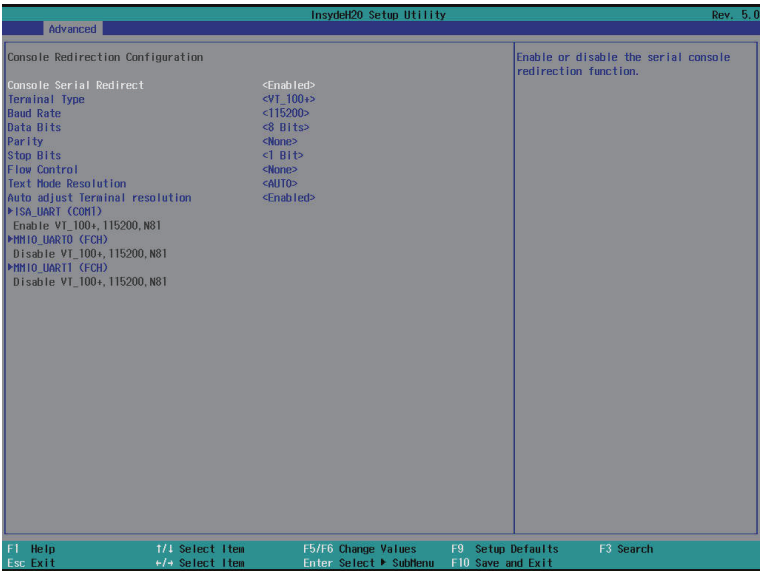


Parameter	Description
IPMI Support	IPMI Interface Configuration page. This page contains IPMI Interface related settings. Options available: **Enabled**, Disabled.
IPMI Interface Configuration	Press [Enter] to configure advanced items. ◆ Max Detect Time (Sec) – Configure IPMI Max Detect Time.
ACPI SPMI Table	Enable/Disable the ACPI SPMI Table for IPMI driver installation. Options available: **Enabled**, Disabled.
Boot Option Support	Enable/Disable IPMI boot options. function. Thhis option controls all configurations of System Boot Option Parameter 5. Options available: **Enabled**, Disabled.
Set BIOS version to BMC	Enable/disable set BIOS version to BMC. If the option is enabled, BIOS will send BIOS version string t BMC during POST. Options available: **Disabled**, Enabled.
BMC state after G3	Select S0/S5 for ACPI state after a G3. Options available: **S0**, S5, Leave power state unchanged.
BMC Configuration	Press [Enter] to configure advanced items. ◆ Watchdog Timer Support (Note1) – Options available: **Disabled**, Enabled. ◆ Enable Watchdog in OS Load (Note2) – Options available: **Disabled**, Enabled. ◆ Power Cycle Time Support (Note3) – Options available: **Disabled**, Enabled. ◆ Power Button – Options available: **Enabled**, Disabled. ◆ Reset Button – Options available: **Enabled**, Disabled. ◆ NMI Button – Options available: **Enabled**, Disabled.

(Note1) This related item appears when **Watchdog Timer Support** is set to **Enabled**.
(Note2) This related item appears when **Enable Watchdog in OS Load** is set to **Enabled**.
(Note3) This related item appears when **Power Cycle Time Support** is set to **Enabled**.

Parameter	Description
BMC Configuration (cont.)	◆ User Configuration – Press [Enter] to configure advanced items. ◆ CHA LAN Channel Number – Configure CHA LAN Channel Number ◆ CHA IPv4 Mode – Selects to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase. – Options available: **Disabled**, Enabled. ◆ CHA IPv4 Source – Options available: **DHCP**, Static. ◆ CHA IPv6 Mode – Options available: **Disabled**, Enabled. ◆ CHA Enable IPv6 Static IP Address – Options available: **Disabled**, Enabled. ◆ CHA IPv6 Router Address Control – Options available: **Enable dynamic router address**, Enable static router address, All Enabled, All Disabled.
SDR List	Enable/disable list all SDRs information. Options available: Options available: **Disabled**, Enabled.
View FRU Information	Press [Enter] to view FRU information. This page displays for basic system ID information, as well as System product information. Items on this window are non-configurable.
Execute H20 IPMI Utility	Press [Enter] to for advanced configurations.

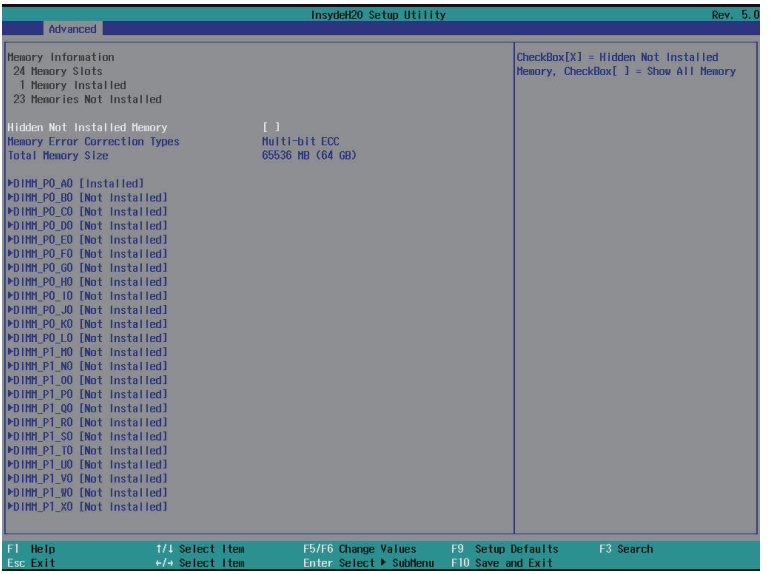
5-2-14 Console Redirection Configuration



Parameter	Description
Console Redirection Configuration	
Console Serial Redirect	Enable/Disable the Serial Port (COM). When set to Enabled allows you to configure the Serial port 1 settings. When set to Disabled, displays no configuration for the serial port. Options available: **Enabled**,Disabled.
Console Serial Redirect	Enable/Disable the Serial Port (COM). When set to Enabled allows you to configure the Serial port 1 settings. When set to Disabled, displays no configuration for the serial port. Options available: **Enabled**,Disabled.
Terminal Type	Selects a terminal type to be used for console redirection. Options available: **VT_100+**, VT_100, VT-UTF8, PC_ANSI, LOG_TERM, TTY_TERM, LINUX_TERM, XTERM_R6, VT400, SCO_TERM.
Baud Rate	Selects the transfer rate for console redirection. Options available: **115200** ,9600, 19200, 57600.
Data Bits	Selects the number of data bits used for console redirection. Options available: **8 Bits**, 7 Bits.

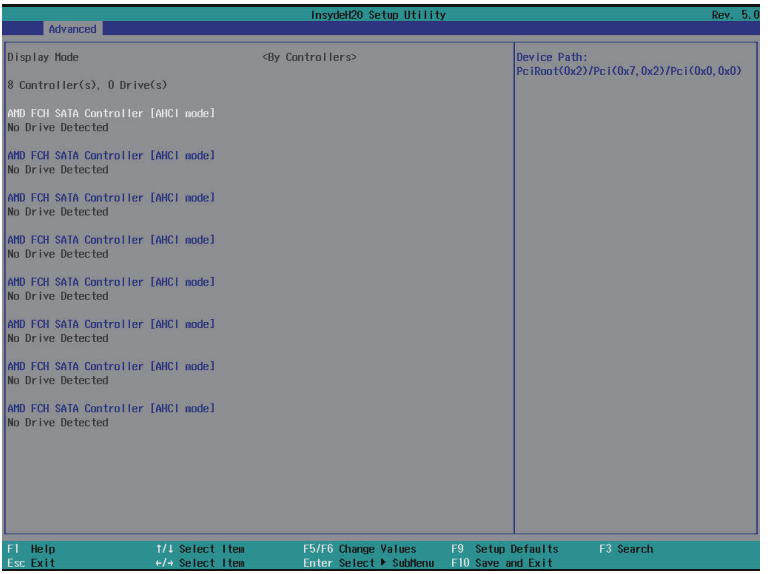
Parity	A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. Options available: **None**, Even, Odd, Mark, Space
Stop Bits	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 Bit**, 2 Bit.
Flow Control	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.
Text Mode Resolution	Console Redirection Text Mode Resolution. Options available: **AUTO**, Force 80x25, Force 80x24 (DEL FIRST ROW), Force 80x24 (DEL LAST ROW), Limit 128x40
Auto adjust Terminal resolution	Through send extra ESC sequence code to adjust terminal resolution to fit hot screen. Options available: **Enabled**, Disabled.
ISA_UART (COM1)	Press [Enter] for advanced items.
MMIO_UART0 (FCH)	Press [Enter] for advanced items.
MMIO_UART1 (FCH)	Press [Enter] for advanced items.

5-2-15 Memory Information



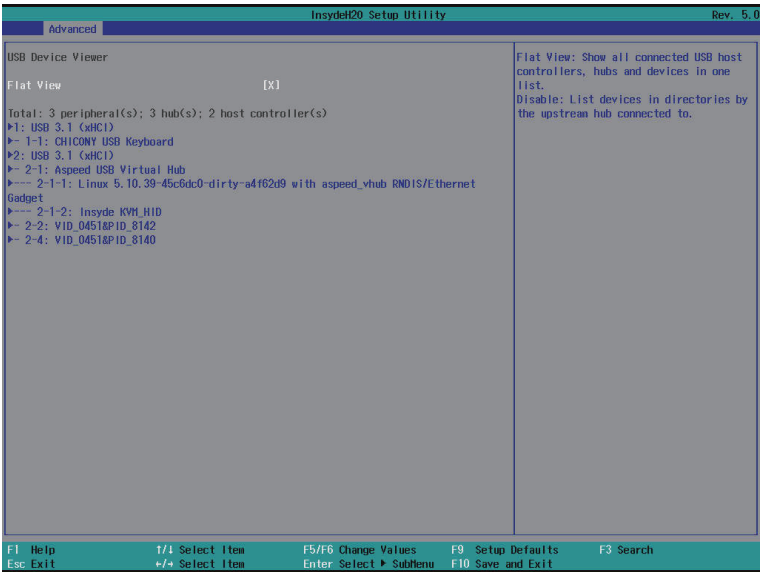
Parameter	Description
Memory Information	
Hidden Not Installed Memory	Press [Enter] to hide the empty memory slot.
Memory Error Correction Types	Displays the memory error correction types information.
Total Memory	Displays the total memory size of the installed memory.
DIMM_P0_#0 DIMM_P1_#0	Press [Enter] to enable/disable specific memory channel.

5-2-16 SATA Drive Information



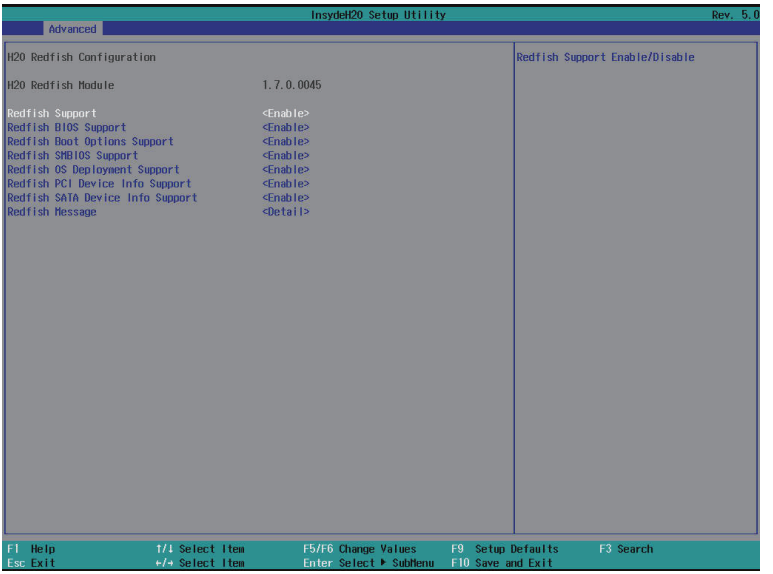
Parameter	Description
Display Mode	By Controller
AMD FCH SATA Controller	AMD FCH SATA controller information.

5-2-17 USB Device Viewer



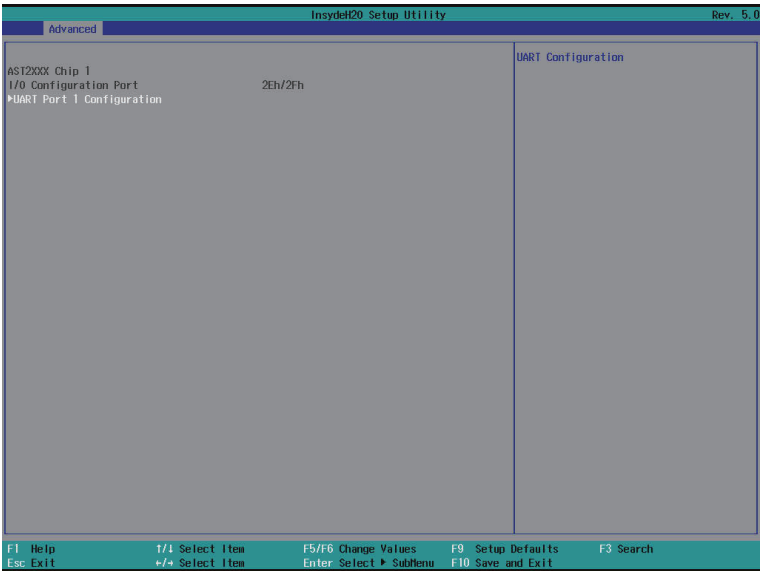
Parameter	Description
Flat View	Click to show detailed information of this host controller.

5-2-18 H20 Redfish Configuration



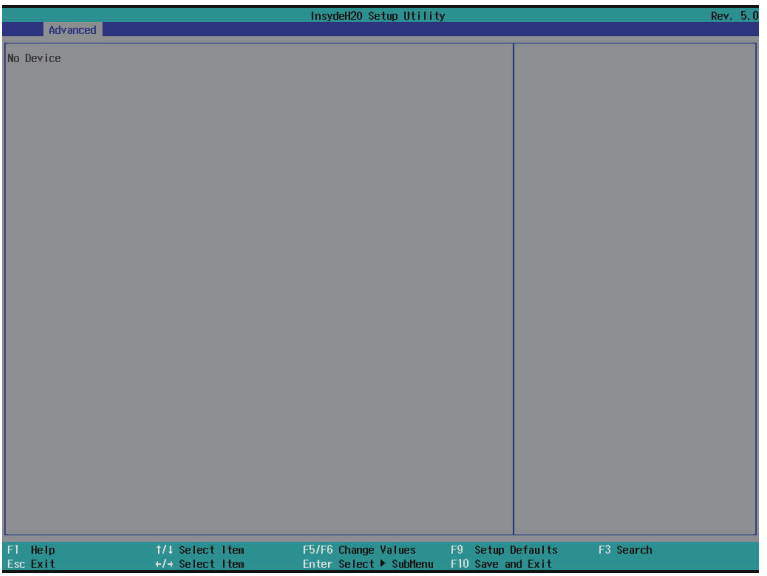
Parameter	Description
Redfish Configuration	
Redfish Support	Options available: **Enable**, Disable.
Redfish BIOS Support	Options available: **Enable**, Disable.
Redfish Boot Option Support	Options available: **Enable**, Disable.
Redfish SMBIOS Support	Options available: **Enable**, Disable.
Redfish OS Deployment Support	Options available: **Enable**, Disable.
Redfish PCI Device Info Support	Options available: **Enable**, Disable.
Redfish SATA Device Support	Options available: **Enable**, Disable.
Redfish Message	Options available: **Detail**, Enable, Disable.

5-2-19 SIO AST2XXX



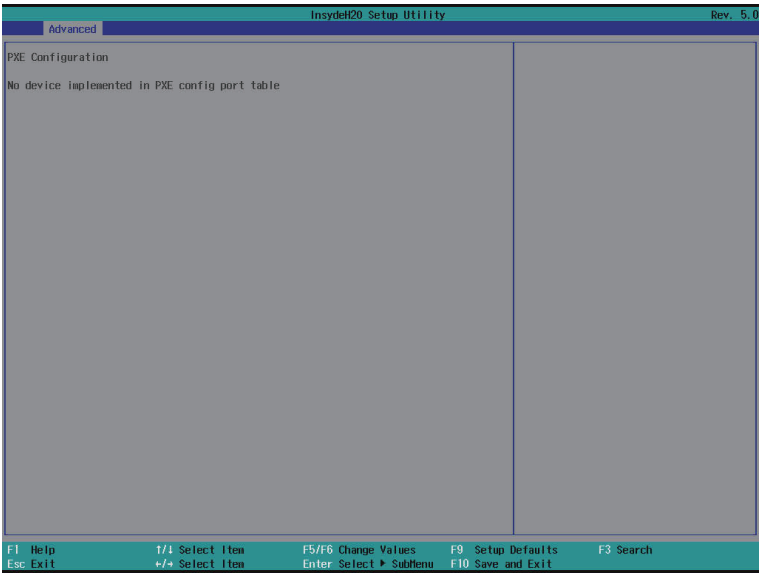
Parameter	Description
UART Port 1 Configuration	Press [Enter] for advanced configuration.
UART Port 1	Options available: **Enabled**, Disabled.
Base I/O Address	Options available: **3F8h**, 2F8h, 3E8h, 2E8h, 338h, 238h, 220h, 228h, 210h, 218h, 218h, 240h, 248h.
Interrupt	Options available: **IRQ4**, IRQ3, IRQ5, IRQ6, IRQ7, IRQ10, IRQ11.
Interrupt Type	Options available: **Rising Edge Trigger**, Low Level Trigger, High Level Trigger.
Peripheral Type	Options available: **RS232**.
Clock Source	Options available: **1.8462 MHz**, 24 MHz.

5-2-20 NVM Express Information



Parameter	Description
NVMe Configuration	Displays the NVMe devices connected to the system.

