# **GIGABYTE**<sup>™</sup> R152-P32

Ampere® Altra® Max ARM Server - 1U 10-Bay

User Manual

Rev. 1.0

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#### **Documentation Classifications**

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

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

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

#### For More Information

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

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

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

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

#### Conventions

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

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

#### **Server Warnings and Cautions**

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

## 

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

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



- · Unplug the power cord from the power supply to disconnect power to the equipment.
- 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 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.

#### Product Specifications 1-2

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

CPU	<ul> <li>Ampere® Altra® Max or Altra® Processor</li> <li>Single processor, 7nm technology</li> <li>Up to 128-core per processor</li> </ul>					
Socket	<ul><li>Single socket</li><li>LGA4926</li></ul>					
Chipset	System on Chip					
Memory	<ul> <li>16 x DIMM slots</li> <li>DDR4 memory supported only</li> <li>8-Channel memory architecture</li> <li>RDIMM modules up to 256GB supported</li> <li>LRDIMM modules up to 256GB supported</li> <li>Up to 4TB of memory capacity supported per processor</li> <li>Memory speed: Up to 3200 MHz</li> </ul> NTOE! Only supports configurations with 1,2, 4, 6, 8,12, or 16 DIMMs					
	<ul> <li>2 x 1GbE LAN ports (1 x Intel® I350-AM2)</li> <li>1 x 10/100/1000 Mbps management LAN</li> </ul>					
Video Video	<ul> <li>Integrated in Aspeed® AST2500</li> <li>2D Video Graphic Adapter with PCIe bus interface</li> <li>1920x1200@60Hz 32bpp</li> </ul>					
Storage	<ul> <li>2 x 2.5" SATA hot-swappable HDD/SSD bays from CSTO180 (ASM1164) SATA HBA</li> <li>SATA device supported only</li> <li>8 x 2.5" NVMe hot-swappable HDD/SSD bays</li> </ul>					
RAID	<ul> <li>RAID 0/ 1/ 1E/ 10</li> </ul>					
Expansion Slot	<ul> <li>Riser Card CRS101D:</li> <li>1 x PCle x16 slot (Gen4 x16), Full height half-length, occupied by CNV3124, 4 x NVMe ports</li> <li>1 x OCP 2.0 mezzanine slot, occupied by CSTO180 (ASM1164) SATA HBA</li> <li>2 x M.2 slots:</li> <li>M-key</li> <li>PCle Gen4 x4</li> </ul>					
	<ul> <li>Supports NGFF-2242/2260/2280/22110 cards</li> </ul>					

Internal I/O	<ul> <li>2 x M.2 slots</li> <li>1 x USB 3.0 header</li> <li>1 x USB 2.0 header</li> <li>1 x TPM header</li> <li>1 x Front panel header</li> <li>1 x HDD back plane board header</li> <li>1 x PMBus connector</li> <li>1 x IPMB connector</li> </ul>
	1 x Clear CMOS jumper
	1 x Buzzer
Front I/O	<ul> <li>1 x USB 3.0</li> <li>1 x Power button with LED</li> </ul>
	1 x ID button with LED
	1 x Reset button
	2 x LAN activity LEDs
	1 x HDD activity LED
	1 x System status LED
Rear I/O	• 3 x USB 3.0
	<ul> <li>1 x VGA</li> </ul>
	<ul> <li>1 x Debug port</li> </ul>
	• 2 x RJ45
	◆ 1 x MLAN
	1 x ID button with LED
Backplane I/O	Backplane P/N: 9CBP10A3NR-00
	Speed and bandwidth:
	PCle Gen3 x4, SATA 6Gb/s
TPM	<ul> <li>1 x TPM header with SPI interface</li> <li>Optional TPM2.0 kit: CTM010</li> </ul>

<ul> <li>Power Supply</li> <li>2 X body Heudinain PSUS</li> <li>80 PLUS Platinum</li> <li>AC Input: 100-240V-/12-6A, 50-60Hz</li> <li>DC Input: 190-310Vdc/7A</li> <li>DC Output: Max 850W/100-240Vac- +12V/T0A</li> <li>DC Output: Management</li> <li>Aspeed® AST2500 management controller</li> <li>GIGABYTE Management Console (AMI MegaRAC SP-X) web interface</li> <li>Dashboard</li> <li>HTML5 KVM</li> <li>Sensor Reading History Data</li> <li>FRU Information</li> <li>SEL Log in Linear Storage / Circular Storage Policy</li> <li>Hardware Inventory</li> <li>Fan Profile</li> <li>System Firewall</li> <li>Power Control</li> <li>LDAP / AD / RADIUS Support</li> <li>Backup &amp; Restore Configuration</li> <li>Remote BIOS/BMC/CPLD Update</li> <li>Event Log Filter</li> <li>User Management</li> <li>Media Redirection Settings</li> <li>SSL Settings</li> <li>SSL Settings</li> <li>SSL Settings</li> <li>SSL Settings</li> <li>Operating temperature: -40°C to 60°C</li> <li>Coparating temperature: -40°C to 60°C</li> <li>Mon-operating temperature: -40°C to 60°C</li> <li>Mon-operating temperature: -40°C if using 280W CPU</li> <li>Monient temperature limited to 30°C if using 280W CPU</li> <li>10</li> <li>438mm (W) x 43.5mm (H) x 660mm (D)</li> </ul>	Power Supply	2 x 850W redundant PSUs
AC Input: 100-240V-/ 12-6A, 50-60Hz     DC Input: 190-310Vdc/ 7A     DC Output: Max 850W/ 100-240Vac- +12V/ 70A +5Vsb/ 3A     System     Aspeed® AST2500 management controller     GIGABYTE Management Console (AMI MegaRAC SP-X) web interface Dashboard     HTML5 KVM     Sensor Monitor (Voltage, RPM, Temperature, CPU Statusetc.) Sensor Reading History Data     FRU Information     SEL Log in Linear Storage / Circular Storage Policy     Hardware Inventory     Fan Profile     System Firewall     Power Consumption     Power Control     LDAP / AD / RADIUS Support     Backup & Restore Configuration     Remote BIOS/BMC/CPLD Update     Event Log Filter     User Management     Media Redirection Settings     SSL Settings     SSL Settings     SMTP Settin	Power Supply	
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Ambient     Ambient     Temperature     Ambient     Temperature     Pelative     Humidity     Ambient temperature limited to 30°C if using 280W CPU     Operating humidity: 10	Environment	
Temperature       • Operating humidity: 8-80% (non-condensing)         Relative       • Non-operating humidity: 20%-95% (non-condensing)         • Ambient temperature limited to 30°C if using 280W CPU         • 1U	Ambient	<ul> <li>Non-operating temperature: -40°C to 60°C</li> </ul>
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Humidity       • Non-operating humidity: 20%-95% (non-condensing)         • Ambient temperature limited to 30°C if using 280W CPU         • 1U         Dimension	remperature	
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Ambient temperature limited to 30°C if using 280W CPU     System     Dimension	Relative	
Ambient temperature limited to 30°C if using 280W CPU     System     Dimension	Humidity	<ul> <li>won-operating numicity: 20%-95% (non-condensing)</li> </ul>
System + 1U Dimension		
Dimension		
Dimension	System	<ul> <li>◆ 1U</li> </ul>
<ul> <li>438mm (W) x 43.5mm (H) x 660mm (D)</li> </ul>	Dimension	
		<ul> <li>438mm (W) x 43.5mm (H) x 660mm (D)</li> </ul>

