OPEN
Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation

Motherboard

BERGAMOD8-2L2T

User Manual

English

Version 1.10
Published July 2024

CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

"Perchlorate Material-special handling may apply, see www.dtsc.ca.gov/hazardouswaste/perchlorate"

AUSTRALIA ONLY

Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you require assistance please call ASRock Rack Tel : +886-2-55599600 ext.123 (Standard International call charges apply)

WARNING

THIS PRODUCT CONTAINS A BUTTOON BATTERY
If swallowed, a button battery can cause serious injury or death.
Please keep batteries out of sight or reach of children.

FC

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

UKCA

ASRock Rack INC. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related UKCA Directives. Full text of UKCA declaration of conformity is available at: http://www.asrockrack.com

CE

ASRock Rack INC. hereby declares that this device is in compliance with the essential requirements and other relevant provisions of related Directives. Full text of EU declaration of conformity is available at: http://www.asrockrack.com

ASRock Rack follows the green design concept to design and manufacture our products, and makes sure that each stage of the product life cycle of ASRock Rack product is in line with global environmental regulations. In addition, ASRock Rack disclose the relevant information based on regulation requirements.

Please refer to https://www.asrockrack.com/general/about.asp?cat=Responsibility for information disclosure based on regulation requirements ASRock Rack is complied with:

DO NOT throw the motherboard in municipal waste. This product has been designed to enable proper reuse of parts and recycling. This symbol of the crossed out wheeled bin indicates that the product (electrical and electronic equipment) should not be placed in municipal waste. Check local regulations for disposal of electronic products.

Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack **BERGAMOD8-2L2T** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

In this manual, chapter 1 and 2 contains introduction of the motherboard and step-by-step guide to the hardware installation. Chapter 3 and 4 contains the configuration guide to BIOS setup and information of the Sofware Support.

> ⚠️ *Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock Rack website without further notice. Find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com*
>
> *About this motherboard technical support, please visit the website for specific information http://www.asrockrack.com/support/*

1.1 Package Contents

- ASRock Rack BERGAMOD8-2L2T motherboard
  (CEB form factor: 12-in x 10.5-in)
- Quick installation guide
- 1 x I/O shield
- 1 x MCIO x8 to 8 SATA +8P cable (63cm)
- 1 x ATX 4P to 24P power cable (8cm)
- 2 x screws for M.2 sockets

> ☆ *If any items are missing or appear damaged, contact the authorized dealer.*

English

1.2 Specifications

BERGAMOD8-2L2T	
MB Physical Status	
Form Factor	CEB
Dimension	12" x 10.5" (304.8 x 266.7mm)
Processor System	
CPU	Supports AMD EPYC™ 9004 (with AMD 3D V-Cache™ Technology) and 97x4 series processors
Socket	1 Socket SP5 (LGA-6096)
Thermal Design Power (TDP)	400W
Chipset	System on Chip
System Memory	
Supported DIMM Quantity	8 DIMM slots (1DPC)
Supported Type	Supports DDR5 288-pin RDIMM, RDIMM-3DS
Max. Capacity per DIMM	RDIMM: 96GB (2R) RDIMM-3DS: 512GB (2S8Rx4)
Max. Frequency	4800MHz
Voltage	1.1V
Note	*Memory capacity, frequency, and voltage support is to be validated*
PCIe Expansion Slots	
Slot 6	PCIe5.0 / CXL1.1 x16
Slot 5	PCIe5.0 x16
Slot 4	PCIe5.0 x16
Slot 3	PCIe5.0 / CXL1.1 x8
Slot 2	PCIe5.0 / CXL1.1 x16
Slot 1	PCIe5.0 / CXL1.1 x8
Other PCIe Expansion Connectors	
M.2	1 M-key (PCIe5.0 x4 or SATA 6Gb/s), supports 2280 form factor 1 M-key (PCIe5.0 x4 or SATA 6Gb/s), supports 22110/2280 form factor
MCIO	1 MCIO (PCIe5.0 x8 or 8 SATA 6Gb/s) 4 MCIO (PCIe5.0 x8)
SATA/SAS Storage	
CPU Built-in Storage	AMD EPYC 9004 (10 SATA 6Gb/s): 1 MCIO, 2 M.2
Ethernet	
Additional Ethernet Controller	Intel X710-AT2: 2 RJ45 (10GbE) Intel i210: 2 RJ45 (1GbE)
USB	
Controller/Hub	AMD EPYC 9004

Connectors/Headers	External: 2 Type-A (USB3.2 Gen1) Internal: 1 header (19-pin, 2 USB3.2 Gen1)
Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA)
Security	
TPM	1 (13-pin, SPI)
Rear I/O	
UID Button/LED	1 UID button w/ LED
Video Output	1 DB15 (VGA)
USB	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (10GbE), 2 RJ45 (1GbE), 1 dedicated IPMI
Hardware Monitor	
Temperature	CPU, MB, TR1 Temperature sensing
Fan	CPU/Rear/Front Fan Tachometer CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) CPU/Rear/Front Fan Multi-Speed Control
Voltage	VCORE,VCCSA,VCCM,3V, 5V, 12V, +1.05V_PCH_ AUX,+BAT, 3VSB, 5VSB,VCCIO,+2.5V_VPP
Server Management	
BMC Controller	ASPEED AST2600: IPMI2.0 with iKVM and vMedia support
IPMI Dedicated GLAN	1 Realtek RTL8211F for dedicated management GLAN
System BIOS	
Type	AMI UEFI BIOS; 256 Mb (32MB) SPI Flash ROM
Features	ASRock Rack Instant Flash, ACPI 6.4 and abouve compliance wake up events, SMBIOS 3.5.0 and above, Plug and Play(PnP)
Other Internal Connectors/Headers	
PSU Connector	1 (4-pin, ATX PSU signal) w/ ATX 24-pin adapter cable, 3 (8-pin, ATX 12V)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN1/LAN2 activity LED, locate, SMBus
System Panel Header	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
NMI Button	1
LAN3/LAN4 LED Header	1
COM Header	1
Speaker Header	1 (4-pin)
Fan Header	8 (6-pin)
Thermal Sensor Header	1