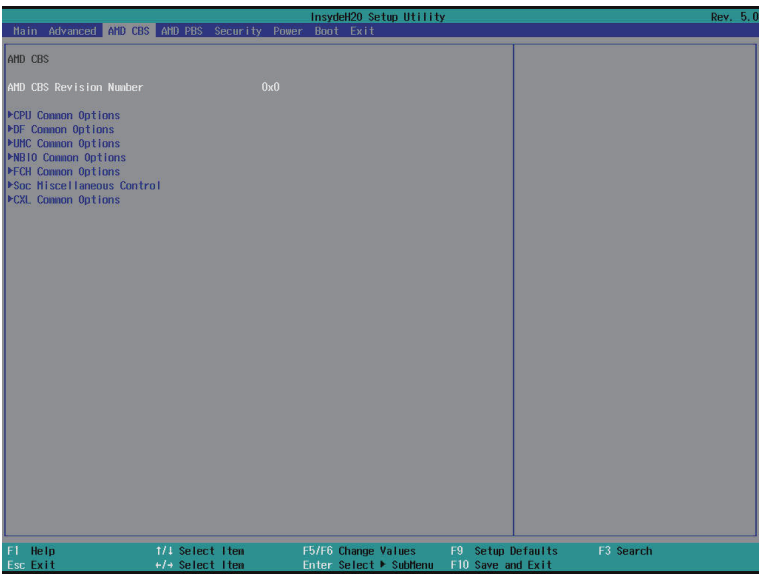
5-2-21 PXE Configuration



Parameter	Description
PXE Configuration	Displays the PXE devices connected to the system.

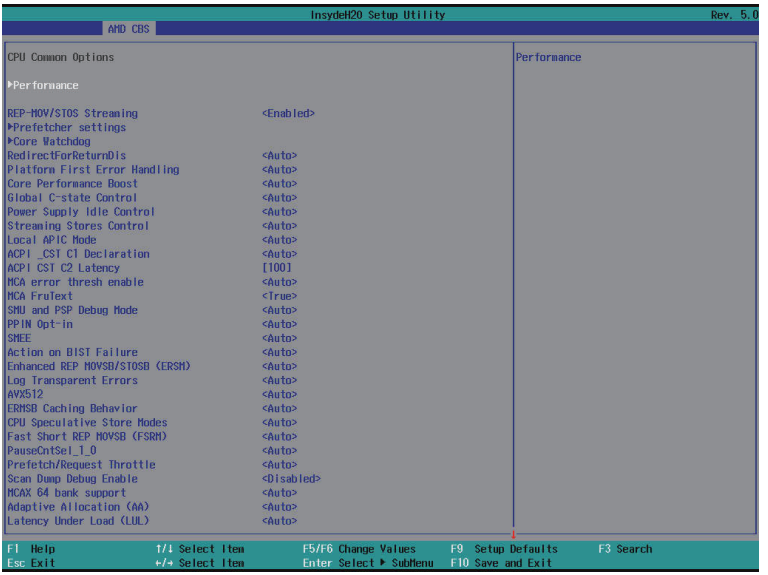
5-3 AMD CBS Menu

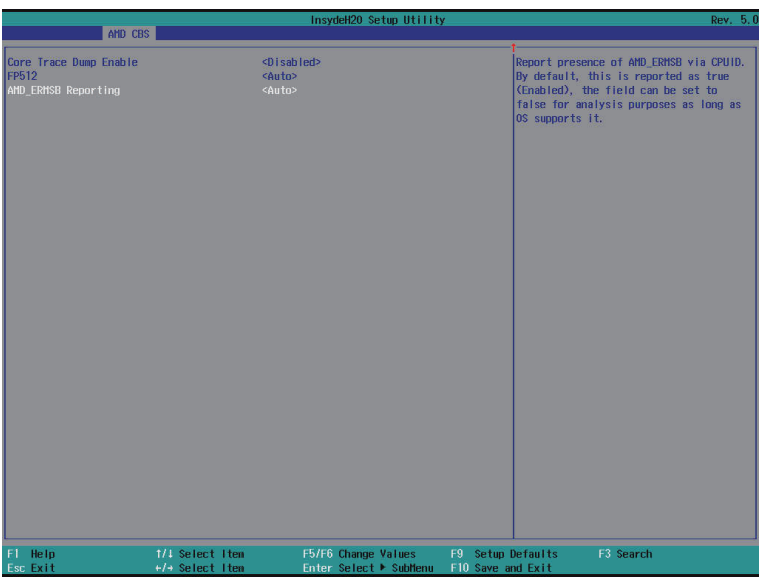
AMD CBS menu displays submenu options for configuring the CPU-related information that the BIOS automatically sets. Select a submenu item, then press [Enter] to access the related submenu screen.



Parameter	Description
AMD CBS Revision Number	Displays AMD CBS Revision Number information.

5-3-1 CPU Common Options

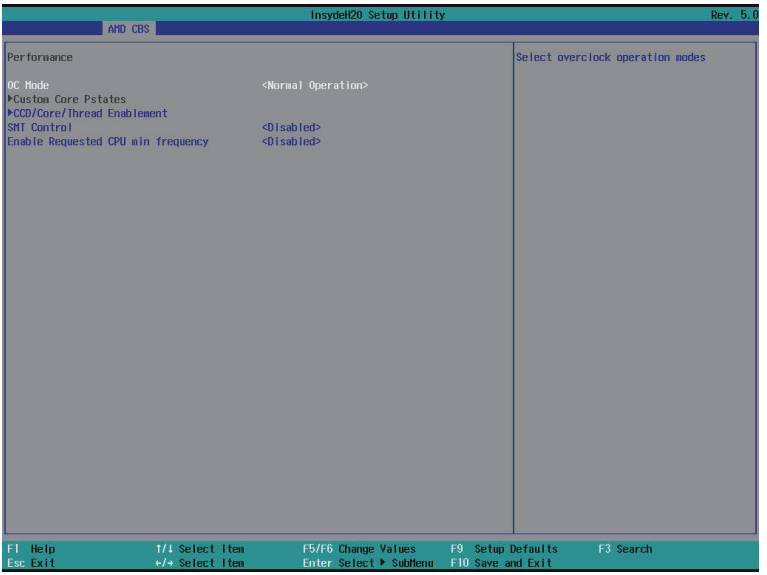




Parameter	Description
CPU Common Options	
Performance	Press [Enter] for configuration of advanced items.
REP-MOV/STOS Streaming	Allow REP-MOV/STOS to use non-caching streaming stores for large sizes. Options available: **Enabled** ,Disabled, Enabled.
Prefetcher settings	Press [Enter] for configuration of advanced items.
Core Watchdog	Press [Enter] for configuration of advanced items.
RedirectForReturnDis	From a workaround for GCC/C000005 issue for XV Core on CZ A0, setting MSRC001_1029 Decode Configuration (DE_CFG) bit 14 [DecfgNoRdrctForReturns] to 1. Options available: Auto, 1, 0. Default setting is **Auto**.
Platform First Error Handling	Enable/Disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.
Core Performance Boost	Enable/Disable the Core Performance Boost function. Options available: Disabled, Auto. Default setting is **Auto**.
Global C-state Control	Controls the IO based C-state generation and DF C-states. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Power Supply Idle Control	Configures the Power Supply Idle Control. Options available: Low Current Idle, Typical Current Idle, Auto. Default setting is **Auto**.
Streaming Stores Control	Enable/Disable the Streaming Stores functionality. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Local APIC Mode	Sets the Local APIC Mode. Options available: Compatibility, xAPIC, x2APIC, Auto. Default setting is **Auto**.
ACPI_CST C1 Declaration	Determines whether or not to declare the C1 state to the OS.. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
ACPI CST C2 Latency	Enter in microseconds (decimal value).
MCA error thresh count	Effective error threshold count = 0xFFF(4095) - <this value> (e.g. the default value of 0xFF5(4085) results in a threshold of 0xA (10)).
MCA FruText	Enable MCA FruText. Options available: False, True. Default setting is **True**.
SMU and PSP Debug Mode	When this option is enabled, specific uncorrected errors detected by the PSP FW or SMU FW will hand and not reset the system. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
PPIN Opt-in	Enable/Disable the PPIN feature. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SMEE	Controls the Secure Memory Encryption Enable (SMEE) function. Options available: Disable, Enable, Auto. Default setting is **Auto**.
Action on BIST Failure	Action to take when a CCD BIST failure is detected. Options available: Do nothing, Down-CCD, Auto. Default setting is **Auto**.

Parameter	Description
Enhanced REP MOVSB/ STOSB (ERSM)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Log Transparent Errors	Enable/Disable the log Transparent errors function. Options available: Auto, Disabled, Enabled. Default setting is **Auto**.
AVX512	Enable/Disable AVX512. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Enhanced REP Movs Stos B	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
CPU Speculative Store Modes	Select the CPU speculative store modes. Options available: Balanced, More Speculative, Less Speculative, Auto. Default setting is **Auto**.
Fast Short REP MOVSB (FSRM)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
PauseCntSel_1_0	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Prefetch/Request Throttle	Enables XI logic which calculates average latency, updates throttle level, and sends throttle level messages to L2. Options available: Disable, Enable, Auto. Default setting is **Auto**.
Scan Dump Debug Enable	Options available: Disable, Enable. Default setting is **Disable**.
MCAX 64 bank support	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Adaptive Allocation (AA)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Latency Under Load (LUL)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Core Trace Dump Enable	Options available: Disable, Enable. Default setting is **Disable**.
FP512	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
AMD_ERMSB Reporting	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

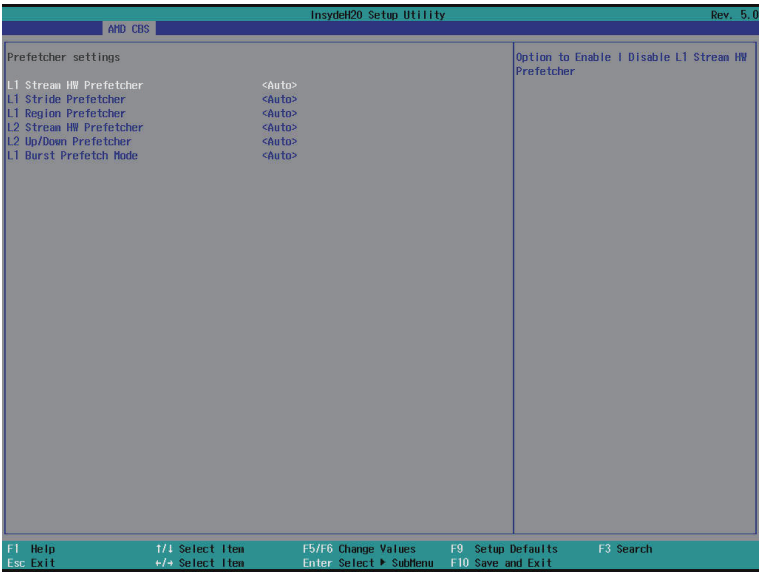
5-3-1-1 Performance



Parameter	Description
Performance	
OC Mode(Note)	Options available: Normal Operation, Customized. Default setting is **Normal Operation**.
Custom Core Pstates	Allows you to accept or decline enabling Custom Core Pstates. When accepted, you can disable or customize core pstates.
CCD/Core/Thread Enablement	Allows you to accept or decline enabling CCDs, processor cores and threads. When accepted, you can control the number of CCDs to be used, and the number of cores to be used. ◆ CCD Control – Options available: Auto, 2 CCDs, 4 CCDs, 6 CCDs, 8 CCDs, 10 CCDs. Default setting is **Auto**. ◆ Core Control – Options available: Auto, ONE(1+0), TWO(2+0), THREE(3+0) FOUR(4+0), FIVE(5+0), SIX(6+0), SEVEN(7+0). – Default setting is **Auto**.
SMT Control	Can be used to disable symmetric multithreading. To re-enable SMT, a POWER CYCLE is needed after select the 'Enable' option. Select 'Auto' base on BIOS PCD. (PcdAmdSmtMode) default setting. Options available: Disable, Enable, Auto. Default setting is **Enable**.
Enable Requested CPU min frequency	Options available: Disable, Enable, Auto. Default setting is **Disable**.

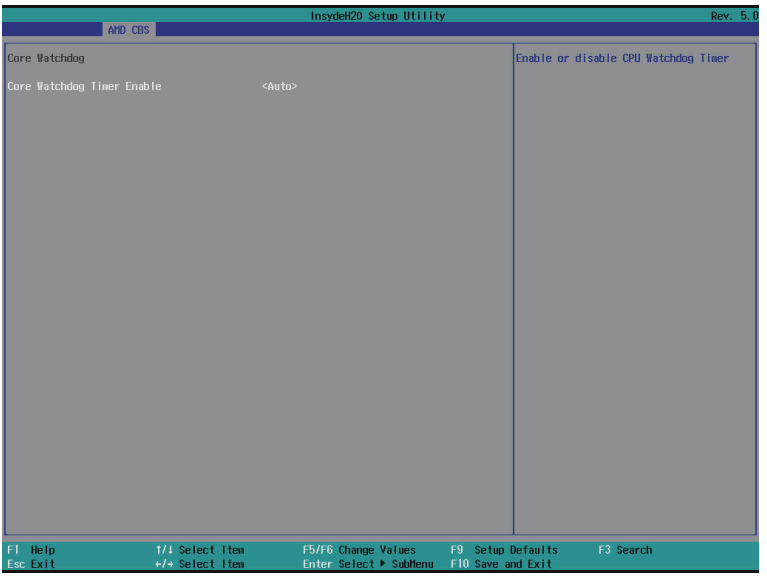
(Note) Advanced items are configurable when this item is defined.

5-3-1-2 Prefetcher Settings



Parameter	Description
Prefetcher settings	
L1 Stream HW Prefetcher	Enable/Disable L1 Stream HW Prefetcher. Options available: Disable, Enable, Auto. Default setting is **Auto**.
L1 Stride Prefetcher	Use memory access history of individual instructions to fetch additional lines when each access is a constant distance from the previous. Enable/Disable L1 Stride Prefetcher. Options available: Disable, Enable, Auto. Default setting is **Auto**.
L1 Region Prefetcher	Use memory access history to fetch additional lines when the data access for a given instruction tends to be followed by other data accesses. Enable/Disable L1 Region Prefetcher. Options available: Disable, Enable, Auto. Default setting is **Auto**.
L2 Stream HW Prefetcher	Enable/Disable L2 Stream HW Prefetcher. Options available: Disable, Enable, Auto. Default setting is **Auto**.
L2 Up/Down Prefetcher	Use memory access history to determine whether to fetch the next or previous line for all memory accesses. Enable/Disable L2 Up/Down Prefetcher. Options available: Disable, Enable, Auto. Default setting is **Auto**.
L1 Burst Prefetch Mode	Enable/Disable L1 Burst Prefetch Mode. Options available: Disable, Enable, Auto. Default setting is **Auto**.

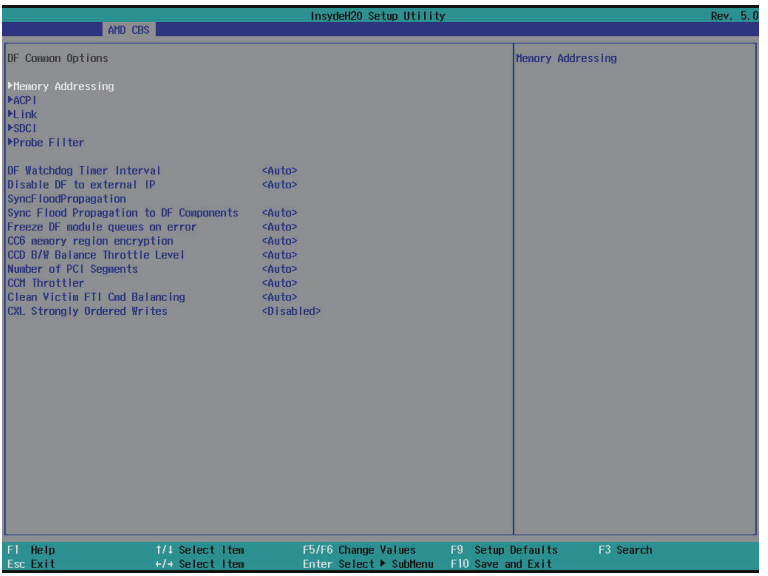
5-3-1-3 Core Watchdog



Parameter	Description
Core Watchdog	
Core Watchdog Timer Enable(Note)	Enable/Disable CPU Watchdog Timer. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Core Watchdog Timer Interval	Select the CPU Watchdog Timer interval. Options available: 2.681s, 1.340s, 669.41ms, 334.05ms, 166.37ms, 82.53ms, 40.61ms, 20.970ms, 10.484ms,5.241ms, 2.620ms, 1.309ms, 654.08us, 326.4us, 162.56us, 80.64us, 39.68us, Auto. Default setting is **Auto**.

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

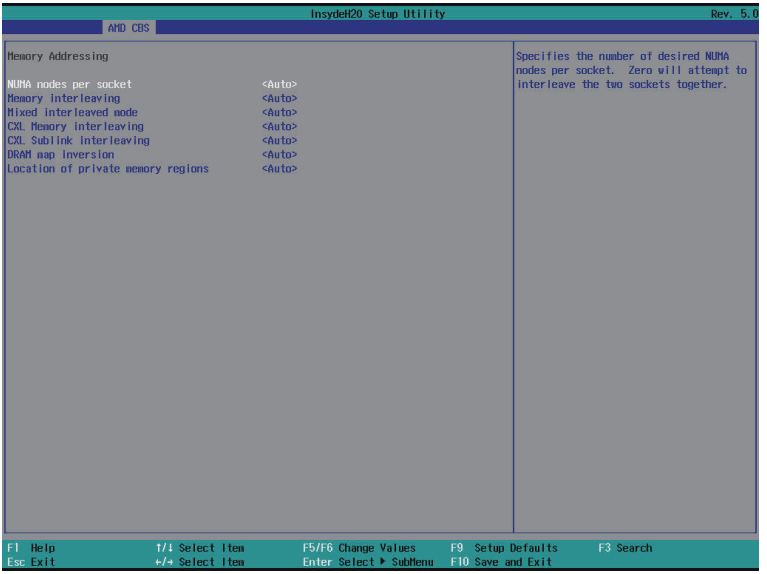
5-3-2 DF Common Options



Parameter	Description
DF Common Options	
Memory Addressing	Press [Enter] for configuration of advanced items.
ACPI	Press [Enter] for configuration of advanced items.
Link	Press [Enter] for configuration of advanced items.
SDCI	Press [Enter] for configuration of advanced items.
Probe Filter	Press [Enter] for configuration of advanced items.
DF Watchdog Timer Interval	Configures the Data Fabric watchdog timer interval. Options available: Auto, 41ms, 166ms, 334ms, 669ms, 1.34 seconds, 2.68 seconds, 5.36 seconds. Default setting is **Auto**.
Disable DF to external IP sync flood propagation	Enable/Disable SyncFlood to UMC & downstream slaves. Options available: Sync flood disabled, Sync flood enabled, Auto. Default setting is **Auto**.
Sync flood propagation to DF Components	Enable/Disable DF Sync Flood propagation. Options available: Sync flood disabled, Sync flood enabled, Auto. Default setting is **Auto**.
Freeze DF module queues on error	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
CC6 memory region encryption	Controls whether or not the CC6 save/restor memory is encrypted. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
CCD B/W Balance Throttle Level	Options available: Auto, Level 0, Level 1, Level 2, Level 3, Level 4. Default setting is **Auto**.

