# **GIGABYTE**<sup>™</sup> G292-Z44

HPC Server - 2U DP 8 x Gen4 GPU Server (Broadcom solution)

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

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## Conventions

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

<b>E</b>	NOTE! Gives bits and pieces of additional information related to the current topic. CAUTION!		
	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.



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.

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# Chapter 1 Hardware Installation

## 1-1 Installation Precautions

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

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

# 1-2 Product Specifications



#### NOTE:

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

System	<ul> <li>◆ 2U</li> </ul>
Dimension	<ul> <li>448 (W) x 87.5 (H) x 800 (D) (mm)</li> </ul>
	<ul> <li>17.64 (W) x 3.4 (H) x 31.5 (D) (inch)</li> </ul>
CPU	<ul> <li>AMD EPYC<sup>™</sup> 7003 series processor family</li> </ul>
	<ul> <li>Dual processors, 7nm technology</li> </ul>
	<ul> <li>Up to 64-core, 128 threads per processor</li> </ul>
	cTDP up to 240W
	NOTE: If only 1 CPU is installed, some PCIe or memory functions might be
	unavailable.
	Compatible with AMD EPYC 7002 series processor family
Socket	070
	• SP3
Chipset	
	System on Chip
Memory	16 x DIMM slots
Wiemory	
	Dert monory supported only
	8-Channel memory architecture per processor
	<ul> <li>RDIMM modules up to 128GB supported</li> </ul>
	<ul> <li>LRDIMM modules up to 128GB supported</li> </ul>
	<ul> <li>3DS RDIMM/LRDIMM modules up to 256GB supported</li> </ul>
	Memory speed: Up to 3200 MHz
	2 x 10Gb/s BASE-T LAN ports (Intel® X550-AT2 controller)
	<ul> <li>1 x 10/100/1000 management LAN</li> </ul>
\ <i>n</i>	
Video	<ul> <li>Integrated in Aspeed® AST2500</li> </ul>
	<ul> <li>2D Video Graphic Adapter with PCIe bus interface</li> </ul>
	<ul> <li>1920x1200@60Hz 32bpp, DDR4 SDRAM</li> </ul>
Storage	8 x 2.5" hot-swappable HDD/SSD bays
	• 4 x amber HDD trays compatible with Gen3 U.2 or SATA/SAS device
	<ul> <li>4 x blue HDD trays compatible with SATA/SAS devices only</li> </ul>
	SAS card is required for SAS dovices support
	SAS card is required for SAS devices support
	Recommended 12Gb/s SAS cards:
	<ul> <li>CRA4448</li> </ul>
	• CRA4548
SATA	Supported
	• Outported

SAS	Supported via add-on SAS Card						
RAID	Depends on RAID HBA						
Expansion Slot	<ul> <li>8 x PCle x16 slots (Gen4 x16 bus) for GPUs (Broadcom solution)</li> <li>2 x PCle x16 (Gen4 x16 bus) Half-length low-profile slots</li> <li>Maximum limitation of GPU card: 285mm (L) x 111.5mm (W) x 39.5mm (H)</li> <li>System is validated for population with a uniform GPU model</li> <li>Support is not provided for mixed GPU populations</li> <li>For the latest GPU cards QVL, please contact your GIGABYTE representative</li> </ul>						
Internal I/O	1 x TPM header						
Front I/O	<ul> <li>1 x Power button with LED</li> <li>1 x ID button with LED</li> <li>2 x LAN activity LEDs</li> <li>1 x HDD activity LED</li> <li>1 x System status LED</li> <li>1 x Reset button</li> </ul>						
Rear I/O	<ul> <li>2 x USB 3.0</li> <li>1 x VGA</li> <li>2 x RJ45</li> <li>1 x MLAN</li> <li>1 x Power button with LED</li> <li>1 x ID button with LED</li> <li>1 x Reset button</li> <li>1 x NMI button</li> <li>1 x NMI button</li> <li>1 x System status LED</li> </ul>						
Backplane I/O	<ul> <li>8 x SAS/SATA or 4 x Gen3 U.2 ports and 4 x SAS/SATA</li> <li>Backplane P/N: 9CBPG083NR-00</li> <li>Bandwidth: SATA 6Gb/s, SAS 12Gb/s and PCIe Gen3 x4</li> </ul>						
TPM	<ul> <li>1 x TPM header with SPI interface</li> <li>Optional TPM2.0 kit: CTM010</li> </ul>						

Power Supply	
	2+0 2200W 80 PLUS Platinum power supply
	AC Input:
	100-127V~/ 14A, 47-63Hz
	200-240V~/ 12.6A, 47-63Hz
	DC Output:
	Max 1200W/ 100-127V~
	+12.12V/ 95.6A
	+12Vsb/ 3.5A
	- Max 2200W/ 200-240V
	+12.12V/ 178.1A
	+12Vsb/ 3.5A
	NOTE: The system power supply requires C10 type power cord
Cuptom	NOTE: The system power supply requires C19 type power cord.
System Management	Aspeed® AST2500 management controller
- wanagement	<ul> <li>AMI MegaRAC SP-X Solution web interface</li> </ul>
	Dashboard
	JAVA Based Serial Over LAN
	<ul> <li>HTML5 KVM</li> </ul>
	<ul> <li>Sensor Monitor (Voltage, RPM, Temperature, CPU Statusetc.)</li> </ul>
	Sensor Reading History Data
	FRU Information
	<ul> <li>SEL Log in Linear Storage / Circular Storage Policy</li> </ul>
	Hardware Inventory
	Fan Profile
	System Firewall
	Power Consumption
	Power Control
	<ul> <li>LDAP / AD / RADIUS Support</li> </ul>
	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	<ul> <li>Non-operating temperature: -40°C to 60°C</li> </ul>
	<ul> <li>Operating humidity: 8 - 80% (non-condensing)</li> </ul>
	<ul> <li>Non-operating humidity: 20% - 95% (non-condensing)</li> </ul>

# 1-3 System Block Diagram



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# Chapter 2 System Appearance

# 2-1 Front View



Go to the section **2-3 Front Panel Buttons and LEDs** for detail description of function LEDs.

# 2-2 Rear View



No.	Description
1.	System Fan (GPU12E_FAN)
2.	VGA Port
3.	10/100/1000 Server Management LAN port
4.	Power Button with LED
5.	ID Button
6.	Reset Button
7.	System Status LED
8.	LAN Port #2 Active/Link LED
9.	10G LAN Port x 2
10.	LAN Port #1 Active/Link LED
11.	USB 3.0 Port x 2
12.	System Fan (GPU56E_FAN)
13.	Power Supply (PSU2)
14.	NMI Button
15.	Power Supply (PSU1)

# 2-3 Front Panel Buttons and LEDs



No.	Name	Color	Status	Description			
	LAN1/2	Green	On	Indicates a link between the system and the network or no access.			
1/2.	Active/ Link LED	Green	Blink	Indicates data trasmission or receiving is occuring.			
		N/A	Off	Indicates no data transmission or receiving is occuring.			
		Green	On	Indicates locating the HDD.			
		Gleen	Blink	Indicates accessing the HDD.			
3.	HDD Status	Amber	On	Indicates HDD error.			
	LED	Green / Amber	Blink	Indicates HDD rebuilding.			
		N/A	Off	Indicates no HDD access or no HDD error.			
		Green	On	Indicates system is operating normally.			
	System Status LED	Amber	On	Indicates a critical condition, may include: - System fan failure - System temperature			
4.			Blink	Indicates non-critical condition, may include: - Redundant power module failure - Temperature and voltage issue - Chassis intrusion			
				N/A	Off	Indicates system is not ready, may include: - POST error - NMI error - Processor or terminator is missing	
5.	Reset Button			Press this button to reset the system.			
		Green	On	Indicates the system is powered on.			
6.	Power Button	Green	Blink	System is in ACPI S1 slate (sleep mode).			
0.	with LED	N/A	Off	Indicates system is not powered on or in ACPI S5 slate (power off) or system is in ACPI S4 slate (hibernation mode).			
7.	ID Button with LED			Press this button to activate system identification.			
Cuetom	Annearance			_ 10 _			

# 2-4 Rear System LAN LEDs



No.	Name	Color	Status	Description		
		Yellow	On	1 Gbps data rate		
1.	1GbE Speed	Green	On	100 Mbps data rate		
		N/A	Off	10 Mbps data rate		
		Green	On	Link between system and network or no access		
2.	1GbE Link / Activity LED	Green	Blink	Data transmission or reception is occurring.		
		N/A	Off	No data transmission or reception is occurring.		
	10GbE Speed LED	Yellow	On	10 Gbps data rate		
3.		Green	On	1000 Mbps data rate		
		N/A	Off	100 Mbps data rate		
	40.01 5 1 1 1 4	10GbE Link / Green	On	Link between system and network or no access		
4.	10GbE Link / Activity LED		Blink	Data transmission or reception is occurring.		
		N/A	Off	No data transmission or reception is occurring.		

# 2-5 Power Supply Unit (PSU) LED



Color	Status	Description					
Off		No AC power to all power supplies					
Green	Blinking 0.5Hz	AC present / Only +12VSB on (PS off) or PSU in Smart Standby Mod					
Green	Blinking 2Hz	Power supply firmware update					
Amber	On	AC cord unplugged / AC power lost but a second power supply in parallel still having AC input power Power supply critical events that cause a shutdown, such as: OTP, OCP, UVP, OVP and fan failure					
	UII						
Amber	Blinking 0.5Hz	Power supply warning events where the power supply continues to operate, such as: high temperature, high power, high current, slot fan					

# 2-6 Hard Disk Drive LEDs



RAID SKU		LED1	Locate	HDD Fault	Rebuilding	HDD Access	HDD Present (No Access)
	Disk LED (LED on	Green	ON(*1)	OFF		BLINK (*2)	OFF
	Back Panel)	Amber	OFF	OFF		OFF	OFF
No RAID configuration (via HBA)	Removed HDD Slot (LED on Back Panel)	Green	ON(*1)	OFF			
		Amber	OFF	OFF			-
	Disk LED	Green	ON	OFF		BLINK (*2)	OFF
RAID configuration (via HW RAID Card or SW RAID Card)		Amber	OFF	ON	(Low Speed: 2 Hz)	OFF	OFF
		Green	ON(*1)	OFF	(*3)		-
	Removed HDD Slot	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 electrostatic discharge. Working on computers that are still connected to a power supply can be extremely dangerous. Follow the simple quidelines below to avoid damage to your computer or injury to yourself.

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

# 3-1 Removing 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 system cover:

- 1. Remove the eight screws securing the cover.
- 2. Slide the cover towards the rear and remove the cover in the direction of the arrow.



# **3-2** Removing and Installing the Fan Duct

#### Follow these instructions to remove/install the fan duct:

- 1. Lift up to remove the fan duct
- 2. To install the fan duct, align the tabs at the front of the fan duct with the slots in the system fan compartment as shown in the image below, and then push down the fan duct into chassis until its firmly seats



# 3-3 Installing the CPU and 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 heatsink:

- 1. Loosen the four captive screws securing the heat sink in place in reverse the order  $(4 \rightarrow 3 \rightarrow 2 \rightarrow 1)$ .
- 2. Lift and remove the heatsink from the system.
- 3. To install the heatsink, 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.





#### Follow these instructions to install the CPU:

- 1. Align and install the processor on the carrier, making sure to line up the triangle markers on the corner of the CPU to the triangle mark on the corner of the CPU carrier.
- 2. Slide the carrier assembly into the channels of the carrier bracket
- 3. Close the carrier bracket so that it firmly latches on to the CPU socket.
- 4. Close the CPU socket cover.
- Tighten and secure the CPU socket cover screws in the following order (3→2→1).
   NOTE: When removing the CPU socket cover, loosen the screws in reverse order (1→2→3).
   NOTE: Apply thermal compound evenly on the top of the CPU. Remove the protective cover from the underside of the heat sink.
- 6. Align and place the heatsink onto the top of the CPU socket.
- 7. To secure the heatsink, tighten the four screws to the CPU socket.
- 8. Repeat steps 1-7 for the second CPU and heatsink.
- 9. To remove the heatsinks and CPUs, follow steps 1-7 in reverse order.









- When installing the heat sink over the CPU, use T30-Lobe driver to tighten the 4 captive nuts in sequential order  $(1\rightarrow 2\rightarrow 3\rightarrow 4)$ .
  - The screw tightening torque: 8 ± 0.5kgf-cm (17.0± 1.0 lbf-in)

# 3-4 Installing the Memory

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

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

## 3-4-1 Eight Channel Memory Configuration

This motherboard provides 16 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. Enabling Four Channel memory mode will be four times of the original memory bandwidth.



## 3-4-2 Installing a Memory

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

Be sure to install DDR4 DIMMs on this motherboard.

Follow these instructions to install the Memory:

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



## 3-4-3 Processor and Memory Module Matrix Table

Processor and Memory Module Matrix Table																
CPU#	Chanr	nel A/I	Chanr	nel B/J	Chann	iel C/K	Chann	iel D/L	Chann	el E/M	Chann	el F/N	Chann	el G/O	Chann	el H/P
	8 DIMMs															
CPU0		A1		B1		C1		D1		E1		F1		G1		H1
16 DIMMs																
CPU0	A0	A1	B0	B1	C0	C1	D0	D1	EO	E1	FO	F1	G0	G1	HO	H1
	16 DIMMs															
CPU0		A1		B1		C1		D1		E1		F1		G1		H1
CPU1		11		J1		К1		L1		M1		N1		01		P1
32 DIMMs																
CPU0	A0	A1	B0	B1	C0	C1	D0	D1	EO	E1	FO	F1	G0	G1	H0	H1
CPU1	10	11	JO	J1	к0	К1	LO	L1	M0	M1	N0	N1	00	01	P0	P1

## 3-4-4 Memory Population Table



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

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

DIMM Type	DIMM Population DIMM 0	Max EPYC 7003 DDR Frequency (MHz)				
RDIMM	1R (1 Rank)	3200				
	2R or 2DR (2 Ranks)	3200				
LRDIMM	4DR (4 Ranks)	3200				
	2S2R (4 Ranks)	3200				
	2S4R (8 Ranks)	3200				

#### EPYC Memory Speed based on DIMM Population (Two DIMM per Channel)

DIMM	DIMM P	opulation	Max EPYC 7003 DDR Frequency (MHz)			
Туре	DIMM 0	DIMM 1				
		1R	3200			
	1R	1R	2933			
RDIMM		2R or 2DR	3200			
	1R	2R or 2DR	2933			
	2R or 2DR	2R or 2DR	2933			
LRDIMM		4DR	3200			
	4DR	4DR	2933			
		2S2R (4 Ranks)	3200			
		2S4R (8 Ranks)	3200			
	2S2R (4 Ranks)	2S2R (4 Ranks)	2933			

# 3-5 Installing the GPU Card



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

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



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

#### For GPU1/GPU2/GPU7/GPU8

#### Follow these instructions to install the GPU card:

- [For GPU7/GPU8] Loosen and remove the two screws securing the PCI cage at the top of the system. [For GPU1/GPU2] Loosen and remove the single screw at the top of the system and the two screws at the rear of the system securing the PCI cage.
- 2. Pull the two plastic handles to lift up the PCI cage from the system.
- 3. Insert the card into the selected slot. Make sure that the card is properly seated.
- 4. Secure the GPU cards in place with two screws.