## 1-3 System Block Diagram



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## Chapter 2 System Appearance

2-1 Front View



No.	Description				
1.	Front USB 3.0 Port				
2.	Front Panel LEDs and Buttons				
N	NOTE! The Orange HDD Latch Supports NVMe				

Please Go to Chapter 2-3 Front Panel LED and Buttons for detail description of function LEDs.

### 2-2 Rear View

PSU2	PSU1 •
No.	Description
1.	Serial Port
2.	VGA Port
3.	Mezzanine Card Slot (Option/OCP V2.0 Card)
4.	ID Button
5.	10/100/1000 Server management LAN port
6.	USB 3.0 Port x 2
7.	GbE LAN Port x 2
8.	USB 3.0 Port
9.	PCIe Card Slot (PCIe x16)

## 2-3 Front Panel LED and Buttons



No.	Name	Color	Status	Description		
1.	Reset Button			Press the button to reset the system.		
2.	ID Button		Press the button to activate system identification			
		Green	On	System is powered on		
	Power button	Green	Green Blink System is in ACPI S1 state (sleep mode)			
3.	with LED	N/A	Off	<ul> <li>System is not powered on or in ACPI S5 state (power off)</li> <li>System is in ACPI S4 state (hibernate mode)</li> </ul>		
		Green	On	System is operating normally.		
			On	Critical condition, may indicate: System fan failure System temperature		
4.	System Status LED	Amber N/A	Blink	Non-critical condition, may indicate: Redundant power module failure Temperature and voltage issue Chassis intrusion		
			Off	System is not ready, may indicate: POST error Processor or terminator missing		
		0	On	HDD locate		
		Green	Blink	HDD access		
5.	HDD Status	Amber	On	HDD fault		
	LED	Green/ Amber	Blink	HDD rebuilding		
		N/A	Off	No HDD access or no HDD fault.		
	LAN 1/2	Green	On	Link between system and network or no access.		
6./7.	Active/Link	Green	Blink	Data trasmission or receiving is occuring		
	LEDs	N/A	Off	No data transmission or receiving is occuring		

## 2-4 Rear System LAN LEDs



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

## 2-5 Power Supply Unit (PSU) LED



State	Description
OFF	Indicates no AC power to all power supplies
1Hz Blink GREEN	Indicates AC present/ only standby on/ Cold redundant mode
Red	Indicates power supply critical event causing shut down: failure, OCP, OVP, Fan Fail, UVP
0.5Hz Blink Red	Indicates AC cord unplugged or AC power lost; with a second power supply in parallel still with AC input power.
1Hz Blink Red/Green Alternative	Indicates power supply warning events where the power supply continues to operate: high temp, high power, high current, slow 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
No DAID confirmation	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			
RAID configuration (via HW RAID Card or SW RAID Card)	Disk LED	Green	ON	OFF		BLINK (*2)	OFF
		Amber	OFF	ON	(Low Speed: 2 Hz)	OFF	OFF
	Removed HDD Slot	Green	ON(*1)	OFF	(*3)		
		Amber	OFF	ON	(*3)		

LED 2	HDD Present	No HDD	
Green	ON	OFF	

NOTE:

\*1: Depends on HBA/Utility Spec.

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

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

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## 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 guidelines below to avoid damage to your computer or injury to yourself.

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

## 3-1 Removing 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 rear system cover:

- 1. Loosen and remove the thumbscrew securing the back cover.
- 2. Push down the indentation located at the side of the back chassis
- 3. Slide the cover horizontally to the back and remove the cover in the direction of the arrow.



#### Follow these instructions to remove the front system cover:

- 1. Remove the four screws securing the front system cover to the system.
- 2. Flip open the front system cover.



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

Follow these instructions to remove/install the fan duct:

- 1. Lift up to remove the two fan ducts
- 2. To install the fan duct, align the fan duct with the guiding groove. Push down the fan duct into chassis until its firmly seats



## 3-3 Removing and Installing the CPU



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

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



#### WARNING!

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

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

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



## 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 DIMM Population Table

	Ranks Per Type DIMM and Data Width	DIMM	Speed (MT/s); Voltage (V) Slot Per Channel (SPC) DIMM Per Channel (DPC)			
Туре		Capacity (GB)	1 Slot per Channel	2 Slots per Channel		
	DIMM Den		1DPC	1DPC	2DPC	
		8Gb	1.2V	1.2V	1.2V	
RDIMM	SRx4	16GB	3200	3200	3200	
RDIMM	DRx8	16GB	0200	5200		