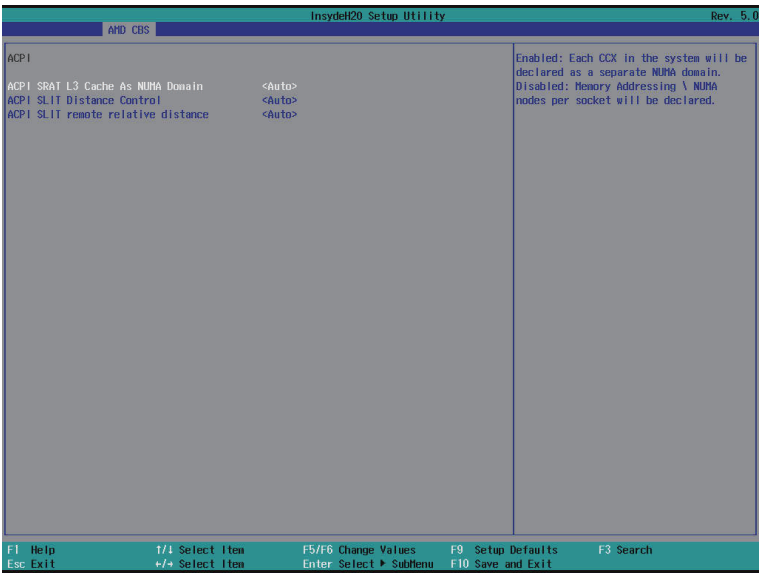
Parameter	Description
Number of PCI Segments	Options available: Auto, 1 Segment, 2 Segments, 4 Segment. Default setting is **Auto**.
CCM Throttler	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Clean Victim FTI Cmd Balancing	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
CXL Strongly Ordered writes	Options available: Disabled, Enabled, Auto. Default setting is **Disabled**.

5-3-2-1 Memory Addressing



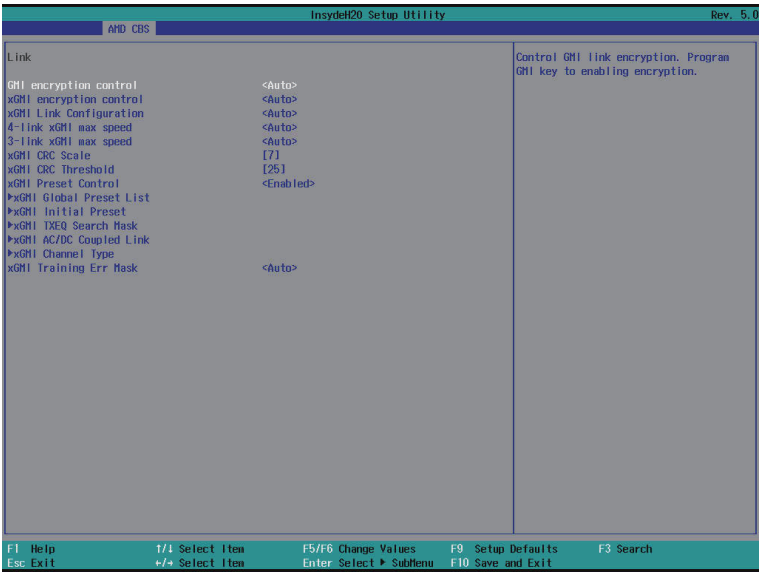
Parameter	Description
Memory Addressing	
NUMA nodes per socket	Specifies the number of desired NUMA nodes per socket. Options available: NPS0, NPS1, NPS2, NPS4, Auto. Default setting is **Auto**. NOTE! • **Available options may vary by system configuration.** • **Only dual processor configuration supports NPS0.**
Memory interleaving	Enable/Disable the Memory interleaving feature. Options available: Disabled, Auto, Enabled. Default setting is **Auto**.
Mixed interleaving mode	Allows for interleaving UMC and CXL together. Options available: Disabled, Auto, Enabled. Default setting is **Auto**.
CXL Memory interleaving	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
CXL Sublink interleaving	Options available: Enable, Disable, Auto. Default setting is **Auto**.
DRAM map inversion	Enable/Disable the DRAM map inversion function. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Location of private memory regions	Controls whether or not the private memory regions (PSP, SMU and CC6) are at the top of DRAM or distributed. Options available: Distributed, Consolidated, Auto. Default setting is **Auto**.

5-3-2-2 ACPI



Parameter	Description
ACPI	
ACPI SRAT L3 Cache As NUMA Domain	Enable/Disable report each L3 cache as a NUMA Domain to the OS. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
ACPI SLIT Distance Control	Determines how the SLIT distances are declared. Options available: Manual, Auto. Default setting is **Auto**.
ACPI SLIT remote relative distance	Sets the remote socket distance for 2P systems as near (2.8) or far (3.2). Options available: Near, Far, Auto. Default setting is **Auto**.

5-3-2-3 Link

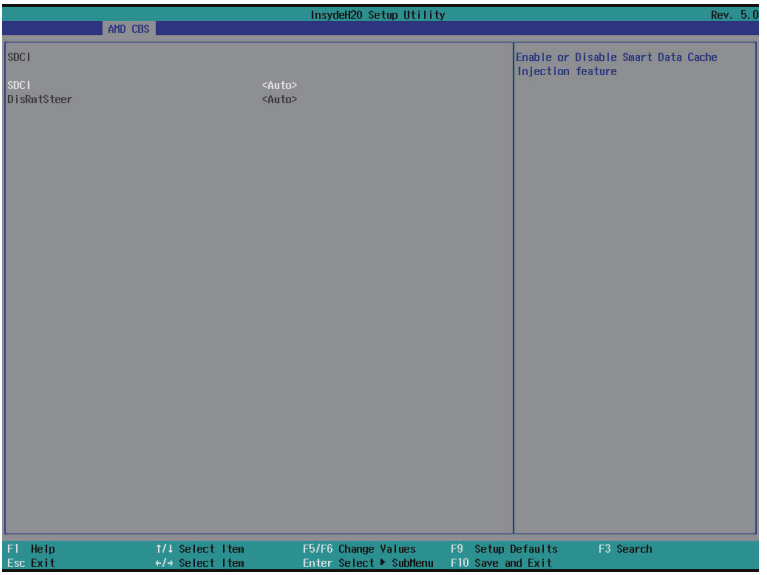


Parameter	Description
GMI encryption control	Enable/Disable GMI link encryption. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
xGMI encryption control	Enable/Disable xGMI link encryption. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
xGMI Link Configuration	Configures the number of xGMI2 links used on a multi-socket system. Options available: Auto, 3 xGMI Links, 4 xGMI Links, 2 xGMI Links + 2 PCI Links. Default setting is **Auto**.
4-link xGMI max speed	Specifies the max speed of 4-link xGMI. Options available: 20Gbps, 25Gbps, 32Gbps, Auto. Default setting is **Auto**.
3-link xGMI max speed	Specifies the max speed of 3-link xGMI. Options available: 20Gbps, 25Gbps, 32Gbps, Auto. Default setting is **Auto**.
xGMI CRC Scale	Configures leaky bucket scale for xGMI and WAFL CRC errors. Every scale milliseconds an error will leak from the CRC counter. Default setting is **5**.
xGMI CRC Threshold	Configures leaky bucket threshold for xGMI and WAFL CRC errors. If link CRC counter exceeds this threshold, an error will be logged. Default setting is **25**.
xGMI Preset Control	Enable/Disable xGMI Preset control. Options available: Disabled, Enabled, Auto. Default setting is **Enabled**.
xGMI Global Preset List	Press [Enter] to configure the xGMI Preset list.
xGMI Initial Preset	Press [Enter] to configure the xGMI Initial Preset CPU0/1 link.
xGMI TXEQ Search Mask	Press [Enter] to configure the xGMI TXEQ Search Mask CPU0/1 link.

Parameter	Description
xGMI AC/DC Coupled Link	Press [Enter] to configure the xGMI AC/DC Coupled link. ◆ xGMI AC/DC Coupled Link Control(Note) – Options available: Manual, Auto. Default setting is **Auto**.
xGMI Channel Type	Press [Enter] to configure the xGMI Channel Type. ◆ xGMI Channel Type Control(Note) – Options available: Manual, Auto. Default setting is **Auto**.
xGMI Training Err Mask	Press [Enter] to configure the xGMI Training Err Mask. ◆ xGMI Channel Type Control(Note) – Options available: Manual, Auto. Default setting is **Auto**.

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

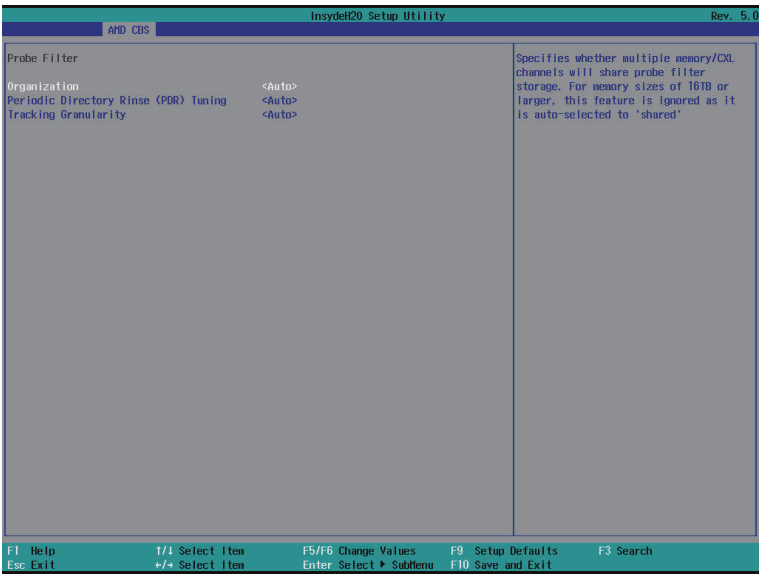
5-3-2-4 SDCI



Parameter	Description
SDCI(Note)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
DisRmSteer	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

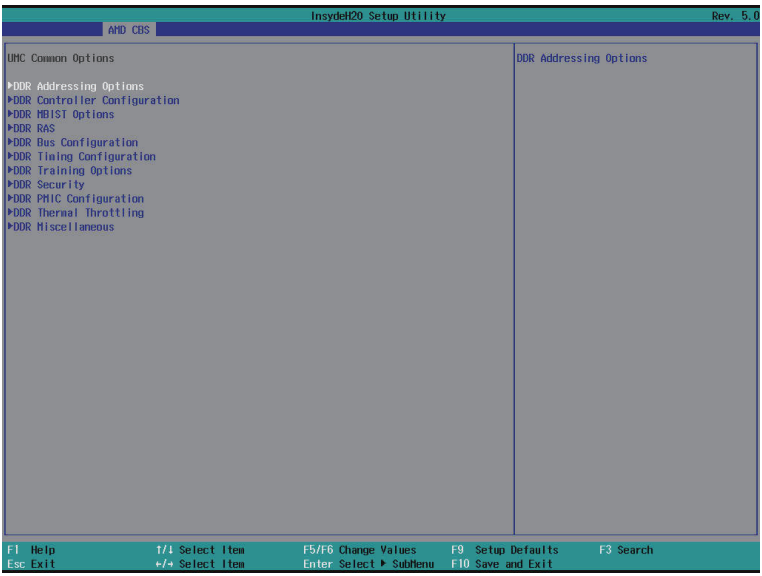
(Note) Advanced items prompt when this item is defined.

5-3-2-5 Probe Filter



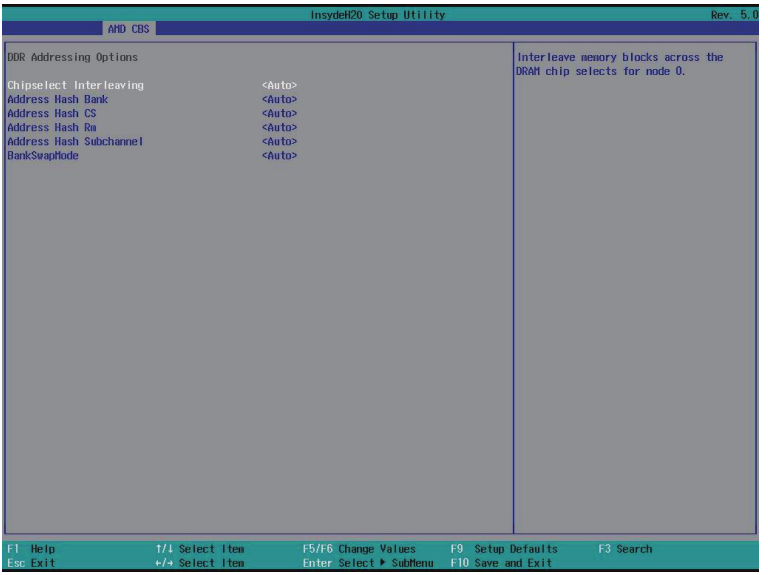
Parameter	Description
Organization	Specifies whether multiple memory/CXL channels will share probe filter storage. Options available: Auto, Dedicated, Shared. Default setting is **Dedicated**.
Periodic Directory Rinse (PDR) Tuning	Controls PDR settings that may impact performance by workload and/or processor. Options available: Memory-Sensitive, Cache-Bound, Neutral, Adaptive, Auto. Default setting is **Auto**.

5-3-3 UMC Common Options



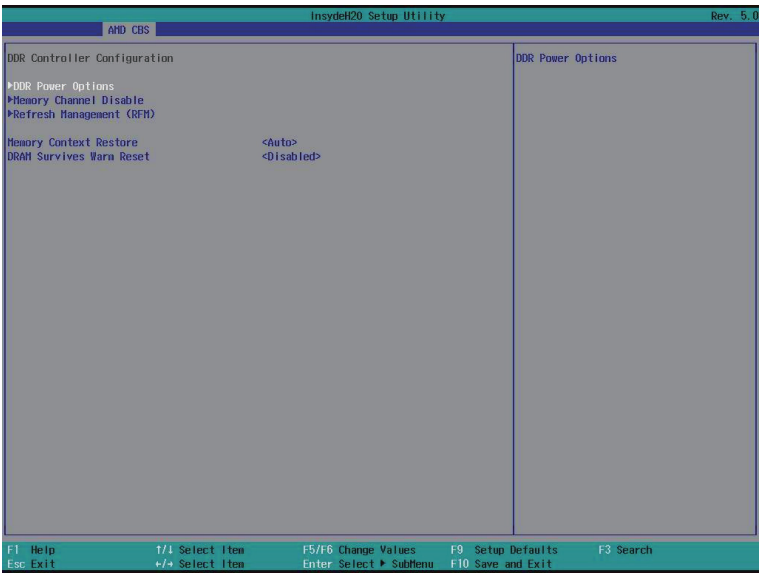
Parameter	Description
UMC Common Options	
DDR Addressing Options	Press [Enter] for configuration of advanced items.
DDR Controller Configuration	Press [Enter] for configuration of advanced items.
DDR MBIST Options	Press [Enter] for configuration of advanced items.
DDR RAS	Press [Enter] for configuration of advanced items.
DDR Bus Configuration	Press [Enter] for configuration of advanced items.
DDR Timing Configuration	Press [Enter] for configuration of advanced items.
DDR Training Options	Press [Enter] for configuration of advanced items.
DDR Security	Press [Enter] for configuration of advanced items.
DDR PMIC Configuration	Press [Enter] for configuration of advanced items.
DDR Miscellaneous	Press [Enter] for configuration of advanced items.

5-3-3-1 DDR Addressing Options



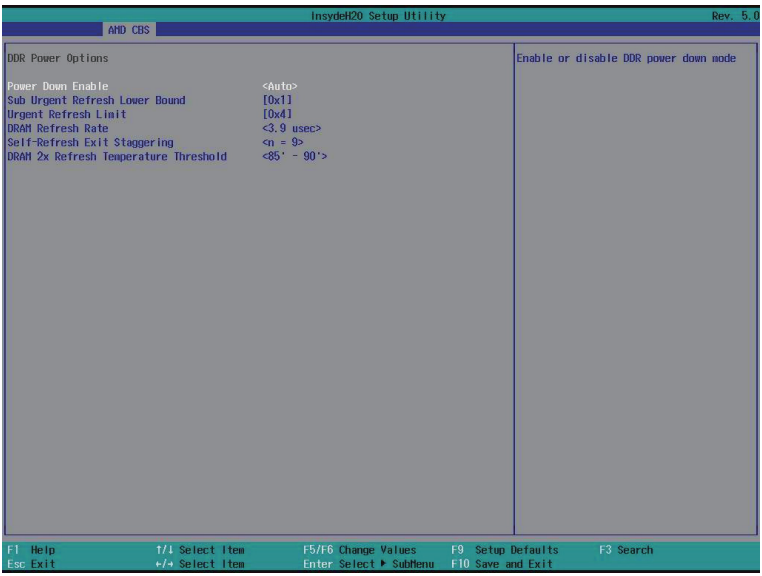
Parameter	Description
DDR Addressing Options	
Chipselect Interleaving	Interleaves memory blocks across the DRAM chip selects for node 0. Options available: Disabled, Auto. Default setting is **Auto**.
Address Hash Bank	Enable or disable bank addressing hashing. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Address Hash CS	Enable or disable CS addressing hashing. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Address Hash RM	Enable or disable RM addressing hashing for 3DS DIMMs. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Address Hash Subchannel	Enable or disable sub-channel addressing hashing. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
BankSwapMode	Options available: Auto, Disabled, Swap CPU. Default setting is **Auto**.