TPM Header	1 (13-pin, SPI)
SMbus	1
PMbus	1
IPMB Header	1
Clear CMOS	1 (contact pads)
LED Indicators	
Standby Power LED	1 (5VSB)
80 debug port LED	1
Fan Fail LED	8
BMC Heartbeat LED	1
Support OS	
OS	Microsoft® Windows®:
	- Server 2019 (64bit)
	- Server 2022 (64bit)
	Linux®:
	- RedHat Enterprise Linux Server 8.6 (64bit) / Server 9.0 (64bit)
	- SUSE SLES 15.4 (64bit)
	- UBuntu 20.04.5 (64bit) / 22.04.2 (64bit)
	Hypervisor::
	- VMWare ESXi / 7.0 U3i / 8.0
	- CITRIX Hypervisor 8.2.1
	Please refer to the website for the latest OS support list.
Environment	
Temperature	Operation temperature: 10°C ~ 35°C (50 - 95 degF)
	Non operation temperature: -40°C ~ 70°C (-40 - 158degF)
Humidity	Non operation humidity: 20% ~ 90% (Non condensing)

NOTE: Please refer to the website for the latest specifications.

⚠ *This motherboard supports Wake from on Board LAN. To use this function, please make sure that the "Wake on Magic Packet from power off state" is enabled in Device Manager > Intel® Ethernet Connection > Power Management. And the "PCI Devices Power On" is enabled in UEFI SETUP UTILITY > Advanced > ACPI Configuration. After that, onboard LAN1&2 can wake up S5 under OS.*

⚠ *If installing Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If installing the drivers only, it will pass the WHQL tests.*

1.3 Unique Features

ASRock Rack Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows user to update system BIOS without entering operating systems first like MS-DOS or Windows*. With this utility, press the <F6> key during the POST or the <F2> key to enter into the BIOS setup menu to access ASRock Rack Instant Flash. Just launch this tool and save the new BIOS file to the USB flash drive, floppy disk or hard drive, then update the BIOS only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system.

1.4 Motherboard Layout
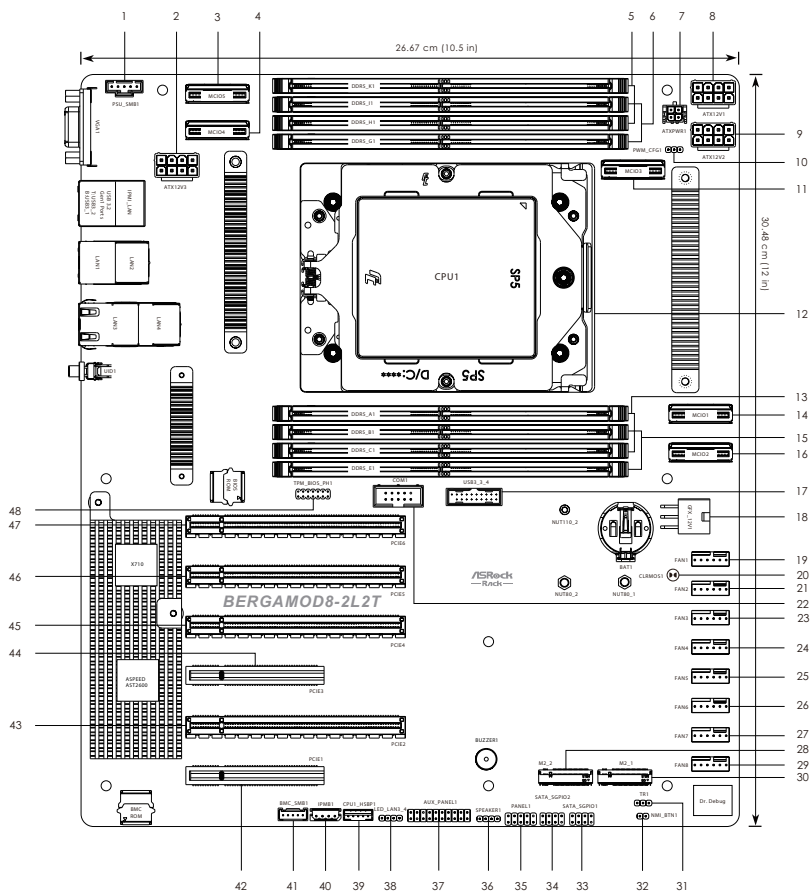
No.	Description
1	PSU SMBus Header (PSU_SMB1)
2	ATX 12V Power Connector (ATX12V3)
3	Mini Cool Edge IO x8 Connector (MCIO5)
4	Mini Cool Edge IO x8 Connector (MCIO4)
5	2 x 288-pin DDR5 DIMM Slots (DDR5_H1, DDR5_K1)*
6	2 x 288-pin DDR5 DIMM Slots (DDR5_G1, DDR5_I1)*
7	ATX Power Connector (ATXPWR1)
8	ATX 12V Power Connector (ATX12V1)
9	ATX 12V Power Connector (ATX12V2)
10	PWM Configuration Header (PWM_CFG1)
11	Mini Cool Edge IO x8 Connector (MCIO3)
12	AMD Socket SP5 (SM-LGA-6096P) (CPU1)
13	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_C1)*
14	Mini Cool Edge IO x8 Connector (MCIO1)
15	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_E1)*
16	Mini Cool Edge IO x8 Connector (MCIO2)
17	USB 3.2 Gen1 Header (USB3_3_4)
18	Graphics 12V Power Connector (GFX_12V1)
19	System Fan Connector (FAN1)
20	Clear CMOS Pad (CLRMOS1)
21	System Fan Connector (FAN2)
22	COM Port Header (COM1)
23	System Fan Connector (FAN3)
24	System Fan Connector (FAN4)
25	System Fan Connector (FAN5)
26	System Fan Connector (FAN6)
27	System Fan Connector (FAN7)
28	M.2 Socket (M2_2) (Type 2280/22110)
29	System Fan Connector (FAN8)
30	M.2 Socket (M2_1) (Type 2280)
31	Thermal Sensor Header (TR1)
32	Non Maskable Interrupt Button (NMI_BTN1)
33	SATA SGPIO Connector (SATA_SGPIO1)
34	SATA SGPIO Connector (SATA_SGPIO2)