#### 3-4-4 Altra Platform DDR4 Suggest Configuration Table

Channels	Channels used ( $\checkmark$ = Memory Installed)							
Used		DIMM_P0_F0	DIMM_P0_G0	DIMM_P0_H0	DIMM_P0_D0	DIMM_P0_C0	DIMM_P0_B0	DIMM_P0_A0
1								$\checkmark$
1	$\checkmark$							
2	$\checkmark$							$\checkmark$
4	~	~					$\checkmark$	$\checkmark$
6	$\checkmark$	~	~			~	$\checkmark$	~
8	~	$\checkmark$	~	~	$\checkmark$	~	$\checkmark$	~

Channels	Channels used ( $$ = Memory Installed)							
Used	DIMM_P0_E0 DIMM_P0_E1	DIMM_P0_F0 DIMM_P0_F1	DIMM_P0_G0 DIMM_P0_G1	DIMM_P0_H0 DIMM_P0_H1	DIMM_P0_D0 DIMM_P0_D1	DIMM_P0_C0 DIMM_P0_C1	DIMM_P0_B0 DIMM_P0_B1	DIMM_P0_A0 DIMM_P0_A1
1								< <
1	~ <i>~</i>							
2	<ul><li>✓</li></ul>							< <
4	<ul><li>✓ ✓</li></ul>	<ul><li>✓ ✓</li></ul>					$\checkmark$	<ul><li>✓ ✓</li></ul>
6	<ul><li>✓ ✓</li></ul>	<ul><li>✓ ✓</li></ul>	<ul><li>✓ ✓</li></ul>			<ul> <li>✓ ✓</li> </ul>	<ul><li>✓ ✓</li></ul>	<ul><li>✓ ✓</li></ul>
8	<ul><li>✓</li></ul>	<ul><li>✓</li></ul>	<ul><li>✓ ✓</li></ul>	$\checkmark \checkmark$	$\checkmark \checkmark$	<ul><li>✓ ✓</li></ul>	<ul><li>✓ ✓</li></ul>	< <

#### 1 DIMM Per Channel

	Channels	Channels used ( √ = Memory Installed)							
	Used	DIMM_P0_E0	DIMM_P0_F0	DIMM_P0_G0	DIMM_P0_H0	DIMM_P0_D0	DIMM_P0_C0	DIMM_P0_B0	DIMM_P0_A0
Ì	8	~	~	✓	~	~	$\checkmark$	~	~



System Hardware Installation

## 3-5 Installing the PCI Expansion Card



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

#### Follow these instructions to PCI Expansion card:

- 1. Remove the thumbscrew on the riser bracket
- 2. Lift up the riser bracket out of system.
- 3. Remove the slot covers from the riser bracket.
- Orient the PCIe card with the riser guide slot and push in the direction of the arrow until the PCIe card sits in the PCI card connector.
- 5. Secure the PCIe card with the screw.
- 6. Reverse the steps 3 1 to install the riser bracket.



## 3-6 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 screw 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.



## 3-7 Installing the Mezzanine Card (Optional)

#### Follow these instructions to install a mezzanine card:

- 1. Remove the screw securing the mezzanine card slot cover.
- 2. Remove the slot cover from the system.
- 3. Insert the OCP 2.0 mezzanine card into the compartment ensuring that the card is firmly connected to the connector on the motherboad.
- 4. Secure the OCP 2.0 mezzanine card into the system with three screws.
- 5. Reverse steps 3-4 to replace the OCP 2.0 mezzanine card.



## 3-8 Installing and Removing an M.2 Solid State Drive

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



NOTE:

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

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



## 3-9 Replacing the FAN Assembly



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

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

#### Follow these instructions to replace the fan assembly:

- 1. Lift up the fan assembly from the chassis.
- 2. Reverse the previous steps to install the replacement fan assembly.



## 3-10 Replacing the Power Supply

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

- 1. Press the retaining clip on the left side of the power supply unit along the direction of the arrow.
- 2. Pull the power supply handle at the same time and pull out the power supply unit.
- 3. Insert the replacement power supply unit firmly into the chassis. Connect the AC power cord to the replacement power supply.
- 4. Repeat steps 1-3 for replacement of the second power supply.



### 3-11 Cable Routing



U.2 NVMe to HDD Back Plane Board Cable (NVMe2)



U.2 NVMe to HDD Back Plane Board Cable (NVMe4)



U.2 NVMe to HDD Back Plane Board Cable (NVMe3)



U.2 NVMe to HDD Back Plane Board Cable (NVMe5)

U.2 NVMe to HDD Back Plane Board Cable (NVMe6)



U.2 NVMe to HDD Back Plane Board Cable (NVMe8)



U.2 NVMe to HDD Back Plane Board Cable (NVMe7)



U.2 NVMe to HDD Back Plane Board Cable (NVMe9)
SATA to HDD Back Plane Board Cable (SATA0)

SATA to HDD Back Plane Board Cable (SATA1)



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# Chapter 4 Motherboard Components

# 4-1 Motherboard Components



Item	Description	
1	SlimLine SAS Connector (U2_3)	
2	SlimLine SAS Connector (U2_2)	
3	SlimLine SAS Connector (U2_1)	
4	SlimLine SAS Connector (U2_0)	
5	Front panel USB 3.0 Connector	
6	Front Panel Connector	
7	HDD Back Plane Board Connector	

8	M.2 Connector (PCIe4 x4, NGFF-22110)
9	M.2 Connector (PCIe4 x4, NGFF-22110)
10	USB 2.0 Connector
11	Serial Port Cable Connector
12	BMC Firmware Readiness LED
13	IPMB Connector
14	PCIe x16 Slot #1 (x8 Signal)
15	PCle x8 Slot #2 (x8 Signal)
16	PCle x16 Slot #3 (x8 Signal)
17	PCle x16 Slot #4 (x16 Signal)
18	PCle x16 Slot #5 (x8 Signal)
19	PCle x16 Slot #6 (x16 Signal)
20	PCle x16 Slot #7 (x16 Signal)
21	System Battery
22	SlimLine SAS Connector (SLINK0)
23	SlimLine SAS Connector (SLINK1)
24	SlimLine SAS Connector (SLINK2)
25	SlimLine SAS Connector (SLINK3)
26	OCP Mezzanine Connector
27	PMBus Connector
28	2 x 13 Pin Power Connector
29	2 x 4 Pin 12V Power Connector
30	2 x 4 Pin 12V Power Connector
31	TPM Module Connector

## 4-2 Jumper Settings



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

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



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

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

	-	
<←><→>	Move the selection bar to select the screen	
<↑><↓>	Move the selection bar to select an item	
<+>	Increase the numeric value or make changes	
<->	Decrease the numeric value or make changes	
<enter></enter>	Execute command or enter the submenu	
<esc></esc>	Main Menu: Exit the BIOS Setup program	
	Submenus: Exit current submenu	
<f1></f1>	Show descriptions of general help	
<f3></f3>	Restore the previous BIOS settings for the current submenus	
<f9></f9>	Load the Optimized BIOS default settings for the current submenus	
<f10></f10>	Save all the changes and exit the BIOS Setup program	

#### Main

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

#### Advanced

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

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

#### Chipset

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

#### Server Management

Server additional features enabled/disabled setup menus.