## (For GPU7/GPU8)



(For GPU1/GPU2)









#### For GPU3/GPU4/GPU5/GPU6

#### Follow these instructions to install the GPU card:

1. [For GPU5/GPU6] Loosen and remove the two screws securing the PCI cage at the top of the system.

[For GPU2/GPU3] Loosen and remove the single screw at the top of the system and the two screws at the rear of the system securing the PCI cage.

Pull the two plastic handles to lift up the PCI cage from the system.

- 2. Insert the card into the selected slot. Make sure that the card is properly seated.
- 3. Secure the GPU cards in place with two screws.



(For GPU5/GPU6)






(For GPU3/GPU4)



### 3-6 Installing a PCI Express Card



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

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

Follow these instructions to install a PCI Express x8 card on right side of the system:

- 1. Loosen and remove the two screws securing the PCI Express card bracket on the right side of the system.
- 2. Remove the PCIe card bracket from the system.
- 3. Install the PCIe card into the bracket.
- 4. Secure the PCIe card to the bracket with one screw.
- Install the PCIe card bracket with card back into the system, ensure that the connector on the bracket is securely installed into the connector on the motherboard as shown.
- 6. Secure the PCIe card bracket with card to the system with two (2) screws.





# Follow these instructions to install a PCI Express x16 card on left side of the system:

- 1. Loosen the thumbnail screw securing the PCI Express card bracket on the left side of the system.
- 2. Remove the PCI e card bracket from the system.
- 3. Install the PCIe card into the bracket.
- 4. Secure the PCIe card to the bracket with one screw.
- Install the PCIe card bracket with card back into the system, ensure that the connector on the bracket is securely installed into the connector on the motherboard as shown.
- 6. Secure the PCIe card bracket with card to the system using the thumbnail screw.





### 3-7 Installing the Hard Disk Drive



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

- Take note of the drive tray orientation before sliding it out.
- The tray will not fit back into the bay if inserted incorrectly.
- Make sure that the HDD is connected to the HDD 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 to remove the HDD tray.
- 4. Align the hard disk drive with the positioning stub on the HDD tray.
- 5. Slide hard disk drive into the blank HDD tray.
- 6. Reinsert the HDD tray into the slot and close the locking lever.

#### CAUTION!

We strongly recommend using enterprise level hard disk drives in the Gigabyte server system. For more information of recommended HDDs, please visit the Gigabyte website:

https://www.gigabyte.com and search for the specific product QVL from Support & Downloads.





## 3-8 Replacing the FAN Assembly

#### CAUTION!

Before you remove or install the system fans follow these steps:

- · Make sure the system is not turned on or connected to the AC power..
- Disconnect all necessary cable connections. Failure to observe these warnings could result in personal injury or damage to the equipment.



#### Follow these instructions to replace the fan assembly: [For GPU12\_FAN/GPU24\_FAN/GPU56\_FAN/GPU78\_FAN]

- 1. Disconnect the fan cable and then lift up the fan assembly from the chassis.
- 2. Reverse the previous steps to install the replacement fan assembly.





#### [For SYS\_FAN1/SYS\_FAN2]

- 1. Disconnect the fan cable and then lift up the fan assembly from the chassis.
- 2. Reverse the previous steps to install the replacement fan assembly.





#### [For GPU12E\_FAN/GPU56E\_FAN]

- 1. Disconnect the fan cable and then loosen and remove the screws securing the fan cage.
- 2. Remove the fan cage from the system
- 3. Reverse the previous steps to install the replacement fan assembly.







#### CAUTION!

To avoid fan cable damage, please make sure the fan cables are firmly seated in the cable routing hooks.



### 3-9 Replacing the Power Supply



#### CAUTION!

In order to reduce the risk of injury from electric shock, disconnect AC power from the power supply before removing it from the system.

#### Follow these instructions to replace the power supply:

- 1. Pull up the power supply handle and press the retaining clip on the right side of the power supply along the direction of the arrow.
- 2. At the same time, pull out the power supply using the handle.
- Insert the replacement power supply firmly into the chassis. Connect the AC power cord to the replacement power supply.





#### CAUTION!

• Please see the illustration below for installation sequence.



### 3-10 Cable Routing

System Main Power



### System Fan Power











HDD Backplane Board Power



Power Distribution Board to HDD Backplane Board Power



SMD





SlimLine SAS #2



#### Front Panel IO



#### NVMe









# Chapter 4 Motherboard Components

### 4-1 Motherboard Components



Item	Description
1	Rear VGA Port
2	Serial Port Connector
3	IPMB Connector
4	10/100/1000 Server Management LAN Port
5	Power Button with LED
6	ID Button with LED
7	Reset Button (top)/ NMI Button (bottom)
8	System Status LED
9	10G RJ45 Type LAN Port #1/#2
10	USB 3.0 Port x 2
11	HDD Back Plane Board Connector
12	2 x 9 Pin Power Connector (for CPU0)
13	SlimLine 4i Connector #0 (SL_SATA0)
14	SlimLine 4i Connector #1 (SL_SATA1)
15	PCIe x16 Slot #2
16	PCIe x16 Slot #4
17	Front Panel Header (primary)
18	SlimLine 4i Connector #3 (U2_P1_P0_1/support NVMe)
19	SlimLine 4i Connector #3 (U2_P1_P0_0/support NVMe)
20	SlimLine 4i Connector #4 (SL_SATA4)
21	SlimLine 4i Connector #3 (SL_SATA3)
22	2 x 9 Pin CPU Power Connector (for CPU1)
23	Front Panel Header (secondary/for power distribution board)
24	PCIe x16 Slot #3
25	SlimLine 4i Connector x 8 (U2_P1_G1_7~4, U2_P0_G3_3~0/Right to Left)
26	PCIe x16 Slot #1
27	Related System Voltage Status LED
28	2 x 9 Pin System Power Connector
29	12V Standby Power Connector (for system power)

30	System Battery Cable Connector
31	Mezzanine Slot
32	TPM Connector
33	BMC Readiness LED
34	NCSI Cable Connector

### 4-2 Jumper Setting



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# Chapter 5 BIOS Setup

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

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



- BIOS flashing is potentially risky, if you do not encounter any problems when using the current BIOS version, it is recommended that you don't flash the BIOS. To flash the BIOS, do it with caution. Inadequate BIOS flashing may result in system malfunction.
- It is recommended that you not alter the default settings (unless you need to) to prevent system
  instability or other unexpected results. Inadequately altering the settings may result in system's
  failure to boot. If this occurs, try to clear the CMOS values and reset the board to default values.
  (Refer to the Exit section in this chapter or introductions of the battery/clearing CMOS jumper in
  Chapter 4 for how to clear the CMOS values.)

#### **BIOS Setup Program Function Keys**

<←><→>	Move the selection bar to select the screen
<↑><↓>	Move the selection bar to select an item
<+>	Increase the numeric value or make changes
<->	Decrease the numeric value or make changes
<enter></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 of the standard compatible BIOS.

#### Advanced

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

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

#### AMD CBS

This setup page includes the common items for configuration of AMD motherboard-related information.

#### AMD PBS Option

This setup page includes the common items for configuration of AMD CPM RAS related settings.

#### Chipset

This setup page includes all the submenu options for configuring the functions of the North Bridge.

#### Server Management

Server additional features enabled/disabled setup menus.

#### Security

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

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

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

#### Boot

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

#### Save & Exit

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

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

### 5-1 The Main Menu

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

#### Main Menu Help

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

#### Submenu Help

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



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

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

	Aptio Setup – AMI	
Main Advanced AMD CBS	AMD PBS Option Chipset Server Mgmt	Security Boot Save & Exit
BIOS Information Project Name Project Version Build Date and Time	MZ42-G20-00 M03a 02/26/2021 13:59:00	
BMC Information BMC Firmware Version	12.50.07	
Processor Information CPU O Brand String	AMD EPYC 7663 56-Core Processor	
CPU 1 Brand String CPU Speed	AMD EPYC 7663 56-Core Processor 2000 MHz	
Processor Core	56	14: Select Item
Microcode Patch	A001119	Enter: Select +/-: Change Opt.
Total Memory	65536 MB	F1: General Help
Memory Speed	3200 MT/s	F3: Previous Values F9: Optimized Defaults
VR Information		F10: Save & Exit
Version	8258	ESC: Exit
AGESA PI Version PI Version	1.0.0.1	
11 10131011	1.0.0.1	
	Version 2.21.1279 Conuright (C) 2021	AMT B4
Main Advanced AMD CBS	Version 2.21.1279 Converght (E) 2021 Aptio Setup – AMI AMD FBS Option Chipset Server Mgmt	and the second second second
Main Advanced AMD CBS	Aptio Setup – AMI	and the second second second
	Aptio Setup - AMI AMD PBS Option Chipset Server Mgmt AMD EPVC 7663 56-Core	Security Boot Save & Exit
Processor Information	Aptio Setup – AMI AMD PBS Option Chipset Server Mgmt	Security Boot Save 8 Exit
Processor Information CPU 0 Brand String	Aptio Setup - AMI AMD PBS Dation Chipset Server Mgmt AMD EPVC 7663 56-Cone Processon AMD EPVC 7663 56-Cone	Security Boot Save & Exit
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processor Core	Aptio Setup - AMI AMD PBS Dotion Chinset Server Mgat AMD EPVC 7663 56-Core Processor AMD EPVC 7663 56-Core Processor 2000 MHz 56	Security Boot Save & Exit
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed	Aptio Setup - AKI AND PBS Dation Chipset Server Mgnt AND EPYC 7663 56-Core Processor AND EPYC 7663 56-Core Processor 2000 MHz	Security Boot Save & Exit
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processor Core	Aptio Setup - AMI AMD PBS Dotion Chinset Server Mgat AMD EPVC 7663 56-Core Processor AMD EPVC 7663 56-Core Processor 2000 MHz 56	Security Boot Save & Exit
Processon Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processon Core Microcode Patch Total Memory Memory Speed	Aptio Setup - AMI AMO PBS Dation Chipset Server Mgat AMO EPVC 7663 56-Cone Processon AMO EPVC 7663 56-Cone Processon 2000 MHz 56 A001119 65536 MB	Security Boot Save & Exit
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processor Core Microcode Patch Total Memory	Aptio Setup - AMI AMO PBS Dation Chipset Server Mgat AMO EPVC 7663 56-Cone Processon AMO EPVC 7663 56-Cone Processon 2000 MHz 56 A001119 65536 MB	Security Boot Save & Exit  Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processor Core Microcode Patch Total Hemory Memory Speed VR Information Version	Aptio Setup - AMI AMD PBS Dation Chipsel Server Hgmt AMD PBS Dation Chipsel Server Hgmt AMD EPVC 7663 56-Done Processon 2000 HHz 56 A001119 65536 MB 3200 MT/s	Security Boot Save & Exit  Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen T4: Select Item
Processor Information CPU 0 Brand String CPU 1 Brand String CPU Speed Processor Core Microcode Patch Total Memory Speed VR Information	Aptio Setup - AMI AMD PBS Dation Chipsel Server Hgmt AMD PBS Dation Chipsel Server Hgmt AMD EPVC 7663 56-Done Processon 2000 HHz 56 A001119 65536 MB 3200 MT/s	Security Boot Save & Exit  Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen 14: Select Item Enter: Select +/-: Change Dpt.
Processor Information CPU 0 Brand String CPU 1 Brand String CPU 5peed Processor Core Microcode Patch Total Memory Memory Speed VR Information Version AGESA PI Version	Aptio Setup - AMI AMD PBS Dotion Chinsel Server Mgnt AMD EPVC 7663 56-Corre Processon AMD EPVC 7663 56-Corre Processon 2000 MHz 56 A001119 65536 MB 3200 MT/s 8258	Security Boot Save & Exit    Set the Time. Use Tab to suitch between Time elements.    +-: Select Screen 14: Select Item Enter: Select
Processor Information CPU 0 Brand String CPU 1 Brand String CPU 1 Brand String CPU 50000 Processor Core Microcode Patch Total Memory Memory Speed VR Information Version AGESA PI Version PI Version Onboard LAN Information LANI MC Address	Aptio Setup - AMI AMD FBS Dation Chipsel Server Hgmt AMD FBS Dation Chipsel Server Hgmt AMD EPVC 7663 56-Core Processon 2000 MH2 56 A001119 65536 MB 3200 MT/s 8258 1.0.0.1 B4-2E-93-BE-92-IF	Security Boot Save & Exit  Set the Time. Use Tab to suitch between Time elements.  +*: Select Screen II: Select Item Enter: Select Item Enter: Select Item F3: General Help F3: Previous Values F3: Optimized Defaults
Processor Information CPU 0 Brand String CPU 1 Brand String CPU 5peed Processor Core Microcode Patch Total Memory Memory Speed V& Information Version A6ESA PI Version FI Version Duboard LAN Information	Aptio Setup - AMI AMD PBB Option Chipsel Server Hgmt AMD PBB Option Chipsel Server Hgmt AMD EPVC 7663 56-Core Processon 2000 MHz 56 A001119 65536 MB 3200 MT/s 8258 1.0.0.1	Security Boot Save & Exit  Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen I: Select Item Enter: Select Item Enter: Select Item Enter: Select Iten F3: Previous Values
Processon Information CPU 0 Brand String CPU 1 Brand String CPU 2 Brand String CPU 2 Speed Processon Core Microcode Patch Total Memory Memory Speed VR Information Version AGESA PI Version PI Version Onboard LAN Information LANI Mic Address LANZ Mic Address	Aptio Setup - AMI AMD PBS Dation Chinest Server Mgnt AMD EPVC 7663 56-Corre Processon AMD EPVC 7663 56-Corre Processon 2000 MHz 56 A001119 65536 MB 3200 MT/s 8258 1.0.0.1 84-2E-99-BE-92-1F B4-2E-99-BE-92-20	Security Boot Save & Exit   Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Selec
Processor Information CPU 0 Brand String CPU 1 Brand String CPU 1 Brand String CPU 5peed Processor Core Microcode Patch Total Henory Memory Speed VR Information Version AGESA PI Version PI Version Chobard LAN Information LANI MAC Address LAN2 MAC Address	Aptio Setup - AMI AMD FBS Dation Chipsel Server Hgmt AMD FBS Dation Chipsel Server Hgmt AMD EPVC 7663 56-Done Processon 2000 HHz 56 A001119 65536 MB 3200 MT/s 8258 1.0.0.1 B4-2E-99-BE-92-1F B4-2E-99-BE-92-20 [Fri 01/01/2021]	Security Boot Save & Exit   Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Selec
Processon Information CPU 0 Brand String CPU 1 Brand String CPU 2 Brand String CPU 2 Speed Processon Core Microcode Patch Total Memory Memory Speed VR Information Version AGESA PI Version PI Version Onboard LAN Information LANI Mic Address LANZ Mic Address	Aptio Setup - AMI AMD PBS Dation Chinest Server Mgnt AMD EPVC 7663 56-Corre Processon AMD EPVC 7663 56-Corre Processon 2000 MHz 56 A001119 65536 MB 3200 MT/s 8258 1.0.0.1 84-2E-99-BE-92-1F B4-2E-99-BE-92-20	Security Boot Save & Exit   Set the Time. Use Tab to suitch between Time elements.  ++: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Select Screen II: Select Screen II: Select Item Enter: Select Screen II: Selec