English

No.	Description
35	System Panel Header (PANEL1)
36	Speaker Header (SPEAKER1)
37	Auxiliary Panel Header (AUX_PANEL1)
38	Front LAN LED Connector (LED_LAN3_4)
39	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
40	Intelligent Platform Management Bus Header (IPMB1)
41	BMC SMBus Header (BMC_SMB1)
42	PCI Express 5.0 x8 Slot (PCIE1)
43	PCI Express 5.0 x16 Slot (PCIE2)
44	PCI Express 5.0 x8 Slot (PCIE3)
45	PCI Express 5.0 x16 Slot (PCIE4)
46	PCI Express 5.0 x16 Slot (PCIE5)
47	PCI Express 5.0 x16 Slot (PCIE6)
48	SPI TPM Header (TPM_BIOS_PH1)

* For DIMM installation and configuration instructions, please see p.19 (Installation of Memory Modules (DIMM)) for more details.

1.5 Onboard LED Indicators
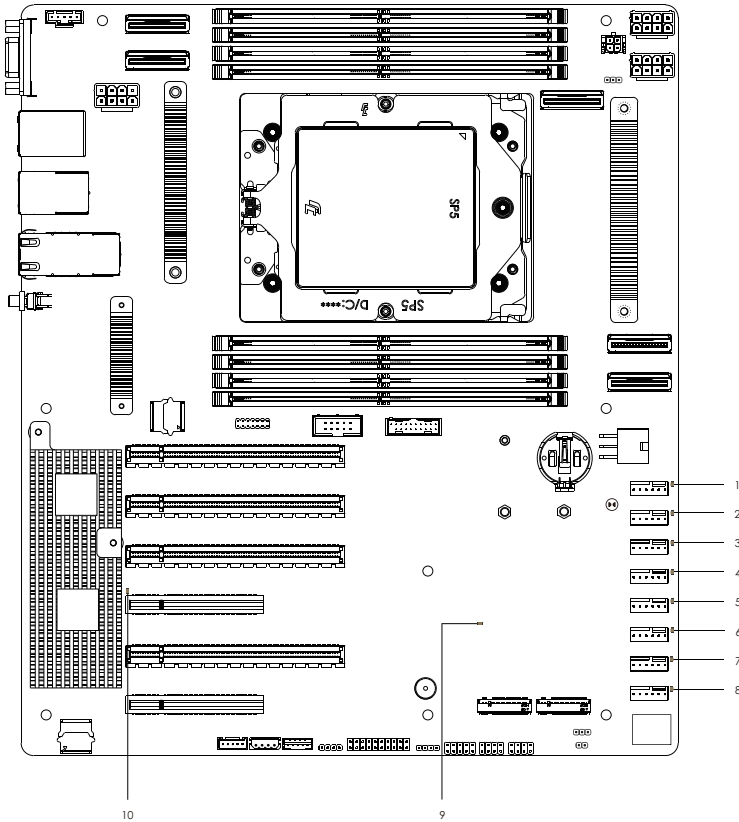
No.	Item	Status	Description
1	LED_FAN1	Red	FAN1 failed
2	LED_FAN2	Red	FAN2 failed
3	LED_FAN3	Red	FAN3 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN5	Red	FAN5 failed
6	LED_FAN6	Red	FAN6 failed
7	LED_FAN7	Red	FAN7 failed
8	LED_FAN8	Red	FAN8 failed
9	SB_PWR1	Green	STB PWR ready
10	BMC_LED1	Green	BMC heartbeat LED

1.6 I/O Panel
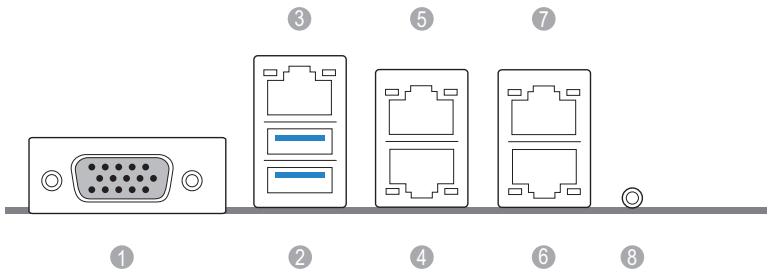
No.	Description	No.	Description
1	VGA Port (VGA1)	5	1G LAN RJ-45 Port (LAN2)**
2	USB 3.2 Gen1 Ports (USB3_1_2)	6	10G LAN RJ-45 Port (LAN3)***
3	IPMI LAN Header (IPMI_LAN1)*	7	10G LAN RJ-45 Port (LAN4)***
4	1G LAN RJ-45 Port (LAN1, shared NIC)**	8	UID Switch (UID1)

LAN Port LED Indications

*There is an LED on each side of IPMI LAN port. Please refer to the table below for the LAN port LED indications.

