GIGABYTE[™] R282-P91

Ampere® Altra® Max ARM Server - 2U DP 24+4-Bay

User Manual Rev. 1.0

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Documentation Classifications

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

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

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

For More Information

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

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

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

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

Conventions

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

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

Server Warnings and Cautions

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

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

- Do not disable the power cord grounding plug. The grounding plug is an important safety feature.
- Plug the power cord into a grounded (earthed) electrical outlet that is easily accessible at all times.
- Unplug all the power cords from the power supplies to disconnect power to the equipment.



- · Shock Hazard! Disconnect all power supply cords before servicing.
- Do not route the power cord where it can be walked on or pinched by items placed against it. Pay particular attention to the plug, electrical outlet, and the point where the cord extends from the server.

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 not suitable for use in locations where children are likely to be present.

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.

- 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.

Electrostatic Discharge (ESD)

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 AT-TACHED TO CHASSIS GROUND -- ANY UNPAINTED METAL SURFACE -- ON YOUR SERVER WHEN HANDLING PARTS.

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

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

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

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

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

Installing or removing jumpers: A jumper is a small plastic encased conductor that slips over two jumper pins. Some jumpers have a small tab on top that can be gripped with fingertips or with a pair of fine needle nosed pliers. If the jumpers do not have such a tab, take care when using needle nosed pliers to remove or install a jumper; grip the narrow sides of the jumper with the pliers, never the wide sides. Gripping the wide sides can 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.



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.

Table of Contents

Chapter 1	Hard	ware	e Installation	9
	1-1	Inst	tallation Precautions	9
	1-2	Pro	duct Specifications	10
	1-3	Sys	stem Block Diagram	14
Chapter 2	Syste	m A	ppearance	15
	2-1	Fro	nt View	15
	2-2	Rea	ar View	15
	2-3	Fro	nt Panel LEDs and Buttons	16
	2-4	Pov	ver Supply Unit LED	17
	2-5	Hai	rd Disk Drive LEDs	18
Chapter 3	Syste	em ⊦	lardware Installation	19
	3-1	Sys	stem Comportments	20
	3-2	Rei	moving and Installing the Chassis Cover	21
	3-3		moving and Installing the Fan Duct	
	3-4	Rei	moving and Installing the Heat Sink	23
	3-5	Rei	moving and Installing the CPU	24
	3-6	Rei	moving and Installing Memory	25
	3-6	ò-1	Eight-Channel Memory Configuration	25
	3-6	6-2	Removing and Installing a Memory Module	26
	3-6	6-3	Processor and Memory Module Matrix Table	27
	3-7	Rei	moving and Installing the PCIe Card	28
	3-8	Rei	moving and Installing the Hard Disk Drive	30
	3-9	Rep	placing the Fan Assembly	31
	3-10	Rei	moving and Installing the Power Supply	32
	3-11	Inst	talling and Removing an M.2 Solid State Drive	33
	3-12	Cal	ble Routing	34
Chapter 4	Mothe	erbc	pard Components	43
	4-1	Mo	therboard Components	43
	4-2	Jun	nper Setting	45
	4-3	Bad	ckplane Board Storage Connector	46
	4-3		System Front HDD Backplane Board (CBP2007)	
	4-3	3-2	System Rear HDD Backplane Board (CBP2022)	46

Chapter 5	BIOS	Set	up	47
	5-1	The	Main Menu	49
	5-2	Adv	anced Menu	51
	5-2	2-1	Trusted Computing	52
	5-2	2-2	ACPI Settings	
	5-2	2-3	APEI Configuration	54
	5-2	2-4	General Watchdog Timer	55
	5-2	2-5	X86 Emulator Configuration	56
	5-2	2-6	PCI Subsystem Settings	57
	5-2	2-7	Info Report Configuration	64
	5-2	2-8	USB Configuration	65
	5-2	2-9	Network Stack Configuration	66
	5-2	2-10	IP Configuration	67
	5-2	2-11	NVMe Configuration	68
	5-2	2-12	SATA Configuration	69
	5-2	2-13	Graphic Output Configuration	70
	5-2	2-14	Power Restore Configuration	71
	5-2	2-15	Intel(R) I350 Gigabit Network Connection	72
	5-2	2-16	MAC IPv4 Network Configuration	74
	5-2	2-17	MAC IPv6 Network Configuration	75
	5-2	2-18	Driver Health	76
	5-3	Chi	pset Setup Menu	77
	5-3	3-1	CPU Configuration	78
	5-3	3-2	RAS Configuration	80
	5-3	3-3	Memory Slot Information	81
	5-3	3-4	Serialport Console	85
	5-3	3-5	PCIE Root Complex Configuration	86
	5-4	Ser	ver Management Menu	87
	5-4	1-1	System Event Log	88
	5-4	1-2	BMC self test	89
	5-4	1-3	View FRU Information	90
	5-4	1-4	BMC Network Configuration	91
	5-5	Sec	urity Menu	92
	5-5	5-1	Media Sanitization	93
	5-5	5-2	Secure Boot	94
	5-6	Boo	t Menu	96
	5-7	Sav	e & Exit Menu	98
	5-8		S POST Beep code (AMI standard)	
	5-8		PEI Beep Codes	
	5-8		DXE Beep Codes	
		_	- F	

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.

Product Specifications 1-2

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

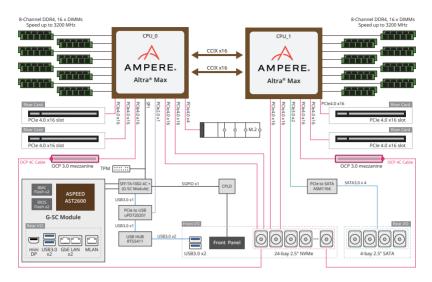
*	•						
CPU	 Ampere® Altra® Max Processor Dual processors, 7nm technology Up to 128-core per processor, TDP 250W NOTE: If only 1 CPU is installed, some PCIe or memory functions might be						
	unavailable						
Socket	Dual sockets						
	◆ LGA4926						
Chipset	System on Chip						
Memory	32 x DIMM slots						
	DDR4 memory supported only						
	8-Channel memory architecture						
	RDIMM modules up to 256GB supported						
	 LRDIMM modules up to 256GB supported 						
	 Up to 4TB of memory capacity supported per processor 						
	Memory speed: Up to 3200 MHz						
	NOTE: Only supports configurations with 1, 2, 4, 6, 8, 12, or 16 DIMMs						
	 2 x 1Gb/s LAN ports (1 x Intel® I350-AM2) 						
	NCSI function supported						
	 1 x 10/100/1000 Mbps management LAN 						
Video	Integrated in Aspeed® AST2600						
Video							
	2D Video Graphic Adapter with PCIe bus interface						
	 1920x1200@60Hz 32bpp, DDR4 SDRAM 						
Storage	 Front side: 24 x 2.5" Gen4 NVMe hot-swappable bays 						
	• Rear side: 4 x 2.5" SATA hot-swappable bays, from onboard SATA controller						
	(asmedia ASM1166)						

Expansion Slot	Riser Card CRS101J: • 1 x PCle x16 slot (Gen4 x16), Full height half-length
	Riser Card CRS101K:
	 1 x PCle x16 slot (Gen4 x16), Full height half-length
	Riser Card CRS202G:
	• 1 x PCIe x16 slot (Gen4 x16), Full height half-length
	NOTE: 1 PCIe slot is disabled
	Riser Card CRS202H:
	 1 x PCle x16 slot (Gen4 x16), Full height full-length
	NOTE: 1 PCIe slot is disabled
	2 x OCP 3.0 Gen4 x16 mezzanine slots (Disabled)
	1 x M.2 slots:
	M-key
	 PCIe Gen4 x4 Supports 2242/2260/2280/22110 cards
Internal I/O	Supports 2242/2260/2280/22110 cards 1 x M.2 slot
	 1 x TPM header
	1 x Front panel header
	1 x HDD/SSD back plane board header
	1 x PMBus connector
	1 x IPMB connector
_	1 x Clear CMOS jumper
Front I/O	2 x USB 3.2 Gen1
	 1 x Power button with LED 1 x ID button with LED
	1 x Reset button
	2 x LAN activity LEDs
	1 x HDD activity LED
	1 x System status LED
Rear I/O	2 x USB 3.2 Gen1
	 1 x mini-DP 2 x RJ45
	 2 x K045 1 x MLAN
Backplane I/O	Front side_CBP2007: 24 x Gen4 U.2 ports
	Rear side_CBP2022: 2 x SATA ports
	Speed and bandwidth: PCIe Gen4 x4 or SATA
TPM	1 x TPM header with SPI interface
	Optional TPM2.0 kit: CTM010

Power Supply	 2 x 1600W power supply
	80 PLUS Platinum
	AC Input:
	 100-120V~/ 12A, 50-60Hz
	 200-240V~/ 10A, 50-60Hz
	DC Input:
	- 40Vdc/ 4.5A
	DC Output:
	 Max 1000W/ 100-120V~
	 +12V/ 81.5A
	 +12Vsb/ 2.5A
	 - Max 1600W/ 200-240V or 240Vdc Input
	 +12V/133A
	 +12Vsb/ 2.5A
System	Aspeed® AST2600 management controller
Management	GIGABYTE Management Console (AMI MegaRAC SP-X) web interface
	Dashboard
	HTML5 KVM
	 Sensor Monitor (Voltage, RPM, Temperature, CPU Statusetc.)
	Sensor Reading History Data
	FRU Information
	SEL Log in Linear Storage / Circular Storage Policy
	· · · · · ·
	Hardware Inventory
	Fan Profile
	System Firewall
	Power Consumption
	Power Control
	LDAP / AD / RADIUS Support
	Backup & Restore Configuration
	Remote BIOS/BMC/CPLD Update
	Event Log Filter
	User Management
	Media Redirection Settings
	PAM Order Settings
	SSL Settings
	SMTP Settings
Operating	Operating temperature: 10°C to 35°C
Properties	 Operating humidity: 8%-80% (non-condensing)
	 Non-operating temperature: -40°C to 60°C
	 Non-operating humidity: 20%-95% (non-condensing)
	, , , , , , , , , , , , , , , , , , , ,

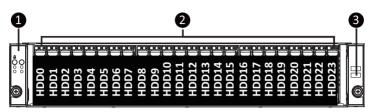
System	*	2U
Dimension	•	438mm (W) x 87mm (H) x 730mm (D)

1-3 System Block Diagram



Chapter 2 System Appearance

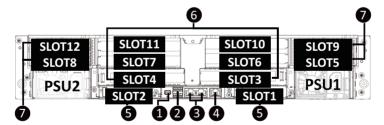
2-1 Front View



No.	Description
1.	Front Panel LEDs and Buttons
2.	2.5" HDD Bays
3.	Front USB 3.0 Ports
	NOTE! The Green Latch Supports NVMe

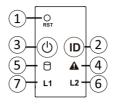
 Refer to section 2-3 Front Panel LEDs and Buttons for a detailed description of the function of the LEDs.