5-3-3-2 DDR Controller Configuration



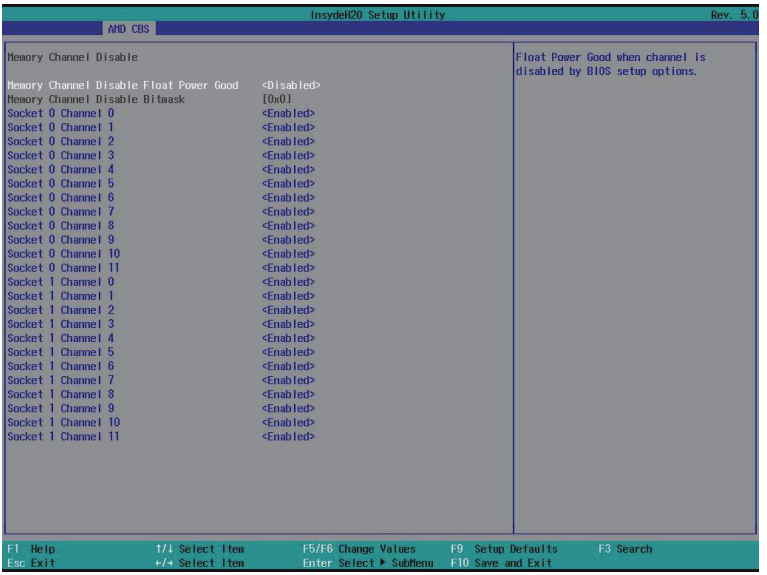
Parameter	Description
DDR Controller Configuration	
DDR Power Options	Press [Enter] for configuration of advanced items.
Memory Channel Disable	Press [Enter] for configuration of advanced items.
Refresh Management (RFM)	Press [Enter] for configuration of advanced items.
Memory Context Restore	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
DRAM Survives Warm Reset	Options available: Disabled, Enabled. Default setting is **Disabled**.

5-3-3-2-1 DDR Power Options



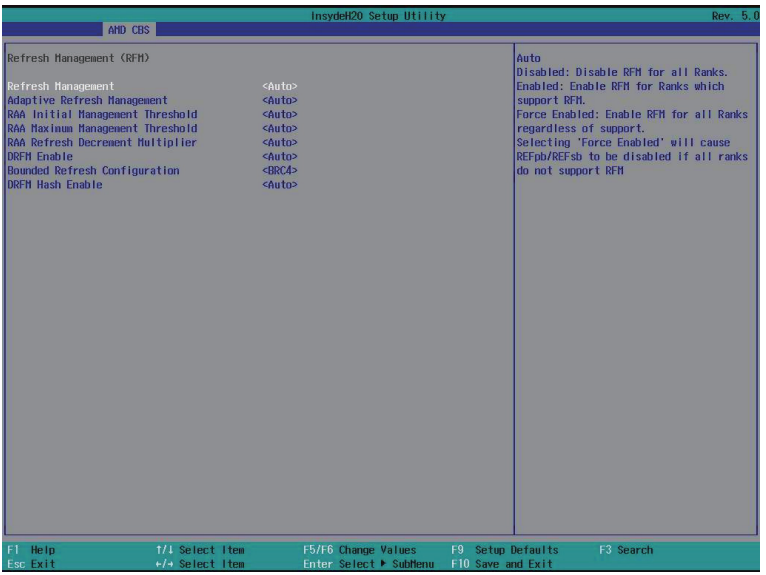
Parameter	Description
DDR Power Options	
Power Down Enable	Enable or disable DDR power down mode. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Sub Urgent Refresh Lower Bound	Specifies the stored refresh limit required to enter sub-urgent refresh mode.
Urgent Refresh Limit	Specifies the stored refresh limit required to enter urgent refresh mode.
DRAM Refresh Rate	DRAM refresh rate: 1.95us or 3.9us. Options available: 3.9 usec, 1.95 usec. Default setting is **3.9 usec**.
Self-Refresh Exit Staggering	Options available: Disabled, n=1~9. Default setting is **n=9**.
DRAM 2X Refresh Temperature Threshold	Options available: 85-100. Default setting is **85-90**.

5-3-3-2-2 Memory Channel Disable



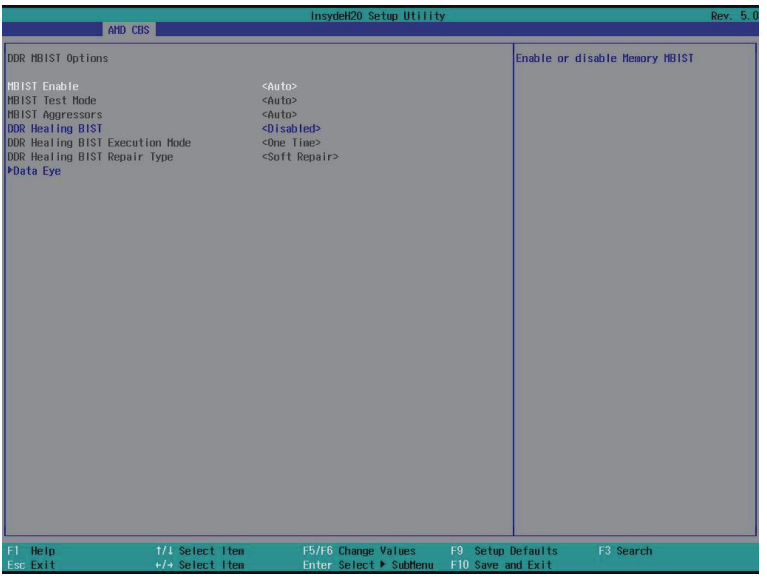
Parameter	Description
Memory Channel Disable	
Memory Channel Disable Float Power Good	Options available: Disabled, Enabled. Default setting is **Disabled**.
Memory Channel Disable Bitmask	
Socket 0/1 Channel_#	Press [Enter] to enable/disable specific memory channel.

5-3-3-2-3 Refresh Management (RFM)



Parameter	Description
Refresh Management (RFM)	
Refresh Management	Configure Refresh Management. Options available: Enable, Disable, Auto, Force Enable. Default setting is **Auto**.
Adaptive Refresh Management	Options available: Auto, Disable, ARFM Level A, ARFM Level B, ARFM Level C. Default setting is **Auto**.
RAA Initial Management Threshold	Override Rolling Accumulated ACT Initial Management Threshold. Options available: 32, 40, 48, 56, 64, 72, 80, Auto. Default setting is **Auto**.
RAA Maximum Management Threshold	Override Rolling Accumulated ACT Maximum Management Threshold. Options available: 3X, 4X, 5X, 6X, Auto. Default setting is **Auto**.
RAA Refresh Decrement Multiplier	Override RAA Refresh Decrement Multiplier. Options available: 0.5, 1, Auto. Default setting is **Auto**.
DRFM	Options available: Disable, Enable, Auto. Default setting is **Auto**.
Bounded refresh Configuration	Options available: BRC2, BRC3, BRC4 . Default setting is **BRC4**.
DRFM Hash Enable	Options available: Disable, Enable, Auto. Default setting is **Auto**.

5-3-3-3 DDR MBIST Options



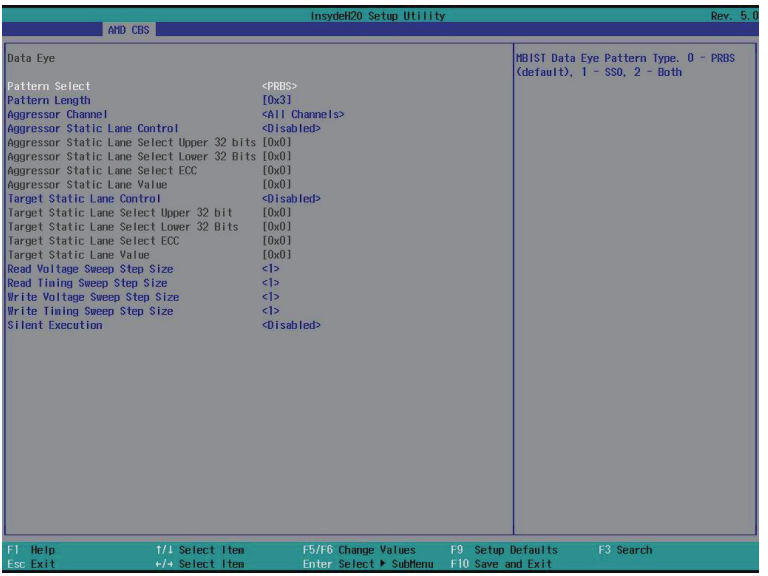
Parameter	Description
DDR MBIST Options	
MBIST Enable	Enable/Disable the Memory MBIST function. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
MBIST Test Mode(Note1)	Selects MBIST Test Mode. **Interface Mode**: Tests Single and Multiple CS transactions and Basic Connectivity. **Data Eye Mode**: Measures Voltage vs. Timing. Options available: Auto, Both, Interface Mode, Data Eye Mode. Default setting is **Auto**.
MBIST Aggressors(Note1)	Enable/Disable MBIST Aggressor test. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DDR Healing BIST	Options available: Disabled, PMU Mem BIST, Self-Healing Mem BIST, PMU and Self-Healing Mem BIST. Default setting is **Disabled**.
DDR Healing BIST Execution Mode(Note2)	Options available: One Time, Every boot. Default setting is **One Time**.
DDR Healing BIST Repair Type(Note2)	For DRAM errors found in the BIOS memory BIST select the repair type. Options available: Soft Repair, Hard Repair, No Repairs -Test only. Default setting is **Soft Repair**.

(Note1) This item appears when **MBIST Enable** is set to **Enabled**.

Parameter	Description
Data Eye	Press [Enter] to configure advanced items.

(Note2) This item appears when **DDR Healing BIST** is defined.

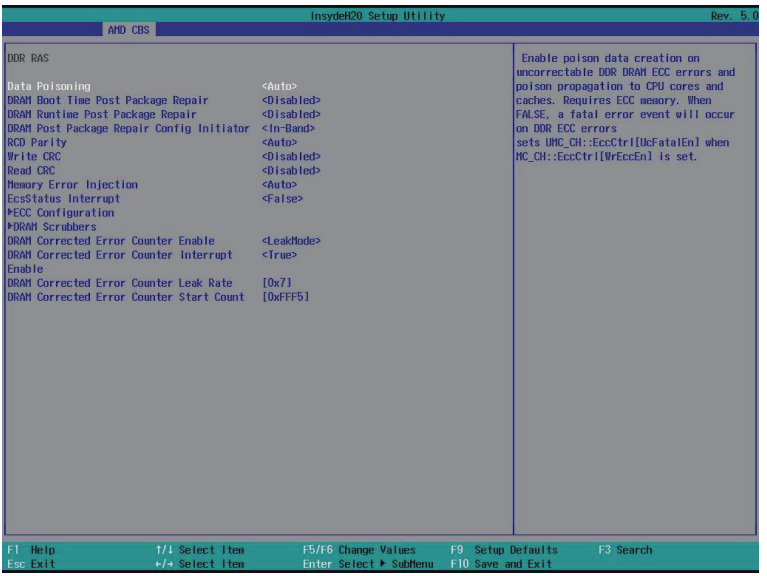
5-3-3-3-1 Data Eye



Parameter	Description
Data Eye	
Pattern Select	Options available: PRBS, SSO, Both. Default setting is **PRBS**.
Pattern Length	Determines the pattern length. The possible options are N=3....12.
Aggressor Channel	This item helps read the aggressors channels. Options available: One Sub-Channel, Half Channels, All Channels. Default setting is **All Channels**.
Aggressor Static Lane Control	Enable/Disable the Aggressor Static Lane Control function. Options available: Enabled, Disabled. Default setting is **Disabled**.
Aggressor Static Lane Select Upper 32 bits	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Select Lower 32 bits	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Select ECC	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Aggressor Static Lane Value	This item is configurable when **Aggressor Static Lane Control** is set to **Enabled**.
Target Static Lane Control	Enable/Disable the Target Static Lane Control function. Options available: Enabled, Disabled. Default setting is **Disabled**.

Parameter	Description
Target Static Lane Select Upper 32 bits	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Select Lower 32 bits	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Select ECC	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Target Static Lane Value	This item is configurable when **Target Static Lane Control** is set to **Enabled**.
Read Voltage Sweep Step Size	Configures the step size for read Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is **1**.
Read Timing Sweep Step Size	Configures the step size for read Data Eye timing sweep. Options available: 1, 2, 4. Default setting is **1**.
Write Voltage Sweep Step Size	Configures the step size for write Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is **1**.
Write Timing Sweep Step Size	Configures the step size for write Data Eye timing sweep. Options available: 1, 2, 4. Default setting is **1**.
Silent Execution	Execute MBIST Data Eye silently without ABL log output. Options available: Enabled, Disabled. Default setting is **Disabled**.

5-3-3-4 DDR RAS



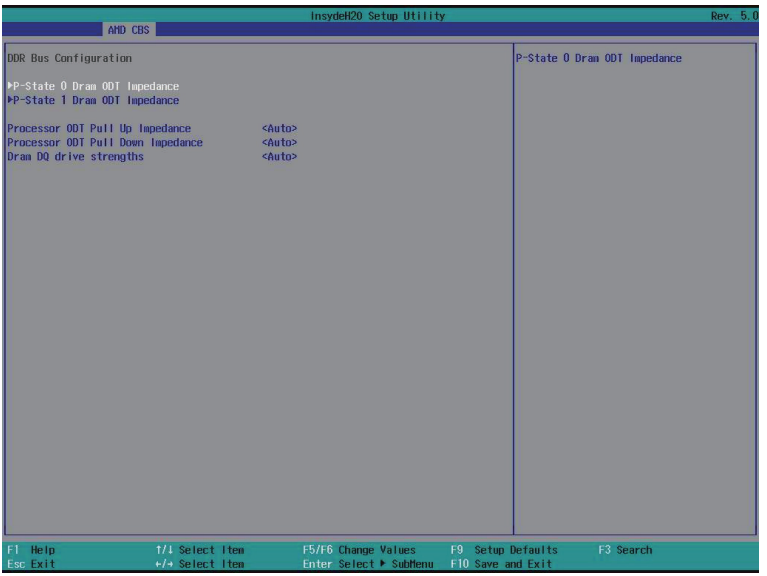
Parameter	Description
DDR RAS	
Data Poisoning	Enable/Disable the Data Poisoning function. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DRAM Boot Time Post Package Repair	Enable/Disable the DRAM Boot Time Post Package Repair function. Options available: Enable, Disable. Default setting is **Disable**.
DRAM Runtime Post Package Repair	Enable/Disable the DRAM Runtime Post Package Repair function. Options available: Enable, Disable. Default setting is **Disable**.
DRAM Post Package Repair Config Initiator	Options available: In-Band, Out of Band. Default setting is **In-Band**.
RCD Parity	Enable/Disable the RCD Parity function. Options available: Auto, Enabled, Disabled. Default setting is **Enabled**.
Write CRC	Options available: Auto, Enabled, Disabled. Default setting is **Disabled**.
Read CRC	Options available: Auto, Enabled, Disabled. Default setting is **Disabled**.
Memory Error Injection	Options available: False, True, Auto. Default setting is **Auto**.
EcsStatus Interrupt	Options available: False, True. Default setting is **False**.
ECC Configuration	Press [Enter] to configure advanced items. ◆ DRAM ECC Symbol Size – Configures the DRAM ECC Symbol Size. – Options available: Auto, x4, x16. Default setting is **Auto**.

Parameter	Description
ECC Configuration (continued)	◆ DRAM ECC Enable – Enable/Disable DRAM ECC. When set to Auto, it will set ECC to enable. – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ DRAM UECC Retry – Enable/Disable DRAM UECC Retry. – Options available: Auto, Enabled, Disabled. Default setting is **Disabled**. ◆ Max DRAM UECC Error Replay(Note) – Default setting is **8**. ◆ Memory Clear – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ Address X0R after ECC – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ CypherText Hiding Enable – Options available: Disable, Enable. Default setting is **Disable**.
DRAM Scrubbers	Press [Enter] to configure advanced items. ◆ DRAM ECS Mode – Options available: Auto, AutoECS, ManualECS, DisableECS. Default setting is **Auto**. ◆ DRAM Redirect Scrubber Enable – Options available: Auto, Enabled, Disabled. Default setting is **Auto**. ◆ DRAM Scrub Redirection Limit – Options available: Auto, 8 Scrubs, 4 Scrubs, 2 Scrubs, 1 Scrub. Default setting is **Auto**. ◆ DRAM Scrub Time – Options available: Disabled, 1 hour, 4 hours, 6 hours, 8 hours, 12 hours, 16 hours, 24 hours, 48 hours. Default setting is **24 Hours**. ◆ ECS Config – DRAM Error Threshold Count » Options available: Auto, ETC_4, ETC_16, ETC_64, ETC_256, ETC_1024, ETC_4096. Default setting is **Auto**. – DRAM ECS Count Mode » Options available: Auto, Row Count Mode, Code Word Count Mode. Default setting is **Auto**. – DRAM AutoEcs during Self Refresh » Options available: Auto, AutoEcs Disabled, AutoEcs Enabled. Default setting is **Auto**.

(Note) This item available when **DRAM UECC Retry** is set to **Enabled**.

Parameter	Description
DRAM Scrubbers (continued)	– DRAM ECS WriteBack Suppression » Options available: Auto, Enable, Disable. Default setting is **Auto**. – DRAM X4 WriteBack Suppression » Options available: Auto, Enable, Disable. Default setting is **Auto**.
DRAM Corrected Error Counter Enable	Configure DRAM Corrected Error Counter function. Options available: Disable, NoLeakMode, LeakMode. Default setting is **LeakMode**.
DRAM Corrected Error Counter Interrupt Enable	Enable SMI when DRAM corrected Error Counter count exceeds the threshold value. Options available: False, True. Default setting is **True**.
DRAM Corrected Counter Leak Rate	Program Rate value for DRAM Corrected Error Counter function. Default setting is **7**.
DRAM Corrected Error Counter Start Count	Program starting value for DRAM Corrected Error Counter function. Default setting is **FFF5**.