ACT/LINK LED
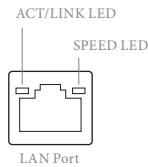
SPEED LED

LAN Port

IPMI LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10Mbps connection or no link
Blinking Yellow	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

**There is an LED on each side of 1G LAN port. Please refer to the table below for the LAN port LED indications.

ACT/LINK LED
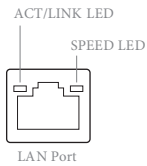
SPEED LED

LAN Port

1G LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	10Mbps connection or no link
Blinking Yellow	Data Activity	Orange	100Mbps connection
On	Link	Green	1Gbps connection

***There is an LED on each side of 10G LAN port. Please refer to the table below for the LAN port LED indications.

ACT/LINK LED
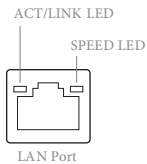
SPEED LED

LAN Port

10G LAN Port LED Indications

Activity / Link LED		Speed LED	
Status	Description	Status	Description
Off	No Link	Off	100Mbps connection or no link
Blinking Yellow	Data Activity	Orange	1Gbps connection
On	Link	Green	10Gbps connection

1.7 Block Diagram

MCIO2

MCIO1

MCIO5

MCIO4

PCIE2

PCIE3

PCIE1

PCIE4

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

PCIe Gen5 x8

PCIe Gen5 x8

PCIe Gen5 x8

PCIe Gen5 x8

PCIe Gen5 x16

PCIe Gen5 x8

PCIe Gen5 x8

PCIe Gen5 x16

CHE

CHC

CHB

CHA

AMD Family 19h 10h-1Fh Processor

CPU GENOA SP5

Socket SP5 (SMLGA-6096)
Support Max : 400 W

1DPC support 8 DIMM with RDIMM

PCIe Gen5 x16 P0

PCIe Gen5 x8 P1

PCIe Gen5 x8 P1

PCIe Gen5 x16 P2

PCIe Gen5 x8 P3

PCIe Gen5 x8 P3

PCIe Gen5 x8 G2

PCIe Gen5 x8 G2

USB3.2 Gen1 x2

USB2.0 x2

USB3.2 Gen1 x2

USB3_1_2 (Rear)

USB3_3_4 (Front)

USB3_HUB

USB11_DP

USB3.2 Gen1

SGPIO

SPI

ESPI

USB10_DP

SGPIO Header x2

TPM (SPI)

SIO NCT6796D-S

PCIe Gen5 x16 G0

PCIe Gen5 x16 G1

PCIe Gen5 x4 SATA3.0 x4 G3

PCIe Gen5 x4 SATA3.0 x4 G3

SATA3 x4 SATA3.0 x4 G3

PCIe Gen5 x8 SATA3.0 x8 G3

PCIe Gen3 x4 P4

PCIe Gen3 x1 P5

PCIe Gen3 x1 P5

PCIe Gen3 x1 P5

PCIe Gen5 x16

PCIe Gen5 x16

PCIe Gen5 x4 SATA3.0 x4

PCIe Gen5 x4 SATA3.0 x4

PCIe Gen5 x8 SATA3.0 x8

PCIe Gen3 x4

PCIe Gen2 x1

PCIe Gen2 x1

PCIe Gen2 x1

CHK

CHI

CHH

CHG

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

1 x DDR5 RDIMM/LRDIMM

PCIE5

PCIE6

M2_1

M2_2

MCIO3

X710-AT2

I210AT

I210AT

Single BIOS ROM (32MB)

80-LED

Speaker

BMC AST2600

DDR4 DRAM (512MB)

SPI FLASH (64MB)

6 Pin-FAN*8

VGA

COM1

RTL8211F

RJ45

RJ45 : LAN1

RJ45 : LAN2

RJ45 : LAN3

RJ45 : LAN4

ESPI

USB2.0

IPMI

NCSI

Chapter 2 Installation

This is an CEB form factor (12" x 10.5", 30.48 x 26.67cm) motherboard. Before installing the motherboard, study the configuration of the chassis to ensure that the motherboard fits into it.

> ⚠ *Make sure to unplug the power cord before installing or removing the motherboard. Failure to do so may cause physical injuries and motherboard damages.*

2.1 Screw Holes

Place screws into the holes indicated by circles to secure the motherboard to the chassis.

> ⚠ *Attention! Before installing this motherboard, be sure to unscrew and remove the standoff at the marked location, under the motherboard, from the chassis, in order to avoid electrical short circuit and motherboard damages.*

Rear I/O

Remove the standoff from the chassis

Remove the standoff from the chassis

> ⚠ *Do not over-tighten the screws! Doing so may damage the motherboard.*

English

13
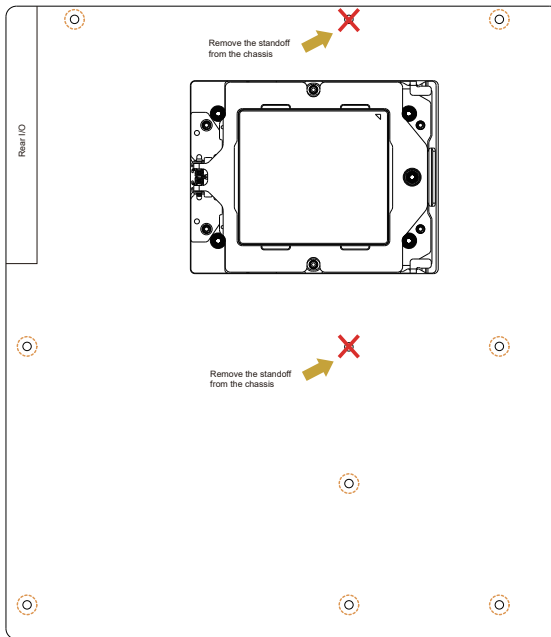
2.2 Pre-installation Precautions

Take note of the following precautions before installing motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place the motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before handling the components.
3. Hold components by the edges and do not touch the ICs.
4. Whenever uninstall any component, place it on a grounded anti-static pad or in the bag that comes with the component.
5. When placing screws into the screw holes to secure the motherboard to the chassis, please do not over-tighten the screws! Doing so may damage the motherboard.