2-2 Rear View



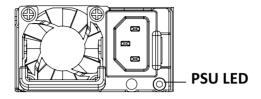
No.	Description	No.	Description
1.	Mini DP Port	5.	NVMe SSD Slot
2.	USB 3.0 Port x 2	6.	PCIe Slot
3.	1GbE LAN Port x 2	7.	2.5" SATA Hard Drive
4.	Server Management LAN Port		-

2-3 Front Panel LEDs and Buttons



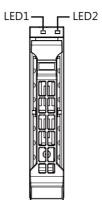
No.	Name	Color	Status	Description		
1.	Reset Button		Press this button to reset the system.			
2.	ID Button	Blue	On	Indicates the system identification is active.		
Ζ.	with LED	N/A	Off	Indicates the system identification is disabled.		
		Green	On	Indicates the system is powered on.		
3.	Power button	Green	Blink	System is in ACPI S1 state (sleep mode).		
0.	with LED	N/A	Off	 System is not powered on or in ACPI S5 state (power off) System is in ACPI S4 state (hibernate mode) 		
		Green	On	Indicates system is operating normally.		
			On	Indicates a critical condition, may include: - System fan failure - System temperature		
4.	System Status LED	Amber	Blink	Indicates non-critical condition, may include: - Redundant power module failure - Temperature and voltage issue - Chassis intrusion		
		N/A	Off	- POST error - POST error - NMI error - Processor or terminator is missing		
			On	Indicates locating the HDD.		
		Green	Blink	Indicates accessing the HDD.		
5.	HDD Status	Amber	On	Indicates HDD error.		
0.	LED	Green/ Amber	Blink	Indicates HDD rebuilding.		
		N/A	Off	Indicates no HDD access or no HDD error.		
0/5	LAN1/2 Active/	Green	On	Indicates a link between the system and the network or no access.		
6/7.	Link LED	Green	Blink	Indicates data trasmission or receiving is occuring.		
				Indicates no data transmission or receiving is occuring.		

2-4 Power Supply Unit LED



State	Description
OFF	No AC power to all power supplies
0.5Hz Green Blinking	AC present / only standby on / Cold redundant mode
2Hz Green Blinking	Power supply firmware updateing mode
	AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power
Amber	Power supply critical event causing shut down: failure, OCP, OVP, fan failure and UVP
0.5Hz Amber Blinking	Power supply warning events where the power supply continues to operate: high temp, high power, high current and slow fan

2-5 Hard Disk Drive LEDs



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

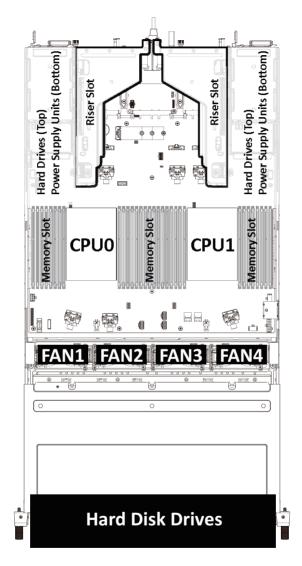


Pre-installation Instructions

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 System Comportments



3-2 Removing and Installing the Chassis Cover

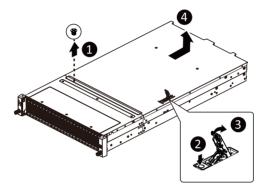


Before you remove or install the system cover

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

Follow these instructions to remove the chassis cover:

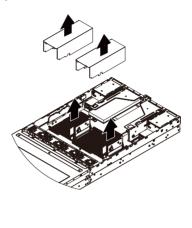
- 1. Remove the screw on on the top cover.
- 2. Unlock the plastic handle and pull the grip handle to open the panel cover.
- Slide the cover cover to the rear of the system and then remove the cover in the direction indicated by the arrow.
- 4. To reinstall the chassis cover reverse steps 1-3.

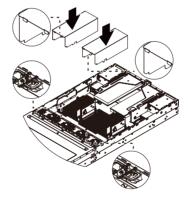


3-3 Removing and Installing the Fan Duct

Follow these instructions to remove the fan duct:

- 1. Lift up to remove the fan duct.
- 2. 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.





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.

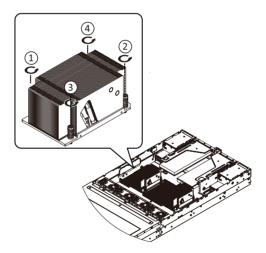


WARNING!

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 $(4 \rightarrow 3 \rightarrow 2 \rightarrow 1)$.
- 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 $(1\rightarrow 2\rightarrow 3\rightarrow 4)$ 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!

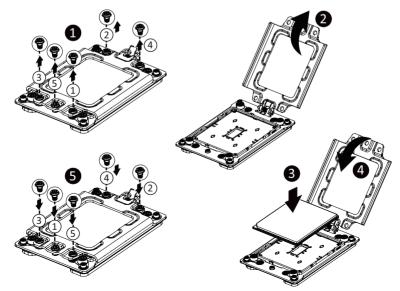
Failure to properly turn off the server before you start installing components may cause serious damage. Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Follow these instructions to install the CPU:

- 1. Loosen the three captive screws securing the CPU cover in sequential order $(1 \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5)$.
- 2. Flip open the CPU cover.
- 3. Remove the CPU carrier from the CPU frame using the handle on the CPU carrier.
- 4. Install the CPU into place in the CPU socket.
- 5. Flip the CPU cover into place over the CPU socket.
- Tighten the CPU cover screws in sequential order (1→2→3→4→5) to secure the CPU cover in place.
- 7. To remove the CPUs, follow steps 1-6 in reverse order.



 When installing the heat sink over the CPU, use Phillip#2 driver to tighten the 4 captive nuts in sequential order (1→2→3→4). The screw tightening torque: 10.0 kgf-cm



3-6 Removing and Installing Memory

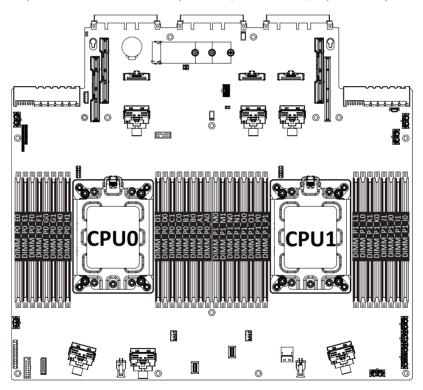


Read the following guidelines before you begin to install the memory:

- 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 Eight-Channel Memory Configuration

This motherboard provides 32 DDR4 memory sockets and supports Eight Channel Technology. After the memory is installed, the BIOS will automatically detect the specifications and capacity of the memory.



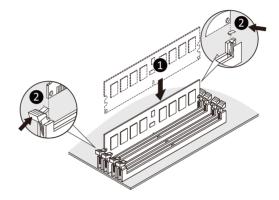
3-6-2 Removing and Installing a Memory Module



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 DDR4 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.



Memory Q'ty	СРИО															
for each CPU	E0	E1	F0	F1	G0	G1	но	H1	D1	D0	C1	C0	B1	B0	A1	A0
1 DIMM																v
2 DIMM	v															v
4 DIMM	v		v											v		v
6 DIMM	v		v		v							v		v		v
8 DIMM	v		v		v		v			v		v		v		v
12 DIMM	v	v	v	v	v	v					v	v	v	v	v	v
16 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v
Memory Q'ty	CPU1															
for each CPU	М0	M1	N0	N1	00	01	P0	P1	L1	L0	К1	К0	J1	JO	11	10
1 DIMM																v
2 DIMM	v															v
4 DIMM	v		v											v		v
6 DIMM	v		v		v							v		v		v
8 DIMM	v		v		v		v			v		v		v		v
12 DIMM	v	v	v	v	v	v					v	v	v	v	v	v
16 DIMM	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v	v

3-6-3 Processor and Memory Module Matrix Table

3-7 Removing and Installing the PCIe 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
PCIe card.

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



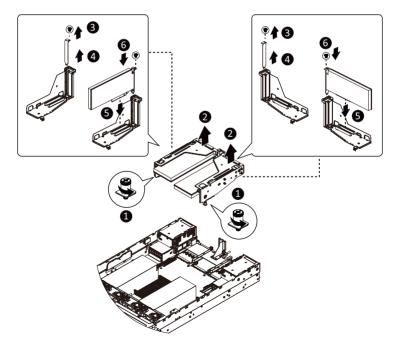
• The PCIe riser assembly does not include a riser card or any cabling as standard. To install a PCIe card, a riser card must be installed.

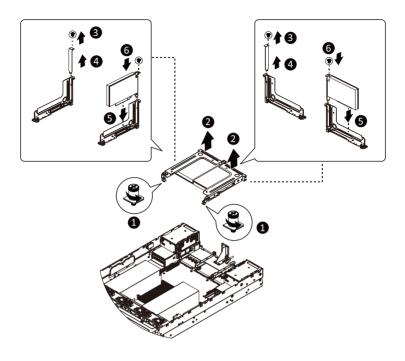
Follow these instructions to install a PCIe card:

- 1. Loosen the thumbnail screw securing the riser bracket from the rear side of the system.
- 2. Loosen the two thumbnail screws securing the riser bracket inside the system.
- 3. Lift up the riser bracket out of system.
- 4. Remove the screw securing the slot cover from riser bracket.
- Orient the PCIe card with the riser guide slot and push in the direction of the arrow until the PCIe card sits in the PCIe card connector.
 NOTE: Some riser brackets allow for single or multiple PCIe cards.

Repeat steps 4-5 as necessary.

- 6. Secure the PCIe card with the screw.
- 7. Repeat steps 1-3 to install the PCIe card into the system.





3-8 Removing and Installing the Hard Disk Drive

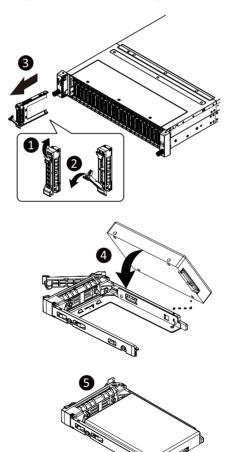


Read the following guidelines before you begin to install the hard disk drive:

- 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 HDD tray.
- 4. Align the hard disk drive with the positioning stud on the HDD tray.
- 5. Slide the hard disk drive into the HDD tray.
- 6. Reinsert the HDD tray into the slot and close the locking lever.



3-9 Replacing the Fan Assembly

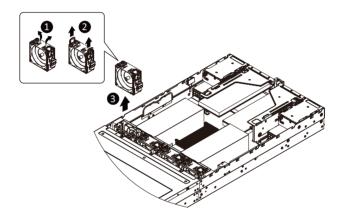


• Voltages can be present within the server whenever an AC power source is connected. This voltage is present even when the main power switch is in the off position. Ensure that the system is powered-down and all power sources have been disconnected from the server prior to replacing a system fan.