Parameter	Description
BIOS Information	
Project Name	Displays the project name information.
Project Version	Displays version number of the BIOS setup utility.
Build Date and Time	Displays the date and time when the BIOS setup utility was created.
BMC Information	
BMC Firmware Version	Displays BMC firmware version information.
CPU Brand String / CPU Speed / Processor Core / Microcode Patch	Displays the technical information for the installed processor(s).
Total Memory <sup>(Note3)</sup>	Displays the total memory size of the installed memory.
Memory Frequency <sup>(Note3)</sup>	Displays the frequency information of the installed memory.
VR Information Version	Displays VR version information.
AGESA PI Version PI Version	Displays AGESA PI version information.
Onboard LAN Information	
LAN1 MAC Address <sup>(Note1)</sup>	Displays LAN MAC address information.
LAN2 MAC Address (Note2)	Displays LAN MAC address information.
System Date	Sets the date following the weekday-month-day-year format.
System Time	Sets the system time following the hour-minute-second format.

(Note1) The number of LAN ports listed will depend on the motherboard / system model.

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

### 5-2 Advanced Menu

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

#### When Boot Mode Select is set to UEFI (Default)

Aptio Setup – AMI Main <mark>Advanced</mark> AMD CBS AMD PBS Option Chipset Server Mgm	t Security Boot Save & Exit
<ul> <li>Trusted Computing</li> <li>PSP Firmware Versions</li> <li>Legacy Video Select</li> <li>AST2500 Super 10 Configuration</li> <li>SR TE Wake Settings</li> <li>Serial Port Console Redirection</li> <li>DPU Configuration</li> <li>POI Subsystem Settings</li> <li>USB Configuration</li> <li>Network Stack Configuration</li> <li>SNME Configuration</li> <li>SATA Configuration Status</li> <li>Tis Auth Configuration Status</li> <li>Tis Auth Configuration Status</li> <li>Network State Stat</li></ul>	Trusted Computing Settings ++: Select Screen 11: Select Them Enter: Select +/-: Change Off. F3: General Heip F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2 21 1279 Dopusiabt (E) 20	21 DMT 3

#### When "Boot Mode Select" is set to Legacy in the Boot > Boot Mode Select section

Main Advanced AMD CBS AMD PBS Op	Aptio Setup - ion Chipset		Security	Boot	Save & Exit
Trusted Computing     PSP Firmware Versions     Legacy Video Select     AST2500 Super ID Configuration     SS RTC Make Settings     Serial Port Console Redirection     PCI Subsystem Settings     USB Configuration     Network Stack Configuration     NWHE Configuration     SMTA Configuration			Trust	ed Com	puting Settings
<ul> <li>AMD Mem Configuration Status</li> <li>Tis Auth Configuration</li> <li>ISOSI Configuration</li> </ul>			t↓: S Enter +/-: F1: G F3: P F9: O	elect : Sele Change eneral reviou ptimiz Save 8	ct Opt. Help s Values ed Defaults
Version 2	21.1279 Copyri	ight (C) 2021	AMI		B4

### 5-2-1 Trusted Computing

Advanced	Aptio Setup – AMI	
Configuration Security Device Support SPI TPM Support NO Security Device Found	(Enable) (Enabled)	Enables or Disables BIOS support for security device. O.S. will not sho Security Device. TCG EFI protocol and INTA interface will not be available.
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Vana	ion 2 21 1279 Conveight (P) 2	2001 AUT

Parameter	Description
Configuration	
Security Device Support	Enable/Disable BIOS support for security device. OS will not show security device. TCG EFI protocol and INT1A interface will not be available. Options available: Enable/Disable. Default setting is <b>Enable</b> .
SPI TPM Support	Select Enable to activate TPM support feature. Options available: Enabled/Disabled. Default setting is <b>Disabled</b>

### 5-2-2 PSP Firmware Versions

The PSP Firmware Versions page displays the basic PSP firmware version information. Items on this window are non-configurable.

Advanced	Aptio Setup – AMI	
PSP Firmware Versions		
PSP Directory Level 1 (Fixed) PSP Recovery BL Ver SMU FW Version ABL Version	FF.13.0.50 0.45.63.0 10015012	
PSP Directory Level 2 (Updateable) PSP BootLoader Version SMU FW Version ABL Version	0.13.0.50 0.45.63.0 10015012	
		+: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit
	2 91 1279 Damusiakt (D) 2001 AMT	ESC: Exit

### 5-2-3 Legacy Video Select

Select between onboard or external VGA support.
★: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F3: Optimized Defaults F10: Save & Exit ESC: Exit
[Onboard]

Parameter	Description		
OnBrd/Ext VGA Select <sup>(Note)</sup>	Selects between onboard or external VGA support.		
	Options available: Auto, Onboard, External. Default setting is Onboard.		

(Note) This configurable option will be displayed when "Boot Mode Select" is set to Legacy in the Boot > Boot Mode Select section.

### 5-2-4 AST2500 Super IO Configuration



Parameter	Description
AST2500 Super IO	
Configuration	
Super IO Chip	Displays the super IO chip information
Serial Port 1/2	Press [Enter] for configuration of advanced items.
Configuration	

### 5-2-4-1 Serial Port 1/2 Configuration



Parameter	Description
Serial Port 1/2 Configuration	
Serial Port <sup>(Note1)</sup>	Enable/Disable the Serial Port (COM). When set to Enabled allows you to configure the Serial port 1/2 settings. When set to Disabled, displays no configuration for the serial port. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
Devices Settings <sup>(Note2)</sup>	Displays the Serial Port 1/2 device settings.
Change Settings <sup>(Note2)</sup>	Select an optimal settings for Super IO Device. Options available for Serial Port 1: Auto IO=3F8h; IRQ=4; IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; Default setting is <b>Auto</b> . Options available for Serial Port 2: Auto IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12; IO=3E8h; IRQ=3,

(Note1) Advanced items prompt when this item is defined.

(Note2) This item appears when Serial Port is set to Enabled.
### 5-2-5 S5 RTC Wake Settings

Advanced	Aptio Setup – AMI	
Wake system from SS	[Disabled]	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select DynamicTime , System will wake on the current time + Increase minute(s)
		<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

Parameter	Description
Wake System from S5 <sup>(Note1)</sup>	Enable/Disable system wake on alarm event. Options available: Disabled/Fixed Time. When Fixed Time enabled, system will wake on the hr::min::sec specified. Default setting is <b>Disabled</b> .

(Note1) Advanced items prompt when this item is defined.

### 5-2-6 Serial Port Console Redirection

Advanced	Aptio Setup – AMI	
COM1/SOL Console Redirection ▶ Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
<ul> <li>Console Redirection Settings</li> <li>Legacy Console Redirection</li> </ul>	[Disabled]	
<ul> <li>Legacy Console Redirection Settings</li> <li>Serial Port for Out-of-Band Management Windows Emergency Management Services Console Redirection EMS</li> <li>Console Redirection Settings</li> </ul>		++: 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	
COM1/2 Serial Over LAN (Note))	Select whether to enable console redirection for specified device. Console redirection enables the users to manage the system from a remote location. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
COM1/2 Serial Over LAN Console Redirection Settings	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Please note that this item is configurable when COM1/Serial Over</li> <li>LAN &amp; COM2 Console Redirection is set to Enabled.</li> <li>Terminal Type <ul> <li>Selects a terminal type to be used for console redirection.</li> <li>Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is ANSI.</li> </ul> </li> <li>Bits per second <ul> <li>Selects the transfer rate for console redirection.</li> <li>Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200.</li> </ul> </li> <li>Data Bits <ul> <li>Selects the number of data bits used for console redirection.</li> <li>Options available: 7/8. Default setting is 8.</li> </ul> </li> </ul>	

(Note) Advanced items prompt when this item is defined. BIOS Setup - 74 -

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

Parameter	Description	
Legacy Console Redirection		
Legacy Console Redirection Settings	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Redirection COM Port <ul> <li>Selects a COM port for Legacy serial redirection.</li> <li>Options available: COM1/Serial Over LAN, COM2. Default setting is COM1/Serial Over LAN.</li> </ul> </li> <li>Resolution <ul> <li>Selects the number of rows and columns used in Console Redirection for legacy OS support.</li> <li>Options available: 80x24, 80x25. Default setting is 80x24.</li> </ul> </li> <li>Redirect After POST <ul> <li>When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS.</li> <li>Options available: Always Enable, BootLoader. Default setting is Always Enable.</li> </ul> </li> </ul>	
Serial Port for Out-of-Band Management / Windows Emergency Management Services (EMS) Console Redirection <sup>(Note)</sup>	EMS console redirection allows the user to configure Console Redirection Settings to support Out-of-Band Serial Port management. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
Serial Port for Out-of-Band EMS Console Redirection Settings	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Please note that this item is configurable when Serial Port for Out-of-Band Management EMS Console Redirection is set to Enabled.</li> <li>Out-of-Band Mgmt Port <ul> <li>Microsoft Windows Emerency Management Service (EMS) allows for remote management of a Windows Server OS through a serial port.</li> <li>Options available: COM1/Serial Over LAN, COM2. Default setting is COM1/Serial Over LAN.</li> </ul> </li> <li>Terminal Type <ul> <li>Selects a terminal type to be used for console redirection.</li> <li>Options available: VT100, VT100+, ANSI, VT-UTF8. Default setting is ANSI.</li> </ul> </li> <li>Bits per second <ul> <li>Selects the transfer rate for console redirection.</li> <li>Options available: 9600, 19200, 38400, 57600, 115200. Default setting is 115200.</li> </ul> </li> </ul>	

(Note) Advanced items prompt when this item is defined. BIOS Setup - 76 -

Parameter	Description	
Serial Port for Out-of-Band EMS Console Redirection Settings(continued)	<ul> <li>Flow Control</li> <li>Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.</li> <li>Options available: None, Hardware RTS/CTS, Software Xon/Xoff. Default setting is None.</li> </ul>	

## 5-2-7 CPU Configuration

Advanced	Aptio Setup – AMI	
CPU Configuration		Enable/disable CPU Virtualization
SVM Mode DDU 0 Information DDU 1 Information		
		++: 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 21 1279 Conuright (C)	

Parameter	Description
C)/M Mada	Enable/Disable the CPU Virtualization.
SVM Mode	Options available: Enabled/Disabled. Default setting is Enabled.
	Controls the Secure Memory Encryption Enable (SMEE) function.
SMEE	Options available: Enabled/Disabled. Default setting is Enabled.
CPU 0/1 Information	Press [Enter] to view more information related to CPU0/1.