⚠ *Before installing or removing any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.*

2.3 Installing the CPU

1. *Before inserting the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*

❸

❹

❺

Carrier Frame with CPU
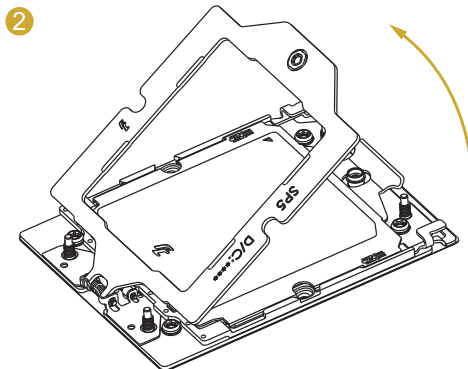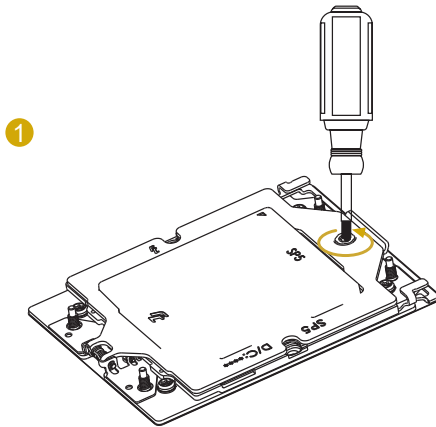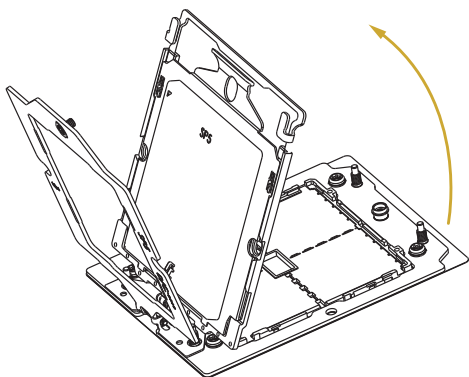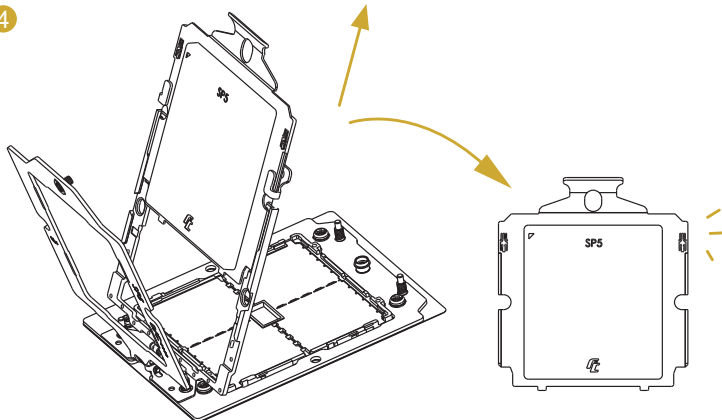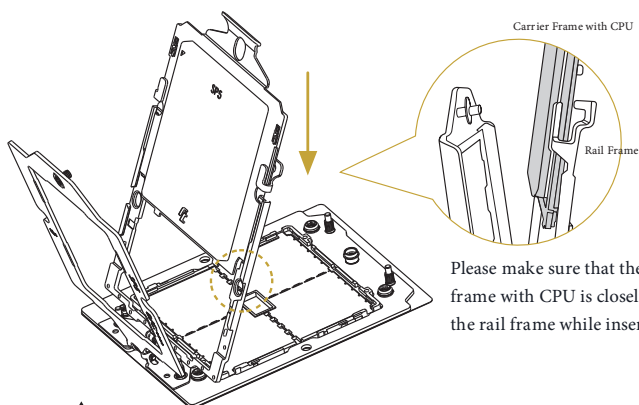
Rail Frame

Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

⚠

Install the carrier frame with CPU. Don't separate them.