#### Security

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

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

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

#### Boot

This setup page provides items for configuration of boot sequence.

#### Save & Exit

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

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

# 5-1 The Main Menu

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

#### Main Menu Help

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

#### Submenu Help

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



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

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



Aptio Setup – AMI Main Advanced Chipset Server Mgmt Security Boot Save & Exit			
System Product Name Project Name Project Version Build Date and Time	R152-P30-JG MP32-AR0-JG F09b8 04/20/2021 15:09:05	▲ Set the Time. Use Tab to switch between Time elements.	
BMC Information BMC Firmware Version	12.48.02		
Processor Information CPU 0 Brand String	Ampere(R) Altra(R) Processor 080–33		
Processor Core Max CPU Speed	80 3000 MHz		
Memory Information		14: Select Item Enter: Select +/-: Change Opt.	
Total Memory	3268	F1: General Help	
Memory Frequency	2933MHz	F3: Previous Values	
▶ Hemory Slot Information	27001112	F9: Optimized Defaults F10: Save & Exit	
System Language	[English]	ESC: Exit	
System Date	[Tue 04/20/2021]		
	[15:32:22]	· · ·	
	ersion 2.21.1280 Copyright (C) 2021	LANI	

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

# 5-2 Advanced Menu

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

Aptio Setup – AMI Main <mark>Advanced</mark> Chipset Server Mgmt Security Boot Save & Exit	
<pre>ACT Advanced intpoet Server Maint Security addit Save 3 Exit Trusted Computing ACPI Settings General Matchdog Timer APEI Configuration PCI Subsystem Settings Info Report Configuration VUSB Configuration NVMe Configuration NVMe Configuration Power Restore Configuration QLogic FastLinQ QL41xxx Ethernet Adapter = 00:0E:1E:F0:02:40 MAC:000E1EF00240-IPV4 Network Configuration QLogic FastLinQ QL41xxx Ethernet Adapter = 00:0E:1E:F0:02:40 MAC:000E1EF00240-IPV4 Network Configuration QLogic FastLinQ QL41xxx Ethernet Adapter = 00:0E:1E:F0:02:40 MAC:000E1EF00240-IPV4 Network Configuration MAC:000E1EF00240-IPV4 Network Configuration MAC:000E1EF00240-IPV4 Network Configuration MAC:000E1EF00240-IPV4 Network Configuration </pre>	Trusted Computing Settings ++: Select Screen 11: Select Item Erter: Select +/-: Change Opt.
<ul> <li>Intel(R) I350 Gigabit Network Connection - 18:C0:4D:0F:F6:CC</li> <li>MAC:18C04D0FF6CC-IPv4 Network Configuration</li> <li>MAC:18C04D0FF6CD-IPv6 Network Configuration - 18:C0:4D:0F:F6:CD</li> <li>MAC:18C04D0FF6CD-IPv4 Network Configuration</li> <li>MAC:18C04D0FF6CD-IPv6 Network Configuration</li> </ul>	F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Warsion 2 21 1280 Convertent (P) 2021 AMT	

### 5-2-1 Trusted Computing

Advanced	Aptio Setup — AMI	
Configuration Security Device Support NO Security Device Found	[Enable]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INTIA interface will not be available.
		<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>
l.	ersion 2.21.1280 Copyright (C)	2021 AMI
Parameter	Description	
Configuration		
ecurity Device Support Select Enabled to activate TPM support feature. Options available: Enable/Disable. Default setting is <b>Enable</b>		

### 5-2-2 ACPI Settings

Advanced	Aptio Setup — AMI	
ACPI Settings		Enables or Disables BIOS ACPI Auto Configuration.
Enable ACPI Auto Configuration		
Enable CPPC Enable DVFS Mode Enable LPI Enable Max Performance	[Enabled] [Disabled] [Enabled] [Enabled]	
		<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>
Vanation	2.21.1280 Convright (C) 2021 AMI	

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

#### 5-2-3 General Watchdog

General Watchdog Timer Secure Watchdog Timeout [5 minutes] BIOS Watchdog Timeout [5 minutes] OS Watchdog Timeout [Disable]	
	Timeout when SCP will reset system if it doesn't receive response from ARMV8.
	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description	
General Watchdog Timer		
	Timeout when SCP will reset system if it doesn't receive response from	
Secure Watchdog Timeout	ARMv8.	
Secure watchuog nineout	Options available: 5 minutes/6 minutes/10 minutes/15 minutes/25 minutes.	
	Default setting is 5 minutes.	
	Options available: 5 minutes/6 minutes/10 minutes/15 minutes/25 minutes.	
BIOS Watchdog Timeout	Default setting is 5 minutes.	
	Timeout when boot OS.	
OS Watchdog Timeout	Options available: Disable/3 minutes/4 minutes/5 minutes/6 minutes/	
US Watchuog Timeout	10 minutes/15 minutes/20 minutes.	
	Default setting is <b>Disable</b> .	