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

Follow these instructions to replace a fan assembly:

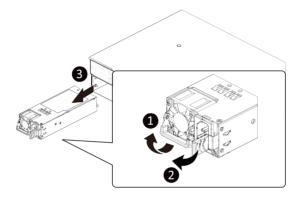
- 1. Flip the latches on the top of the fan outwards.
- 2. Using the latches, lift up the fan assembly from the chassis.
- 3. Reverse the previous steps to install the replacement fan assembly.



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 Installing and Removing an M.2 Solid State Drive

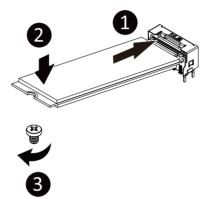
Follow these instructions to install an optional M.2 solid state drive (SSD):



NOTE:

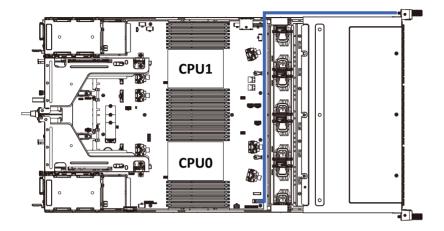
To install/remove the M.2 heatsink use a No. 1 Phillips-head screwdriver with a screw torque of 1.5 \pm 0.2 kgf*cm

- 1. Place the solid state drive into the M.2 connector.
- Secure the solid state drive to the motherboard with a single screw. NOTE: The position of the screw will depend on the size of the SSD. Refer to the second image below for proper placement.
- 3. Reverse steps 1-2 to remove the solid state drive.

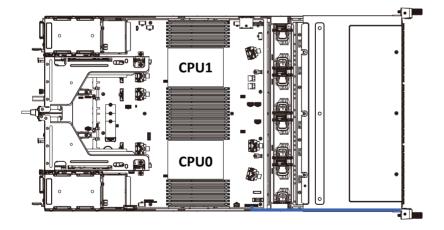


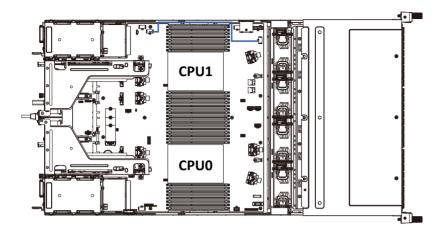
3-12 Cable Routing

Front Panel USB 3.0 Ports Cable

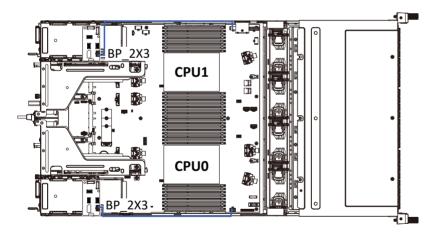


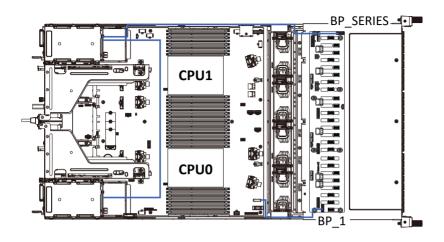
Front Panel LEDs and Buttons Cable



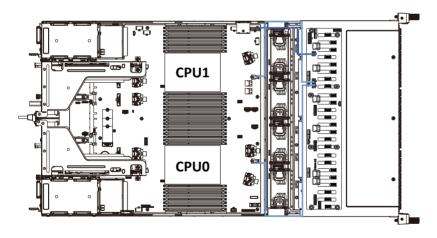


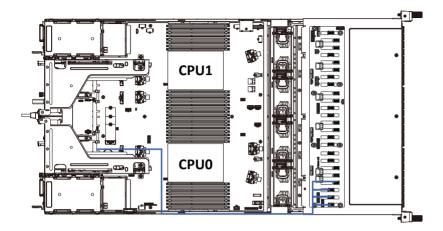
Rear HDD Backplane Board Power Cable



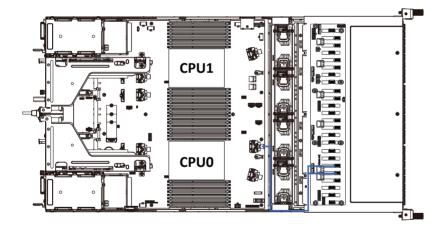


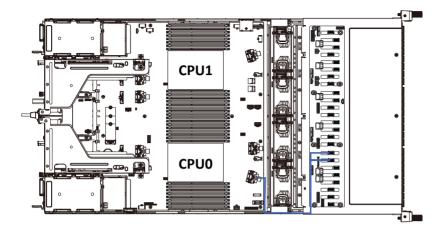
HDD Backplane Board Power Cable



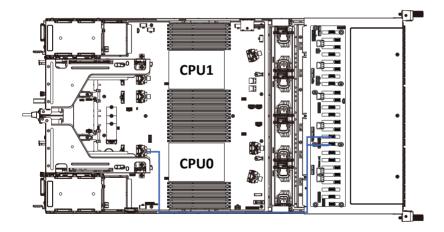


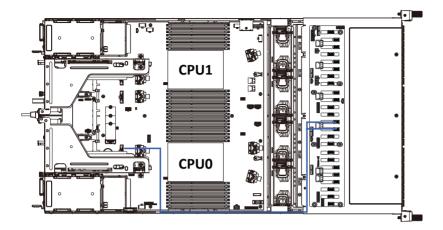
NVMe 4-5 Cable



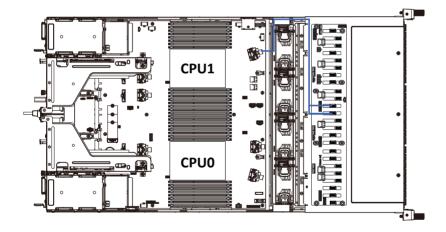


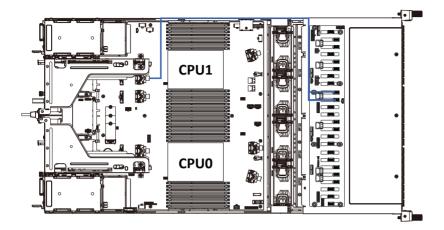
NVMe 8-9 Cable



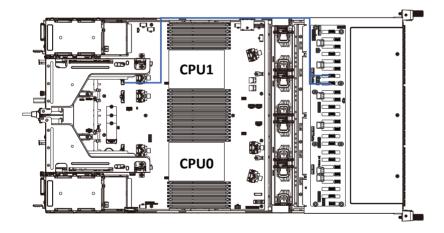


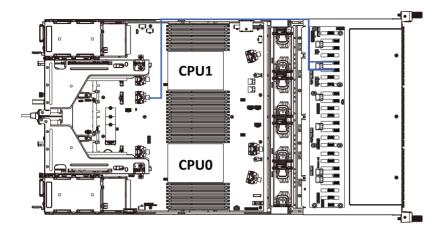
NVMe 12-13 Cable



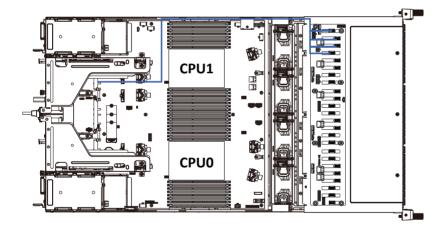


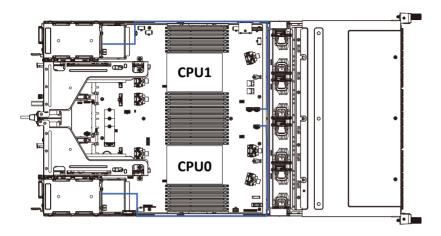
NVMe 16-17 Cable





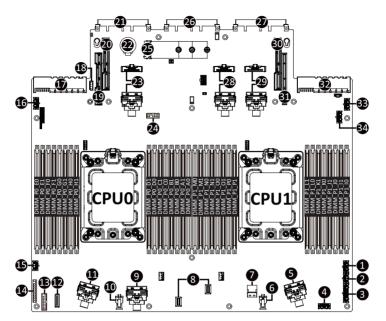
NVMe 20-23 Cable





Chapter 4 Motherboard Components

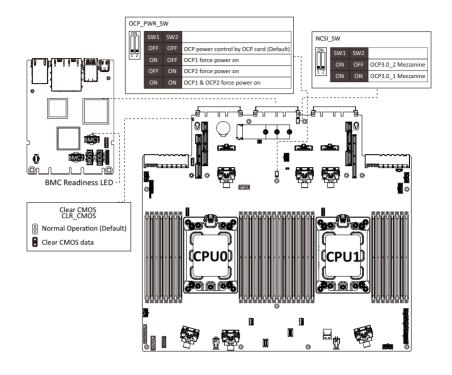
4-1 Motherboard Components

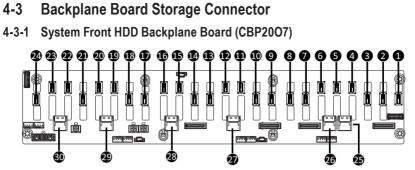


Item	Description	
1	2 x 4 Pin P12V GPU Power Connector	
2	2 x 3 Pin Power Connector	
3	2 x 7 Pin Power Connector	
4	2 x 4 Pin P12V Power Connector	
5	MCIO Connector (MCIO_P1_3/PCIe Gen4)	
6	2 x 2 Pin P12V Backplane Power Connector	
7	SlimLine SAS Connector (MCIO_P1_22/PCIe Gen4)	
8	SlimLine SAS Connectors	
9	MCIO Connector (MCIO_P0_1/PCIe Gen4)	
10	2 x 2 Pin P12V Backplane Power Connector	
11	MCIO Connector (MCIO_P0_0/PCIe Gen4)	
12	HDD Backplane Board Connector	
13	Front Panel USB 3.0 Connector	
14	Front Panel Header	
15	2 x 3 Pin Power Connector	
16	2 x 4 Pin P12V GPU Power Connector	
17	Power Supply Connector#1 (Primary)	
18	IPMB Connector	