❻

⑨

⑩
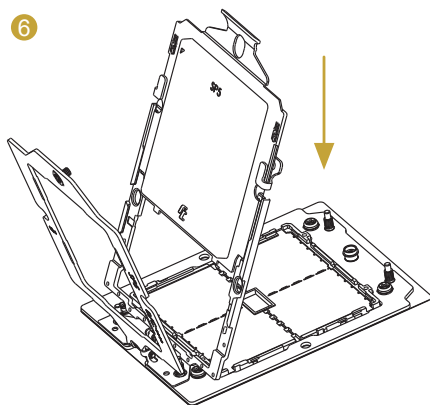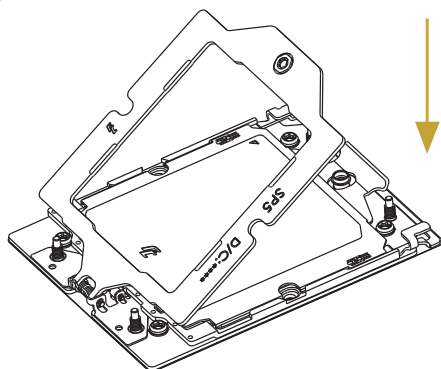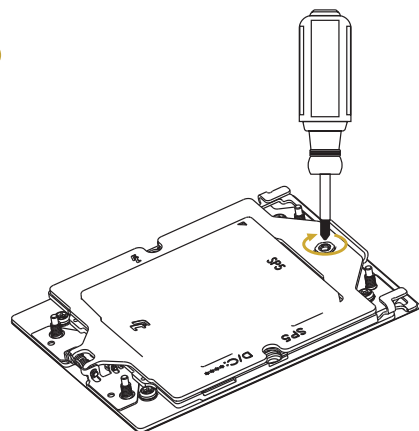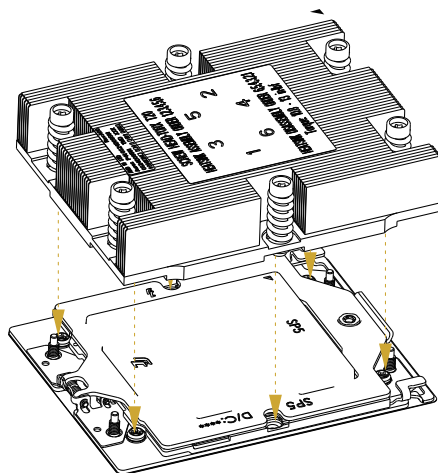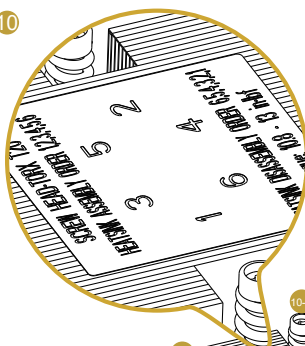
Set your torque wrench to 1.54 in-lb.
One fourth a turn each time.

Tighten the screws in a sequential order
1 > 2 > 3 > 4 > 5 > 6.
Loosen the screws in a reverse order.
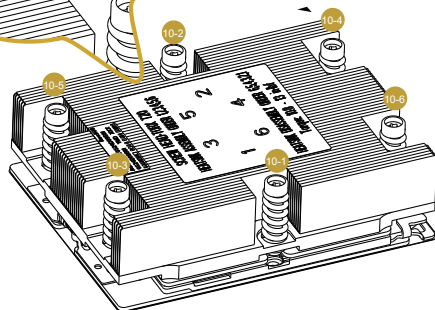
2.4 Installation of Memory Modules (DIMM)

This motherboard provides eight 288-pin DDR5 (Double Data Rate 5) DIMM slots in two groups, and supports Single Channel Memory Technology .

> ☆
> 1. Before installing a memory module, make sure to turn off the computer and unplug the powercord from the power outlet to prevent damage to the memory module.
> 2. For Eight channel configuration, It needs to install identical (the same brand, speed, size and chip-type) DDR5 DIMM groups.
> 3. It is not allowed to install a DDR, DDR2, DDR3 or DDR4 memory module into a DDR5 slot; otherwise, this motherboard and DIMM may be damaged.

Recommended Memory Configurations

	CPU1							
	A1	B1	C1	E1	G1	H1	I1	K1
1 DIMM	V							
2 DIMMS	V				V			
4 DIMMS	V		V		V		V	
8 DIMMS	V	V	V	V	V	V	V	V

The symbol V indicates the slot is populated.
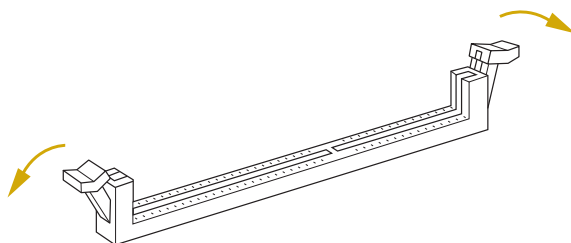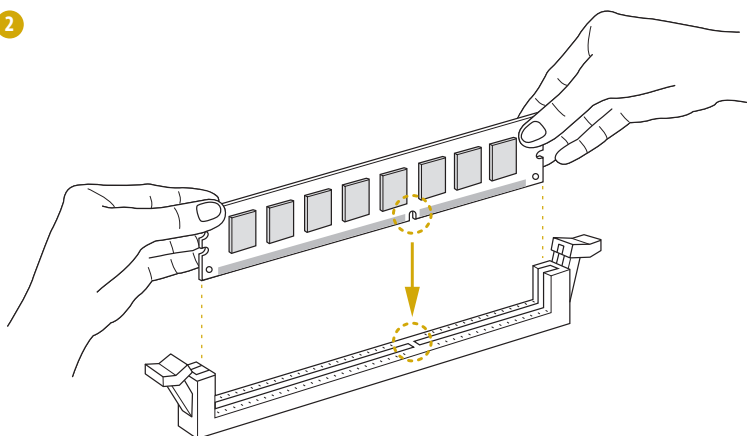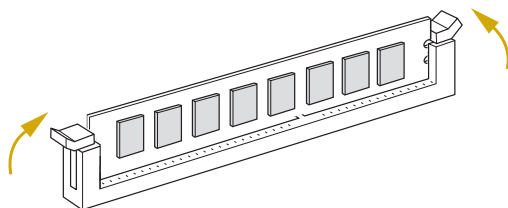
2.5 Expansion Slots (PCI Express Slots)

There are six PCI Express slots on this motherboard.

PCIE slots:

PCIE1 (PCIE 5.0 x8 slot, from CPU1) is used for PCI Express x8 lane width cards.
PCIE2 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE3 (PCIE 5.0 x8 slot, from CPU1) is used for PCI Express x8 lane width cards.
PCIE4 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE5 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE6 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE1	5.0	x8	x8	CPU1
PCIE2	5.0	x16	x16	CPU1
PCIE3	5.0	x8	x8	CPU1
PCIE4	5.0	x16	x16	CPU1
PCIE5	5.0	x16	x16	CPU1
PCIE6	5.0	x16	x16	CPU1

Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before starting the installation.

Step 2. Remove the system unit cover (if the motherboard is already installed in a chassis).