### 5-2-4 APEI Configuration

Advanced	Aptio Setup — AMI	
APEI Configuration		Enable/Disable ACPI Platform Error Interface
APEI Enable		support
		<pre>→+: Select Screen  ↑↓: Select Item</pre>
		Enter: Select +/-: Change Opt.
		F1: General Help F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit
		ESC: Exit
1	/ersion 2.21.1280 Convright (C)	2021 AMT

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

#### 5-2-5 PCI Subsystem Settings



Advanced	Aptio Setup – AMI	
PCI Express GEN 1 Settings PCI Express Device Register Settings Relaxed Ordering Extended Tag No Snoop Maximum Peyload Maximum Read Request	[Enabled] [Disabled] [Disabled] [Auto] [Auto]	Enables or Disables PCI Express Device Relaxed Ordering.
PCI Express Link Register Settings Extended Synch Clock Power Management Link Training Retry Link Training Timeout (uS) Disable Empty Links WARNING: Enabling ASPM may cause som PCI-E devices to fail!	(Disabled) (Disabled) (5) 1000 (Disabled) e	<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>
Version 2	.21.1280 Copyright (C) 2021 AMI	

Parameter	Description	
AMI PCI Bus Driver Version	Displays the AMI PCI Bus Driver version information.	
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>Disabled</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> .	
Change Settings of the Following PCI Devices		
Slot #8 Occupied Onboard Device_#	<ul> <li>PCI Latency Timer         <ul> <li>Value to be programmed onto PCI Latency Timer Register.</li> </ul> </li> <li>Options available: 32/64/96/128/160/192/224/248 PCI Bus Clocks. Default setting is <b>32 PCI Bus Clocks</b>.</li> <li>PCI-X Latency Timer         <ul> <li>Value to be programmed onto PCI Latency Timer Register.</li> </ul> </li> <li>Options available: 32/64/96/128/160/192/224/248 PCI Bus Clocks. Default setting is <b>64 PCI Bus Clocks</b>.</li> <li>VGA Palette Snoop         <ul> <li>Enable or disable VGA Palette Registers Snooping.</li> <li>Options available: Enabled/Disabled. Default setting is <b>Disabled</b>.</li> </ul> </li> <li>PERR#         <ul> <li>Enable or disable PCI device to generate PERR.</li> <li>Options available: Enabled/Disabled. Default setting is <b>Disabled</b>.</li> </ul> </li> <li>SERR#         <ul> <li>Enable or disable PCI device to generate SERR.</li> <li>Options available: Enabled/Disabled. Default setting is <b>Disabled</b>.</li> </ul> </li> </ul>	
Disable Above 4G Decoding	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
Disable PCle Init	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	
Disable PCIe GEN2	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .	

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

PCI Express GEN 1 Settings PCI Express Device Register Setting Relaxed Ondering Extended Tag	s (Enabled)	Enables or Disables PCI Express Device Relaxed Ordering.
No Snoop Maximum Payload Maximum Read Request	(Disabled) (Disabled) (Auto) (Auto)	
PCI Express Link Register Settings Extended Synch Clock Power Management Link Training Retry Link Training Timeout (uS) Disable Empty Links WARNING: Enabling ASPM may cause so PCI-E devices to fail!	[Disabled] [Disabled] [5] 1000 [Disabled] me	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

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

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

### 5-2-5-2 PCI Express GEN 2 Settings

Advanced	Aptio Setup – AMI	
PCI Express GEN 2 Settings		In device Functions that
PCI Express GEN2 Device Register Se Completion Timeout ARI Forwarding AtomicOp Requester Enable AtomicOp Egress Blocking IDO Request Enable IDO Completion Enable LTR Mechanism Enable End-End TLP Prefix Blocking	ttings [Default] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled] [Disabled]	support Completion Timeout programmability, allows system software to modify the Completion Timeout value. 'Default' Sous to Soms. If 'Shorter' is selected, software will use shorter timeout ranges supported by hardware. If 'Longer' is selected, *
PCI Express GEN2 Link Register Sett Compliance SOS Hardware Autonomous Width Hardware Autonomous Speed	ings [Disabled] [Disabled] [Disabled]	++: Select Screen 1↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
Version :	2.21.1280 Copyright (C) 2021 AM:	í

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

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

# 5-2-6 Info Report Configuration

	Post Report Support Enabled/Disabled
	Endbied/ bisdbied
[1]	
[Enabled]	
	<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>
	[1]

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

### 5-2-7 USB Configuration

Advanced	Aptio Setup — AMI	
USB Configuration		This is a workaround for OSes without XHCI hand—off
USB Module Version	24	support. The XHCI ownership change should be
USB Controllers: 1 XHCI		claimed by XHCI driver.
USB Devices: 2 Drives, 1 Keyboard, 1 Mouse,	E Hubo	
2 Drives, i Keyboard, i Mouse,	5 Hubs	
	[Enabled]	
USB Mass Storage Driver Support	[Enabled]	
USB hardware delays and time-outs:		
Mass Storage Devices:		↔: Select Screen 1↓: Select Item
		Enter: Select
		+/-: Change Opt. F1: General Help
		F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit ESC: Exit
	21 1280 Repubidbt (P) 2021 AMT	

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

<sup>(</sup>Note) This item is present only if you attach USB devices.

#### 5-2-8 Network Stack

Advanced	Aptio Setup — AMI	
Network Stack PXE Retry IPv4 PXE Support IPv6 PXE Support IPv6 PXE Support PXE boot wait time Media detect count	[Enabled] [Disabled] [Enabled] [Disabled] [Disabled] [Disabled] 1 1	Enable/Disable UEFI Network Stack ++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	ersion 2.21.1280 Conuright (C) 2	021 ANT

Parameter	Description
Network Stack	Enable/Disable the UEFI network stack.
Network Oldek	Options available: Enabled/Disabled. Default setting is <b>Enabled</b> .
Inv/ DVE Support	Enable/Disable the Ipv4 PXE feature.
Ipv4 PXE Support	Options available: Enabled/Disabled. Default setting is Enabled.
Inv/ HTTD Support	Enable/Disable the Ipv4 HTTP feature.
Ipv4 HTTP Support	Options available: Enabled/Disabled. Default setting is Disabled.
Ipv6 PXE Support	Enable/Disable the Ipv6 PXE feature.
	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
Ipv6 HTTP Support	Enable/Disable the Ipv6 HTTP feature.
ipvo i i i i ouppoit	Options available: Enabled/Disabled. Default setting is <b>Disabled</b> .
IPSEC Certificate	Enable/Disable the IPSEC Certificate feature.
Media detect count	Press the <+> / <-> keys to increase or decrease the desired values.