### 5-2-8 PCI Subsystem Settings

Advanced	Aptio Setup – AMI	
PCI Bus Driver Version	A5.01.24	▲ Enable/Disable PCIE_1 I/O
PCIE_1 Lanes PCIE_1 I/O ROM		
PCIE_2 Lanes PCIE_2 I/O ROM	[Enabled]	
PCIE_3 Lanes PCIE_3 I/O ROM	[Enabled]	
PCIE_4 Lanes PCIE_4 I/O ROM	[Enabled]	
GENZ_1 Lanes GENZ_1 I/O ROM	[Auto] [Enabled]	↔+: Select Screen ↑↓: Select Item Enter: Select
GENZ_2 Lanes GENZ_2 I/O ROM	[Auto] [Enabled]	+/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults
Onboard LAN Controller Onboard LAN1 I/O ROM Onboard LAN2 I/O ROM	[Enabled] [Enabled] [Enabled]	F10: Save & Exit ESC: Exit
PCI Devices Common Settings:	[LINDICU]	•
Ver	sion 2.21.1279 Copyright (C)	2021 AMI
Advanced	Aptio Setup – AMI	
PCIE_1 Lanes PCIE_1 I/O ROM	[Enabled]	▲ If system has SR-IOV capable PCIe Devices, this
PCIE_2 Lanes PCIE_2 I/O ROM	(Enabled)	option Enables or Disables Single Root IO Virtualization Support.
PCIE_3 Lanes PCIE_3 I/O ROM	(Enabled)	
PCIE_4 Lanes		

PCIE\_4 I/O ROM [Enabled] [Auto] GENZ\_1 Lanes ++: Select Screen
↑↓: Select Item GENZ\_1 I/O ROM [Enabled] 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit GENZ\_2 Lanes [Auto] GENZ\_2 I/O ROM [Enabled] Onboard LAN Controller [Enabled] Onboard LAN1 I/O ROM Onboard LAN2 I/O ROM [Enabled] [Enabled] PCI Devices Common Settings: Above 4G Decoding SR–IOV Support [Enabled]

Parameter	Description
PCI Bus Driver Version	Displays the PCI Bus Driver version information.
PCIE_# <sup>(Note1)</sup> Lanes Configuration GEN_# Lanes Configuration	Change the PCIe lanes. Options available: Disabled, Auto, x16, x8x8, x8x4x4, x4x4x8, x4x4x4x4. Default setting is <b>Auto</b> .
PCIE_# I/O ROM <sup>(Note1</sup> GEN_# I/O ROM <sup>(Note1)</sup>	When enabled, this setting will initialize the device expansion ROM for the related PCI-E slot. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
Onboard LAN Controller <sup>(Note2)</sup>	Enable/Disable the onboard LAN devices. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
Onboard LAN I/O ROM <sup>(Note2)</sup>	Enable/Disable the onboard LAN devices, and initializes device expansion ROM. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
PCI Devices Common Settings	
Above 4G Decoding	Enable/Disable memory mapped I/O to 4GB or greater address space (Above 4G Decoding). Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
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 <b>Enabled</b> .

## 5-2-9 USB Configuration

Advanced	Aptio Setup – AMI	
USB Configuration		Enables Legacy USB support. AUTO option
USB Module Version	27	disables legacy support if
USB Controllers: 2 XHCIs		connected. DISABLE option will keep USB devices
USB Devices:		available only for EFI
2 Drives, 1 Keyboard, 1 Mouse	, 4 Hubs	applications.
Legacy USB Support		
XHCI Hand-off	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		→+: Select Screen
USB transfer time-out	[20 sec]	î∔: Select Item
Device reset time-out	[20 sec]	Enter: Select
Device power-up delay	[Auto]	+/-: Change Opt. F1: General Help
Mass Storage Devices:		F3: Previous Values
AMI Virtual CDROMO 1.00	[Auto]	F9: Optimized Defaults
AMI Virtual HDiskO 1.00	[Auto]	F10: Save & Exit ESC: Exit
		COS. ENTC

Parameter	Description	
USB Configuration		
USB Module Version	Displays the USB version.	
USB Controllers	Displays the supported USB controllers.	
USB Devices	Displays the USB devices connected to the system.	
Legacy USB Support	Enable/disable the Legacy USB support fuction. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. Options available: Auto/Enabled/Disabled. Default setting is <b>Enabled</b> .	
XHCI Hand-off	Enable/Disable the XHCI (USB 3.0) Hand-off support. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .	
USB Mass Storage Driver Support <sup>(Note)</sup>	Enable/Disable the USB Mass Storage Driver Support. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .	
USB hardware delays and time-outs		
USB transfer time-out	The time-out value for Control, Bulk, and Interrupt transfers. Options available: 1 sec/5 sec/10 sec/20 sec. Default setting is <b>20 sec</b> .	
USB resetr time-out	Options available: 1 sec/5 sec/10 sec/20 sec. Default setting is 20 sec.	

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

Parameter	Description	
Device reset time-out	USB mass storage device Start Unit command time-out. Options available: 10 sec/20 sec/30 sec/40 sec. Default setting is <b>20 sec</b> .	
Device power-up delay	Maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100 ms, for a Hub port the delay is taken from Hub descriptor. Options available: Auto/Manual. Default setting is <b>Auto</b> .	
Mass Storage Devices		
AMI Virtual CDROM0 1.00 / AMI HDisk0 1.00 / Generic Flash Disk 8.07 / ADATA USB Flash Drive 1100	Mass storage device emulation type. AUTO enumerates devices according to their media format. Optical drives are emulated as CDROM, drives with no media will be emulated according to a drive type. Options available: Auto/Floppy/Forced FDD/Hard Disk/CD-ROM. Default setting is <b>Auto</b> .	

## 5-2-10 Network Stack Configuration

Advanced	Aptio Setup – AMI	
Network Stack Ipv4 PXE Support Ipv4 HTTP Support Ipv6 PXE Support Ipv6 HTTP Support PXE boot wait time Media detect count	(Enabled) (Enabled) (Disabled) (Enabled) (Disabled) 1	Enable/Disable UEFI Network Stack
		<pre> ++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

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

### 5-2-11 NVMe Configuration



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

## 5-2-12 SATA Configuration

Advanced	Aptio Setup - AMI	
SATA Configuration		
Front SATA: HDD #0 HDD #1 HDD #2 HDD #3	Not Present Not Present Not Present Not Present Not Present 11: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
	Version 2.21.1279 Copyright (C) 2021 AMI	
Parameter	Description	
SATA Configuration	Displays the installed HDD devices information. System will automatically detect HDD type.	

## 5-2-13 UEFI POST LOGO Configuration

Advanced	Aptio Setup – AMI	
UEFI POST LOGO Configuration		Select Output Device Type
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Warsing	2 21 1279 Popuriøht (P) 2021	L AMT

Parameter	Description
UEFI Configuration	
Output Device Type	Select output device. Options available: First loaded Device,Onboard Device,External Device, Specific Device. Default setting is <b>Onboard Deviceevice</b> .

### 5-2-14 AMD Mem Configuration Status

► CPU 0 ► CPU 1		Socket–specific memory configuration status
Mbist Test Enable	Disabled, 0xC000	Configuration status
Mbist Aggressor Enable	Disabled, 0xC000	
Mbist Per Bit Slave Die Report	0x0000, 0xC000	
Dram Temp Controlled Refresh Enable	Disabled, 0xC000	
User Timing Mode	Disabled, 0xC018	
User Timing Value	Disabled, 0xC018	
Mem Bus Freq Limit	Disabled, 0xC018	
Enable Power Down	Disabled, 0xC000	
Dram Double Refresh Rate	Disabled, 0xC000	
Pmu Train Mode	0x0003, 0xC000	
Ecc Symbol Size	0x0002, 0xC000	→+: Select Screen
Uncorrectable Ecc Retry	Enabled, 0xC000	↑↓: Select Item
Ignore Spd Checksum	Enabled, 0xC000	Enter: Select
Enable Bank Group Swap Alt	Enabled, 0xC000	+/-: Change Opt.
Enable Bank Group Swap	Disabled, OxCO1A	F1: General Help
Ddr Route Balanced Tee	Disabled, 0xC000	F3: Previous Values
Nvdimm Power Source	0x0001, 0xC000	F9: Optimized Defaults
Odts Cmd Throt Enable Odts Cmd Throt Cycle	Disabled, 0xC004 Disabled, 0xC004	F10: Save & Exit ESC: Exit
uuts umu nn ut ugule	Disabled, 0x6004	ESC. EXIT
Versic	n 2 21 1279 Conuright (C) 20	N21 AMT

CPU0/1

Press [Enter] to view the memory configuration status related to CPU 0/1.

## 5-2-15 TIs Auth Configuration

Advanced	
	Press <enter≻ configure<br="" to="">Server CA.</enter≻>
▶ Client Cert 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	
	Press [Enter] for configuration of advanced items.	
	Enroll Cert	
	<ul> <li>Press [Enter] to enroll a certificate</li> </ul>	
	Enroll Cert Using File	
Server CA Configuration	Cert GUID	
	Input digit character in 1111111-2222-3333-4444-1234567890ab	
	format.	
	<ul> <li>Commit Changes and Exit</li> </ul>	
	<ul> <li>Discard Changes and Exit</li> </ul>	
	Delete Cert	
Client Cert Configuration	Press [Enter] for configuration of advanced items.	

### 5-2-16 Intel(R) Ethernet Controller X550

	Aptio Setup – AMI	
Advanced		
▶ NIC Configuration		Click to configure the network device port.
Blink LEDs	0	
UEFI Driver	Intel(R) 10GbE Driver 7.2.10 x64	
Adapter PBA	000000-000	
Device Name	Intel(R) Ethernet Controller X550	
Chip Type	Intel X550	
PCI Device ID PCI Address	1563 62:00:00	
FGI MUUIESS	82.00.00	
Link Status	[Connected]	<pre>++: Select Screen  ↑↓: Select Item</pre>
MAC Address	B4:2E:99:BE:92:1F	Enter: Select
Virtual MAC Address	00:00:00:00:00:00	+/-: Change Opt.
		F1: General Help F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
1	/ersion 2.21.1279 Copyright (C) 2021	AMI 84
Advanced	Aptio Setup – AMI	
		Enables power on of the
Link Crood	[Auto Norotisted]	system via LAN. Note that
Link Speed Wake On LAN	[Auto Negotiated] [Enabled]	configuring Wake on LAN in the operating system does
Make on Enn		not change the value of
		this setting, but does
		override the behavior of
		Wake on LAN in OS
		controlled power states.
		++: Select Screen
		↑↓: Select Item

++: 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
Firmware Image Properties	Press [Enter] to configure advanced items.
NIC Configuration	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Link Speed <ul> <li>Allows for automatic link speed adjustment.</li> <li>Options available: Auto Negotiated, 10 Mbps Half, 10 Mbps Full, 100 Mbps Half, 100 Mbps Full. Default setting is Auto Negotiated.</li> </ul> </li> <li>Wake On LAN <ul> <li>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.</li> <li>Options available: Enabled/Disabled. Default setting is Enabled.</li> </ul> </li> </ul>
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.

## 5-2-17 VLAN Configuration

Advanced	Aptio Setup – AMI	
Create new VLAN VLAN ID Priority Add VLAN	0	VLAN ID of new VLAN o∩ existing VLAN, valid value is 0~4094
Configured VLAN List Remove VLAN		
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit
	ersion 2,21,1279 Copyright	ESC: Exit

Parameter	Description
Enter Configuration Menu	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Create new VLAN</li> <li>VLAN ID <ul> <li>Sets VLAN ID for a new VLAN or an existing VLAN.</li> <li>Press the &lt;+&gt; / &lt;-&gt; keys to increase or decrease the desired values.</li> <li>The valid range is from 0 to 4094.</li> </ul> </li> <li>Priority <ul> <li>Sets 802.1Q Priority for a new VLAN or an existing VLAN.</li> <li>Press the &lt;+&gt; / &lt;-&gt; keys to increase or decrease the desired values.</li> <li>The valid range is from 0 to 7.</li> </ul> </li> <li>Add VLAN <ul> <li>Press [Enter] to create a new VLAN or update an existing VLAN.</li> </ul> </li> <li>Configured VLAN List</li> <li>Remove VLAN <ul> <li>Press [Enter] to remove an existing VLAN.</li> </ul> </li> </ul>

### 5-2-18 MAC IPv4 Network Configuration

Advanced	Aptio Setup – AMI	
Configured Save Changes and Exit	(Disabled)	Indicate whether network address configured successfully or not.
		++: Select Screen T4: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	rsion 2.21.1279 Copyright (C)	

Parameter	Description
Carefornad	Indicates whether network address is configured successfully or not.
Configured	Options available: Enabled/Disabled. Default setting is Disabled.
Enable DHCP <sup>(Note)</sup>	Options available: Enabled/Disabled. Default setting is <b>Enabled.</b>
Local IP Address <sup>(Note)</sup>	Press [Enter] to configure local IP address.
Local NetMask <sup>(Note)</sup>	Press [Enter] to configure local NetMask.
Local Gateway <sup>(Note)</sup>	Press [Enter] to configure local Gateway
Local DNS Servers(Note)	Press [Enter] to configure local DNS servers
Save Changes and Exit	Press [Enter] to save all configurations.