Step 3. Remove the bracket facing the slot that intending to use. Keep the screws for later use.

Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

Step 5. Fasten the card to the chassis with screws.

Step 6. Replace the system cover.

2.6 Onboard Headers and Connectors

⚠️ *Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.*

System Panel Header
(9-pin PANEL1)
(see p.6, No. 35)

PLED+
PLED-
PWRBTN#
GND

1

GND
RESET#
GND
HDLED-
HDLED+
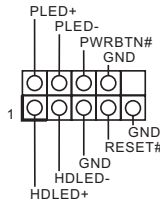
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

🔍 **PWRBTN (Power Switch):**
Connect to the power switch on the chassis front panel. Configure the way to turn off the system using the power switch.

RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

PLED (System Power LED):
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

HDLED (Hard Drive Activity LED):
Connect to the hard drive activity LED on the chassis front panel. The LED is on when the hard drive is reading or writing data.

The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting the chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Auxiliary Panel Header
(18-pin AUX_PANEL1)
(see p.6, No. 37)
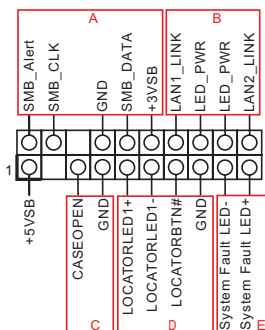
This header supports multiple functions on the front panel, including front panel SMB, internet status indicator.

A. Front panel SMBus connecting pin (6-1 pin FPSMB)
This header allows user to connect SMBus (System Management Bus) equipment. It can be used for communication between peripheral equipment in the system, which has slower transmission rates, and power management equipment.

B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow user to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

C. Chassis intrusion pin (2-pin CHASSIS)
This header is provided for host computer chassis with chassis intrusion detection designs. In addition, it must also work with external detection equipment, such as a chassis intrusion detection sensor or a microswitch. When this function is activated, if any chassis component movement occurs, the sensor will immediately detect it and send a signal to this header, and the system will then record this chassis intrusion event. The default setting is set to the CASEOPEN and GND pin; this function is off.

D. Locator LED (4-pin LOCATOR)
This header is for the locator switch and LED on the front panel.

E. System Fault LED (2-pin LOCATOR)
This header is for the Fault LED on the system.

USB 3.2 Gen1 Header:
(19-pin USB3_3_4)
(see p.6, No. 17)
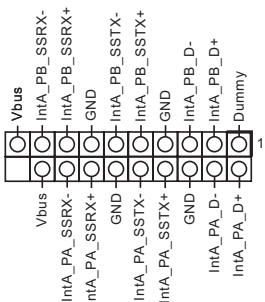
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 48)

TPM_CS#
GND
RSMRST#
MISO
SPI_CS
SPI_WP

SPI PIRQ
SPI_RST
MOSI
SPI_CLK
X
+3.3V
SPI_HOLD
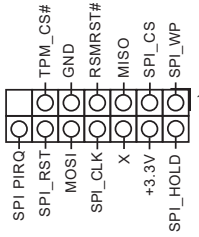
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Serial Port Header
(9-pin COM1)
(see p.6, No. 22)

RRXD1
DDTR#1
DDSR#1
CCTS#1
RRI#1
RRTS#1
GND
TTXD1
DDCD#1
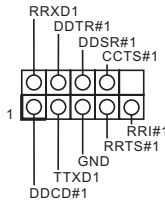
This COM header supports a serial port module.

PWM Configuration Header
(3-pin PWM_CFG1)
(see p.6, No. 10)

SMB_CLK_VSB
SMB_DATA_VSB
GND
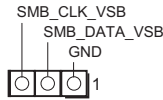
The header is used for PWM configurations.

Non Maskable Interrupt Button Header
(2-pin NMI_BTN1)
(see p.6, No. 32)

GND
CONTROL

Please connect a NMI device to this header.

PSU SMBus Header
(PSU_SMB1)
(see p.6, No. 1)

ALERT
SMBCLK   +3V
SMBDATA
GND
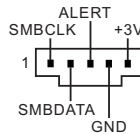
PSU SMBus monitors the status of the power supply, fan and system temperature.

BMC SMB Header
(5-pin BMC_SMB1)
(see p.6, No. 41)

BMC_SMB_PRESENT_1_N
Power
BMC_SMBCLK
GND
BMC_SMBDATA
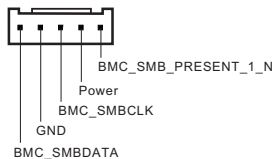
The header is used for the SM BUS devices.

Backplane PCI Express
Hot-Plug Connector
(5-pin CPU1_ HSBP1)
(see p.6, No. 39)

+3V
CPU_HP_SCL
CPU_HP_SDA
P0_HP_ALERT_L
GND

1
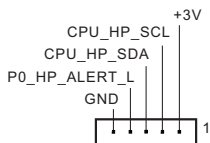
The header is used for the hot
plug feature of HDDs on the
backplane.

System Fan Connectors
(6-pin FAN1)
(see p.6, No. 19)
(6-pin FAN2)
(see p.6, No. 21)
(6-pin FAN3)
(see p.6, No. 23)
(6-pin FAN4)
(see p.6, No. 24)
(6-pin FAN5)
(see p.6, No. 25)
(6-pin FAN6)
(see p.6, No. 26)
(6-pin FAN7)
(see p.6, No. 27)
(6-pin FAN8)
(see p.6, No. 29)

6 5 4 3 2 1

GND
12V(FAN_VOLTAGE)
FAN_SPEED_SENSOR1
FAN_SPEED_CONTROL
FAN_SPEED_SENSOR2
NC
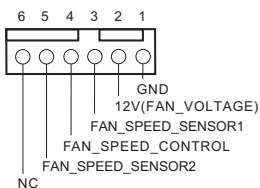
Please connect fan cables to
the fan connectors and match
the black wire to the ground
pin. All fans support Fan
Control.