19 Riser Connector #1 (PCle Gen4/x16 Slot) 20 Riser Connector #2 (PCle Gen4/x16 Slot) 21 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 22 RTC Battery 23 MCIO Connectors (MCIO_P0_2/MCIO_P0_3/PCle Gen4) 24 TPM Module Connector (SPI Interface) 25 M.2 Slot (PCle Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCle Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCle Gen4) 30 Riser Connector #3 (PCle Gen4/x16 Slot) 31 Riser Connector #4 (PCle Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector 34 2 x 4 Pin P12V Power Connector		
21 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 22 RTC Battery 23 MCIO Connectors (MCIO_P0_2/MCIO_P0_3/PCIe Gen4) 24 TPM Module Connector (SPI Interface) 25 M.2 Slot (PCIe Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	19	Riser Connector #1 (PCIe Gen4/x16 Slot)
22 RTC Battery 23 MCIO Connectors (MCIO_P0_2/MCIO_P0_3/PCIe Gen4) 24 TPM Module Connector (SPI Interface) 25 M.2 Slot (PCIe Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	20	Riser Connector #2 (PCIe Gen4/x16 Slot)
23 MCIO Connectors (MCIO_P0_2/MCIO_P0_3/PCIe Gen4) 24 TPM Module Connector (SPI Interface) 25 M.2 Slot (PCIe Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	21	OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16)
24 TPM Module Connector (SPI Interface) 25 M.2 Slot (PCIe Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	22	RTC Battery
25 M.2 Slot (PCIe Gen4 x4, Support NGFF-22110) 26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	23	MCIO Connectors (MCIO_P0_2/MCIO_P0_3/PCIe Gen4)
26 G-SCM Module Connector 27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	24	TPM Module Connector (SPI Interface)
27 OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16) 28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	25	M.2 Slot (PCIe Gen4 x4, Support NGFF-22110)
28 MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4) 29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	26	G-SCM Module Connector
29 MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4) 30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	27	OCP Mezzanine Connector (OCP 3.0/SFF Type/Gen4 x16)
30 Riser Connector #3 (PCIe Gen4/x16 Slot) 31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	28	MCIO Connectors (MCIO_P1_4/MCIO_P1_5/PCIe Gen4)
31 Riser Connector #4 (PCIe Gen4/x16 Slot) 32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	29	MCIO Connectors (MCIO_P1_0/MCIO_P1_1/PCIe Gen4)
32 Power Supply Connector#2 (Secondary) 33 2 x 4 Pin P12V GPU Power Connector	30	Riser Connector #3 (PCIe Gen4/x16 Slot)
33 2 x 4 Pin P12V GPU Power Connector	31	Riser Connector #4 (PCIe Gen4/x16 Slot)
	32	Power Supply Connector#2 (Secondary)
34 2 x 4 Pin P12V Power Connector	33	2 x 4 Pin P12V GPU Power Connector
	34	2 x 4 Pin P12V Power Connector

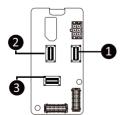
4-2 Jumper Setting





Item	Description	Item	Description
1	SilmLine SAS Connector (U_2_0)	16	SilmLine SAS Connector (U_2_15)
2	SilmLine SAS Connector (U_2_1)	17	SilmLine SAS Connector (U_2_16)
3	SilmLine SAS Connector (U_2_2)	18	SilmLine SAS Connector (U_2_17)
4	SilmLine SAS Connector (U_2_3)	19	SilmLine SAS Connector (U_2_18)
5	SilmLine SAS Connector (U_2_4)	20	SilmLine SAS Connector (U_2_19)
6	SilmLine SAS Connector (U_2_5)	21	SilmLine SAS Connector (U_2_20)
7	SilmLine SAS Connector (U_2_6)	22	SilmLine SAS Connector (U_2_21)
8	SilmLine SAS Connector (U_2_7)	23	SilmLine SAS Connector (U_2_22)
9	SilmLine SAS Connector (U_2_8)	24	SilmLine SAS Connector (U_2_23)
10	SilmLine SAS Connector (U_2_9)	25	SilmLine SAS Connector (SL_SAS0)
11	SilmLine SAS Connector (U_2_10)	26	SilmLine SAS Connector (SL_SAS1)
12	SilmLine SAS Connector (U_2_11)	27	SilmLine SAS Connector (SL_SAS2)
13	SilmLine SAS Connector (U_2_12)	28	SilmLine SAS Connector (SL_SAS3)
14	SilmLine SAS Connector (U_2_13)	29	SilmLine SAS Connector (SL_SAS4)
15	SilmLine SAS Connector (U_2_14)	30	SilmLine SAS Connector (SL_SAS5)

4-3-2 System Rear HDD Backplane Board (CBP2022)



4-3

Item	Description	
1	SilmLine SAS Connector (U_2_0)	
2	SilmLine SAS Connector (U_2_1)	
3	SilmLine SAS Connector (SL_SAS0)	

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 and loading operating system, etc. BIOS includes a BIOS Setup program that allows the user to modify basic system configuration settings or to activate certain system features. When the power is turned off, the battery on the motherboard supplies the necessary power to the CMOS to keep the configuration values in the CMOS.

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



- BIOS flashing is potentially risky, if you do not encounter problems of 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></enter>	Execute command or enter the submenu
<esc></esc>	Main Menu: Exit the BIOS Setup program
	Submenus: Exit current submenu
<f1></f1>	Show descriptions of general help
<f3></f3>	Restore the previous BIOS settings for the current submenus
<f9></f9>	Load the Optimized BIOS default settings for the current submenus
<f10></f10>	Save all the changes and exit the BIOS Setup program

Main

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

Advanced

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

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

Chipset

This setup page includes all the submenu options for configuring the function of processor, network, North Bridge, South Bridge, and System event logs.

Server Management

Server additional features enabled/disabled setup menus.

Security

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

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

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

Boot

This setup page provides items for configuration of boot sequence.

Save & Exit

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

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

5-1 The Main Menu

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

Main Menu Help

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

Submenu Help

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



When the system is not stable as usual, select the **Restore Defaults** item to set your system to its defaults.

The BIOS Setup menus described in this chapter are for reference only and may differ by BIOS version.

BIOS Information		▲ Memory Slot Information.
Access Level	Administrator	
System Product Name	R282-P91-00	
Project Name	MP92-FS0-00	
Project Version	F21a	
Build Date and Time	06/13/2022 16:10:43	
BMC Information		
BMC Firmware Version	13.03.03	
Processor Information		
CPU 0 Brand String	Ampere(R) Altra(R) Max	
	Processor M128–30	
CPU 1 Brand String	Ampere(R) Altra(R) Max	++: Select Screen
	Processor M128–30	14: Select Item
Processor Core	128	Enter: Select
Processor Speed	3000 MHz	+/-: Change Opt.
		F1: General Help
		F3: Previous Values
10 38 BL 100		F9: Optimized Defaults
Memory Information		F10: Save & Exit
Total Memory	326B	ESC: Exit
Memory Frequency	3200MHz	

Main Advanced Chipset Serve	Aptio Setup – AMI r Mgmt Security Boot Save & R	Exit
Project Version Build Date and Time	F21a 06/13/2022 16:10:43	 Set the Time. Use Tab to switch between Time elements.
BMC Information BMC Firmware Version	13.03.03	
Processor Information CPU O Brand String	Ampere(R) Altra(R) Max Processor M128–30	
CPU 1 Brand String	Ampere(R) Altra(R) Max Processor M128–30	
Processor Core Processor Speed	128 3000 MHz	
	3000 MH2	++: Select Screen ↑↓: Select Item Enter: Select
Memory Information Total Memory	326B	+/-: Change Opt. E1: General Help
Memory Frequency	3200MHz	F3: Previous Values
 Hemory Slot Information 	0200m2	F9: Optimized Defaults F10: Save & Exit
System Language	[English]	ESC: Exit
System Date	[Fri 06/17/2022]	
System Time	[01:13:37]	*
	ion 2.22.1282 Conuright (C) 2023	2. OUT

Parameter	Description
Access Level	Display the privileges level information.
System Product Name	Displays the system product name information.
System Project Name	Displays the system project name information.
Project Name	Displays the motherboard project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information	
BMC Firmware Version	Displays version number of the BIOS setup utility.
Processor Information	
CPU0/1 Brand String	
Processor Core	Displays the technical specifications for the installed processor.
Max CPU Speed	
Memory Information	
Total Memory	Diantons the technical energifications for the installed memory
Memory Frequency	Displays the technical specifications for the installed memory.
Memory Slot Information	Press [Enter] to view installed memory slot information.
System Language	Option: English
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

5-2 Advanced Menu

The Advanced menu display submenu options for configuring the function of various hardware components. Select a submenu item, then press [Enter] to access the related submenu screen.

Aptio Setup – AMI Main Advanced Chipset Server Mgmt Security Boot Save & Ex	it
 Trusted Computing ACPI Settings ACPI Settings ACPI Settings ACPI Settings ACPI Subsystem Settings Semenal Matchdog Timer X86 Emulator Configuration PCI Subsystem Settings Info Report Configuration USB Configuration Network Stack Configuration IP Configuration SATA Configuration SATA Configuration Power Restore Configuration Intel(R) 1350 Gigabit Network Connection - 00:A0:C3:00:00:00 MAC:00A0C900000-IPv4 Network Configuration Intel(R) 1350 Gigabit Network Configuration Intel(R) 1350 Gigabit Network Configuration Intel(R) 1350 Gigabit Network Configuration MAC:00A0C900000-IPv4 Network Configuration MAC:00A0C900000-IPv6 Network Configuration MAC:00A0C9000001-IPv6 Network Configuration MAC:00A0C9000001-IPv6 Network Configuration MAC:00A0C9000001-IPv6 Network Configuration Driver Health 	Trusted Computing Settings **: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2.22.1282 Copyright (C) 2022 (AMI B

5-2-1 Trusted Computing

Advanced	Aptio Setup – AMI		
Configuration Security Device Support Disable Block Sid ND Security Device Found	(Enable) (Disabled)	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TGG EFI protocol and INTIA interface will not be available.	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
V.	ersion 2.22.1282 Copyright (C) 2	022 AMI B4	
Parameter	Description		
Configuration			
Security Device Support	Select Enabled to activate Options available: Enable/E	TPM support feature. Disable. Default setting is Enable .	
Disable Block Sid	Options available: Enabled	Options available: Enabled/Disabled. Default setting is Disabled.	

5-2-2 ACPI Settings

Advanced	Aptio Setup – AMI	
ACPI Settings		Enables or Disables BIOS ACPI Auto Configuration.
Enable ACPI Auto Configuration		
Enable CPPC Enable DVFS Mode Enable LPI Enable Max Performance	[Enabled] [Disabled] [Enabled] [Enabled]	
		++: Select Screen 1J: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Vencion	2.22.1282 Convright (6) 2022 AMI	

Parameter	Description
ACPI Settings	
	Enable or disable BIOS ACPI auto configuration.
Enable ACPI Auto Configuration	Options available: Enabled/Disabled. Default setting is Enabled.
Enable CPPC	Enable or disable CPPC.
	Options available: Enable/Disable. Default setting is Enabled.
Enable DVFS Mode	Options available: Enabled/Disabled. Default setting is Disabled .
Enable LPI	Options available: Enabled/Disabled. Default setting is Enabled.
Enable Max Performance	Options available: Enabled/Disabled. Default setting is Enabled.

5-2-3 APEI Configuration

Advanced	Aptio Setup – AMI	
APEI Configuration		Enable/Disable ACPI Platform Error Interface
APEI Enable		support
		Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit ESC: Exit
	/ersion 2.22.1282 Convright (C) :	2022 AMT

Parameter	Description
APEI Configuration	
	Enable/Disable ACPI Platform Error Interface support.
APEI Enable	Options available: Enabled/Disabled.
	Default setting is Disabled .