#### 5-2-19 MAC IPv6 Network Configuration



Parameter	Description
Enter Configuration Menu	<ul> <li>Press [Enter] to configure advanced items.</li> <li>Displays the MAC Address information.</li> <li>Interface ID <ul> <li>The 64 bit alternative interface ID for the device. The string is colon separated. e.g. ff:dd:88:66:cc:1:2:3.</li> </ul> </li> <li>DAD Transmit Count <ul> <li>The number of consective Neighbor solicitation messages sent while performing Duplicate Address Detection on a tentative address. A value of zero indicates that Duplicate Address Detection is not performed.</li> </ul> </li> <li>Policy <ul> <li>Options available: automatic/manual. Default setting is <b>automatic</b>.</li> </ul> </li> <li>Save Changes and Exit <ul> <li>Press [Enter] to save all configurations.</li> </ul> </li> </ul>

## 5-3 AMD CBS Menu

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

		io Setup					
Main Advanced AMD CBS	AMD PBS Option	Chipset	Server Mgmt	Seci	urity	Boot	Save & Exit
AMD CBS					CPU C	ommon	Options
<ul> <li>CPU Common Options</li> <li>DF Common Options</li> <li>URC Common Options</li> <li>NEIO Common Options</li> <li>FCH Common Options</li> <li>FCH Common Options</li> <li>NTB Common Options</li> <li>Soc Miscellaneous Control</li> <li>Workload Tuning</li> </ul>							
					↑↓: S Enter +/-: F1: G F3: P F9: O	elect : Sele Change eneral reviou ptimiz Save &	ect 2 Opt. 1 Help us Values 2ed Defaults
	Version 2.21.1	.279 Copyr	ight (C) 2021	L AMI			Be

## 5-3-1 CPU Common Options

CPU Common Options		Performance
Performance		
Prefetcher settings		
Core Watchdog		
RedirectForReturnDis	[Auto]	
Platform First Error Handling	[Auto]	
Core Performance Boost	[Auto]	
Global C-state Control	[Auto]	
Power Supply Idle Control	[Auto]	
SEV ASID Count	[Auto]	
SEV-ES ASID Space Limit Control	[Auto]	
Streaming Stores Control	[Auto]	→+: Select Screen
Local APIC Mode	[Auto]	î↓: Select Item
ACPI _CST C1 Declaration	[Auto]	Enter: Select
MCA error thresh enable	[Auto]	+/-: Change Opt.
SMU and PSP Debug Mode	[Auto]	F1: General Help
Xtrig7 Workaround	[Auto]	F3: Previous Values
PPIN Opt-in	[Auto]	F9: Optimized Defaults
SNP Memory (RMP Table) Coverage	[Auto]	F10: Save & Exit
SMEE	[Auto]	ESC: Exit
Action on BIST Failure	(Auto)	
Fast Short REP MOVSB	[Enabled]	
Enhanced REP MOVSB/STOSB	[Enabled]	V

Parameter	Description
CPU Common Options	
Performance	Press [Enter] for configuration of advanced items.
Prefetcher settings	Press [Enter] for configuration of advanced items.
Core Watchdog	Press [Enter] for configuration of advanced items.
RedirectForReturnDis	From a workaround for GCC/C000005 issue for XV Core on CZ A0, setting MSRC001_1029 Decode Configuration (DE_CFG) bit 14 [DecfgNoRdrctForReturns] to 1. Options available: Auto, 1, 0. Default setting is <b>Auto</b> .
Platform First Error Handling	Enable/Disable PFEH, cloak individual banks, and mask deferred error interrupts from each bank. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
Core Performance Boost	Enable/Disable the Core Performance Boost function. Options available: Auto/Disabled. Default setting is <b>Auto</b> .
Global C-State Control	Controls the IO based C-state generation and DF C-states. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
Power Supply Idle Control	Configures the Power Supply Idle Control. Options available: Auto, Low Current Idle, Typical Current Idle. Default setting is <b>Auto</b> .
SEV ASID Count	Specifies the maximum valid ASID, which affects the maximum system physical address space. Options available: Auto, 253 ASIDs, 509 ASIDs. Default setting is <b>Auto</b> .

Parameter	Description
SEV-ES ASID Space Limit	Space limit control for SEV-ES ASIDs.
Control	Options available: Auto/Manual. Default setting is <b>Auto</b> .
	Enable/Disable the Streaming Stores functionality.
Streaming Stores Control	Options available: Auto, Enabled, Disabled. Default setting is Auto.
Local APIC Mode	Sets the Local APIC Mode.
	Options available: Auto, xAPIC, x2APIC. Default setting is Auto.
ACPI_CST C1 Decaration	Determines whether or not to declare the C1 state to the OS
	Options available: Auto, Enabled, Disabled. Default setting is Auto.
MCA error thresh enable	Enable MCA error thresholding.
	Options available: Auto, False, True. Default setting is Auto.
	When this option is enabled, specific uncorrected errors detected by the
SMU and PSP Debug Mode	PSP FW or SMU FW will hand and not reset the system.
	Options available: Auto, Enabled, Disabled. Default setting is Auto.
Xtrig7 Workaround	Options available: Auto, No Workaround, Bronze Workaround, Sliver
	Workaround. Default setting is Auto.
PPIN Opt-in	Enable/Disable the PPIN feature.
	Options available: Auto, Enabled, Disabled. Default setting is Auto.
SNP Memory (RMP Table)	Enabled: Enter system memory is covered. Options available: Auto, Enabled, Disabled, Custom.
Coverage	Default setting is Auto.
	Control secure memory encryption enable.
SMEE	Options available: Auto, Enabled, Disabled.
OWIEL	Default setting is <b>Auto</b> .
	Action to take when a CCD BIST failure is detected.
Action on BIST Failure	Options available: Auto, Do nothing, Down-CCD.
	Default setting is Auto.
	Default is 1, cab be set to zero for analysis purpose as long as OS supports
Fast Short REP MOVSB	it.
Fast Short REP MOVSB	Options available: Enabled, Disabled.
	Default setting is Enabled.
	Default is 1, cab be set to zero for analysis purpose as long as OS supports
Enhanced REP MOVSB/	it.
STOSB	Options available: Enabled, Disabled.
	Default setting is <b>Enabled</b> .
	Allows REP-MOV/STOS to use non-caching streaming stores for large
REP-MOV/STOS Steaming	sizes.
i i i i i i i i i i i i i i i i i i i	Options available: Enabled, Disabled.
	Default setting is Enabled.
Vac	Override of X3D technology.
X3D	Options available: Auto, Disable, 1 stack, 2 stack, 4 stack.
	Default setting is <b>Auto</b> . Set if using IBS execution sampling without software workaround for
	erratum 1,285. May impac performance
IBS hardware work around	Options available: Enabled, Auto.
	Default setting is <b>Enabled</b> .
	Bolduit sottling is <b>Lindpieu</b> .

### 5-3-1-1 Performance

AMD CBS	Aptio Setup – AMI	
Performance		No help string
OC Mode • Custom Core Pstates • CCD/Core/Thread Enablement		
SMT Control	[Disable]	
		++: Select Screen
		t↓: Select Item Enter: Select
		+/-: Change Opt. F1: General Help F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit ESC: Exit
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Parameter	Description
Performance	
OO Marata (Note1)	Option Available: Normal Operation, Customized
OC Mode <sup>(Note1)</sup>	Default setting is Normal Operation.
Custom Core Pstates	Allows you to accept or decline enabling Custom Core Pstates. When
Cusion Core Estates	accepted, you can disable or customize core pstates.
	Allows you to accept or decline enabling CCDs, processor cores and
CCD/Core/Thread Enablement	threads. When accepted, you can control the number of CCDs to be
	used, the number of cores to be used, and whether to enable or disable
	Simultaneous Multithreading Technology (SMT) support.
	Can be used to disable symmetric multithreading. To re-enable SMT, a
SMT Control	POwer CYCLE is needed after select the 'Enable' option. Select 'Auto' base
	on BIOS PCD. (PcdAmdSmtMode) default setting.
	Option Available: Enable, Disable.
	Default setting is <b>Disable</b> .

(Note1) Advanced items are configurable when this item is defined.

### 5-3-1-2 Prefetcher Settings

Prefetcher settings		Option to Enable   Disable
L1 Stream HW Prefetcher L1 Stride Prefetcher L1 Region Prefetcher L2 Stream HW Prefetcher L2 Up/Down Prefetcher	[Enable] [Auto] [Auto] [Enable] [Auto]	L1 Stream HW Prefetcher
		<pre>+*: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

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

## 5-3-1-3 Core Watchdog

AMD CB	Aptio Setup – AMI S	
Core Watchdog		Enable or disable CPU
Core Watchdog Timer Ena		Watchdog Timer
		++: Select Screen TJ: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.21.1279 Copyright (	C) 2021 AMI
arameter	Description	
ore Watchdog		
core Watchdog Timer Enable	Enable/Disable CPU Watchdog Options available: Auto, Enable	g Timer. ed, Disabled. Default setting is <b>Auto</b> .

## 5-3-2 DF Common Options

DF Common Options		Scrubber
Scrubber Memory Addressing ACPI Link Disable DF to external IP	[Auto]	
SyncFloodPropagation Disable DF sync flood propagation Freeze DF module queues on error CC6 memory region encryption System probe filter Memory Clear PSP error injection support	[Auto] [Auto] [Auto] [Auto] [Auto] [False]	<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

Parameter	Description	
DF Common Options		
Scrubber	Press [Enter] for configuration of advanced items.	
Memory Addrssing	Press [Enter] for configuration of advanced items.	
ACPI	Press [Enter] for configuration of advanced items.	
Link	Press [Enter] for configuration of advanced items.	
Disable DF to external IP sync flood propagation	Enable/Disable SyncFlood to UMC & downstream slaves. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is <b>Auto</b> .	
Disable DF sync flood propagation	Enable/Disable DF Sync Flood propagation. Options available: Auto, Sync flood disabled, Sync flood enabled. Default setting is <b>Auto</b> .	
Frezze DF module queues on error	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
CC6 memory region encryption	Controls whether or not the CC6 save/restor memory is encrypted. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
System probe filter	Enable/Disable Systme probe filter. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
Memory Clear	Enable/Disable the Memory Clear feature. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
PSP error injection support	Enable/Disable PSP error injection support. Options available: False/True. Default setting is <b>False</b> .	

### 5-3-2-1 Scrubber

Scrubber		Provide a value that is
DRAM scrub time Poison scrubber control Redirect scrubber control Redirect scrubber limit	[Auto] [Auto] [Auto] [Auto]	the number of hours to scrub memory.
		++: 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	
Scrubber		
	Provide a value that is the number of hours to scrub memory.	
DRAM scrub time	Options available: Auto, Disabled, 1 hour, 4 hours, 8 hours, 16 hours, 24	
	hours, 48 hours. Default setting is Auto.	
Poison scrubber control	Enable/Disable the Poison scrubber control feature.	
	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
Redirect scrubber control	Enable/Disable the Redirect scrubber control feature.	
Redirect scrubber control	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
Redirect scrubber limit	Sets the redirect scrubber limit.	
	Options available: Auto, 2, 4, 8, Infinite. Default setting is Auto.	

## 5-3-2-2 Memory Addressing

Memory Addressing		Specifies the number of
NUMA nodes per socket Memory interleaving Memory interleaving size 1TB remap DRAM map inversion Location of private memory regions	[Auto] [Auto] [Auto] [Auto] [Auto] [Auto]	desired NUMA nodes per socket. Zero will attemp to interleave the two sockets together.
		++: 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 Addressing	
NI IMA nodoo nor oookot	Specifies the number of desired NUMA nodes per socket.
NUMA nodes per socket	Options available: Auto, NPS0, NPS1, NPS2, NPS4. Default setting is NPS4.
Memory inerleaving	Enable/Disable the Memory interleaving feature.
Merriory meneaving	Options available: Auto/Disabled. Default setting is Auto.
	Controls the memory interleaving size. This determines the starting address of
Memory interleaving size	the interleave (bit 8, 9, 10 or 11).
	Options available: Auto, 256Bytes, 512Bytes, 1KB, 2KB. Default setting is Auto.
	Enable/Disable to remap DRAM out of the space just below the 1TB boundary.
	The ability to remap depends on DRAM configuration, NPS, and interleaving
1TB remap	selection, and may not always be possible.
	Options available: Auto, Do not remap, Attempt to remap.
	Default setting is Auto.
DRAM map inversion	Enable/Disable the DRAM map inversion function.
DRAW Map Inversion	Options available: Auto, Enabled, Disabled. Default setting is Auto.
	Control whether or not the rpivate memory regions (PSP, SMU, and CC6) are
Location of private memory	at the top of DRAM or distributed. Note that distributed requires memory on
Location of private memory	all dies. Note that it will always be at the top of DRAM if some dies don't have
regions	memory regardless of this.
	Options available: Auto, Distributed, Consolidated. Default setting is Auto.

AMD CBS		
	(Auto) (Auto) (Auto)	Enabled: Each CCX in the system will be declared as a separate NUMA domain. Disabled: Memory Addressing \ NUMA nodes per socket will be declared.
		++: 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
ACPI	
ACPI SRAT L3 Cache As	Enable/Disable the ACPI SRAT L3 Cache As NUMA Domain function.
NUMA Domain Options available: Auto, Enabled, Disabled. Default setting is Auto.	
ACPI SLIT Distance Control	Determines how the SLIT distances are declared.
ACPT SETT DIStance Control	Options available: Auto/Manual. Default setting is Auto.
ACPI SLIT remote relative Sets the remote socket distance for 2P systems as near (2.8) or far (3.2).	
distance	Options available: Auto, Near, Far. Default setting is Auto.

### 5-3-2-4 Link

Link		Control GMI link encryptio
GMI encryption control xGMI encryption control	[Auto] [Auto]	
CAKE CRC perf bounds Control	[Auto]	
xGMI Link Configuration 4–link xGMI max speed	[Auto] [Auto]	
3-link xGMI max speed	[Auto]	
XGMI TXEQ Mode XGMI 18GACOFC	[Auto] [Auto]	
		↔: Select Screen ↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit ESC: Exit
		COUL EXIT

Parameter	Description
Link	
GMI encryption control	Enable/Disable GMI link encryption.
	Options available: Auto, Enabled, Disabled. Default setting is Auto.
vCMI operation control	Enable/Disable xGMI link encryption.
xGMI encryption control	Options available: Auto, Enabled, Disabled. Default setting is Auto.
CAKE CRC perf bounds	Options available: Auto/Manual. Default setting is Auto.
Control	Options available. Auto/Manual. Delaut setting is Auto.
	Specifies the max speed of 4-link xGMI.
4-link xGMI max speed	Options available: Auto, 10.667Gbps, 13Gbps, 16Gbps, 18Gbps.
	Default setting is 10.667Gbps.
	Specifies the max speed of 3-link xGMI.
3-link xGMI max speed	Options available: Auto, 10.667Gbps, 13Gbps, 16Gbps, 18Gbps.
	Default setting is 10.667Gbps.
	Configures xGMI TXEQ/RX vetting Mode.
xGMI TXEQ Mode	Options available: Auto, TXEQ_Disabled, TXEQ_Lane, TXEQ_Link,
	TXEQ_RX_Vet. Default setting is 10.667Gbps.
xGMI 18GACOFC	Configures xGMI 18GACOFC.
	Options available: Auto, Enable, Disable. Default setting is Auto.

## 5-3-3 UMC Common Options

Aptio Setup - AMI AMD CBS		
UMC Common Options > DDR4 Common Options > DRAM Hemory Mapping > NVDIMM > Memory MBIST	DDR4 Common Options	
	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit	
	Version 2.21.1279 Copyright (C) 2021 AMI	
arameter	Description	
MC Common Options		
OR4 Common Options	Press [Enter] for configuration of advanced items.	
RAM Memory Mapping	Press [Enter] for configuration of advanced items.	
/DIMM	Press [Enter] for configuration of advanced items.	
emory MBIST	Press [Enter] for configuration of advanced items.	