### 5-2-9 NVMe Configuration

Advanced	Aptio Setup – A	MI
NVMe controller and Drive info	rmation	A
[NVME_OO] Nvme Size / Serial Number	Empty Empty	
[NVME_01] Nvme Size / Serial Number	Empty Empty	
[NVME_02] Nvme Size / Serial Number	Empty Empty	
[NVME_03] Nvme Size ∕ Serial Number	Empty Empty	
		<pre>→+: Select Screen  1↓: Select Item Enter: Select</pre>
		+/-: Change Opt. F1: General Help
		F3: Previous Values F9: Optimized Defaults F10: Save & Exit
		ESC: Exit
		•
	sion 2.21.1280 Converign	

Parameter	Description	
NVMe controller and Drive	Displays the NV/Me devices connected to the system	
Information	Displays the NVMe devices connected to the system.	

### 5-2-10 Power Restore Configuration

Advanced	Aptio Setup – AMI	
Power Restore Power restore needs (about 1.5 minutes)	[Last State] to wait for BHC to be ready	Specify what state when power is re-applied after a power failure (G3 state). **: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	Version 2.21.1280 Copyright (C)	2021 AMI
Parameter	Description	
Power Restore	Specify what state when power is (G3 state). Options available: Last State/Pov	

Default setting is Last State.

#### 5-2-11 Intel(R) I350 Gigabit Network Connection

Advanced	Aptio Setup – AMI	
▶ NIC Configuration		Click to configure the network device port.
Blink LEDs	0	HERBORK GEVICE port.
UEFI Driver	Intel(R) PRD/1000 Open Source 9.2.06 PCI–E	
Adapter PBA	106300-000	
Device Name	Intel(R) I350 Gigabit Network Connection	
Chip Type	Intel i350	
PCI Device ID	1521	
PCI Address	02:00:00	
Link Status	[Disconnected]	<pre>→+: Select Screen ↑↓: Select Item</pre>
MAC Address	18:C0:4D:0F:F6:CC	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
	/ersion 2.21.1280 Copyright (C) 2021	AMI
Advanced	Aptio Setup – AMI	
Link Speed	[Auto Negotiated]	Specifies the port speed used for the selected boot protocol.

Link Speed [Auto Negotisted] Nake Dn LAN [Enabled] \*\*: Select Screen 11: Select Screen 11: Select Trem Eter: Select +/-: Change Opt. F3: Deneral Heip F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
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.

#### 5-2-12 MAC IPv4 Network Configuration

Advanced	Aptio Setup – AMI	
Configured Enable DHCP Local IP Address Local NetMask Local Gateway Local DNS Servers Save Changes and Exit	[Enabled] [Disabled]	Indicate whether network address configured successfully or not. ++: Select Screen 11: Select Item Enter: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
1	ncion 2 21 1280 Conveight (P	

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

<sup>(</sup>Note) Advance items prompt when this item set to Enabled.

### 5-2-13 MAC IPv6 Network Configuration

Interface Name :	eth2	The 64 bit alternative
Interface Type :	Ethernet	interface ID for the
AC address :	18-C0-4D-0F-F6-CC	device. The string is
iost addresses :		colon separated. e.g.
	FE80::1AC0:4DFF:FE0F:F6CC/64	ff:dd:88:66:cc:1:2:3
Route Table :		
	FE80::/64 >>::	
Gateway addresses :		
NS addresses :		
)AD Transmit Count	1	
Policy	[automatic]	
		Electronic contraction of the
Save Changes and Exit		++: Select Screen
		↑↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help
		F3: Previous Values
		F9: Optimized Defaults F10: Save & Exit
		ESC: Exit
		ESU: EXIL

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

## 5-3 Chipset Setup Menu

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

<ul> <li>&gt; GPU Configuration</li> <li>&gt; Memory Slot Information</li> <li>&gt; RAS Configuration</li> <li>&gt; PCIE Root Complex Configuration</li> <li>+*: Select Screen</li> <li>14: Select Item</li> <li>Enter: Select</li> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F3: Previous Values</li> <li>F9: Optimized Defaults</li> <li>F10: Save &amp; Exit</li> <li>ESC: Exit</li> </ul>	Aptio Setup – AMI Main Advanced <mark>Chipset</mark> Server Mgmt Security Boot Save & Exit	
	<ul> <li>Memory Slot Information</li> <li>RAS Configuration</li> </ul>	++: Select Screen 14: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit

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

### 5-3-1 CPU Configuration

Aptio Setup – AMI	
1 80 [Default] [Disable I-Cache coherency] [Monolithic] [Enabled] [Enhanced Least Recently Used]	Enable number of cores for the system.
Socket 0 64 KB 1 MB 32 MB 1	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit
	80 [Default] [Disable I-Cache coherency] [Monolithic] [Enhanced Least Recently Used] Socket 0 64 KB 1 MB 32 MB

Parameter	Description	
CPU Configuration		
Numbers of processor enabled	Displays the number of installed processor information.	
Enable number of cores	Option: Default/2/4/6/8/10/12/14/16/18/20/22/24/26/28/30/32/34/3680. Default Setting is <b>Default</b> .	
ARM ERRATA 1542419	Option available: Disable I-Cache coherency/Software solution/Disable.	
workaround	Default Setting is Disable I-Cache coherency.	
ANC mode	Option available: Monolithic/Hemisphere/Quadrant.	
ANG MODE	Default Setting is Monolithic.	
	Enable/disable cacheable atomic instruction executed near in CPU.	
Near atomic	Option available: Enabled/Disabled.	
	Default Setting is Enabled.	
	Option available: Enhanced Least Recently Used/Linear-Feedback Shift	
SLC Replacement Policy	Register.	
	Default Setting is Enhanced Least Recently Used.	
L1C I/D		
L2C	Displays the technical apositions for the installed processor	
SLC	Displays the technical specifications for the installed processor.	
Warranty		

### 5-3-2 Memory Slot Information

Chipset	Aptio Setup – AMI	
Memory Configuration Total Memory Effective Memory Memory Speed Memory Operating Speed Selection	[1x]	Force specific Memory Operating Speed or use Auto setting. +*: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Optimized Defaults F10: Save & Exit ESC: Exit