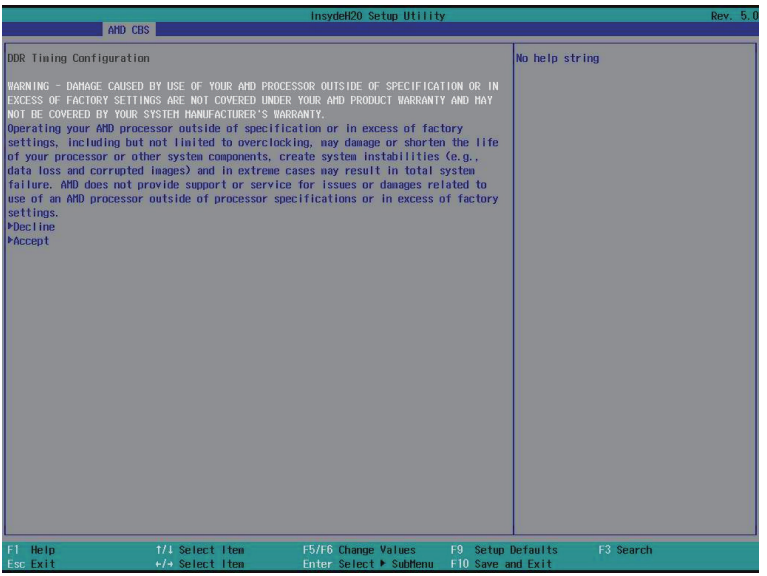
5-3-3-5 DDR Bus Configuration



Parameter	Description
DDR Bus Configuration	
P-State 0 Dram ODT Impedance	Press [Enter] to configure advanced items. ◆ RTT_NOM_WR P-State 0 – Default setting is **Auto**. ◆ RTT_NOM_RD P-State 0 – Default setting is **Auto**. ◆ RTT_WR P-State 0 – Default setting is **Auto**. ◆ RTT_PARK P-State 0 – Default setting is **Auto**. ◆ DQS_RTT PARK P-State 0 – Default setting is **Auto**.
P-State 1 Dram ODT Impedance	Press [Enter] to configure advanced items. ◆ RTT_NOM_WR P-State 1 – Default setting is **Auto**. ◆ RTT_NOM_RD P-State 1 – Default setting is **Auto**. ◆ RTT_WR P-State 1 – Default setting is **Auto**. ◆ RTT_PARK P-State 1 – Default setting is **Auto**. ◆ DQS_RTT PARK P-State 1 – Default setting is **Auto**.

Parameter	Description
Processor ODT Pull Up impedance	Select the ODT impedance for all DBYTE IOs. Options available: Auto, High Impedance, 480 ohm, 240 ohm, 160 ohm, 120 ohm, 96 ohm, 80 ohm, 68.6 ohm, 60 ohm, 53.3 ohm,48 ohm, 43.6 ohm, 40 ohm, 36.9 ohm, 34.3 ohm, 32 ohm, 30 ohm, 28.2 ohm, 26.7 ohm, 25.3 ohm. Default setting is **Auto**.
Processor ODT Pull Down impedance	Select the ODT pull down impedance for all DBYTE IOs. Options available: Auto, High Impedance, 480 ohm, 240 ohm, 160 ohm, 120 ohm, 96 ohm, 80 ohm, 68.6 ohm, 60 ohm, 53.3 ohm,48 ohm, 43.6 ohm, 40 ohm, 36.9 ohm, 34.3 ohm, 32 ohm, 30 ohm, 28.2 ohm, 26.7 ohm, 25.3 ohm. Default setting is **Auto**.
Dram DQ drive strengths	Select the Dram Pull-up and Pull-Down Output Driver Impedance for all DQ and DMI IOs. Options available: Auto, 48 ohm, 40 ohm, 34 ohm, Default setting is **Auto**.

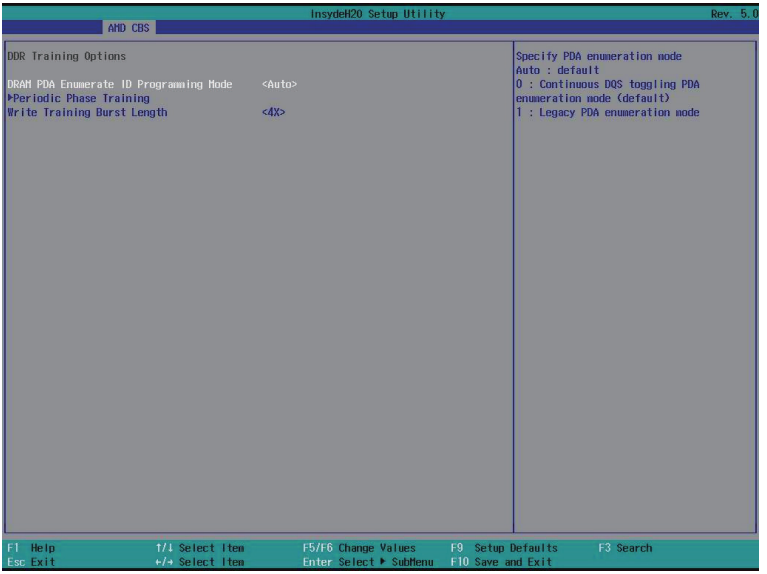
5-3-3-6 DDR Timing Configuration



Parameter	Description
Enforce POR	Decline/Accept to configure the advanced items.
Accept	
Active Memory Timing Settings(Note)	Active memory Timing Settings. Options available: Auto, Enabled. Default setting is **Auto**.
Memory Target Speed	Specifies the memory target speed in MT/s. Options available: Auto, DDR3600, DDR4000, DDR4400, DDR4800, DDR5200, DDR5600, DDR6000, DDR6400. Default setting is **Auto**.
SPD Timing	Press [Enter] to configure advanced items.
Non-SPD Timing	Press [Enter] to configure advanced items.

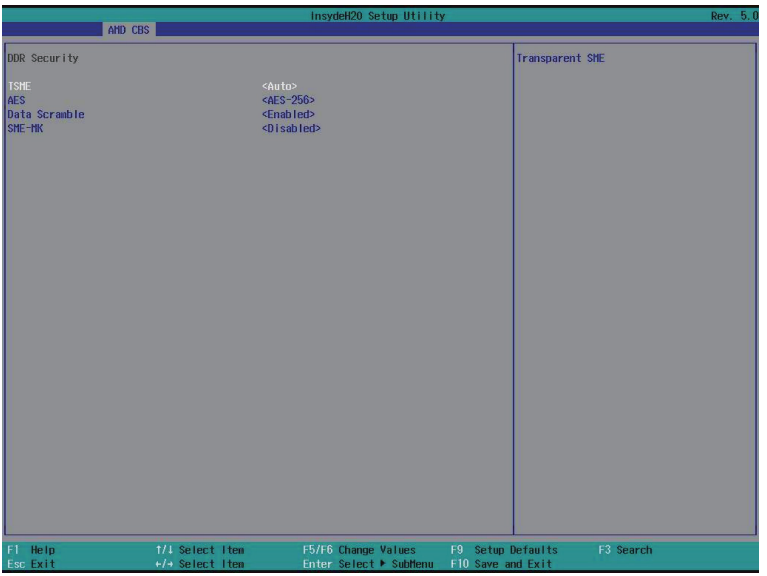
(Note) Advanced items prompt when this item is defined.

5-3-3-7 DDR Training Options



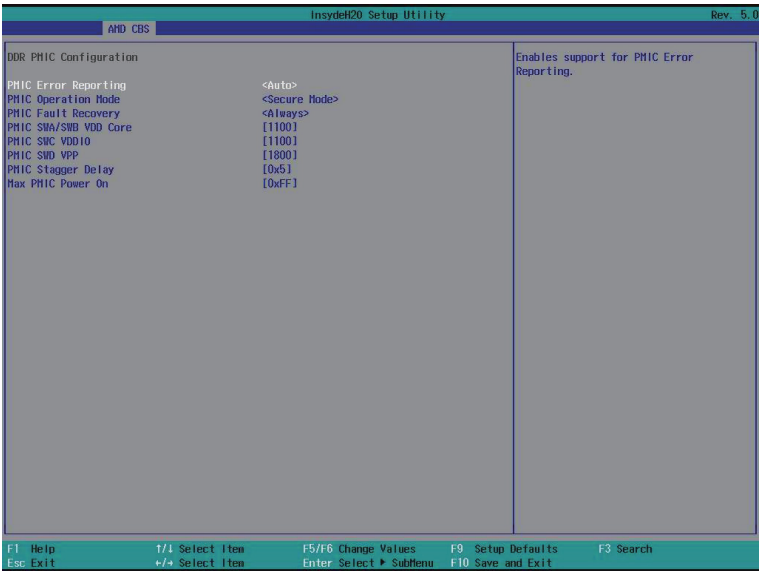
Parameter	Description
DDR Training Options	
DRAM PDA Enumerate ID Programming Mode	Specify PDA enumeration mode. Options available: Auto, Toggling PDA enumeration mode, Legacy PDA enumeration mode. Default setting is **Auto**.
Periodic Phase Training	Press [Enter] to configure advanced items. ◆ Periodic Training Mode – Options available: Disabled Legacy. Default setting is **Legacy**. ◆ Periodic Interval – Periodic Interval value in milli-second, in decimal. Range 100-4095 ms.
Write Protection	Options available: **4x**, 8x.

5-3-3-8 DDR Security



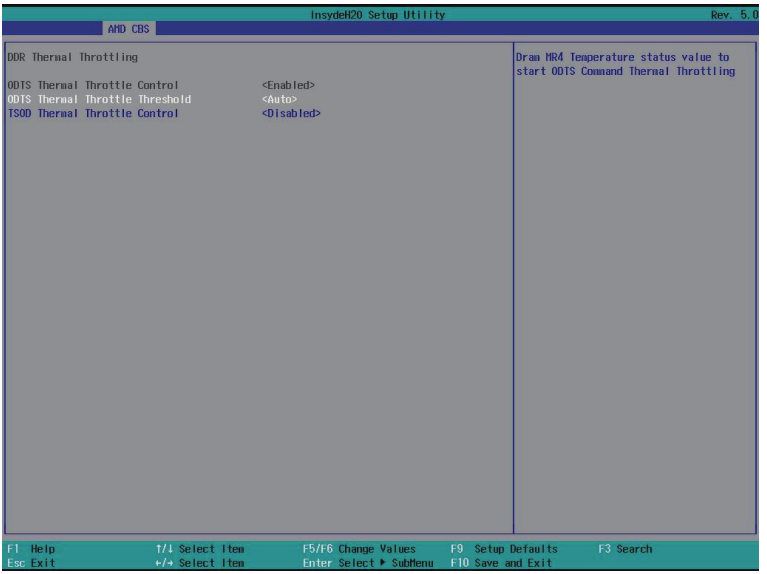
Parameter	Description
Security	
TSME	Enable/Disable Transparent SME. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
AES	Options available: AES-128, AES-256. Default setting is **AES-256**.
Data Scramble	Enable/Disable Data Scrambling. Options available: Enabled, Disabled. Default setting is **Enabled**.
SME-MK	Options available: Enabled, Disabled. Default setting is **Disabled**.

5-3-3-9 DDR PMIC Configuration



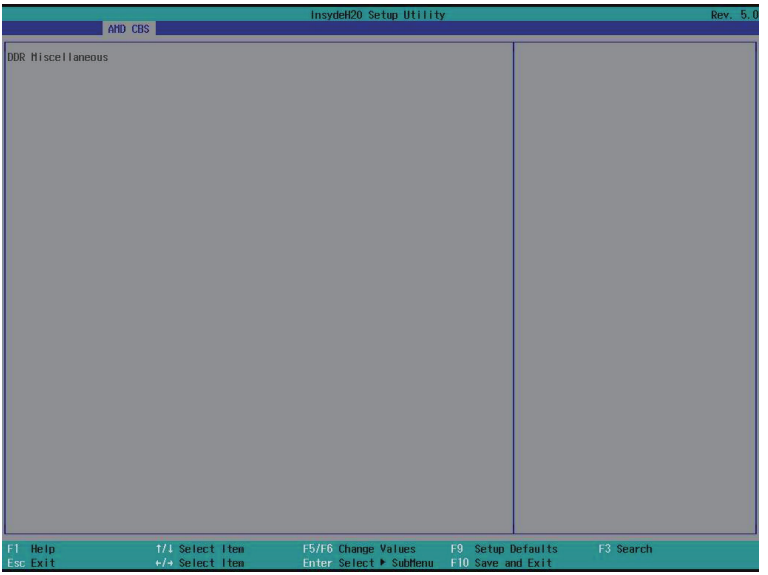
Parameter	Description
DDR PMIC Configuration	
PMIC Error Reporting	Enables support for PMIC Error Reporting. Options available: Auto, False, True. Default setting is **Auto**.
PMIC Operation Mode	Options available: Secure Mode, Programmable Mode. Default setting is **Programmable Mode**.
PMIC Fault Recovery	Options available: Always, Never, Once. Default setting is **Always**.
PMIC SWA/SWB VDD Core	Default setting is **1100**.
PMIC SWC VDDIO	Default setting is **1100**.
PMIC SWD VPP	Default setting is **1800**.
PMIC Stagger Delay	Default setting is **5**.
Max PMIC Power On	Default setting is **FF**.

5-3-3-10 DDR Thermal Throttling



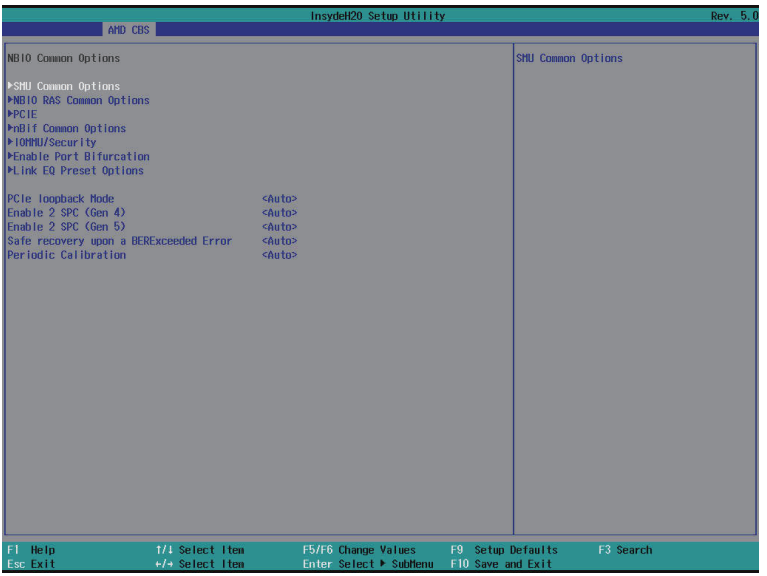
Parameter	Description
DDR Thermal Throttling	
ODTS Thermal Throttle Threshold	Options available: **Auto**, >85°C, >90°C, >95°C.
TDTS Thermal Throttle Control	Options available: **Disabled**, Enable.

5-3-3-11 DDR Miscellaneous



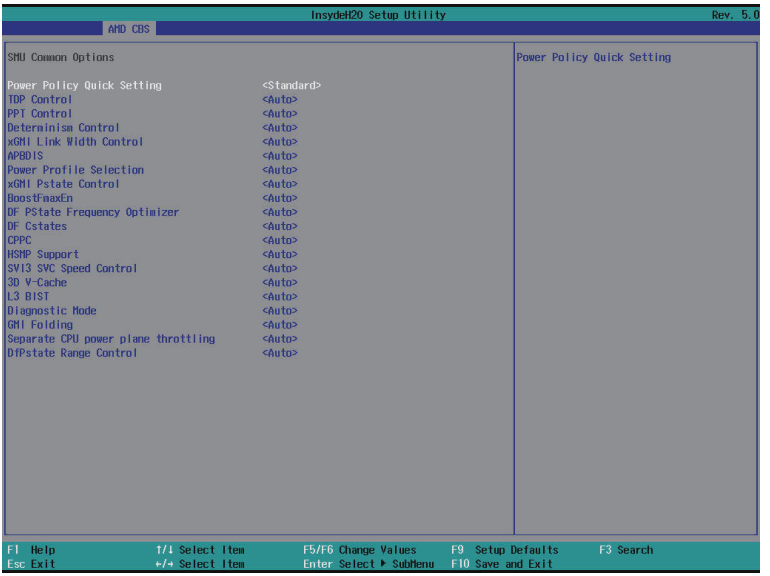
Parameter	Description
DDR Miscellaneous	

5-3-4 NBIO Common Options



Parameter	Description
NBIO Common Options	
SMU Common Options	Press [Enter] for configuration of advanced items.
NBIO RAS Common Options	Press [Enter] for configuration of advanced items.
PCIE	Press [Enter] for configuration of advanced items.
nBif Common Options	Press [Enter] for configuration of advanced items.
IOMMU/Security	Press [Enter] for configuration of advanced items.
Enable Port Bifuration	Press [Enter] for configuration of advanced items.
Link EQ Present Options	Press [Enter] for configuration of advanced items.
PCIe loopback Mode	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Enable 2SPC (Gen 4)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Enable 2SPC (Gen 5)	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Safe recovery upon a BERExceeed Error	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Periodic Calibration	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

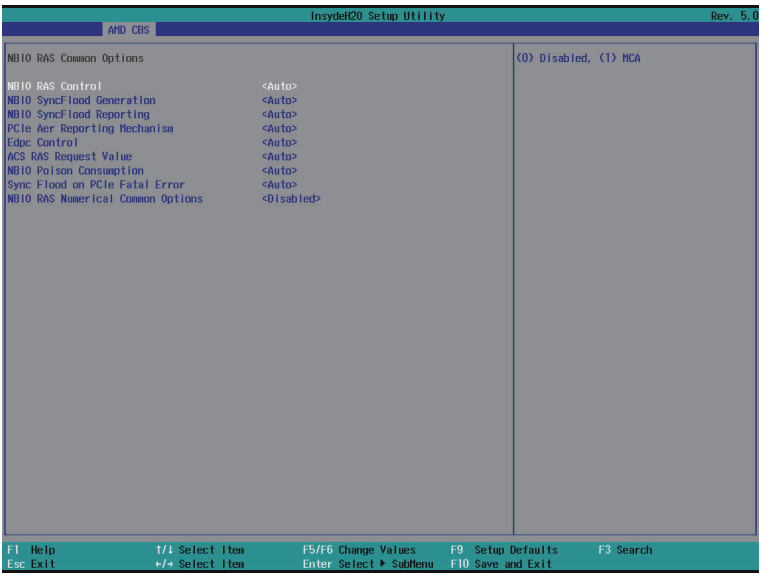
5-3-4-1 SMU Common Options



Parameter	Description
SMU Common Options	
Power Policy Quick Setting	Options available: Standard, Best Performance, Energy Efficient. Default setting is **Standard**.
TDP Control	Options available: Manual, Auto. Default setting is **Auto**.
PPT Control	Options available: Manual, Auto. Default setting is **Auto**.
Determinism Control	Selects use the fused Determinism or set customized Determinism. Options available: Manual, Auto. Default setting is **Auto**.
xGMI Link Width Control	Options available: Manual, Auto. Default setting is **Auto**.
APBDIS	Options available: 0, 1, Auto. Default setting is **Auto**.
Power Profile Selection	Options available: High Performance Mode, Efficiency Mode, Maximum IO Performance Mode. Default setting is **High Performance Mode**.
xGMI Pstate Control	Options available: Manual, Auto. Default setting is **Auto**.
BoostFmaxEn	Options available: Manual, Auto. Default setting is **Auto**.
DF PState Frequency Optimizer	Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
DF Cstates	Options available: Disabled, Enabled, Auto. Default setting is **Disabled**.