## 5-3-3-1 DDR4 Common Options

DDR4 Common Options	Enforce POR
Enforce POR DRAM Controller Configuration CAD Bus Configuration Data Bus Configuration Common RAS Security Phy Configuration	
	++: Select Screen f4: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
DDR4 Common Options	
Enforce POR	Press [Enter] to configure the Plan of Record (POR) to enable / disable restrictions for DDR4 frequency and voltage programming. Memory speeds will be capped at AMD guidelines. Note: To enable 2 DIMMs per Channel at 3200MHz function, select [Accept] at warning message, change Overclock from [Auto] to [Enabled], and then set memory speed to 3200MHz.
DRAM Controller Configuration	Press [Enter] to configure DRAM Controller Configuration.
CAD Bus Configuration	Press [Enter] to configure CAD Bus Configuration.
Data Bus Configuration	Press [Enter] to configure Data Bus Configuration.
Common RAS	Press [Enter] to configure Common RAS.
Security	Press [Enter] to configure Security.
Phy Configuration	Press [Enter] to configure Security.

### 5-3-3-1-1 DRAM Controller Configuration

AMD	Aptio Setup – AMI CBS	
DRAM Controller Conf.	iguration	DRAM Power Options
▶ DRAM Power Options		
Cmd2T Gear Down Mode	[Auto] [Auto]	
		++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.21.1279 Copyright	(C) 2021 AMI
ameter	Description	
AM Controller Configura	tion	
	Press [Enter] to configure DF <ul> <li>Power Down Enable</li> <li>Enable/Disable DDR</li> </ul>	

- Enable/Disable DDR power down mode.
- Options available: Auto, Enabled, Disabled. Default setting is Auto.
- Power Down Entry Delay
- SubUrgRefLowerBound

DRAM Maximum Activate Count

UrgRefLimit

٠

- DRAM Power Options
- Options available: Auto, Unlimited MC, 200K,300K, 400K, 500K, 600K, 700K. Default setting is Auto.
- DRAM Refresh Rate
  - Options available: 7.8 usec, 3.9 usec. Default setting is 7.8 usec.
- Self-Refresh Exit Staggering
  - Options available:Disabled, Trfc/3, Trfc/4. Default setting is Disabled.

	Disabled.
Cmd2T	Selects the Cmd2T mode on ADDR/CMD.
	Options available: Auto, 1T, 2T. Default setting is Auto.
Gear Down Mode	Enable/Disable the Gear Down Mode function.
	Options available: Auto, Enabled, Disabled, Default setting is Auto.

# 5-3-3-1-2 CAD Bus Configuration

CAD Bus Configuration		Setup time on CAD bus signals to Auto or Manual
CAD Bus Timing User Controls CAD Bus Drive Strength User Controls	[Auto] [Auto]	signals to hold of handal
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

Parameter	Description
CAD Bus Configuration	
CAD Bus Timing User Controls	Setup time on CAD bus signals to Auto or Manual.
	Options available: Auto/Manual. Default setting is Auto.
CAD Bus Drive Strength User	Drive Strength on CAD bus signals to Auto or Manual.
Controls	Options available: Auto/Manual. Default setting is Auto.
## 5-3-3-1-3 Data Bus Configuration

Data Bus Configuration	Specify the mode for drive strength to Auto or Manua:
	strength to hate of herea.
	++: 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	
Data Bus Configuration		
Data Bus Configuration User	Specifies the mode for drive strength to Auto or Manual.	
Controls	Options available: Auto/Manual. Default setting is Auto.	

### 5-3-3-1-4 Common RAS

Common RAS		Enable/disable data
Data Poisoning DRAW Post Package Repain RCD Parity DRAM Address Command Parity Retry Max Parity Error Replay Write CRC Enable DRAM Write CRC Enable and Retry Limit Max Write CRC Error Replay	(Auto) (Disable) (Auto) (Auto) 8 (Auto) (Auto) 8	poisoning: UMC_CH::EccCtrl[UcFatalEn] UMC_CH::EccCtrl[WrFccEn] Should be enabled/disabled together.
	[True]	++: Select Screen 11: Select Item Enter: Select +/-: Change Oot. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description	
Common RAS		
Data Bajaaning	Enable/Disable the Data Poisoning function.	
Data Poisoning	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
DRAM Post Poskage Densir	Enable/Disable the DRAM Post Package Repair function.	
DRAM Post Package Repair	Options available: Enabled/Disabled. Default setting is Auto.	
DCD Derity	Enable/Disable the RCD Parity function.	
RCD Parity	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
DRAM Address Command Parity	Enable/Disable the DRAM Address Command Parity Retry function.	
Retry	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
	Configures the Max Parity Error Replay. (0~0x3f)	
May Darity Error Danlay	Default setting is 8.	
Max Parity Error Replay	Please note that this item is configurable when DRAM Address	
	Command Parity Retry is set to Enabled.	
Write CRC Enable	Enable/Disable the Write CRC function.	
While CRC Enable	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
DRAM Write CRC Enable and Retry	Enable/Disable DRAM Write CRC Enable and Retry Limit.	
Limit	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
	Configures the Max Write CRC Error Replay. (0~0x3f)	
May Write CDC Error Banlay	Default setting is 8.	
Max Write CRC Error Replay	Please note that this item is configurable when DRAM Write CRC	
	Enable and Retry Limit is set to Enabled.	

Parameter	Description		
Disable Memory Error Injection	Options available: False/True. Default setting is True.		
ECC Configuration	<ul> <li>Press [Enter] to configure advanced items.</li> <li>DRAM ECC Symbol Size <ul> <li>Configures the DRAM ECC Symbol Size.</li> <li>Options available: Auto, x4, x8, x16. Default setting is Auto.</li> </ul> </li> <li>DRAM ECC Enable <ul> <li>Enable/Disable DRAM ECC. When set to Auto, it will set ECC to enable.</li> <li>Options available: Auto, Enabled, Disabled. Default setting is Auto.</li> </ul> </li> <li>DRAM UECC Retry <ul> <li>Enable/Disable DRAM UECC Retry.</li> <li>Options available: Auto, Enabled, Disabled. Default setting is Auto.</li> </ul> </li> </ul>		

#### 5-3-3-1-5 Security

Security		Transparent SME:
TSME Data Scramble	[Auto] [Auto]	AddrTweakEn = 1; ForceEncrEn =1; DataEncrE = 0
		++: 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	
Security		
TSME	Enable/Disable Transparent SME.	
	Options available: Auto, Enabled, Disabled. Default setting is Auto.	
Data Carambia	Enable/Disable Data Scrambling.	
Data Scramble	Options available: Auto, Enabled, Disabled. Default setting is Auto.	

## 5-3-3-1-6 Phy Configuration

Phy Configuration	PMU Training
	++: 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		
Phy Configuration			
	Press [Enter] to configure PMU Training.		
	DFE Traing		
DMU Tasisian	<ul> <li>Enable/Disable DDR power down mode.</li> </ul>		
	– Options available: Auto, Enabled, Disabled. Default setting is Auto.		
PMU Training	FFE Write Training		
	<ul> <li>Auto, Enabled, Disabled. Default setting is Auto.</li> </ul>		
	PMU Pattern Bits Controls		
	<ul> <li>Auto, Manual. Default setting is Auto.</li> </ul>		

## 5-3-3-2 DRAM Memory Mapping

AMD CBS	Aptio Setup – AMI	
DRAM Memory Mapping		Interleave memory blocks across the DRAM chip
Chipselect Interleaving BankGroupSwap BankGroupSwapAlt Address Hash Bank Address Hash CS Address Hash Rm SPD Read Optimization	(Auto) [Auto] [Auto] [Auto] [Auto] [Auto] [Auto]	selects for mode 0.
		++: 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		
DRAM Memory Mapping			
Chinaclast Interlacting	Interleave memory blocks across the DRAM chip selects for CPU 0.		
Chipselect Interleaving	Options available: Auto/Disabled. Default setting is Auto.		
	Configures the BankGroupSwap. BankGroupSwap (BGS) is a new memory		
	mapping option in AGESA that alters how applications get assigned to		
BankGroupSwap	physical locations within the memory modules. When this option sets to		
	Auto, it is null: No help string.		
	Options available: Auto, Enabled, Disabled. Default setting is Auto.		
BankGroupSwapAlt	Configures the BankGroupSwapAlt.		
	Options available: Auto, Enabled, Disabled. Default setting is Auto.		
Address Hash Bank	Enable/Disable bank address hashing.		
Audress Hash Dalik	Options available: Auto, Enabled, Disabled. Default setting is Auto.		
Address Hash CS	Enable/Disable CS address hashing.		
Address Hash 05	Options available: Auto, Enabled, Disabled. Default setting is Auto		
Address Hash Rm	Enable/Disable RM address hashing.		
Audress Hash Kill	Options available: Auto, Enabled, Disabled. Default setting is Auto		
SPD Read Optimization	Enable/Disable SPD Read Optimization.		
or D Reau Optimization	Options available: Auto, Enabled, Disabled. Default setting is Auto		

#### 5-3-3-3 NVDIMM

	AMD CBS	Aptio Setup – AM	1
NVDIMM Disable NVDIMM	I-N Feature	[No]	Disable NVDIMM-N feature for memory margin tool
			<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
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Parameter	Descrip	tion	
IVDIMM	Disable NVDIMM-N feature for memory margin tool. Options available: No, Yes. Default setting is <b>No</b> .		

#### 5-3-3-4 Memory MBIST

AMD CBS	Aptio Setup – AMI	
Memory MBIST MBIST Enable MBIST Test Mode MBIST Aggressors MBIST Per Bit Slave Die Reporting Data Eye Memory Healing BIST Mem BIST Test Select Mem BIST Post Package Repair Type	(Disabled) (Auto) (Auto) (Auto) (Disabled) (Vendor Tests Enabled) (Soft Repair)	Enable or disable Memory M8IST
		++: Select Screen T1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version :	2.21.1279 Copyright (C) 2021 AMI	

Parameter	Description
Memory MBIST	
MBIST Enable	Enable/Disable the Memory MBIST function. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
MBIST Test Mode <sup>(Note)</sup>	Selects MBIST Test Mode. Interface Mode: Tests Single and Multiple CS transactions and Basic Connectivity. Data Eye Mode: Measures Voltage vs. Timing. Options available: Auto, Both, Interface Mode, Data Eye Mode. Default setting is Auto.
MBIST Aggressors(Note)	Enable/Disable MBIST Aggressor test. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
MBIST Per Bit Slave Die Reporting <sup>(Note)</sup>	Enable/Disable to report 2D data eye results in ABL log for each DQ, Chipselect, and Channel. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
Data Eye	Press [Enter] to configure advanced items.
Memory Healing BIST	Enable/Disable memory healing BIST. Options available: Auto, Enabled, Disabled. Default setting is <b>Disabled</b> .

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

## 5-3-3-4-1 Data Eye

AMD CBS	Aptio Setup – AMI	
Data Eye		No help string
Pattern Select Pattern Length Aggressor Channel Aggressor Static Lane Control Aggressor Static Lane Select Upper 32 bits Aggressor Static Lane Select ECC Aggressor Static Lane Select ECC Aggressor Static Lane Select Upper 32 bit Target Static Lane Select Upper 32 bit Target Static Lane Select Lower 32 bit Target Static Lane Select Lower 32 bit Target Static Lane Select ECC Target Static Lane Select ECC Read Timing Sweep Step Size Write Voltage Sweep Step Size	[PRBS] 3 [1 Aggressor Channel] [Disabled] 0 0 0 [Disabled] 0 0 0 0 [Per Chip Select] [1] [1] [1]	<pre>#*: Select Screen 14: Select Item Enter: Select +/-1 Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

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Parameter	Description
Data Eye	
Pattern Select	Options available: PRBS, SSO, Both. Default setting is <b>PRBS</b> .
Pattern Length	Determines the pattern length. The possible options are N=312.
Aggressor Channel	This item helps read the aggressors channels. Options available: Disabled, 1 Aggressor Channel, 3 Aggressor Channels, 7 Aggressor Channels. Default setting is <b>1 Aggressor Channel</b> .
Aggressor Static Lane Control	Enable/Disable the Aggressor Static Lane Control function. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
Aggressor Static Lane Select Upper 32 bits	This item is configurable when <b>Aggressor Static Lane Control</b> is set to <b>Enabled</b> .
Aggressor Static Lane Select Lower 32 bits	This item is configurable when <b>Aggressor Static Lane Control</b> is set to <b>Enabled</b> .
Aggressor Static Lane Select ECC	This item is configurable when <b>Aggressor Static Lane Control</b> is set to <b>Enabled</b> .
Aggressor Static Lane Value	This item is configurable when <b>Aggressor Static Lane Control</b> is set to <b>Enabled</b> .
Target Static Lane Control	Enable/Disable the Target Static Lane Control function. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .

Parameter	Description
Target Static Lane Select Upper 32 bits	This item is configurable when <b>Target Static Lane Control</b> is set to <b>Enabled</b> .
Target Static Lane Select Lower 32 bits	This item is configurable when <b>Target Static Lane Control</b> is set to <b>Enabled</b> .
Target Static Lane Select ECC	This item is configurable when <b>Target Static Lane Control</b> is set to <b>Enabled</b> .
Target Static Lane Value	This item is configurable when <b>Target Static Lane Control</b> is set to <b>Enabled</b> .
Data Eye Type	This item determines which results are expected to be captured for Data Eye. Options available: 1D Voltage Sweep, 1D Timing Sweep, 2D Full Data Eye, Worst Case Margin Only. Default setting is <b>Worst Case Margin Only</b> .
Worst Case Margin Granularity	Configures Worst Case Margin Granularity. Options available: Per Chip Select, Per Nibble. Default setting is <b>Worst Case Margin Only</b> .
Read Voltage Sweep Step Size	Configures the step size for read Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is <b>2</b> .
Read Timing Sweep Step Size	Configures the step size for read Data Eye timing sweep. Options available: 1, 2, 4. Default setting is <b>1</b> .
Write Voltage Sweep Step	Configures the step size for write Data Eye voltage sweep. Options available: 1, 2, 4. Default setting is <b>2</b> .
Write Timing Sweep Step Size	Configures the step size for write Data Eye timing sweep. Options available: 1, 2, 4. Default setting is <b>1</b> .