5-2-4 General Watchdog Timer

Advanced	Aptio Setup – AMI	
General Watchdog Timer Secure Watchdog Timeout BIOS Watchdog Timeout OS Watchdog Timeout	(Disable) [Disable] [Disable]	Timeout when SCP will reset system if it doesn't receive response from ARMv8.
		+: Select Screen 11: Select Item Enter: Select +/-: Change Opt, F1: General Help
		F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Var	sinn 2.22.1282 Conuright (C) 2	1022 AMT

Parameter	Description
General Watchdog Timer	
	Timeout when SCP will reset system if it doesn't receive response from
Secure Watchdog Timeout	ARMv8.
Secure watchuog nineout	Options available: 5 minutes/6 minutes/10 minutes/15 minutes/20 minutes.
	Default setting is Disable .
BIOS Watchdog Timeout	Options available: 5 minutes/6 minutes/10 minutes/15 minutes/20 minutes.
BIOS Watchuog Timeout	Default setting is Disable .
	Timeout when boot OS.
OS Watchdog Timeout	Options available: Disable/3 minutes/4 minutes/5 minutes/6 minutes/
	10 minutes/15 minutes/20 minutes.
	Default setting is Disable .

5-2-5 X86 Emulator Configuration

Advanced	Aptio Setup – AMI	
X86 Emulator Configuration		Enable/Disable X86 Emulator support.
X86 Emulator Enable		
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Vensil	an 2.22.1282 Ennuright (R) 202	22 AMT

Parameter	Description
X86 Emulator	
Configuraiton	
	Enable/Disable X86 Emulator support.
X86 Emulator Enable	Options available: Enabled/Disabled.
	Default setting is Disabled .

5-2-6 PCI Subsystem Settings

Aptio Setup - AMI Advanced	
Advanced AMI PCI Driver Version : A5.01.20 PCI Settings Common for all Devices: SR-IOV Support [Enabled] Change Settings of the Following PCI Devices: > Slot # 4 Occupied [Mass Storage Controller] > Slot # 5 Occupied [Mass Storage Controller] > Slot # 5 Occupied [Mass Storage Controller] > Slot # 6 Occupied [Mass Storage Controller] > Slot # 8 Occupied [Mass Storage Controller] > Slot # 25 Occupied [Mass Storage Controller] > Slot # 25 Occupied [Mass Storage Controller] > Slot # 48 Occupied [Mass Storage Controller] > DnBoard Device [Bridge Device] WARNING: Changing PCI Device(s) settings may have unwanted slde effects! System may HANG! PROCEED WITH CAUTION.	If system has SR-IOV capable PCIE Devices, this option Enables or Disables Single Root IO Virtualization Support. ++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. Fi: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Advanced	Aptio Setup – AMI	
Slot # 4 Occupied [Mass Storage Location: S:O1h B:O1h D:O0h F:OC VID:144D DID:A80A Supports: PCIe GEN1(X]; GEN2(X); GEN3(X]; GEN4(X);	ih;	Value to be programmed into PCI Latency Timer Register.
PCI Latency Timer PCI-X Latency Timer VGA Palette Snoop PERR# Generation SERR# Generation Disable PCIE Init Disable PCIE GEN 2 PCI Express GEN 1 Settings PCI Express GEN 2 Settings	[32 PCI Bus Clocks] [64 PCI Bus Clocks] [Disabled] [Disabled] [Enabled] [Disabled] [Disabled]	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Vana	on 2.22.1282 Copyright (C) 202	22 ANT

Parameter	Description
AMI PCI Bus Driver Version	Displays the AMI PCI Bus Driver version information.
PCI Settings Common for all Devices:	
SR-IOV Support	If the system has SR-IOV capable PCIe devices, this item Enable/Disable Single Root IO Virtualization Support. Options available: Enabled/Disabled. Default setting is Enabled .
Change Settings of the Following PCI Devices	
Slot_# Occupied Onboard Device_#	 PCI Latency Timer Value to be programmed onto PCI Latency Timer Register. Options available: 32/64/96/128/160/192/224/248 PCI Bus Clocks. Default setting is 32 PCI Bus Clocks. PCI-X Latency Timer Value to be programmed onto PCI Latency Timer Register. Options available: 32/64/96/128/160/192/224/248 PCI Bus Clocks. Default setting is 64 PCI Bus Clocks. VGA Palette Snoop Enable or disable VGA Palette Registers Snooping. Options available: Enabled/Disabled. Default setting is Disabled. PERR# Enable or disable PCI device to generate PERR. Options available: Enabled/Disabled. Default setting is Disabled. SERR# Enable or disable PCI device to generate SERR. Options available: Enabled/Disabled. Default setting is Disabled. Disable PCIe Init Options available: Enabled/Disabled. Default setting is Disabled.
	Options available: Enabled/Disabled. Default setting is Disabled .

5-2-6-1 PCI Express GEN 1 Settings

Advanced		
PCI Express GEN 1 Settings PCI Express Device Register Setting Relaxed Ondering Extended Tag No Snoop Maximum Payload Maximum Read Request	s [Enabled] [Disabled] [Disabled] [Auto] [Auto]	Enables or Disables PCI Express Device Relaxed Ordering.
PCI Express Link Register Settings Extended Synch Clock Power Management Link Training Retry Link Training Timeout (uS) Disable Empty Links WARNING: Enabling ASPM may cause so PCI-E devices to fail!	[Disabled] [Disabled] [5] 1000 [Disabled] me	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
PCI Express GEN1 Setting	 PCI Express GEN1 Device Register Settings Relaxed Ordering Enable or disable PCI Express Device Relaxed Ordering. Options available: Enabled/Disabled. Default setting is Enabled. Extend Tag If enabled, allows device to use 8-bit Tag field as a requester. Options available: Enabled/Disabled. Default setting is Disabled. No Snoop Enable or disable PCI Express Device No Snoop option. Options available: Enabled/Disabled. Default setting is Disabled. No Snoop Enable or disable PCI Express Device No Snoop option. Options available: Enabled/Disabled. Default setting is Disabled. Maximum Payload Set Maximum Payload of PCI Express Device or allow System BIOS to select the value. Options available: Auto/128 Bytes/ 256 Bytes. Default setting is Auto.

Parameter	Description
	 PCI Express Device Link Register Settings Maximum Read Request Set Maximum Read Request of PCI Express Device or allow System BIOS to select the value. Options available: Auto/128 /256/512/1024/2048/4096 Bytes. Default setting is Auto.
	 Extended Synch If enabled, allows generation of Extended Synchronization patterns. Options available: Enabled/Disabled. Default setting is Disabled.
PCI Express GEN1 Setting	 Clock Power Management If support by hardware and set to 'Enabled', the device is permitted to use CLKREQ# signal for power management of link clock in accordance to protocol defined in appropriate form factor specification. Options available: Enabled/Disabled. Default setting is Disabled.
	 Link Training Retry Defines numbers of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful. Options available: Disabled/2/3/5. Default setting is 5.
	 Link Training Timeout (uS) Press '+' and '.' keys to set the values. Link Training Retry Defines numbers of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.
	 Disable Empty Links In order to save software will disable unpopulated PCI Express Device links, if this option set to 'Disabled Link'. Options available: Enabled/Disabled. Default setting is Disabled.

5-2-6-2 PCI Express GEN 2 Settings

Advanced	Aptio Setup – AMI	
PCI Express GEN 2 Settings PCI Express GEN2 Device Register Completion Timeout ARI Forwarding	Settings [Default] [Disabled]	In device Functions that A support Completion Timeout programmability, allows system software to modify the Completion Timeout
AtomicOp Requester Enable AtomicOp Egress Blocking IDO Request Enable IDO Completion Enable LTR Mechanism Enable End—End TLP Prefix Blocking	[Disabled] (Disabled] (Disabled] (Disabled] (Disabled] (Disabled]	value. "oefault' 50us to 50ms. If 'Shorter' is selected, software will use shorter timeout ranges supported by hardware. If 'Longer' is selected,
PCI Express GEN2 Link Register Se Compliance SOS Hardware Autonomous Width Hardware Autonomous Speed	ettings [Disabled] (Disabled] [Disabled]	++: Select Screen 11: Select Trem Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Versid	on 2.22.1282 Copyright (C) 20	22 AMI

Parameter	Description	
	 PCI Express GEN2 Device Register Settings Completion Timeout In device Functions that support Completion Timeout programmability, allows system software to modify the Completion Timeout value. 'Default' 50us to 50ms. If 'Shorter' is selected, software will use shorter timeout ranges supported by hardware. If 'Longer' is selected, software will use longer timeout ranges. Options available: Default/Shorter/Longer/Disabled. Default setting is Default. 	
PCI Express GEN2 Setting	 ARI Forwarding If supported by hardware and set to 'Enabled', the Downstream Port disables its traditional Device Number field being 0 enforcement when turning a Type1 Configuration Request into a Type0 Configuration Request, permitting access to Extended Functions in an ARI Device immediately below the Port. Options available: Default/Shorter/Longer/Disabled. Default setting is Disabled. 	
	 AtomicOp Requester Enable If supported by hardware and set to 'Enabled', this function initiates AtomicOp Requests only if Bus Master Enable bit is in the Command Register Set. Options available: Enabled/Disabled. Default setting is Disabled. 	
	 AtomicOp Egress Blocking If supported by hardware and set to 'Enabled', outbound AtomicOp Requestsvia Egress Ports will be blocked. Options available: Enabled/Disabled. Default setting is Disabled. 	
	 IDO Request Enable If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2]) requests to be initiated Options available: Enabled/Disabled. Default setting is Disabled. 	

Parameter	Description	
	PCI Express GEN2 Device Register Settings	
PCI Express GEN2 Setting	 PCI Express GEN2 Device Register Settings IDO Request Enable If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2)) requests to be initiated. Options available: Enabled/Disabled. Default setting is Disabled. IDO Completion Enable If supported by hardware and set to 'Enabled', this permits setting the number of ID-Based Ordering (IDO) bit (Attribute[2)) requests to be initiated. Options available: Enabled/Disabled. Default setting is Disabled. LTR Mechanism Enable If supported by hardware and set to 'Enabled', this enables the Latency Tolerance Reporting (LTR) Mechanism. Options available: Enabled/Disabled. Default setting is Disabled. End-End TLP Prefix Blocking If supported by hardware and set to 'Enabled', this function will block forwarding of TLPs containing End-End TLP Prefixes. Options available: Enabled/Disabled. Default setting is Disabled. PCI Express GEN2 Device Link Settings Compliance SOS If supported by hardware and set to 'Enabled', this will force LTSSM to send SKP Ordered Sets between sequences when sending Compliance Pattern or Modified Compliance Pattern. Options available: Enabled/Disabled. Default setting is Disabled. Hardware Autonomous Width If supported by hardware and set to 'Disabled', this will disable the hardware's ability to change link width except width size reduction for the purpose of correcting unstable link operation. 	
	Options available: Enabled/Disabled. Default setting is Disabled.	