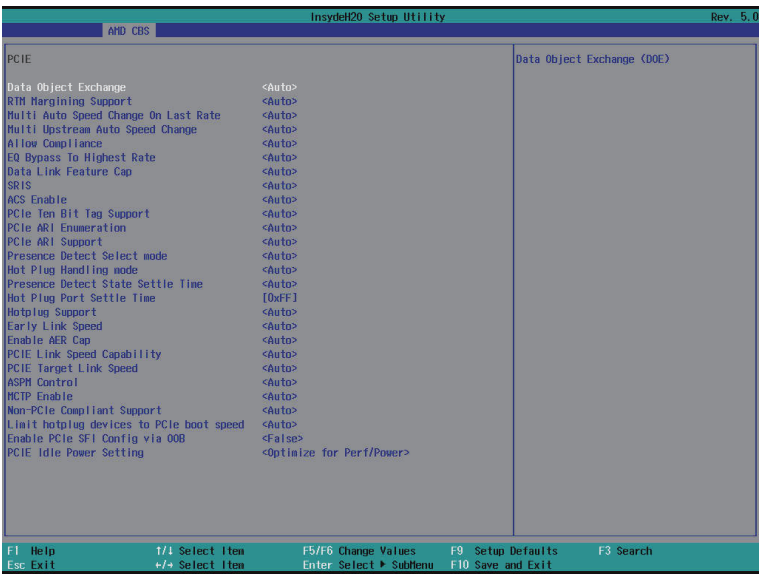
Parameter	Description
CPPC	Enable/Disable the CPPC feature. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
HSMP Support	Enable/Disable the HSMP support. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SVI3 SVC Speed Control	Options available: Auto, Manual. Default setting is **Auto**.
3D V-Cache	Options available: Auto, Disable, 1 stack, 2 stack, 4 stack. Default setting is **Auto**.
L3 BIST	Options available: Auto, Disable, Enable. Default setting is **Auto**.
Diagnostic Mode	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
GMI Folding	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Separate CPU power plane throttling	Options available: Auto, Disable, Enable. Default setting is **Auto**.
DfPstate Range Support	Options available: Disable, Enable, Auto. Default setting is **Auto**.

5-3-4-2 NBIO RAS Common Options



Parameter	Description
NBIO RAS Common Options	
NBIO RAS Control	Options available: Disabled, MCA, Auto. Default setting is **Auto**.
NBIO SyncFlood Generation	The value may be used to mask SyncFlood caused by NBIO RAS options. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.
NBIO SyncFlood Reporting	The value may be used to enable SyncFlood reporting to APML. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.
PCIe Aer Reporting Mechanism	Selects the method of reporting AER errors from PCI Express. Options available: Firmware First, Firmware First but allow OS First, OS First, Auto. Default setting is **Auto**.
Edpc Control	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
ACS RAS Request Value	Options available: Direct Request Access Enabled, Request Blocking Enabled, Request Redirect Enabled, Auto. Default setting is **Auto**.
NBIO Poison Consumption	Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
Sync Flood on PCIe Fatal Error	Options available: Auto, True, False. Default setting is **Auto**.
NBIO RAS Numerical Common Options	Options available: Disable, Manual. Default setting is **Disable**.

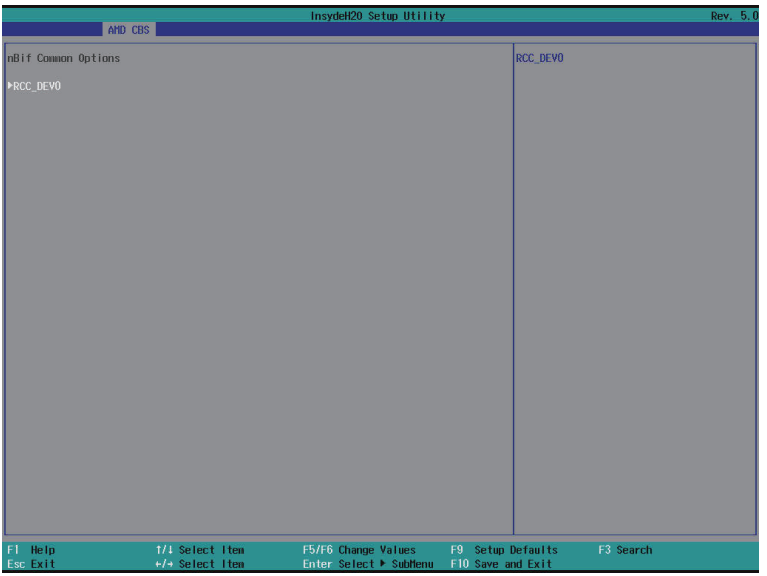
5-3-4-3 PCIE



Parameter	Description
PCIE	
Data Object Exchange	Options available: Auto, Disabled, Enabled. Default setting is **Auto**.
RTM Margining Support	Options available: Auto, Disable, Enable. Default setting is **Auto**.
Multi Auto Speed Change On Last Rate	Options available: Auto, Disable, Enable. Default setting is **Auto**.
Multi Upstram Auto Speed Change	Options available: Auto, Disabled, Enabled. Default setting is **Auto**.
Allow Compliance	When enabled, allows the PCIe RP to enter Polling.Compliance state. Options available: Auto, Disable, Enable. Default setting is **Auto**.
EQ Bypass To Highest Rate	Options available: Disable, Enable, Auto. Default setting is **Auto**.
Data Link Feature Cap	Options available: Auto, Disabled, Enabled. Default setting is **Auto**.
SRIS	Options available: Auto, Disable, Enable. Default setting is **Auto**.
ACS Enable	Enable/Disable ACS. Options available: Enable, Disabled, Auto. Default setting is **Auto**.

Parameter	Description
PCIe Ten Bit Tag Support	Enable/Disable PCIe ten bit tags for supported devices. (Auto=Disabled) Options available: Disable, Enable, Auto. Default setting is **Auto**.
PCIe ARI Enumeration	ARI Forwarding Enable for each downstream port. Options available: Disable, Enable, Auto. Default setting is **Auto**.
PCIe ARI Support	Enable/Disable Alternative Routing-ID Interpretation. Options available: Disable, Enable, Auto. Default setting is **Auto**.
Presence Detect Select mode	Controls the Presence Detect Select mode. Options available: OR, AND, Auto. Default setting is **Auto**.
Hot Plug Handling mode	Controls the Hot Plug Handling mode. Options available: OS First, Firmware First/EDR if OS supports, Firmware First but allow OS First, System Firmware Intermediary, Auto. Default setting is **Auto**.
Presence Detect State Settle Time	Options available: True, False, Auto. Default setting is **Auto**.
Hot Plug Port Settle Time	Configure Hot Plug Port Settle Time.
Hot Plug Support	Options available: Auto, Disabled. Default setting is **Auto**.
Early Link Speed	Configures Early Link Speed. Options available: Auto, Gen1, Gen2. Default setting is **Auto**.
Enable AER Cap	Enable/Disable Advanced Error Reporting Capability. Options available: Enable, Disabled, Auto. Default setting is **Auto**.
PCIE Link Speed Capability	Options available: Maximum speed, Gen1, Gen2, Gen3, Gen4, Gen5, Auto. Default setting is **Auto**.
PCIE Target Link Speed	Options available: Maximum Speed, GEN1, GEN2, GEN3, GEN4, GEN5, Auto. Default setting is **Auto**.
ASPM Control	Options available: Disable, L0s, L1, Auto. Default setting is **Auto**.
MCTP Enable	Options available: Enable, Disable, Auto. Default setting is **Disable**.
Non-PCIe Compliant Support	Options available: Enable, Disable, Auto. Default setting is **Auto**.
Limit hotplug devices to PCIe boot speed	Options available: Enable, Disable, Auto. Default setting is **Auto**.
Enable PCIe SFI Config via 00B	Options available: **False**,True.
PCIE Idle Power Setting	Options available: **Optimized for Perf/Power**,Optimized for Latency.

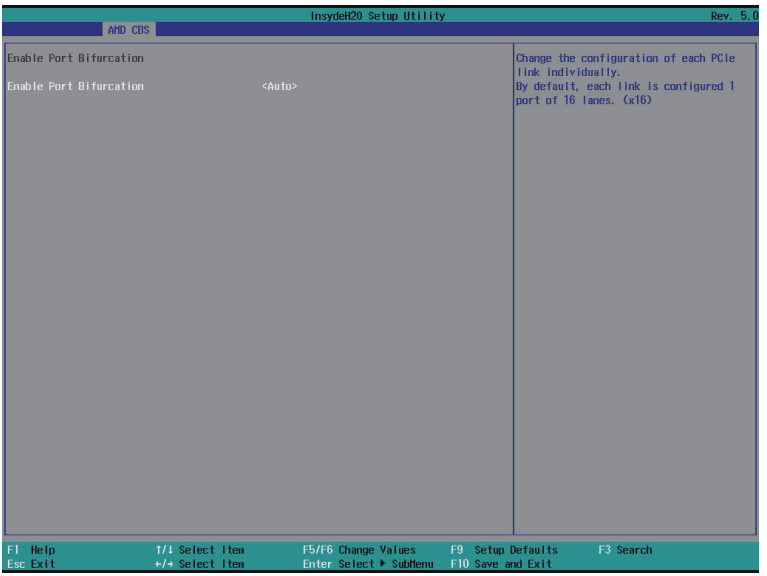
5-3-4-4 nBif Common Options



Parameter	Description
RCC_DEV0	◆ ACS Rcc_Dev0 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ AER Rcc_Dev0 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ DlfEnableStrap1 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ Phy16GTStrap1 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ MarginEnStrap1 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ SourceValStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ TranslationalBlockingStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ P2pReq ACS Control – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ P2pCompStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ UpstreamFwdStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**.

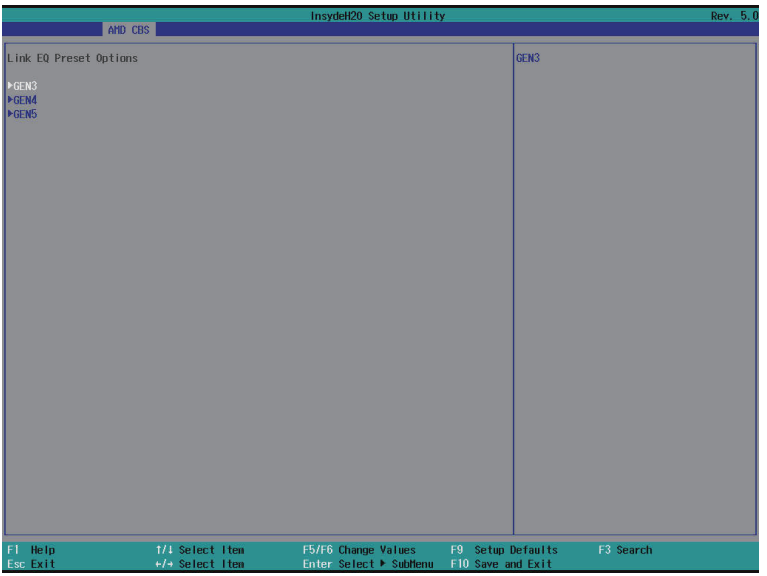
Parameter	Description
RCC_DEV0 (continued)	◆ P2PEgressStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ DirectTranslatedStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ SsidEnStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ PriEnPageReq – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ PriResetPageReq – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ SourceVal ACS cntl – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ TranslationalBlocking ACS Control – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ P2pComp ACS Control – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ UpstreamFwd ACS Control – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ P2PEgress ACS Control – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ P2pReqStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ E2E_PREFIX – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ EXTENDED_FMT – Options available: Auto, Disabled, Enabled. Default setting is **Auto**. ◆ AtomicRoutingStrap5 – Options available: Auto, Disabled, Enabled. Default setting is **Auto**.

5-3-4-5 IOMMU/Security



Parameter	Description
SEV-SNP Support	Enable/Disable the SEV-SNP support. Options available: Disable, Enable. Default setting is **Disable**.
DRTM Memory Reservation	Enable/Disable DRTM Memory reservation. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
DRTM Virtual Device Support	Enable/Disable DRTM ACPI virtual device. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
DMA Protection	Enable/Disable DMA remap support in IVRS IVinfo Field. Options available: Auto, Enabled, Disabled. Default setting is **Auto**.
IOMMU	Enable/Disable the IOMMU function. Options available: Disabled, Enabled. Default setting is **Enabled**.
DMAr Support	Enable/Disable DMAr system protection during POST. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

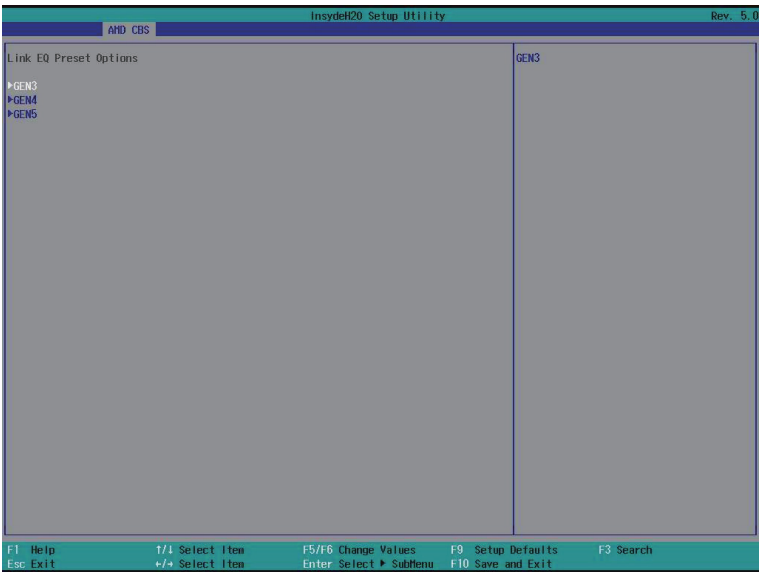
5-3-4-6 Enable Port Bifurcation



Parameter	Description
Enable Bifurcation(Note)	Options available: Disable, Enable, Auto. Default setting is **Auto**.
Socket0 Slot Info Override	
Socket1 Slot Info Override	

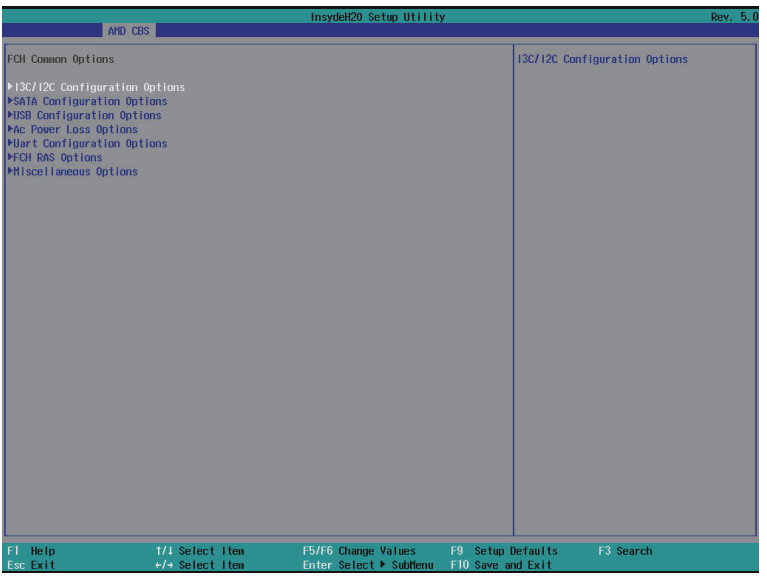
(Note) Advanced items prompt when this item is defined.

5-3-4-7 Link EQ Preset Options



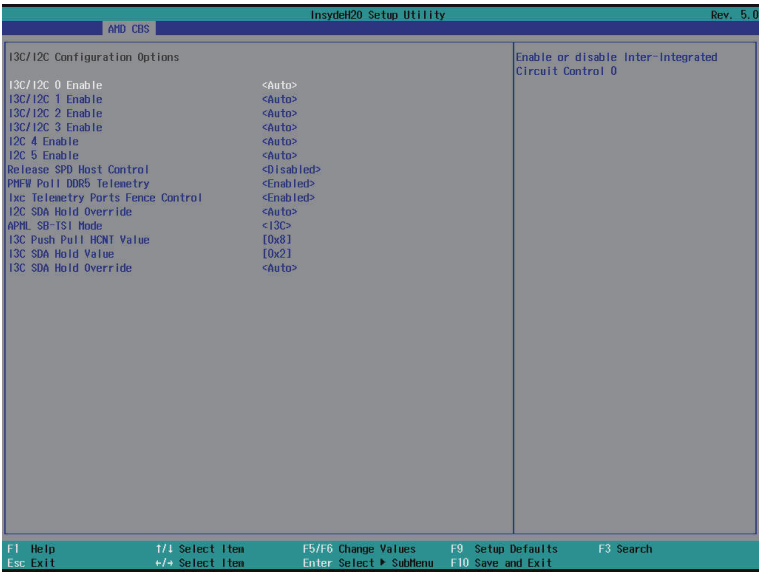
Parameter	Description
GEN3/4/5	Press [Enter] to configure advanced items. ◆ Preset Search Mask Configuration – Options available: Custom, Auto. Default setting is **Auto**.