## 5-3-4 NBIO Common Options

NBIO Common Options		Enable/Disable IOMMU
DMAr Support	[Auto]	
PCIe ARI Support	(Auto)	
PCIe ARI Enumeration	[Auto]	
PCIe Ten Bit Tag Support	(Disable)	
SMU Common Options		
NBIO RAS Common Options		
Enable AER Cap	[Disabled]	
Early Link Speed	(Auto)	
Hot Plug Handling mode	[Auto]	
Presence Detect Select mode	[Auto]	
Preferred IO	[Auto]	++: Select Screen
Data Link Feature Cap	[Auto]	↑↓: Select Item
CV test	[Auto]	Enter: Select
SEV-SNP Support	(Disable)	+/-: Change Opt.
SRIS	[Auto]	F1: General Help
		F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit

Parameter	Description	
NBIO Common Options		
IOMMU	Enable/Disable the IOMMU function. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
DMAr Support	Enable DMAr system protection during POST. Options available: Auto,Enabled/Disabled. Default setting is <b>Auto</b> .	
PCIe ARI Support	Enable/Disable Alternative Routng-ID Interpretation. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
PCIe ARI Enumeration	ARI Forwarding Enable for each downstream port. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
PCIe Ten Bit Tag Support	Enable/Disable PCIe ten bit tags for supported devices. (Auto=Disabled) Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
SMU Common Options	Press [Enter] for configuration of advanced items.	
NBIO RAS Common Options	Press [Enter] for configuration of advanced items.	
Enable AER Cap	Enable/Disable Advanced Error Reporting Capability. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
Early Link Speed	Configures Early Link Speed. Options available: Auto, Gen1, Gen2. Default setting is <b>Auto</b> .	

Parameter	Description	
Hot Plug Handling mode	Controls the Hot Plug Handling mode. Options available: Auto, A0 Mode, OS First (No Error Handling), OS First (Error Handling-Not Implemented), Firmware First (Not Implemented). Default setting is <b>Auto</b> .	
Presence Detect Select mode	Controls the Presence Detect Select mode. Options available: Auto, OR, AND. Default setting is <b>Auto</b> .	
Preferred IO Device	Configures Preferred IO Device. Options available: Auto, Manual. Default setting is <b>Auto</b> .	
Loopback Mode	Enabled/Disabled PCIe Loopback mode. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
CV test	Set this to Enabled to support running PCIECV tool. Auto: preserve hardware defaults. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
CAC Weight Adjustment	EDC Mode select. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto.</b>	
SEV-SNP Support	Options available: Enable, Disable. Default setting is <b>Enable</b> .	
SRIS	Options available: Auto, Enable, Disable. Default setting is Auto.	
EDC Control	Options available: Auto, Enable, Disable. Default setting is Auto.	

## 5-3-4-1 SMU Common Options

SMU Common Options		Power Policy Quick Setting
Power Policy Quick Setting Determinism Control cTDP Control EfficiencyModeEn Package Power Limit Control XGMT Link Width Control AFBDIS DF Cstates CPPC HSMP Support DLWM Support BOOSTFMAXEN EDC Current Tracking LCLK Frequency Control DF PState Mode Select EDC Control	[Standard] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Auto] [Disable] [Auto] [Auto]	<pre>++: Select Screen I4: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

Parameter	Description
SMU Common Options	
Power Policy Quick Setting	Options available: Standard, Best Performance, Energy Efficient. Default setting is <b>Standard</b> .
Determinism Control	Selects use the fused Determinism or set customized Determinism. Options available: Auto/Manual. Default setting is <b>Auto</b> .
Determine Slider	Options available: Auto/Power, Performance. Default setting is <b>Power</b> .
cTDP Control	Selects use the fused TDP or set customized TDP. **TDP is used to define the RC thermal model only** Options available: Auto/Manual. Default setting is <b>Auto</b> .
cTDP	Display cTDP information.
EfficiencyModeEn	Options available: Auto/Enabled. Default setting is Auto.
Package Power Limit Control	Selects use the fused PPT or set customized PPT. **PPT will be used as the ASIC power limit** Options available: Auto/Manual. Default setting is <b>Auto</b> .
Package Power Limit	Display Package Power Limit information
xGMI Link Width Control	Options available: Auto/Enabled. Default setting is Auto.
APBDIS	Options available: Auto, 0, 1. Default setting is Auto.

Parameter	Description	
DF Cstates	Enable/Disable DF C-states. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
CPPC	Enable/Disable the CPPC feature. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
HSMP Support	Select HSMP support enable or disable. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
DLMM Support	Select DLMM support enable or disable. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
BoostFmaxEn	Options available: Auto/Enabled. Default setting is Auto.	
EDC Current	Options available: Enable, Disable. Default setting is <b>Disable</b> .	
LCLK Frequency Control	Press [Enter] for advanced configuration.	
DF PSTATE Mode Select	Option available: Normal, limit Highest, Limit All, Auto. Default setting is <b>Auto</b> .	

## 5-3-4-2 NBIO RAS Common Options

NBIO RAS Common Options		(0) Disabled, (1) MCA, (2 Legacy
		88
Egress Poison Severity High	30011	
Egress Poison Severity Low	4	
NBIO SyncFlood Generation	[Auto]	
NBIO SyncFlood Reporting	[Auto]	
Egress Poison Mask High	FFFCFFFF	
Egress Poison Mask Low	FFFFFFB	
Uncorrected Converted to Poison	30000	
Enable Mask High		
Uncorrected Converted to Poison	4	
Enable Mask Low		
System Hub Watchdog Timer	A28	↔ Select Screen
SLINK Read Response OK	[Disabled]	↑↓: Select Item
SLINK Read Response Error Handling	[Log Errors in MCA]	Enter: Select
Log Poison Data from SLINK	[Disabled]	+/-: Change Opt.
PCIe Aer Reporting Mechanism	[Auto]	F1: General Help
Edpc Control	(Auto)	F3: Previous Values
NBIO Poison Consumption	[Auto]	F9: Optimized Defaults
Sync Flood on PCIe Fatal Error	[Auto]	F10: Save & Exit
		ESC: Exit

Parameter	Description
NBIO RAS Common Options	
NBIO RAS Control	Options available: Disabled, MCA, Legacy. Default setting is MCA.
Egress Poison Serverity High	Configures the Egress Poison High Serverity. Each bit set to 1 enables High serverity on the associated IOHC egress port. A bit of 0 indicates LOW serverity.
Egress Poison Serverity Low	Configures the Egress Poison Low Serverity. Each bit set to 1 enables High serverity on the associated IOHC egress port. A bit of 0 indicates LOW serverity.
NBIO SyncFlood Generation	The value may be used to mask SyncFlood caused by NBIO RAS options. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
NBIO SyncFlood Reporting	The value may be used to enanle SyncFlood reporting to APML. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
Egress Poison Mask High	Enables mask for masking of errors logged in EGRESS_POISON_ STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.
Egress Poison Mask Low	Enables mask for masking of errors logged in EGRESS_POISON_ STATUS. For each bit set to 1, errors are masked. For each bit set to 0, errors trigger response actions.

Parameter	Description
Uncorrected Converted to Poison Enabke Mask High	Enables mask for masking of uncorrectable parity errors on internal arrays.
Uncorrected Converted to Poison Enabke Mask Low	Enables mask for masking of uncorrectable parity errors on internal arrays.
System Hub Watchdog Timer	Specifies the timer interval of the SYSHUB Watchdog timer in miliseconds.
SLINK Read Response OK	This item specifies whether SLINK read response errors are converted to an Okay response. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
SLINK Read Response Error Handling	Options available: Enabled, Trigger MCOMMIT Error, Log Errors in MCA. Default setting is <b>Log Errors in MCA</b> .
Log Poison Data from SLINK	Enable/Disable the Log Poison Data from SLINK feature. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
PCIe Aer Reporting Mechanism	Selects the method of reporting AER errors from PCI Express. Options available: Auto, Firmware First, OS First, MCA. Default setting is <b>Auto</b> .
Edpc Control	Options available: Auto, Enabled, Disabled. Default setting is <b>Disabled</b> .
NBIO Poison Consumption	Options available: Auto, Enabled, Disabled. Default setting is Auto.
Sync Flood on PCle Fatal Error	Options available: Auto, True, False. Default setting is Auto.

# 5-3-5 FCH Common Options

Aptio Setu AMD CBS	AMI
FCH Common Options ▶ Ac Power Loss Options	Ac Power Loss Options
▶ FCH RAS Options ▶ Miscellaneous Options	
	++: Select Screen 11: Select Item
	Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
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Parameter	Description
FCH Common Options	
AC Power Loss Options	Press [Enter] for configuration of advanced items.
FCH RAS Options	Press [Enter] for configuration of advanced items.
Miscellaneous Options	Press [Enter] for configuration of advanced items.

# 5-3-5-1 AC Power Loss Options

Ac Power Loss Options	Select Ac Loss Control Method
	Method
	++: Select Screen 14: Select Item
	Enter: Select frem Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values
	F9: Optimized Defaults F9: Save & Exit ESC: Exit

Parameter	Description
AC Power Loss Options	
AC Loss Control	Selects the AC Loss Control Method. Options available: Power Off, Power On, Last State. Default setting is <b>Power off</b> .

## 5-3-5-2 FCH RAS Options

FCH RAS Options		No help string
ALink RAS Support Reset after sync flood	[Auto] [Auto]	
		++: 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
FCH RAS Options	
ALink RAS Support	Enable/Disable the ALink RAS Support. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .
Reset after sync flood	Enables AB to forward downstream sync-flood message to system controller. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .

## 5-3-5-3 Miscellaneous Options

Miscellaneous Options	Boot Timer enable.
	Enable : force PMx44 bit 27 = 1 Disable : force PMx44 bit 27 = 0 Auto:PMx44 bit 27 = PcdBootTimerEnable
	++: 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
Miscellaneous Options	
Boot Time Enable	Options available: Auto, Enabled, Disabled. Default setting is Auto.

# 5-3-6 NTB Common Options

NTB Common Options		Enable NTB on Socket-O PC Link
Socket-0 PO NTB Enable Socket-0 P1 NTB Enable Socket-0 P2 NTB Enable Socket-0 P3 NTB Enable	[Auto] [Auto] [Auto] [Auto]	LINK
		++: Select Screen
		<pre>14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit</pre>
		ESC: Exit

Parameter	Description
NTB Common Options	
Socket-0 P0 NTB Enable	Options available: Auto/Enable. Default setting is Auto.
Socket-0 P1 NTB Enable	Options available: Auto/Enable. Default setting is Auto.
Socket-0 P2 NTB Enable	Options available: Auto/Enable. Default setting is Auto.
Socket-0 P3 NTB Enable	Options available: Auto/Enable. Default setting is Auto.

#### 5-3-7 SOC Miscellaneous Control

Enable : Enable ConsoleOut Function for ABL Disable : Disable ConsoleOut Function for AB Auto : Keep default behavior
++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
T

Parameter	Description	
SOC Miscellaneous Control		
ABL Console Out Control	Enable/Disable the ConsoleOut function for ABL. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	
ABL PMU message Control <sup>(Note)</sup>	To Control the total number of PMU debug messages. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .	

## 5-3-8 Workload Tuning

√orkload Tuning		Select the profile for different workloads.
кжжжжжжжжже Descriptions »	antaintaintaintaintainte	uitterent workioaus.
Jse BIOS default workload prof		
Performance Tracing	[Auto]	
		++: 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
Workload Tuning	
	Select the profile for different workloads.
Workload Profile	Default setting is <b>Auto</b> .
Performance Tracing	Enable to allow capturing performance traces. Options available: Auto, Enabled, Disabled. Default setting is <b>Auto</b> .

# 5-4 AMD PBS Menu

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

Main Advanced AMD CBS AMD PBS Opt	Aptio Setup – AMI tion Chipset Server Mgmt Sec	curity Boot Save & Exit
AMD PBS RAS SPI Locking iLA TraceMemoryEn iLA TraceMemoryEn reserved MMIO SRIS mode debug SRIS Autodetect	[Disabled] [Disabled] O [Auto] [Auto]	AMD CPM RAS related settings
		<pre>++: Select Screen 1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2		

Parameter	Description
RAS	Press [Enter] for configuration of advanced items.
SPI Locking	Enable/Disable SPI Locking for protect ROM part.
SI I LOCKING	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
	Reserved 1M bytes MMIO space on 1M boundary when iLA TraceMemoryEn
iLA TraceMemoryEn	disabled.
	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
iLA TraceMemoryEn	
reserved MMIO	Reserved function.
SRIS mode debug	Control SRIS mode debug.
SINIS IIIOUE UEDUY	Options available: Auto/Enabled/Disabled. Default setting is Auto.
SRIS Autodetect	Control SRIS Autodetect.
SRIS AULUDELECL	Options available: Auto/Enabled/Disabled. Default setting is Auto.