5-2-7 Info Report Configuration

Info Report Configuration		Post Report Support
Post Report		Chapieu/Disabieu
Post Report		
Delay Time	[1]	
Error Message Report		
Info Error Message	[Enabled]	
		→+: Select Screen
		14: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit

Parameter	Description
Info Report Configuration	
Post Report	
Post Poport	Enable/Disable Post Report support.
Post Report	Options available: Enabled/Disabled. Default setting is Enabled.
Delay Time	Options available: 0/1/2/3/4/5/6/78/9/10/Util Press ESC.
Delay Time	Default setting is 1.
Error Message Report	
Info Error Message	Enable/Disable Info Error Message support.
IIIO LITOI MESSaye	Options available: Enabled/Disabled. Default setting is Enabled.

5-2-8 USB Configuration

Advanced	Aptio Setup — AMI	
USB Configuration		This is a workaround for OSes without XHCI hand-off
USB Module Version	27	support. The XHCI ownership change should be
USB Controllers: 1 XHCI		claimed by XHCI driver.
USB Devices:		
8 Drives, 1 Keyboard, 1 Mous	e, 5 Hubs	
XHCI Hand—off		
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		
		→+: Select Screen
Mass Storage Devices:		↑↓: Select Item Enter: Select
		+/-: Change Opt.
		F1: General Help
		F3: Previous Values F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
11202 F 20	2 22 1282 Conucidat (P) 203	20.407

Parameter	Description	
USB Configuration		
USB Module Version	Displays USB module version information.	
USB Controller	Displays the supported USB controllers.	
USB Devices:	Displays the USB devices connected to the system.	
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support.	
	Options available: Enabled/Disabled. Default setting is Enabled.	
USB Mass Storage Driver	Enable/Disable the USB Mass Storage Driver Support.	
Support ^(Note)	Options available: Enabled/Disabled. Default setting is Enabled .	

5-2-9 Network Stack Configuration

Advanced	Aptio Setup – AMI	
Advanced Network Stack PXE Retry IPv4 PKE Support IPv6 PXE Support IPv6 FXE Support PXE boot wait time Media detect count	[Enabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] 1 1	Enable/Disable UEFI Network Stack +*: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	version 2.22.1282 Donuright (D)	

Parameter	Description
Network Stack	Enable/Disable the UEFI network stack.
Notwork Oldok	Options available: Enabled/Disabled. Default setting is Enabled .
PXE Retry	Options available: Enabled/Disabled. Default setting is Disabled .
Inv/ DVE Support	Enable/Disable the Ipv4 PXE feature.
Ipv4 PXE Support	Options available: Enabled/Disabled. Default setting is Enabled .
Ipv4 HTTP Support	Enable/Disable the Ipv4 HTTP feature.
Ipv4 HTTP Support	Options available: Enabled/Disabled. Default setting is Disabled .
Ipv6 PXE Support	Enable/Disable the Ipv6 PXE feature.
	Options available: Enabled/Disabled. Default setting is Disabled .
Ipv6 HTTP Support	Enable/Disable the Ipv6 HTTP feature.
	Options available: Enabled/Disabled. Default setting is Disabled .
PXE boot wait time	Press the <+> / <-> keys to increase or decrease the desired values.
Media detect count	Press the <+> / <-> keys to increase or decrease the desired values.

5-2-10 IP Configuration



Parameter	Description
IP Configuration Settings	
Provide the Options to Configure the IP Address	
Auto Configuration	Options available: Disabled/Every Boot/On Demand. Default setting is Disabled .

5-2-11 NVMe Configuration

Advanced	Aptio Setup – AMI	
NVMe controller and Drive inform	nation	
[NVME_00] PCI 1:1:0:0 Nvme Size / Serial Number	SAMSUNG MZQL2960HCJR-00A07 960.1GB / S64FNE0R906004	
[NVME_01] PCI 1:2:0:0 Nvme Size / Serial Number		
[NVME_02] PCI 1:3:0:0 Nvme Size / Serial Number		
[NVME_03] PCI 1:4:0:0 Nvme Size / Serial Number	SAMSUNG MZQL2960HCJR-00A07 960.1GB / S64FNE0R906014	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.
[NVME_04] PCI 5:1:0:0 Nvme Size / Serial Number	SAMSUNG MZQL2960HCJR-00A07 960.1GB / S64FNE0R9059B7	F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit
[NVME_05] PCI 5:2:0:0 Nvme Size / Serial Number		ESC: Exit
liance	ion 2 22 1282 Convright (C) 2022 A	IMT

Advanced	Aptio Setup – AMI	
Nvme Size / Serial Number	Empty	
[NVME_20] Nvme Size / Serial Number	Empty Empty	
[NVME_21] Nvme Size / Serial Number	Empty Empty	
[NVME_22] Nvme Size / Serial Number	Empty Empty	
[NVME_23] Nvme Size / Serial Number	Empty Empty	
[M2] PCI 4:4:0:0 Nyme Size / Serial Number	INTEL SSDPEKKA256G7 256.0GB / BTPY729300C4256D	<pre>++: Select Screen 1↓: Select Item Enter: Select</pre>
NVIIE 3128 / 381 141 NUIIIDEI	238.000 / 8111723300042300	+/-: Change Opt. F1: General Help
		F3: Previous Values F9: Optimized Defaults
		F10: Save & Exit ESC: Exit
		•
Vers	ion 2,22,1282 Consuright (C) 2022 A	MT
Deser		

Parameter	Description
NVMe controller and Drive Information	Displays the NVMe devices connected to the system.
	Allows user to set IP.
Auto Configuration	Options available: Every Boot/On Demand/Disabled. Default setting is Disabled .

5-2-12 SATA Configuration

Advanced	Aptio Setup – AMI	
Advanced SATA Configuration SATA Controller (S:08 B Port 0 Port 1 Port 2 Port 2 Port 3 Port 4 Port 5	:01 D:00 F:00) Not Present Not Present Not Present Not Present Not Present Not Present	<pre>**: Select Screen 11: Select Item Enter: Select */-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</pre>
arameter	Version 2.22.1282 Convrisht (F) Description	2022 AMT
ATA Configuration		

SATA Controlers:	Displays the installed HDD devices information. System will automatically
Port_#	detect HDD type.

5-2-13 Graphic Output Configuration

Advanced	Aptio Setup — AMI	
Graphic Output Configuration		Select Output Device Type
Output Device Type OS graphics output	[Onboard Device] [Controlled by OS]	
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</pre>
Version	2.22.1282 Convright (C) 2022 AMI	

Parameter	Description
UEFI Configuration	
Output Device Type	Select output device. Options available: First loaded Device,Onboard Device,External Device, Specific Device. Default setting is Onboard Device .
OS graphics output	Options available: Controlled by OS/Onboard VGA. Default setting is Controlled by OS .

5-2-14 Power Restore Configuration

Advanced	Aptio Setup - AMI	
Power Restore Power restore need (about 1.5 minutes	[Last State] s to wait for BHC to be ready)	Specify what state when power is re-applied after a power failure (G3 state). +: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.22.1282 Copyright (C)	2022 AMI
arameter	Description	
Power Restore	Specify what state when power is re-applied after a power failure (G3 state). Options available: Last State/Power On/Power Off.	

Default setting is Last State.

5-2-15 Intel(R) I350 Gigabit Network Connection

Advanced	Aptio Setup – AMI	
Advanced NIC Configuration Blink LEDs UEFI Driver Adapter PBA Device Name Chip Type PCI Device ID PCI Address Link Status MAC Address Virtual MAC Address	15 Intel(R) PRD/1000 Open Source 9.2.06 PCI-E 106300-000 Intel(R) I350 Gigabit Network Connection Intel 1350 1521 05:00:00 [Disconnected] 00:A0:C9:00:00 Intel(R) I350 Gig	Click to configure the network device port.
Version	2,22,1282 Copuright (C) 2022 AM Aptio Setup – AMI	F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Link Speed [Auto Negotiated] Wake Dn LAN [Enabled] *: Select Screen 14: Select Item Enter: Select Item Ente

Parameter	Description
NIC Configuration	 Press [Enter] to configure advanced items. Link Speed Allows for automatic link speed adjustment. Options available: Auto Negotiated/10 Mbps Half/10 Mbps Full/100 Mbps Half/100 Mbps Full. Default setting is Auto Negotiated. Wake On LAN Enables power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states. Options available: Enabled/Disabled. Default setting is Enabled.
Blink LEDs	Identifies the physical network port by blinking the associated LED. Press the numeric keys to adjust desired values.
UEFI Driver	Displays the technical specifications for the Network Interface Controller.
Adapter PBA	Displays the technical specifications for the Network Interface Controller.
Device Name	Displays the technical specifications for the Network Interface Controller.
Chip Type	Displays the technical specifications for the Network Interface Controller.
PCI Device ID	Displays the technical specifications for the Network Interface Controller.
PCI Address	Displays the technical specifications for the Network Interface Controller.
Link Status	Displays the technical specifications for the Network Interface Controller.
MAC Address	Displays the technical specifications for the Network Interface Controller.
Virtual MAC Address	Displays the technical specifications for the Network Interface Controller.

5-2-16 MAC IPv4 Network Configuration

Aptio Setup – AMI	
[Disabled]	Indicate whether network address configured successfully or not.
	★: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
Configured ^(Note)	Options available: Enabled/Disabled. Default setting is Disabled.
Enable DHCP	Options available: Enabled/Disabled. Default setting is Enabled.
Local IP Address	Press [Enter] to configure local IP address.
Local NetMask	Press [Enter] to configure local NetMask.
Local Gateway	Press [Enter] to configure local Gateway
Local DNS Servers	Press [Enter] to configure local DNS servers
Save Changes and Exit	Press [Enter] save all configurations.

5-2-17 MAC IPv6 Network Configuration

Interface Name :	eth0	The 64 bit alternative
Interface Type :	Ethernet	interface TD for the
AC address :	00-A0-C9-00-00-00	device. The string is
inst addresses :		colon separated. e.g.
103 t uuur 03003	FE80::2A0:C9FF:FE00:0/64	ff:dd:88:66:cc:1:2:3
Route Table :	120002100000111120000101	
100100 10020	FE80::/64 >>::	
ateway addresses :	1200000000000	
NS addresses :		
Interface ID	2:A0:C9:FF:FE:0:0:0	
AD Transmit Count	1	
Policy	[automatic]	
9		
Save Changes and Exit		→+: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit

Parameter	Description
Enter Configuration Menu	Press [Enter] for configuration of advanced items.

5-2-18 Driver Health

Advanced	
Intel(R) PRO/1000 Open Source 9.2.06 PCI-E Healthy AVRGD EFI SAS Driver Healthy	Provides Health Status for the Drivers/Controllers
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Versinn 2,22,1282 Ennurisht (f	1) 2022 AMT

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

5-3 Chipset Setup Menu

Chipset Setup menu displays submenu options for configuring the function of the North Bridge. Select a submenu item, then press [Enter] to access the related submenu screen.