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

### 5-3-2-1 Memory RAS and Performance Configuration

ECC mode: Disabled, SECDED or Symbol
++: 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 RAS and	
Performance Configuration	
ECC Mode	Option available: Disabled/SECDED/Symbol
ECC MODE	Default setting: SECDED.
Defer uncorrectable read	Option available: Enabled/Disabled.
errors	Default setting: Disabled.
Fault handling interrupt	Option available: Enabled/Disabled.
Fault handling interrupt	Default setting: Enabled.
Scrub Patrol duration (hour)	Option available: 124.
Scrub Patrol duration (nour)	Default setting: 24.
Demand scrub	Option available: Enabled/Disabled.
Demanu Scrub	Default setting: Enabled.
Write CRC	Option available: Enabled/Disabled.
	Default setting: Disabled.
CVE=2020-10255 mitigation	Option available: Enabled/Disabled.
	Default setting: Disabled.

### 5-3-2-2 NVDIMM-N Configuration

Chipset	Aptio Setup – AMI	
NVDIMM—N Configuration SocketO Configured Mode Mode Selection	Non-NVDIMM [Auto]	Select NVDIMM-N Hode (Non-NVDIMM/Non-Hashed/Hash ed/Auto) +*: Select Screen 14: Select Item
	sion 2.21.1280 Copyright (C)	Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

Parameter	Description
NVDIMM-N Configuration	
Socket0 Configuration	
	Select NVDIMM-N Mode.
Mode Selection	Option available: Non-NVDIMM/Non-Hashed/Hashed/Auto.
	Default setting: Auto.
### 5-3-3 RAS Configuration

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

Parameter	Description
RAS Configuration	
Hardware EINJ	Option available: Enabled/Disabled.
	Default setting: Disabled.
PCIe AER Firmware First	Option available: Enabled/Disabled.
POIE AER FIITIWAIE FIISL	Default setting: Disabled.
DDR CE Threshold	Press '+" or "-" to configure the threshold.
Processor CE Threshold	Press '+" or "-" to configure the threshold.
DDR Kink Error Threshold	Press '+" or "-" to configure the threshold.

### 5-3-4 PCIE Root Complex Configuration

PCIE Root Complex Configuration		Configure PCIe Lanes
PCIe Lanes Bifurcation Mode	[Default]	Bifurcation Mode
SMMU Pmu	[Disabled]	Default: Adjust according
On-board VGA	[Enabled]	to system settings.
		Manual: Adjust according
Root Complex # 0 (x16: OCP)		to user settings.
Root Complex # 1 (x16: PCIE_7 or	U2)	
Root Complex # 2 (x16: PCIE_6)		
Root Complex # 3 (x16: PCIE_4)		
Root Complex # 4 (1st x8: PCIE_3		
Root Complex # 5 (1st x8: PCIE_2		
Root Complex # 6 (1st x8: VGA/USE		
Root Complex # 7 (1st x8: PCIE_1	. 2nd x8: M2_1 and M2_2)	
		→+: Select Screen
		î↓: Select Item
		Enter: Select
		+/-: Change Opt.
		F1: General Help F3: Previous Values
		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit
		LOU. LAIT

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

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

# 5-4 Server Management Menu

Main Advanced Chipset S	Aptio Setup – AMI erver Mgmt <mark>Security Boot Sa</mark>	ve & Exit
BMC Self Test Status BMC Device ID BMC Device Revision BMC Firmware Revision IPMI Version BMC Interface(s) BMC Support System Event Log Bmc self test log	PASSED 32 1 12.48.02 2.0 SSIF [Enabled]	Enable/Disable interfaces to communicate with BMC
<ul> <li>View FRU information</li> <li>BMC network configuration</li> </ul>		<pre>++: Select Screen f1: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save &amp; Exit ESC: Exit</pre>

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

### 5-4-1 System Event Log

d] disable event logging for error/progress codes during boot.
during boot.
hing]
codel
[ehor
t↓: Select Item Enter: Select
++: Select Screen
Enter: Select
+/-: Change Opt.
F1: General Help E3: Previous Values
F9: Optimized Defaults
F10: Save & Exit
ESC: Exit

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

### 5-4-2 BMC self test



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

### 5-4-3 View FRU Information

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

Server M	Aptio Setup – AMI g <mark>mt</mark>	
BMC network configuration Lan channel 1 Configuration Address source Station IP address Subnet mask Router IP address Station MAC address	[Static] 10.1.6.233 255.255.25.0 10.1.6.253 18-CO-4D-OF-F6-CE	Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase
Real-time get BNC network address ***********************************	[Disabled]	++: 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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### 5-4-4 BMC Network Configuration

		Select to configure LAN channel parameters
Lan channel 1		statically or
		dynamically(by BIOS or
Station IP address	10.1.6.233	BMC). Unspecified option
Subnet mask Router IP address	255.255.255.0	will not modify any BMC
Station MAC address	10.1.6.253 18-C0-4D-0E-E6-CE	network parameters during
Station MHC address	10-00-40-06-66-66	BIOS phase
Real-time get BMC network address		
***		
Configure IPv6 support		
жжжжжжжжжжжжжжж		→+: Select Screen ↑↓: Select Item
Lan channel 1		Enter: Select
Lan channel 1		+/-: Change Opt.
IPv6 Support	[Disabled]	F1: General Help
	[Dibabilda]	F3: Previous Values
IPv6 Support is Disabled		F9: Optimized Defaults
		F10: Save & Exit
		ESC: Exit

Parameter	Description
BMC network configuration	
Lan Channel 1	
Configuration Address source	Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase. Options available: Unspecified/Static/DynamicBmcDhcp. Default setting is <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.
Real-time get BMC network address	Press [Enter] to synchronize the BMC network address
IPV6 Support <sup>(Note)</sup>	Option available: Enabled/Disabled. Default Setting is <b>Disabled</b> .