### 5-4-1 RAS

and the second second second	Aptio Setup – AMI	
Main Advanced AMD CBS	AMD PBS Option Chipset Server Mgmt Sec	urity Boot Save & Exit
BIOS Information Project Name Project Version Build Date and Time	MZ62-HD0-00 M03a 02/26/2021 13:59:32	
BMC Information BMC Firmware Version	12.50.09	
Processor Information CPU 0 Brand String	AMD EPYC 7313 16-Core Processor	
CPU 1 Brand String	AMD EPYC 7313 16-Core Processor	
CPU Speed	3000 MHz	↔+: Select Screen
Processor Core	16	î∔: Select Item
Microcode Patch	A001119	Enter: Select +/-: Change Opt.
Total Memory	32768 MB	F1: General Help
Memory Speed	2667 MT/s	F3: Previous Values F9: Optimized Defaults
VR Information		F10: Save & Exit
Version	8434	ESC: Exit
AGESA PI Version		
PI Version	1.0.0.1	

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

BIOS Setup

Parameter	Description	
PCIe Root Port UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of Root Port.	
PCIe Root Port UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Serverity register of Root Port.	
PCIe Device Corr Err Mask Reg	Initialize the PCIe AER Corrected Error Mask register of PCIe device.	
PCIe Device UnCorr Err Mask Reg	Initialize the PCIe AER Uncorrected Error Mask register of PCIe device.	
PCIe Device UnCorr Err Sev Reg	Initialize the PCIe AER Uncorrected Error Serverity register of PCIe device.	
CCIX GHES Deferred ERR Notify Type	Selects the Notification type for CCIX deffered error. Options available: Polled/SCI. Default setting is <b>Polled</b> .	
CCIX GHES Corrected Err Notify Type	Selects the Notification type for CCIX corrected error. Options available: Polled/SCI. Default setting is <b>Polled</b> .	
DDR4 DRAM Hard Post Package Repair	This feature allows spare DRAM rows to replace malfunctioning rows via an in-field repair mechanism. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
HEST DMC Structure Support	HEST DMC (Deferred Machine Check) Structure Support. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
RAS EINJ Mode	BIOS: Send APEI EINJ actions to PSP via CPM EINJSMI callback; PSP: Send APEI EINJ actions to RSP via PSP Mailbox. Option available: BIOS, PSP. Default setting is <b>PSP</b> .	

# 5-5 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.

Main Advanced	AMD CBS AMD	Aptio Setu PBS Option Chipse		Security Boot Save & Exit
Main Advanced PCIe Compliance Program All VR > North Bridge > Fabric Resource		PES Option Chipse (Off) (Enabled)	t <u>Server Mgmt</u>	Security Boot Save & Exit PCIe Link Compliance Mode. ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
		sion 2.21.1279 Cop		

Parameter	Description	
PCIe Compliance Mode	Options available: On/Off. Default setting is Off.	
Program All VR	Enable/Disable program all VR on MB. Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .	
North Bridge	Press [Enter] for configuration of advanced items.	
Fabric Resource	Press [Enter] for configuration of advanced items.	

## 5-5-1 North Bridge

North Bridge Confi		View Information related to CPU 0
Memory Information	1	
Total Memory: 4915 ▶ CPU 0 Information ▶ CPU 1 Information	20 MB (DDR4)	
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.21.1279 Copyr	ight (C) 2021 AMI
ameter	Description	

North Bridge Configuration Memory Information	
Total Memory	Displays the total memory information.
CPU0 Information	Press [Enter] to view information related to CPU 0.
CPU1 Information	Press [Enter] to view information related to CPU 1.

#### 5-5-2 Fabric Resource

Fabric Resource		Change CPU0 NBIO0 PCIe bus
CPUO NBIDO Base Bus:0x60 CPUO NBIDO PCIe Bus Number	20	number
CPU0 NBI01 Base Bus:0x40		
CPUO NBIO1 PCIe Bus Number	20	
CPUO NBIO2 Base Bus:0x20 CPUO NBIO2 PCIe Bus Number	20	
	20	
CPUO NBIO3 Base Bus:0x00 CPUO NBIO3 PCIe Bus Number	20	
CPU1 NBIOO Base Bus:0xE0		↔: Select Screen 1↓: Select Item
CPU1 NBIOO PCIe Bus Number	20	Enter: Select +/-: Change Opt.
CPU1 NBIO1 Base Bus:0xCO		F1: General Help
CPU1 NBIO1 PCIe Bus Number	20	F3: Previous Values F9: Optimized Defaults
CPU1 NBIO2 Base Bus:0xA0		F10: Save & Exit
CPU1 NBIO2 PCIe Bus Number	20	ESC: Exit
CPU1 NBIO3 Base Bus:0x80		
CPU1 NBIO3 PCIe Bus Number	20	

Parameter	Description
Fabric Resource	
Socket 0/1 NBIO_# PCIe Bus Number	Change Socket 0/1 NBIO_# PCIe Bus Number.

-

# 5-6 Server Management Menu

Main Advanced AMD CBS	Aptio Setup – AMI AMD PBS Option Chipset Server Mgmt S	Security Boot Save & Exit
FRB-2 Timer FRB-2 Timer timeout FRB-2 Timer Policy OS Wid Timer Timeout OS Wid Timer Timeout OS Wid Timer Policy Wait BMC Ready > System Event Log > View FRU information > BMC network configuration > IPv6 BMC Network Configura	[Enabled] [6 minutes] [Do Nothing] [Disabled] [10 minutes] [Reset] [2 minutes]	Enter value Between 3 to 6 min for FRB-2 Timer Expiration value
		<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

Parameter	Description	
FRB-2 Timer	Display the FRB-2 Timer staus. This item is not configurable.	
FRB-2 Timer timeout	Configures the FRB2 Timer timeout. Options available: 3 minutes, 4 minutes, 5 minutes, 6 minutes. Default setting is 6 minutes.	
FRB-2 Timer Policy	Configures the FRB2 Timer policy. Options available: Do Nothing, Reset, Power Down, Power Cycle. Default setting is <b>Do Nothing</b> .	
OS Watchdog Timer	Enable/Disable OS Watchdog Timer function. Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
OS Wtd Timer Timeout	Configures OS Watchdog Timer. Options available: 5 minutes, 10 minutes, 15 minutes, 20 minutes. Default setting is 10 minutes. Please note that this item is configurable when OS Watchdog Timer is set to Enabled.	
OS Wtd Timer Policy	Configure OS Watchdog Timer Policy. Options available: Reset, Do Nothing, Power Down. Default setting is <b>Reset</b> . <b>Please note that this item is configurable when OS Watchdog Timer is set to</b> <b>Enabled.</b>	

Parameter	Description	
Wait BMC Ready	POST wait BMC ready and reboot system. Options available: Disabled/2 minutes/4 minutes/6 minutes. Default setting is <b>2 minutes</b> .	
System Event Log	Press [Enter] to configure advanced items.	
View FRU Information	Press [Enter] to view the FRU information.	
BMC network configuration	Press [Enter] to configure advanced items.	
IPv6 BMC Network Configuration	Press [Enter] to configure advanced items.	

# 5-6-1 System Event Log

	Aptio Setup – AMI Server Mgmt	
Enabling/Disabling Options SEL Components	[Enabled]	Change this to enable or disable all features of System Event Logging
Erasing Settings Erase SEL When SEL is Full	[No] [Do Nothing]	during boot.
Custom EFI Logging Options Log EFI Status Codes	[Error code]	
NOTE: All values changed here do not effect until computer is resta		
		<pre>++: Select Screen  ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values</pre>
		F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version 2	.21.1279 Copyright (C) 2021 AMI	

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

### 5-6-2 View FRU Information

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

	Aptio Setup – AMI <mark>Server Mgmt</mark>	
FRU Information System Manufacturer System Product Name System Serial Number Board Manufacturer Board Version Board Serial Number Chassis Manufacturer Chassis Product Name Chassis Serial Number	GIGABYTE G292-240-00 0100 GKG2P5912A0028 GIGABYTE M242-G20-00 123456789AB JGBF660007 GIGABYTE 01234567890123456789AB	<pre>++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
		MT B4

# 5-6-3 BMC Network Configuration

	Aptio Setup – AMI Server Mgmt	
BMC network configuration Lan channel 1 Configuration Address source Station IP address Subnet mask Router IP address Station MAC address VLAN Support	[Unspecified] 10.1.112.62 255.255.255.0 10.1.112.253 18-c0-4d-05-2e-d7 [Disabled]	Select to configure LAN channel parameters statically or dynamically(by BIDS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Real-time synchronize BMC network	parameter values	<ul> <li>++: Select Screen</li> <li>↑4: Select Item</li> <li>Enter: Select</li> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F3: Previous Values</li> <li>F3: Optimized Defaults</li> <li>F10: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>
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Parameter	Description
BMC network configuration	
Lan Channel 1	
Configuration Address source	Selects to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase. Options available: Unspecified, Static, DynamicBmcDhcp. Default setting is <b>DynamicBmcDhcp</b> .
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.
VLAN Support	Set to BMC enabled/diisabled VLAN. Options available: Enabled, Disabled. Default setting is <b>Disabled</b> .
Real-time get BMC network address	Press [Enter] will set LAN mode and Address source and then get IP, Subnet, Gateway and MAC address.

## 5-6-4 IPv6 BMC Network Configuration

	Aptio Setup – AMI Server Mgmt	
IPv6 BMC Network Configuration IPv6 BMC Lan Channel 1: IPv6 BMC Lan Option IPv6 BMC Lan IP Address Source IPv6 BMC Lan IP Address/Prefix Length -> [2001:C66:0:0:DEF4:ACAB:7090:65DB,	[Enable] [Unspecified] 2001:C66:0:0:DEF4:ACAB:7090: 6508/64 /64]	Enable/Disable IPv6 BMC LAN channel function. Disable option will not modify any BMC network during BIOS Phase
		++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
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Parameter	Description
IPv6 BMC network configuration	
IPv6 BMC Lan Channel 1	
IPv6 BMC Lan Option	Enable/Disable IPv6 BMC LAN channel function. When this item is disabled, the system will not modify any BMC network during BIOS phase. Options available: Unspecified, Disable, Enable. Default setting is <b>Enable</b> .
IPv6 BMC Lan IP Address Source	Selects to configure LAN channel parameters statically or dynamically (by BIOS or BMC). Options available: Unspecified, Static, Dynamic-Obtained by BMC running DHCP. Default setting is <b>Enable Dynamic-Obtained by BMC running DHCP</b> .
IPv6 BMC Lan IP Address/ Prefix Length	Check if the IPv6 BMC LAN IP address matches those displayed on the screen.

# 5-7 Security Menu

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

Main Advanced AMD CBS	Aptio Setup AMD PBS Option Chipset		Security Boot Save & Exit
Main Advanced AMD CBS Password Description If ONLY the Administrator then this only limits acc only asked for when enter If ONLY the User's password is a power on password am boot or enter Setup. In St have Administrator rights The password length must l in the following range: Minimum length Maximum length Administrator Password User Password Secure Boot	AMD FBS Option Chipset 's password is set, ess to Setup and is ing Setup. "d is set, then this d must be entered to etup the User will		Security Boot Save & Exit Set Administrator Password **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.21.1279 Copur	pight (C) 2021 (	мт

There are two types of passwords that you can set:

Administrator Password

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

User Password

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

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

#### 5-7-1 Secure Boot

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

	Aptio Setup – AMI	Security
System Mode	Setup	Secure Boot feature is Active if Secure Boot is
	[Disabled] Not Active	Enabled, Platform Key(PK) is enrolled and the System is
Secure Boot Mode	[Custom]	in User mode.
Restore Factory Keys	[Cus ( Dilij	The mode change requires
		platform reset
Reset To Setup Mode		platform reset
Enter Audit Mode		
Key Management		++: Select Screen 14: Select Item
		Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit ESC: Exit
	ersion 2.21.1279 Copyright (C)	

Description
Displays if the system is in User mode or Setup mode.
Enable/ Disable the Secure Boot function. Options avaiable:Enabled/Disabled. Default setting is <b>Disabled</b> .
Secure Boot requires all the applications that are running during the booting process to be pre-signed with valid digital certificates. This way, the system knows all files being loaded before Windows loads to the login screen have not been tampered with. When set to Standard, it will automatically load the Secure Boot keys form the BIOS databases. When set to Custom, you can customize the Secure Boot settings and manually load its keys from the BIOS database. Options available: Standard/Custom. Default setting is <b>Standard</b> .
Forces the system to user mode and installs factury default Secure Boot key database.
Enter Audit Mode workflow. Transitions from User to Audit. Mode will result in erasing of PK variable.

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

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

# 5-8 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 AMD CBS AMD PBS C	Aptio Setup – AMI ption Chipset Server Mgmt	Security <mark>Boot</mark> Save & Exit
Boot Configuration Setup Prompt Timeout Bootup NumLock State Quiet Boot	2 [On] [Enabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Boot mode select	[UEFI]	
FIXED BOOT ORDER Priorities		
Boot Option #1	[Hard Disk]	
Boot Option #2	[CD/DVD]	
Boot Option #3	[USB Device]	
Boot Option #4	[Network:UEFI: PXE IPv4 Intel(R) Network 18:CO:4D:05:3B:C7]	
Boot Option #5	[UEFI AP:UEFI: Built-in EFI Shell]	↑↓: Select Item Enter: Select +/-: Change Opt.
▶ UEFI NETWORK Drive BBS Priorities		F1: General Help
▶ UEFI Application Boot Priorities		F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version	2.21.1279 Copyright (C) 2021	AMI

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

Parameter	Description	
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.	

### 5-8-1 UEFI NETWORK Drive BBS Priorities

The UEFI network drive BBS priorities submenu allows you to specify the boot device priority from the available UEFI network drives during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

Aptio Setup Utility	– Copyright (C) 2020 American	Megatrends, Inc. Boot
Boot Option #1	(UEFI: PXE IP4 Intel(R) I350 Gigabit Network Connection)	Sets the system boot order
Boot Option #2	[UEFI: PXE IP4 Intel(R) I350 Gigabit Network Connection]	
Boot Option #3	[UEFI: PXE IP6 Intel(R) I350 Gigabit Network Connection]	
Boot Option #4	[UEFI: PXE IP6 Intel(R) I350 Gigabit Network Connection]	
		<pre>++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.20.1275.	Copyright (C) 2020 American Me	gatrends, Inc.

### 5-8-2 UEFI Application Boot Priorities

The UEFI application boot priorities submenu allows you to specify the boot device priority from the available UEFI applications during system boot-up. BIOS setup will display an error message if the legacy drive(s) specified is not bootable.

Aptio Setup U	Htility – Copyright (C) 2020 American Me	egatrends, Inc. Boot
Boot Option #1		Sets the system boot order
		<pre>+*: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>
Version 2.20	.1275. Copyright (C) 2020 American Mega	atrends, Inc.

# 5-9 Save & Exit Menu

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



Parameter	Description
Save Options	
Save 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	Saves 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.
Launch EFI Shell from filesystem device	Attempts to Launch EFI Shell application (Shell.efi) from one of the available filesystem devices.

# 5-10 BIOS POST Beep code (AMI standard)

### 5-10-1 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

### 5-10-2 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

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