1212				Aptio Setu			
Main	Havanced	Unipset	Server Mgmt	Security	BOOT	Save & Exit	
 RAS Co Memory Serial 	nfiguratic nfiguratic Slot Info port consc oot Comple	n rmation le	ration				CPU Configuration ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
CPU Configuration	Press [Enter] for configuration of advanced items.
RAS Configuration	Press [Enter] for configuration of advanced items.
Memory Slot Configuration	Press [Enter] for configuration of advanced items.
Serialport Console	Press [Enter] for configuration of advanced items.
PCIE Root Complex Configuration	Press [Enter] for configuration of advanced items.

5-3-1 CPU Configuration

Chipset	Aptio Setup – AMI	
CPU Configuration		Control Link Speed for Inter Socket Connection
Number of processors enabled	2	Inter Sucket Connection
Number of cores enabled	256	
Inter Socket Connection: Link 0		
Inter Socket Connection: Link 1		
Inter Socket Connection Speed Configured	[Default]	
Enable number of cores	[Default]	
ARM ERRATA 1542419 workaround	[Disable I-Cache coherency]	
ANC mode	(Monolithic)	
Near atomic	[Enabled]	
SLC Replacement Policy	[Enhanced Least Recently	-
	Used]	↔+: Select Screen
L1/L2 Prefetch	[Enabled]	↑↓: Select Item
SLC as L3\$	[Disabled]	Enter: Select
		+/-: Change Opt.
	Socket 0 Socket 1	F1: General Help
L1C I/D	64 KB 64 KB	F3: Previous Values
L2C	1 MB 1 MB	F9: Optimized Defaults
SLC	16 MB 16 MB	F10: Save & Exit
Warranty	1 1	ESC: Exit

Parameter	Description
CPU Configuration	
Numbers of processor enabled	Displays the number of installed processor information.
Numbers of core enabled	Displays the core of installed processor information.
Inter Socket Connection 0/1	Displays the inter socket 0/1 connection information.
Inter Socket Connection Speed Configured	Control Link Speed for Inter Socket Connection. Option: Default/16 GT/s/20 GT/s/25 GT/s. Default Setting is Default .
Enable number of cores	Option: Default/2/4/6/8/10/12/14/16/18/20/22/24/26/28/30/32/34/36256. Default Setting is Default .
ARM ERRATA 1542419 workaround	Option available: Disable I-Cache coherency/Software solution/Disable. Default Setting is Disable I-Cache coherency .
ANC mode	Option available: Monolithic/Hemisphere/Quadrant. Default Setting is Monolithic .
Near atomic	Enable/disable cacheable atomic instruction executed near in CPU. Option available: Enabled/Disabled. Default Setting is Enabled .

SLC Replacement Policy	Option available: Enhanced Least Recently Used/Linear-Feedback Shift Register. Default Setting is Enhanced Least Recently Used .
L1C I/D	
L2C	Displays the technical specifications for the installed processor.
SLC	Displays the technical specifications for the installed processor.
Warranty	

5-3-2 RAS Configuration

RAS Configuration		Enable hardware EINJ
Hardware EINJ	[Disabled]	support, if disabled EINJ
DRAM EINJ No Trigger	[Disabled]	is software simulated
Enable AGDI	[Disabled]	
PCIe AER Firmware First	[Disabled]	
Processor OS-first	[Disabled]	
DDR CE Threshold	1	
2P CE Threshold	1	
Processor CE Threshold	1	
DDR Link Error Threshold	2	
		 ↔: Select Screen tl: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
RAS Configuration	
Hardware FINJ	Option available: Enabled/Disabled.
	Default setting: Disabled.
DRAM EINJ No Trigger	Option available: Enabled/Disabled.
DIVAM LING NO HIGGEI	Default setting: Disabled.
Enable AGDI	Option available: Enabled/Disabled.
	Default setting: Disabled.
PCIe AER Firmware First	Option available: Enabled/Disabled.
T OIC ALICT IIII Wale T IISt	Default setting: Disabled.
Processor OS-first	Option available: Enabled/Disabled.
	Default setting: Disabled.
DDR CE Threshold	Press '+" or "-" to configure the threshold.
2P CE Threshold	Press '+" or "-" to configure the threshold.
Processor CE Threshold	Press '+" or "-" to configure the threshold.
DDR Kink Error Threshold	Press '+" or "-" to configure the threshold.

5-3-3 Memory Slot Information

Chipset	
Chipset Memory Configuration Total Memory 32 GB Effective Memory 30 GB Memory Speed 3200 MH2 Memory Openating Speed Selection [Auto] Enable Slave 32bit memory region [Disabled] Fine Gnanularity Refresh (FGR) [Ix] Memory RRS and Performance Configuration NVDIMM-R Configuration DIMM_FO_A0: Not Installed DIMM_FO_B1: Not Installed DIMM_FO_D20: Not Installed DIMM_FO_C0: Not Installed DIMM_FO_C1: Not Installed DIMM_FO_E1: Not Installed	 Force specific Memory Operating Speed or use Auto setting. **: Select Screen *1: Select Item Enter: Select */-: Change Opt. F1: General Help F3: Previous Values F3: Optimized Defaults F10: Save & Exit ESC: Exit

Aptio Setup – Chipset	AMI
DIMM_P0_D1: Not Installed DIMM_P0_E1: Not Installed DIMM_P0_E1: Not Installed DIMM_P0_E1: Not Installed DIMM_P0_F1: Not Installed DIMM_P0_F0: Not Installed DIMM_P0_H0: Not Installed DIMM_P0_H0: Not Installed DIMM_P1_1: Not Installed DIMM_P1_1: Not Installed DIMM_P1_J1: Not Installed DIMM_P1_X0: Not Installed DIMM_P1_X0: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X0: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_X1: Not Installed DIMM_P1_N0: Not Installed DIMM_P1_N1: Not Installed DIMM_P1_N1: Not Installed DIMM_P1_N1: Not Installed DIMM_P1_N1: Not Installed DIMM_P1_P1.N1: Not Installed DIMM_P1_P1.N1: Not Installed DIMM_P1_P1.N1: Not Installed DIMM_P1_P1.N1: Not Installed DIMM_P1_P1.N1: Not Installed	+: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
Memory Configuration	
Total Memory	
Effective Memory	Displays the technical specifications for the installed DIMM.
Memory Speed	
Memory Operating Speed	Option available: Auto/2133/2400/2666/2933/3200.
Selection	Default setting: Auto.
Enable Slave 32bit memory	Option available: Enabled/Disabled.
region	Default setting: Disabled.
Fine Granularity Refresh	Select DDR Fine Granularity Refresh (FGR) mode.
(FGR)	Option available: 1x/2x/4x. Default setting is 1x.
Memory RAS and	Press [Enter] for advanced configuration.
Performance Configuration	
NVDIMM -N Configuration	Press [Enter] for advanced configuration.
DIMM Information	Display installed DIMM information.

5-3-3-1 Memory RAS and Performance Configuration

Memory RAS and Performance Configuration ECC mode: Auto, Dissection ECC mode [Auto] Defer uncorrectable read errors [Enabled] Is recommended on I SECDED or Symbol. State on the section of	
14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Value: F9: Optimized Defa F10: Save & Exit	. Symbol nly for x4 DIMMs, selected. device
	ues faults

Parameter	Description
Memory RAS and	
Performance Configuration	
ECC Mode	Option available: Disabled/SECDED/Symbol
ECC MODE	Default setting: SECDED.
Defer uncorrectable read	Option available: Enabled/Disabled.
errors	Default setting: Disabled.
Fault handling interrupt	Option available: Enabled/Disabled.
r ault nanuling interrupt	Default setting: Enabled.
Scrub Patrol duration (hour)	Option available: 124.
	Default setting: 24.
Demand scrub	Option available: Enabled/Disabled.
Demand Scrub	Default setting: Enabled.
Write CRC	Option available: Enabled/Disabled.
	Default setting: Disabled.
CVE=2020-10255 mitigation	Option available: Enabled/Disabled.
0 v L-2020-10200 milligation	Default setting: Disabled.

5-3-3-2 NVDIMM-N Configuration

Chipset	Aptio Setup – AMI	
NVDIMM—N Configuration SocketO Configured Mode SocketI Configured Mode Mode Selection	Non-NVDIMM Non-NVDIMM [Auto]	Select NVDIMM-N Mode (Non-NVDIMM/Non-Hashed/Hash ed/Auto)
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Ven	sion 2.22.1282 Copyright (C)	2022 AMI

Parameter	Description
NVDIMM-N Configuration	
Socket0/1 Configuration	
	Select NVDIMM-N Mode.
Mode Selection	Option available: Non-NVDIMM/Non-Hashed/Hashed/Auto.
	Default setting: Auto.

5-3-4 Serialport Console

Chipset	Aptio Setup — AMI	
Serialport console		To Enable or Disable the Console Redirection for
Serialport console for UARTO (COM1 / SOL)		UARTO
Serialport console for UART2	[Enabled]	
		→+: Select Screen
		î↓: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
Serialport console	
Serialport console or UART0	To enable or disable the Console Redirection for UART0. Option available: Enabled/Disabled. Default setting: Enabled .
Serialport console or UART2	To enable or disable the Console Redirection for UART2. Option available: Enabled/Disabled. Default setting: Enabled .

5-3-5 PCIE Root Complex Configuration

Chipset	Aptio Setup – AMI	
PCIE Root Complex Configuration PCIE Lanes Bifurcation Mode SMMU Pmu On-board VGA > Root Complex # 0 (CCIX) > Root Complex # 1 (CCIX) > Root Complex # 2 (OCP1) > Root Complex # 3 (SLOT_1) > Root Complex # 4 (KCID_PO_2, MCI > Root Complex # 5 (SLOT_2)		Configure PCIE Lanes Bifurcation Mode Default: Adjust according to system settings. Manual: Adjust according to user settings.
 Root Complex # 6 (VGA/USB, M2/LAI Root Complex # 7 (MCI0_PO_1, MCI0 Root Complex # 9 (CCIX) Root Complex # 9 (CCIX) Root Complex # 10 (SLOT_4) Root Complex # 11 (OCP2) Root Complex # 13 (SLOT_3) Root Complex # 13 (SLOT_3) Root Complex # 15 (MCI0_P1_1, MCI0 	0_P0_0) 2, MCI0_P1_3) 0_P1_4)	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
PCIE Root Complex	
Configuration	
PCIe Lanes Bifurcation	Option available: Manual/Default.
FOR Lanes Diluication	Default setting: Default.
	Enable/Disable PMU feature for SMMU.
SMMU Pmu	Option available: Enabled/Disabled.
	Default setting: Disabled.
	Enable/Disable on-board VGA.
On-board VGA	Option available: Enabled/Disabled.
	Default setting: Enabled.
Root Complex_#(Note)	Press [Enter] to view advanced items.