5-3-5 FCH Common Options



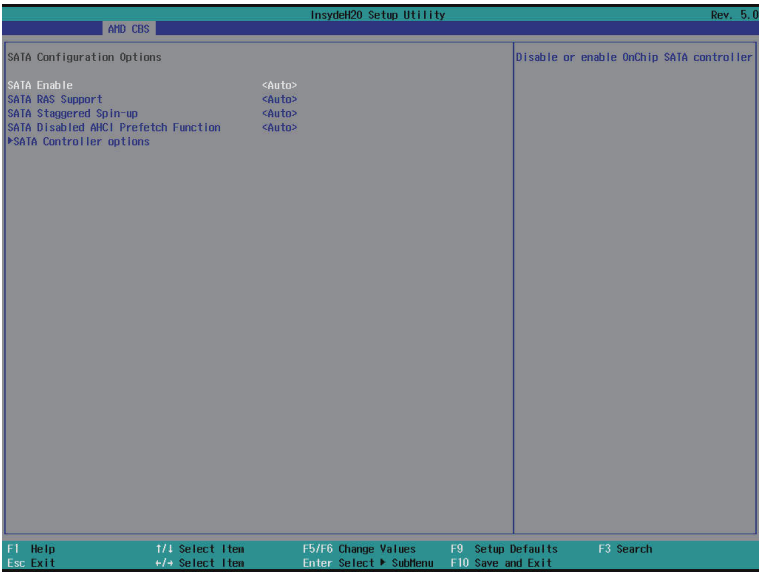
Parameter	Description
FCH Common Options	
I3C/I2C Configuration Options	Press [Enter] for configuration of advanced items.
SATA Configuration Options	Press [Enter] for configuration of advanced items.
USB Configuration Options	Press [Enter] for configuration of advanced items.
AC Power Loss Options	Press [Enter] for configuration of advanced items.
Uart Configuration Options	Press [Enter] for configuration of advanced items.
FCH RAS Options	Press [Enter] for configuration of advanced items.
Miscellaneous Options	Press [Enter] for configuration of advanced items.

5-3-5-1 I3C/I2C Configuration Options



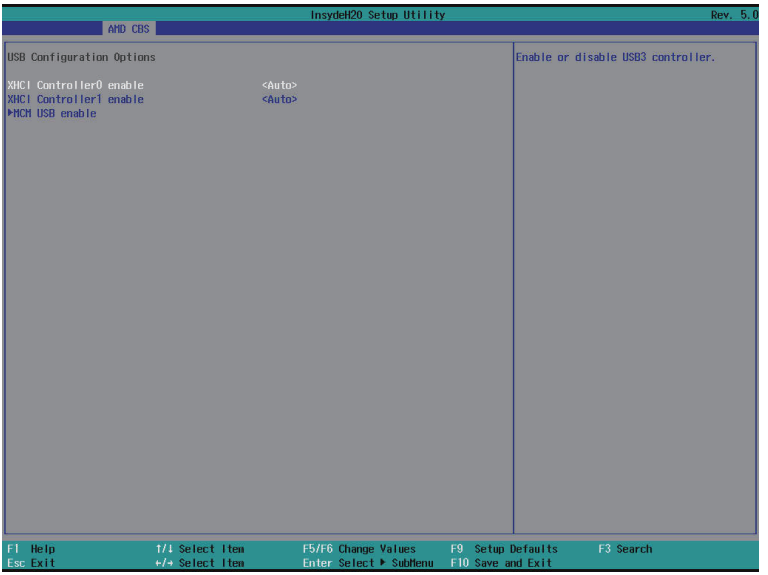
Parameter	Description
I3C/I2C Configuration Options	
I3C/I2C 0/1/2/3 Enable	Options available: Both Disabled, I3C Enabled, I2C Enabled, Auto. Default setting is **Auto**.
I2C 4/5 Enable	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Release SPD Host Control	Options available: Disabled, Enabled. Default setting is **Disabled**.
PMFW Poll DDR5 Telemetry	Options available: Disabled, Enabled. Default setting is **Enabled**.
Ixc Telemetry Ports Fence Control	Options available: Disabled, Enabled. Default setting is **Disabled**.
I2C SDA Hold Override	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
APML SB-TSI & RMI Mode	Options available: I3C, I2C. Default setting is **I3C**.
I3C Mode Speed	Options available: SDR2(6MHz), SDR0(12.5MHz), Auto. Default setting is **Auto**.
I3C Push Pull HCNT Value	SCL push-pull High count for I3C transfers targeted to I3C devices.
I3C SDA Hold Value	Specifies I3C SDA Hold value.
I3C SDA Hold Override	Override I3C SDA Hold value. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.

5-3-5-2 SATA Configuration Options



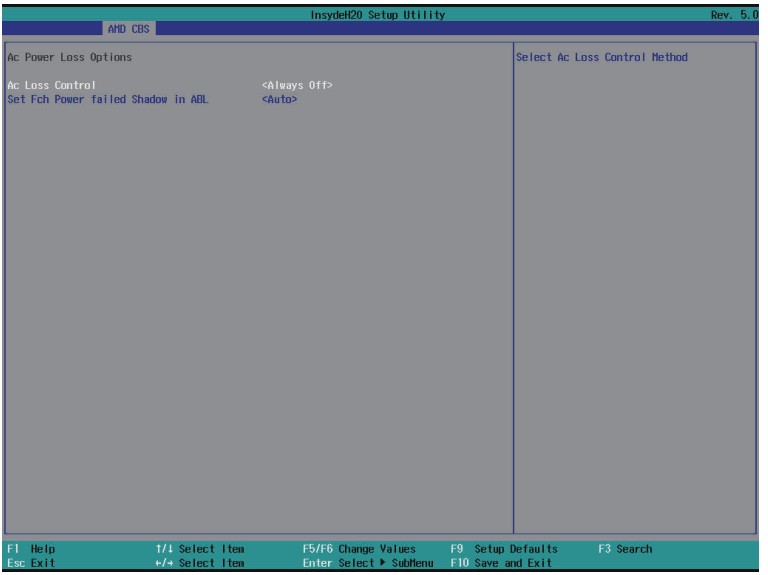
Parameter	Description
SATA Configuration Options	
SATA Enable	Enable/Disable OnChip SATA controller. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SATA RAS Support	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SATA Staggered Spin-up	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SATA Disabled AHCI Prefetch Function	Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
SATA Controller options	Press [Enter] for configuration of advanced items. ◆ SATA Controller Enable ◆ SATA Controller eSATA ◆ SATA Controller DevSlp ◆ SATA Controller SGPIO

5-3-5-3 USB Configuration Options



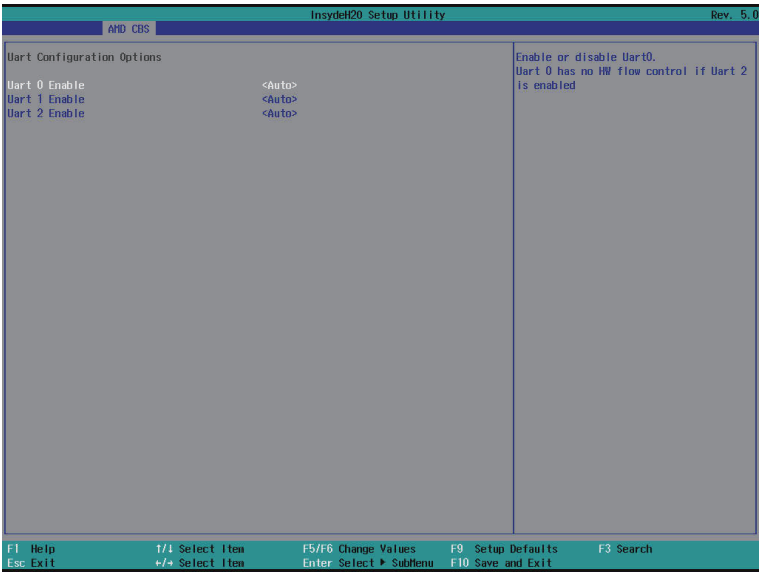
Parameter	Description
USB Configuration Options	
XHCI Controller0/1 enable	Enable/Disable USB controller. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.
MCM USB enable	Press [Enter] for configuration of advanced items. ◆ XHCI2/ XHCI3 enable (Socket1) – Options available: Enabled, Disabled, Auto. Default setting is **Auto**.

5-3-5-4 AC Power Loss Options



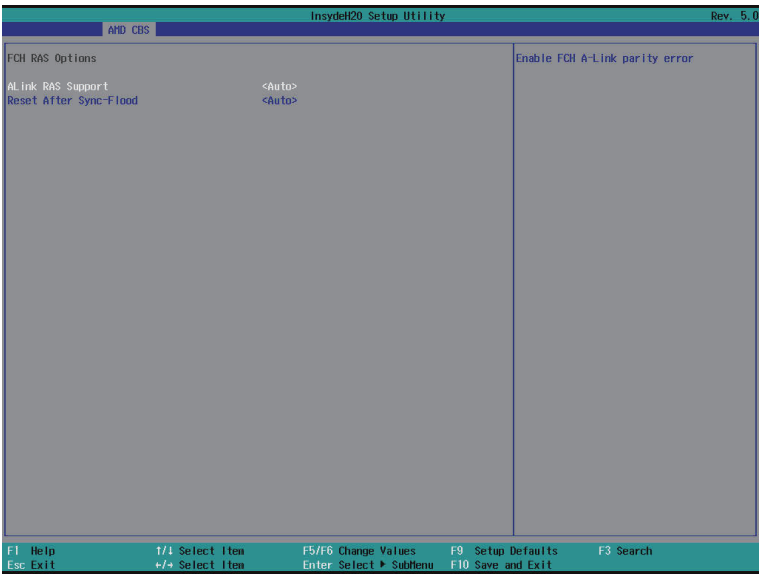
Parameter	Description
AC Power Loss Options	
AC Loss Control	Selects the AC Loss Control Method. Options available: Power Off, Power On, Last State. Default setting is **Power off**.
Set FCH Power failed shadow in ABL	Enable/Disable set FCH power failed shadow by AC Loss control policy in ABL. Options available: Enabled, Disabled, Auto. Default setting is **Auto**.

5-3-5-5 Uart Configuration Options



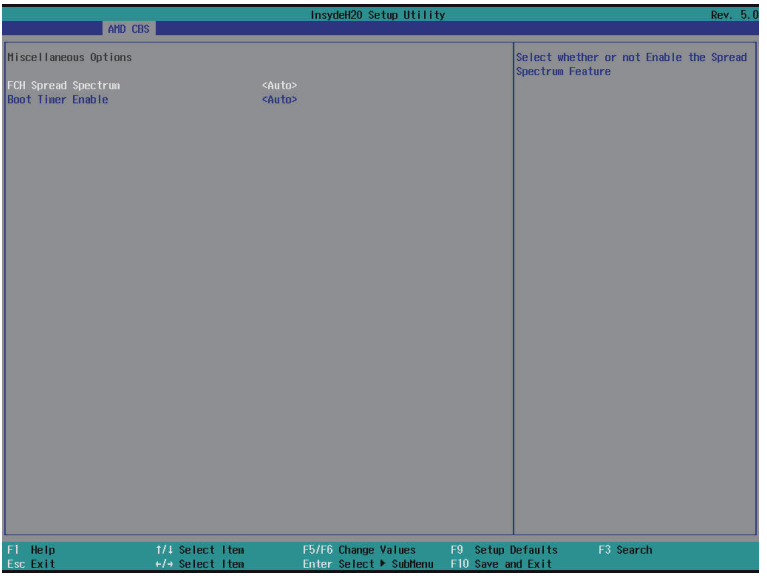
Parameter	Description
Uart Configuration Options	
Uart 0/1/2/3 Enable	Options available: **Auto**, Disabled.

5-3-5-6 FCH RAS Options



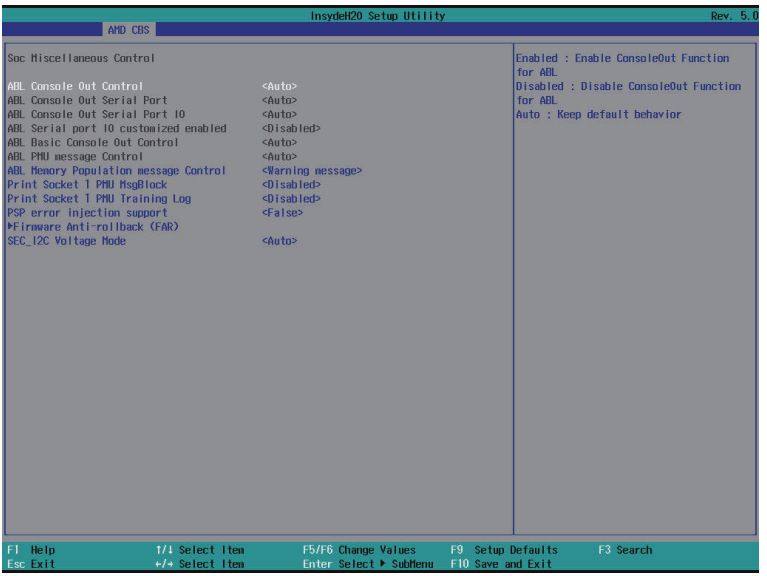
Parameter	Description
FCH RAS Options	
ALink RAS Support	Enable/Disable the ALink RAS Support. Options available: Disabled, Enabled, Auto. Default setting is **Auto**.
Reset After Sync-Flood	Enables AB to forward downstream sync-flood message to system controller. Options available: Enable, Disable, Auto. Default setting is **Auto**.

5-3-5-7 Miscellaneous Options



Parameter	Description
Miscellaneous Options	
FCH Spread Spectrum	Select whether or not Enable the Spread Spectrum Feature. Options available: **Disabled**, Enabled, Auto.
Boot Timer Enable	Enable/Disable Boot Timer. Options available: **Auto**, Disabled, Enabled, Auto.

5-3-6 SOC Miscellaneous Control

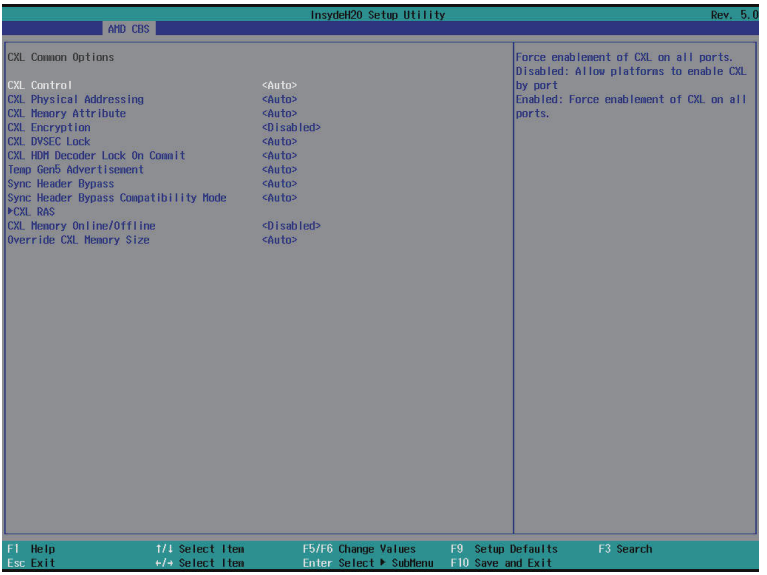


Parameter	Description
SOC Miscellaneous Control	
ABL Console Out Control(Note)	Enable/Disable the ConsoleOut function for ABL. Options available: Disable, Enable, Auto. Default setting is **Auto**.
ABL Console Out Serial Portl(Note)	Options available: eSPI, SOC UART0, SOC UART1, Auto. Default setting is **Auto**.
ABL Console Out Serial Port IO	Options available: 0x3F8, 0x2F8, 0x3E8, 0x2E8, Auto. Default setting is **Auto**.
ABL Serial port IO customized enabled	Options available: Disabled, Enabled. Default setting is **Disabled**.
ABL Basic Console Out Control	Enable/Disable the Basic ConsoleOut function for ABL. Options available: Disable, Enable, Auto. Default setting is **Auto**.
ABL PMU message Control	To Control the total number of PMU debug messages. Options available: Auto, Detailed debug message, Coarse debug message, Stage completion, Assertion messages, Firmware completion message only. Default setting is **Auto**.
ABL Memory Population message Control	Options available: Warning message, Fatal error. Default setting is **Warning message**.

(Note) Advanced items are configurable when this item is defined.

Parameter	Description
PSP error injection support	Options available: **False**, True.
Firmware Anti-rollback (FAR)	Press [Enter] for configuration of advanced items. ◆ FAR enforcement state – Default setting is **Enabled**. ◆ SPL value in the CPU Fuse ◆ SPL value in the SPL table ◆ FAR Switch – Options available:**Auto** Disabled, Enabled, Auto.
SEC_I2C Voltage Mode	Options available: False, True. Default setting is **False**.