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

### 5-5 Security Menu

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

Main Advanced Chipset Ser	Aptio Setup – AMI rver Mgmt <mark>Security</mark> Boot	
Password Description		Set Administrator Password
If ONLY the Administrator's p then this only limits access only asked for when entering If ONLY the User's password is a power on password and m boot or enter Setup. In Setup have Administrator rights. The password length must be in the following range: Minimum length Maximum length	to Setup and is Setup. is set, then this ust be entered to	
Administrator Password User Password	20	++: Select Screen †1: Select Item Enter: Select +/-: Change Opt.
▶ Secure Boot		F1: General Help F3: Previous Values F9: Optimized Defaults F10: Save & Exit ESC: Exit

There are two types of passwords that you can set:

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

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

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

#### 5-5-1 Secure Boot

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

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

Parameter	Description	
	Press [Enter] to configure advanced items.	
	Please note that this item is configurable when Secure Boot Mode is set	
	to Custom.	
	Provision Factory Defaults	
	<ul> <li>Allows to provision factory default Secure Boot keys when system is in</li> </ul>	
	Setup Mode.	
	<ul> <li>Options available: Enabled/Disabled. Default setting is <b>Disabled</b>.</li> </ul>	
	Install Factory Default Keys	
	<ul> <li>Installs all factory default keys. It will force the system in User Mode.</li> </ul>	
	– Options available: Yes/No.	
	Enroll Efi Image     Duese IE to 2 to even II 0140550 hash of the birds lists A the deal	
	<ul> <li>Press [Enter] to enroll SHA256 hash of the binary into Authorized</li> <li>Simplify Database (Jb)</li> </ul>	
	Signature Database (db). • Save all Secure Boot variables	
	<ul> <li>Press [Enter] to save all Secure Boot Keys and Key variables.</li> </ul>	
	<ul> <li>Secure Boot variable</li> </ul>	
	<ul> <li>Displays the current status of the variables used for secure boot.</li> </ul>	
	Platform Key (PK)	
	<ul> <li>Displays the current status of the Platform Key (PK).</li> </ul>	
	<ul> <li>Press [Enter] to configure a new PK.</li> </ul>	
	<ul> <li>Options available: Set New.</li> </ul>	
	Key Exchange Keys (KEK)	
Key Management	<ul> <li>Displays the current status of the Key Exchange Key Database (KEK).</li> </ul>	
	<ul> <li>Press [Enter] to configure a new KEK or load additional KEK from</li> </ul>	
	storage devices.	
	<ul> <li>Options available: Set New/Append.</li> <li>A there is a Qinet way (DD)</li> </ul>	
	Authorized Signatures (DB)     Displays the surgest status of the Authorized Signature Detabase	
	<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</li> </ul>	
	devices.	
	<ul> <li>Options available: Set New/Append.</li> </ul>	
	<ul> <li>Forbidden Signatures (DBX)</li> </ul>	
	<ul> <li>Displays the current status of the Forbidden Signature Database.</li> </ul>	
	<ul> <li>Press [Enter] to configure a new dbx or load additional dbx from</li> </ul>	
	storage devices.	
	<ul> <li>Options available: Set New/Append.</li> </ul>	
	Authorized TimeStamps (DBT)	
	<ul> <li>Displays the current status of the Authorized TimeStamps Database.</li> </ul>	
	<ul> <li>Press [Enter] to configure a new DBT or load additional DBT from</li> </ul>	
	storage devices.	
	<ul> <li>Options available: Set New/Append.</li> </ul>	
	OsRecovery Signatures	
	<ul> <li>Displays the current status of the OsRecovery Signature Database.</li> </ul>	
	<ul> <li>Press [Enter] to configure a new OsRecovery Signature or load</li> <li>additional OsRecovery Signature from storage devices</li> </ul>	
	additional OsRecovery Signature from storage devices.	
	<ul> <li>Options available: Set New/Append.</li> </ul>	

# 5-6 Boot Menu

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

Boot Configuration Setup Promot Timeout Bootup NumLock State Quiet Boot	5 (On) [Enabled]	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Dump full Setup Data Dump non-default Setup Data Restore Setup Data		
New UEFI OS Boot Option Policy	[Place First]	
FIXED BOOT ORDER Priorities Boot Option #1 Boot Option #2 Boot Option #3 Boot Option #4 Boot Option #5	[Hard Disk] [Network:UEFI: PXE IPv4 QLogic Network 00:0E:1E:F0:02:40] [O2/DVD] [USB Device] [UEFI AP:UEFI: Built-in	++: Select Screen 11: Select Item Enter: Select +/-: Change Opt. F1: General Help F3: Previous Values
▶ UEFI NETWORK Drive BBS Priorities ▶ UEFI Application Boot Priorities	EFI Shell]	F9: Optimized Defaults F10: Save & Exit ESC: Exit

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

# 5-7 Save & Exit Menu

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

Aptio Setup – AMI Main Advanced Chipset Server Mgmt Security Boot <mark>Save &amp; Exit</mark>	
Save Options Save Changes and Exit Discard Changes and Exit Save Changes and Reset Discard Changes Discard Changes Discard Changes	Exit system setup after saving the changes.
Default Options Restore Defaults Save as User Defaults Restore User Defaults Boot Overnide UEFI: PXE IPV4 QLogic Network 00:0E:1E:F0:02:40 UEFI: PXE IPV4 QLogic Network 00:0E:1E:F0:02:40 UEFI: PXE IPV4 Intel(R) Network 18:C0:40:0F:F6:CD UEFI: PXE IPV4 Intel(R) Network 18:C0:40:0F:F6:CD UEFI: Built-in EFI Shell Launch EFI Shell from filesystem device	<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
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.
Discard Changes and Exit	Options available: Yes/No.
Save Changes	Save changes done so far to any of the setup options.
	Options available: Yes/No.
Default Options	
Restore Defaults	Loads the default settings for all BIOS setup parameters. Setup Defaults are quite demanding in terms of resources consumption. If you are using low-speed memory chips or other kinds of low-performance components and you choose to load these settings, the system might not function properly. Options available: Yes/No.
Boot Override	Press [Enter] to configure the device as the boot-up drive.

## 5-8 BIOS POST Beep code (AMI standard)

### 5-8-1 PEI Beep Codes

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

### 5-8-2 DXE Beep Codes

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