(Note) Advance items can be configurable when PCIe Lanes Bifurcation is set to Manual.

5-4 Server Management Menu

Main Advanced Chipset Se	Aptio Setup – AMI <mark>rver Mgmt</mark> Security Boot S	ave & Exit
BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version BMC Interface(s) BMC Support > System Event Log > Bmc self test log > View FRU information	PASSED 32 1 13.03.03 2.0 SSIF [Enabled]	Configure BMC network panameters
▶ BMC network configuration		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</pre>

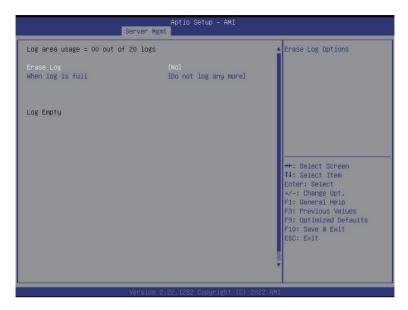
Parameter	Description
PMC Support	Enable/Disable interfaces to communicate with BMC.
BMC Support	Options available: Enabled/Disabled. Default setting is Enabled.
System Event Log	Press [Enter] to configure advanced items.
BMC self test	Press [Enter] to configure advanced items.
View FRU	Press [Enter] to view the advanced items.
Information	
BMC network	Press [Enter] to configure advanced items.
configuration	

5-4-1 System Event Log

Enabling/Disabling Options		Change this to enable or
SEL Components		disable event logging for error/progress codes
Erasing Settings		during boot.
Enase SEL	[No]	001 210 00000
When SEL is Full	[Do Nothing]	
Custom EFI Logging Options		
Log EFI Status Codes	[Error code]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt.
		F1: General Help F3: Previous Values

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

5-4-2 BMC self test



Parameter	Description
log area usage =00 out of 20	
logs	
Free Lee	Options available: No/Yes, On next reset/Yes, On every reset.
Erase Log	Default setting is No.
	Configuration for reactions to a full log.
When Log is full	Option available: Do not log any more/Clear Log.
	Default setting is Do not log any more .

5-4-3 View FRU Information

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

Serv	Aptio Setup – AMI ver Mgmt	
FRU Information		
System Hanufacturer System Product Name System Serial Number Board Manufacturer Board Version Board Serial Number Chassis Manufacturer Chassis Version Chassis Version Chassis Serial Number NOTE:NO FRU information for f: information needs to be filled		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F3: Optimized Defaults F10: Save & Exit ESC: Exit
	sion 2.22.1282 Copyright (C) 2022	AWT

5-4-4 BMC Network Configuration

BMC network configuration		Select to configure LAN channel parameters
Lan channel 1		statically or
		dynamically(by BIOS or
Station IP address	10.1.27.99	BMC). Unspecified option
Subnet mask	255.255.255.0	will not modify any BMC
Router IP address	10.1.27.253	network parameters during
Station MAC address	B4-2E-99-AF-F7-5A	BIOS phase
Real-time get BMC network address		
Configure IPv6 support		
жжыскаскаскаскаскаскаскаска		↔+: Select Screen
		î↓: Select Item
Lan channel 1		Enter: Select
IPv6 Support	[Disabled]	+/-: Change Opt. F1: General Help
TEVE Support	[DISGDIEU]	E3: Previous Values
IPv6 Support is Disabled		F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description	
BMC network configuration		
Lan Channel 1		
Configuration Address source	Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase. Options available: Unspecified/Static/DynamicBmcDhcp. Default setting is DynamicBmcDhcp .	
Station IP address	Displays IP Address information.	
Subnet mask	Displays Subnet Mask information. Please note that the IP address must be in three digitals, for example, 192.168.000.001.	
Router IP address	Displays the Router IP Address information.	
Station MAC address	Displays the MAC Address information.	
Real-time get BMC network address	Press [Enter] to synchronize the BMC network address	
IPV6 Support ^(Note)	Option available: Enabled/Disabled. Default Setting is Disabled .	

(Note) Advance items can be configurable when IPV6 Support is set to Enabled.

5-5 Security Menu

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

	Main Advanced Chipset Server ⊦	Aptio Setup – AMI gmt <mark>Security</mark> Boot Save & Exit	
Γ	Password Description		Set Administrator Password
	If ONLY the Administrator's passue then this only limits access to Sa only asked for when entering Setur If ONLY the User's password is set is a power on password and must be boot or enter Setup. In Setup the have Administrator rights. The password length must be in the following range:	tup and is , then this entered to	
	Minimum length	3	
	Maximum length Administrator Password User Password	20	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt.
•	Media Sanitization		F1: General Help
•	Secure Boot		F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

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.
Media Sanitization	Press [Enter] to configure advanced items.
Secure Boot	Press [Enter] to configure advanced items.

5-5-1 Media Sanitization

Aptio Set Security Media Sanitization > SAMSUNG M2QL2960HCJR-00A07 > SAMSUNG M2QL2960HCJR-00A07	
Version 2.22,1282 60	F10: Save & Exit ESC: Exit

Parameter	Description
Media Sanitization	
Configuration	
Device Name	Display device name.
Method Type	Select which method apply for this drive.
	Options available: Clear/Purge. Default settings: Clear.
Start This Device Sanitization	Start sanitizating this device with setup configsuraiton.

5-5-2 Secure Boot

System Mode	User	Secure Boot feature is Active if Secure Boot is
		Enabled,
	Not Active	Platform Key(PK) is enrolled and the System is
Secure Boot Mode	[Custom]	in User mode.
Restore Factory Keys		The mode change requires
Reset To Setup Mode		platform reset
Key Management		
		↔+: Select Screen
		↑↓: Select Item
		Enter: Select +/-: Change Opt.
		F1: General Help
		F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit

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

Parameter	Description
	Press [Enter] to configure advanced items.
	Please note that this item is configurable when Secure Boot Mode is set
	to Custom.
	Provision Factory Defaults
	 Allows to provision factory default Secure Boot keys when system is in Setup Mode.
	 Options available: Enabled/Disabled. Default setting is Disabled. Install Factory Default Keys
	 Installs all factory default keys. It will force the system in User Mode. Options available: Yes/No.
	Enroll Efi Image
	 Press [Enter] to enroll SHA256 hash of the binary into Authorized Signature Database (db).
	Save all Secure Boot variables
	 Press [Enter] to save all Secure Boot Keys and Key variables.
	Secure Boot variable
	 Displays the current status of the variables used for secure boot.
	 Platform Key (PK)
	 Displays the current status of the Platform Key (PK).
	 Press [Enter] to configure a new PK.
	 Options available: Set New.
	Key Exchange Keys (KEK)
Key Management	 Displays the current status of the Key Exchange Key Database (KEK). Press [Enter] to configure a new KEK or load additional KEK from storage devices.
	 Options available: Set New/Append.
	Authorized Signatures (DB)
	 Displays the current status of the Authorized Signature Database.
	 Press [Enter] to configure a new DB or load additional DB from storage devices.
	 Options available: Set New/Append.
	Forbidden Signatures (DBX)
	 Displays the current status of the Forbidden Signature Database.
	- Press [Enter] to configure a new dbx or load additional dbx from
	storage devices.
	 Options available: Set New/Append.
	Authorized TimeStamps (DBT)
	 Displays the current status of the Authorized TimeStamps Database.
	 Press [Enter] to configure a new DBT or load additional DBT from storage devices.
	 Options available: Set New/Append.
	OsRecovery Signatures
	 Displays the current status of the OsRecovery Signature Database.
	 Press [Enter] to configure a new OsRecovery Signature or load
	additional OsRecovery Signature from storage devices.
	 Options available: Set New/Append.

5-6 Boot Menu

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

Main Advanced Chipset Server Mgm	Aptio Setup – AMI Mt Security <mark>Boot</mark> Save & Exit	
Boot Configuration Setup Promot Timeout Bootup NumLock State Quiet Boot Dump full Setup Data Dump non-default Setup Data Restore Setup Data	5 [On] [Enabled]	Number of seconds to wait for setup activation key. 65535(OXFFFF) means indefinite waiting.
New UEFI OS Boot Option Policy	[Place First]	
FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4	[Hard Disk:CentOS (INTEL SSDFEKA256G7)] [USP Device] [Network:UEFI: PXE IPv4 Intel(R) Network 00:A0:C5:00:00:00]	++: Select Screen fl: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values
Boot Option #5	[UEFI AP:UEFI: Built-in EFI Shell]	F9: Optimized Defaults F10: Save & Exit
 ▶ UEFI Hard Disk Drive BBS Priorities ▶ UEFI NETWORK Drive BBS Priorities ▶ UEFI Application Boot Priorities 		ESC: Exit

Parameter	Description
Boot Configuration	
	Number of seconds to wait for setup activation key. 65535 (0xFFFF)
Setup Prompt Timeout	means indefinite waiting.
	Press the numeric keys to input the desired values.
Bootup NumLock State	Enable/Disable the Bootup NumLock function.
	Options available: On/Off. Default setting is On .
Quiet Boot	Enable/Disable showing the logo during POST.
Quiet DOOL	Options available: Enabled/Disabled. Default setting is Enabled .

Parameter	Description
Dump full Setup Data	
Dump non-default Setup Data	
Restore Setup Date	
New UEFI OS Boot Option Policy	Option available: Default/Place First/Place Last. Default setting is Place First /.
FIXED BOOT ORDER Priorities	
Boot Option #1 / #2 / #3 / #4 / #5	Press [Enter] to configure the boot priority. By default, the server searches for boot devices in the following sequence: 1. Hard drive. 2. CD-COM/DVD drive. 3. USB device. 4. Network. 5. UEFI.
UEFI Network Drive BBS Priorities	Press [Enter] to configure the boot priority.
UEFI Application Boot Priorities	Press [Enter] to configure the boot priority.

5-7 Save & Exit Menu

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

Aptio Setup – AMI Main Advanced Chipset Server Mgmt Security Boot <mark>Save & Exit</mark>	
Save Changes and Exit	Restore/Load Default values for all the setup options.
Boot Override CentOS (INTEL SSDPEKKA25667) UEFI: PXE IPv4 Intel(R) Network 00:A0:C9:00:00:00 UEFI: PXE IPv4 Intel(R) Network 00:A0:C9:00:00:01 UEFI: Built-in EFI Shell Launch EFI Shell from filesystem device	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit</pre>

Parameter	Description
Save Options	
Save Changes and Exit	Saves changes made and closes the BIOS setup. Options available: Yes/No.
Discard Changes and Exit	Discards changes made and exits the BIOS setup. Options available: Yes/No.
Save Changes	Save changes done so far to any of the setup options. Options available: Yes/No.
Default Options	
Restore Defaults	Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly. Options available: Yes/No.
Boot Override	Press [Enter] to configure the device as the boot-up drive.

5-8 BIOS POST Beep code (AMI standard)

5-8-1 PEI Beep Codes

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

5-8-2 DXE Beep Codes

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