5-3-7 CXL Common Options

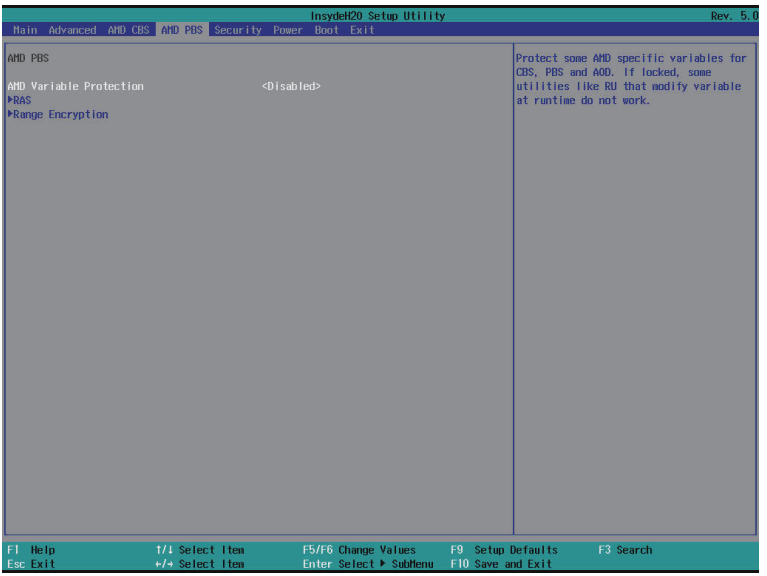


Parameter	Description
CXL Common Options	
CXL Control	Options available: **Auto**, Enabled, Disabled.
CXL Physical Addressing	Options available: **Auto**, Normalized address, System address.
CXL Memory Attribute	Options available: **Auto**, Enabled, Disabled.
CXL Encryption	Options available: **Disabled**, Enabled.
CXL DVSEC Lock	Options available: **Auto**, Enabled, Disabled.
CXL HDM Decoder Lock on Commit	Options available: **Auto**, Enabled, Disabled.
Temp Gen5 Advertisement	Options available: **Auto**, Disabled, Enabled.
Sync Header Bypass	Options available: **Auto**, Enabled, Disabled.
Sync Header Bypass Compatibility Mode	Options available: **Auto**, Enabled, Disabled.

Parameter	Description
CXL RAS	Press [Enter] for configuration of advanced items. ◆ CXL Protocol Error Reporting – Options available: **SameAsPcieAer**, Disabled, ForceAerFwFirstIfCxlPresent. ◆ CXL Component Error Reporting – Options available: **Debug FW-First** ,Allow OS First, Force FW-First. ◆ CXL Root Port Isolation – Options available: **Auto**, Enabled, Disabled. CXL Root Port Isolation FW Notification. – Options available: **Auto**, Enabled, Disabled.
CXL Memory Online/Offline	All 4 Plink sots support memory online/offline. Only slot4 of Amber supports hot plug CXL memory interleaving automatically disabled globally when this CBS is enabled. Options available: **Disabled**, Enabled, Disabled.
Override CXL Memory Size	Options available: **Auto** ,32GB, 64GB, 128GB, Auto.

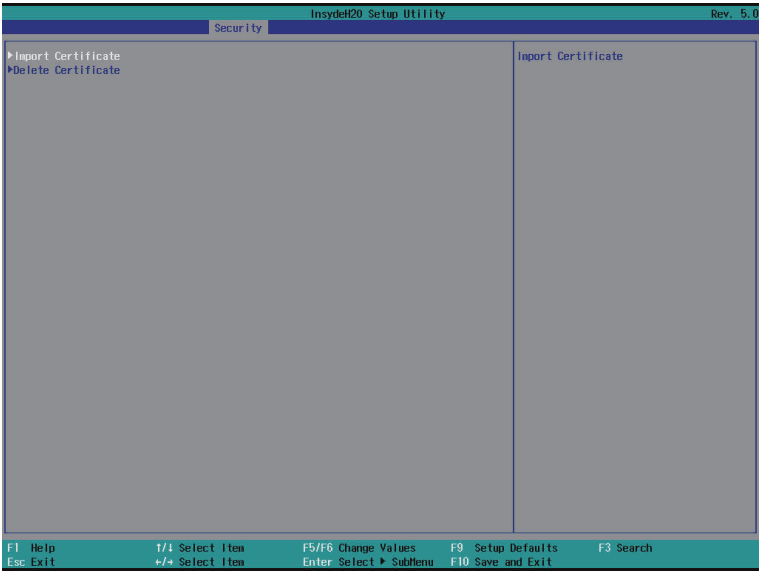
5-4 AMD PBS Menu

AMD PBS Option menu displays submenu options for configuring the function of AMD PBS. Select a submenu item, then press [Enter] to access the related submenu screen.



Parameter	Description
AMD Variable Protection	Protect some AMD specific variables for CBS, PBS and AOD. If locked, some utilities like RU that modify variable at runtime do not work. Options available:**Disabled**, Enabled.
RAS	Press [Enter] for configuration of advanced items.
Range Encryption	Press [Enter] for configuration of advanced items. ◆ Range1/2/3/4/5/6/7 – Configure the Range 1/2/3/4/5/6/7 Memory Base. – Configure the Range 1/2/3/4/5/6/7 Memory Limit/Size. ◆ Start Range Encryption

5-4-1 RAS

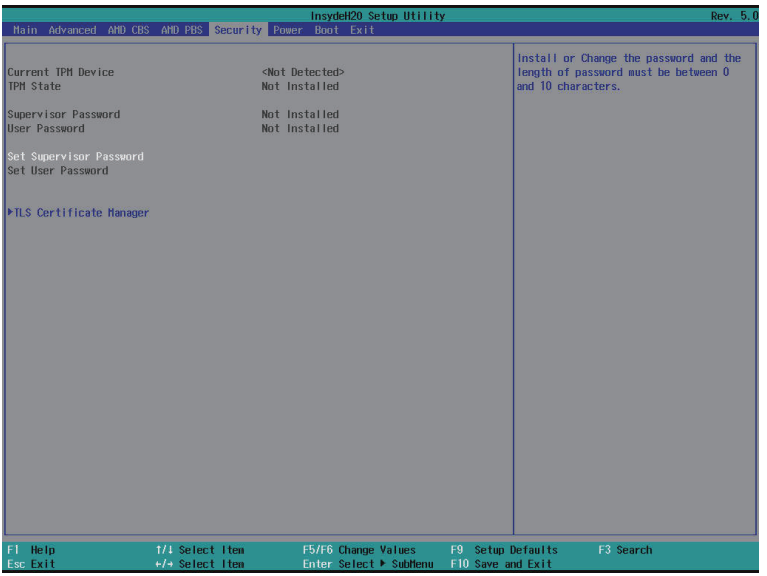


Parameter	Description
RAS Periodic SMI Control	Enable/Disable the Periodic SMI for polling [MCA Threshold] error. Options available: Disabled, Enabled. Default setting is **Enabled**.
SMI Threshold	Configures the SMI Threshold value.
SMI Scale	Configures the SMI Scale value.
SMI Scale Unit	Defines the unit of time scale. Options available: millisecond, second, minute. Default setting is **millisecond**.
SMI Period	Configures the SMI Period.
GHES Notify Type	Selects the Notification type for deferred/ corrected errors. Options available: Polled, SCI. Default setting is **Polled**.
GHES UnCorr Notify Type	Selects the Notification type for uncorrected errors. Options available: Polled, NMI. Default setting is **NMI**.
PCIe GHES Notify Type	Selects the Notification type for PCIe corrected errors. Options available: Polled, SCI. Default setting is **Polled**.
PCIe UnCorr GHES Notify Type	Selects the Notification type for PCIe uncorrected errors. Options available: Polled, NMI. Default setting is **NMI**.
PCIe Root Port Corr Err Mask Reg	Initialize the PCIe AER Corrected Error Mask register of Root Port.

Parameter	Description
PCIe Root Port UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of Root Port.
PCIe Root Port UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Severity register of Root Port.
PCIe Device Corr Err Mask Reg	Initialize the PCIe AER Corrected Error Mask register of PCIe device.
PCIe Device UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of PCIe device.
PCIe Device UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Severity register of PCIe device.
CXL DP CIE Mask Enable	Options available: Disabled, Enabled. Default setting is **Enabled**.
DRAM Hard Post Package Repair	This feature allows spare DRAM rows to replace malfunctioning rows via an in-field repair mechanism. Options available: Disabled, Enabled. Default setting is **Disabled**.
HEST DMC Structure Support	HEST DMC (Deferred Machine Check) Structure Support. Options available: Disabled, Enabled. Default setting is **Disabled**.
CXL Error Report Support	Enable/Disable CXL Error Reporting. Options available: Disabled, Enabled. Default setting is **Disabled**.

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

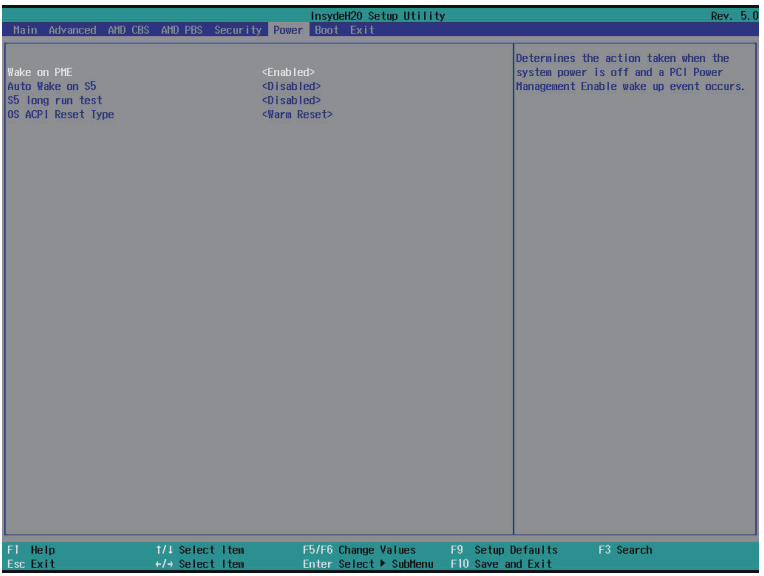
  Entering this password will allow the user to access and change all settings in the Setup Utility.

- 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.
TLS Certificate Manager	Press [Enter] to configure advanced items. ◆ Import Certificates – Press [Enter] for advanced configuration. ◆ Delete Certificates – Press [Enter] for advanced configuration.

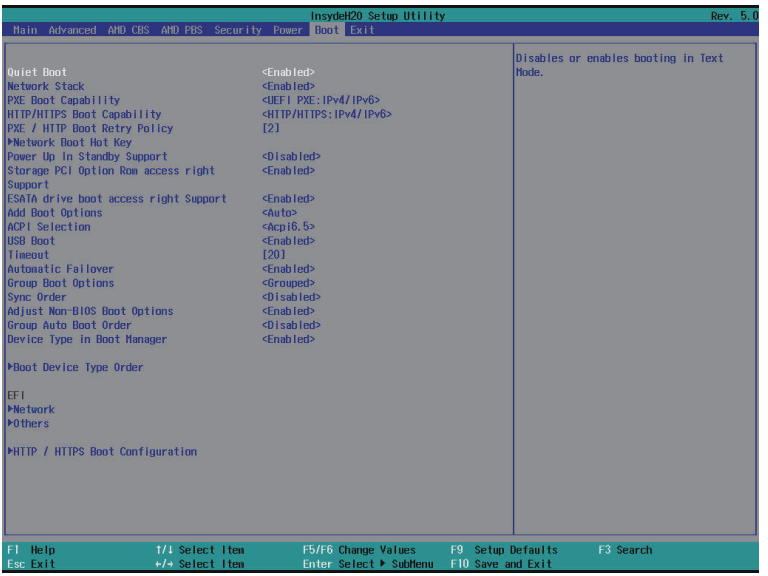
5-6 Server Management Menu



Parameter	Description
Wake on PME	Determines the action taken when the system power is off and a PCI power Management Enable wake up event occurs. Options available: **Enabled**, Disabled.
Auto Wake on S5	Auto wake on S5, By Day of month or Fixed time of every day. Options available: **Disabled**, Enabled.
S5 long run test	Options available: **Disabled**, Enabled.
OS ACPI Reset Type	Options available: **Disabled**, Enabled.

5-7 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.

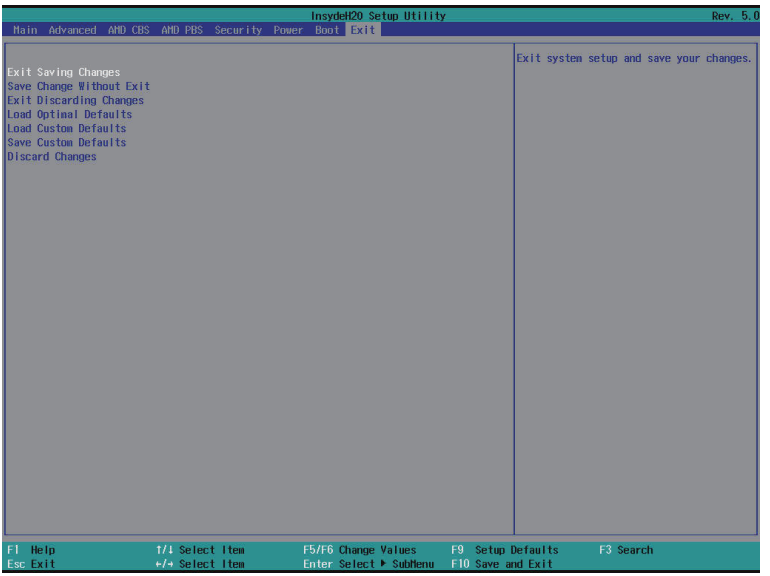


Parameter	Description
Boot Configuration	
Quiet Boot	Enable/Disable showing the logo during POST. Options available: **Enabled**, Disabled.
Network Stack	Options available: **Enabled**, Disabled.
PXE Boot Capability	Options available: **UEFI PXE: IPv4/IPv6**, UEFI PXE: IPv4, UEFI PXE: IPv6, Disabled.
HTTP/HTTPS Boot Capability	Options available: **HTTP/HTTPS: IPv4/IPv6**, HTTP/HTTPS: IPv4, HTTP/HTTPS: IPv6, Disabled.
PXE /HTTP Boot Retry Policy	PXE /HTTP boot retry settings.
Network Boot Hot Key	Press [Enter] for configuration of advanced items. ◆ Network Hot Key Policy – Options available: **Disabled**, Network Boot First, Network Boot Only. ◆ Network Hot Key Capability – Options available: **Both**, HTTP Only, PXE Only. ◆ Network Hot Key Other – Options available: **Default**, PXE First, HTTP First.

Parameter	Description
Power Up Standby Support	Options available: **Disabled**, Enabled.
Storage PCI Option Rom access right Support	Options available: **Enabled**, Disabled.
ESATA drive boot access right Support	Options available: **Enabled**, Disabled.
Add Boot Options	Position in Boot Order Shell, network and Re movables. Options available: **Auto**, First, Last.
ACPI Selection	Options available: **Acpi6.5**, Acpi3.0, Acpi4.0, Acpi5.0, Acpi6.0, Acpi6.1, Acpi6.2, Acpi6.3, Acpi6.4.
USB Boot	Options available: **Enabled**, Disabled.
Timeout	The number of seconds that the firmware will wait before booting the original default boot selection.
Automatic Failover	Options available: **Enabled**, Disabled.
Group Boot Option	Options available: **Grouped**, Non-Grouped.
Sync Oder	Options available: **Disabled**, Enabled.
Adjust Non-BIOS Boot Options	Options available: **Enabled**, Disabled.
Group Auto Boot Order	Options available: **Disabled**, Enabled.
Device Type in Boot Manager	Options available: **Enabled**, Disabled.
Boot Device Type Oder	Press [Enter] to configure the boot priority.
Network	Press [Enter] to configure the boot priority.
Others	Press [Enter] to configure the boot priority.
HTTP/ HTTPS Boot Configuration	Press [Enter] to for advanced configuration.

5-8 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>.



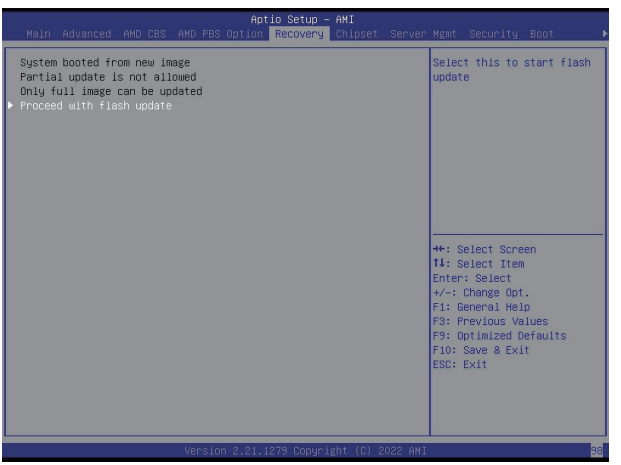
Parameter	Description
Exit Saving Changes	Saves changes made and closes the BIOS setup. Options available: Yes, No.
Save Changes without Exit	Save your changes and without exiting system. Options available: Yes, No.
Exit Discarding Changes	Discards changes made and exits the BIOS setup. Options available: Yes, No.
Load Optimal Defaults	Press [Enter] to load optimal defaults. Options available: Yes, No.
Load Custom Defaults	Press [Enter] to load custom defaults. Options available: Yes, No.
Save Custom Defaults	Saves changes done so far to any of the setup options. Options available: Yes, No.
Discard Changes	Discards changes made and exits the BIOS setup. Options available: Yes, No.

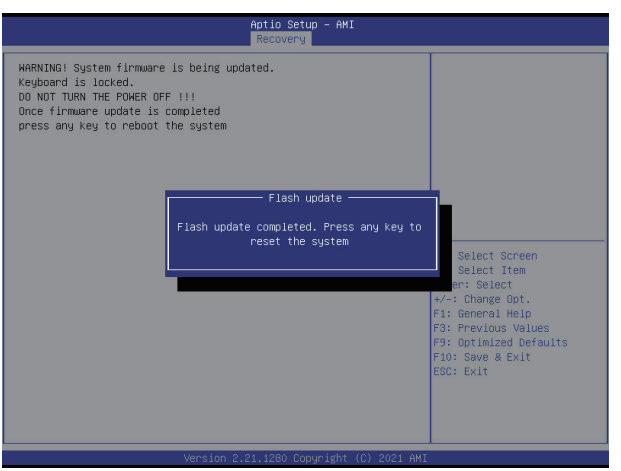
5-9 BIOS Recovery

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.





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