SATA SGPIO Connectors
(7-pin SATA_SGPIO1)
(see p.6, No. 33)
(7-pin SATA_SGPIO2)
(see p.6, No. 34)

SCLOCK
SLOAD
GND

1

SDATAOUT
GND
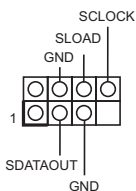
These connectors support
Serial Link interface for
onboard SATA connections.

Thermal Sensor Header
(3-pin TR1)
(see p.6, No. 31)

TR1   TR1

1

GND
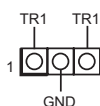
Please connect the thermal
sensor cable to either pin 1-2
or pin 2-3 and the other end
to the device which wishing
to monitor its temperature.

ATX Power Connectors
(8-pin ATX12V1)
(see p.6, No. 8)
(8-pin ATX12V2)
(see p.6, No. 9)
(8-pin ATX12V3)
(see p.6, No. 2)

GND

1   4

5   8

12V
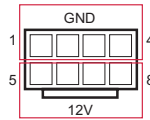
This motherboard provides three ATX power connectors.

Graphics 12V Power Connector
Right-Angle:
(6-pin GFX_12V1)
(see p.6, No. 18)

Detective Pin

GND   GND

6   4

3   1

+12V
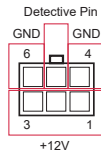
This motherboard provides a 6-pin Graphics 12V power connector. Install the PSU's power cable to this connector when 4 graphics cards are installed.

ATX Power Connector
(4-pin ATXPWR1)
(see p.6, No. 7)

4   3

PSON#   ATX_+5VSB

GND   ATX_PWROK

2   1
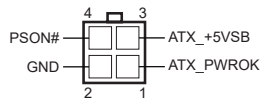
The motherboard provides one 4-pin power/signal connector which is a required input for ATX power source.

When using ATX power, it is necessary to use a 24pin-to-4pin power cable to connect between the 24pin power connector of PSU and the ATX12V1, ATX12V2 or ATX12V3 connector on the motherboard for power supply and signal communication.

Intelligent Platform Management Bus Header
(4-pin IPMB1)
(see p.6, No. 40)

IPMB_SDA

IPMB_SCL

GND
No Connect
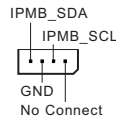
This 4-pin connector is used to provide a cabled baseboard or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

English

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Chassis Speaker Header (4-pin SPEAKER1) (see p.6, No. 36)	DUMMY SPEAKER 1 +5V DUMMY	Please connect the chassis speaker to this header.
Front LAN LED Connector (LED_LAN3_4) (see p.6, No. 38)	LAN4_LINK LED_PWR 1 LAN3_LINK LED_PWR	This 4-pin connector is used for the front LAN status indicator.
Clear CMOS Pad (CLRCMOS1) (see p.6, No. 20)		This allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.
MCIO x8 Connectors (MCIO1) (see p.6, No. 14) (MCIO2) (see p.6, No. 16) (MCIO3) (see p.6, No. 11) (MCIO4) (see p.6, No. 4) (MCIO5) (see p.6, No. 3)		These connectors are used for the PCIE devices.
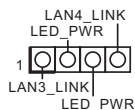
MCIO1 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G2_RXP7	B2	G2_TXN7
A3	G2_RXN7	B3	G2_TXP7
A4	GND	B4	GND
A5	G2_RXP6	B5	G2_TXN6
A6	G2_RXN6	B6	G2_TXP6
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	RST0_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	G2_RXP5	B14	G2_TXN5
A15	G2_RXN5	B15	G2_TXP5
A16	GND	B16	GND
A17	G2_RXP4	B17	G2_TXN4
A18	G2_RXN4	B18	G2_TXP4
A19	GND	B19	GND
A20	G2_RXP3	B20	G2_TXN3
A21	G2_RXN3	B21	G2_TXP3
A22	GND	B22	GND
A23	G2_RXP2	B23	G2_TXN2
A24	G2_RXN2	B24	G2_TXP2
A25	GND	B25	GND
A26	BP_TYPE	B26	SMB_SCL
A27	WAKE#	B27	SMB_SDA
A28	GND	B28	GND
A29	DP	B29	RST0_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	G2_RXP1	B32	G2_TXN1
A33	G2_RXN1	B33	G2_TXP1
A34	GND	B34	GND
A35	G2_RXP0	B35	G2_TXN0
A36	G2_RXN0	B36	G2_TXP0
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

English

MCIO2 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G2_RXP15	B2	G2_TXN15
A3	G2_RXN15	B3	G2_TXP15
A4	GND	B4	GND
A5	G2_RXP14	B5	G2_TXN14
A6	G2_RXN14	B6	G2_TXP14
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	RST0_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	G2_RXP13	B14	G2_TXN13
A15	G2_RXN13	B15	G2_TXP13
A16	GND	B16	GND
A17	G2_RXP12	B17	G2_TXN12
A18	G2_RXN12	B18	G2_TXP12
A19	GND	B19	GND
A20	G2_RXP11	B20	G2_TXN11
A21	G2_RXN11	B21	G2_TXP11
A22	GND	B22	GND
A23	G2_RXP10	B23	G2_TXN10
A24	G2_RXN10	B24	G2_TXP10
A25	GND	B25	GND
A26	BP_TYPE	B26	SMB_SCL
A27	WAKE#	B27	SMB_SDA
A28	GND	B28	GND
A29	DP	B29	RST0_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	G2_RXP9	B32	G2_TXN9
A33	G2_RXN9	B33	G2_TXP9
A34	GND	B34	GND
A35	G2_RXP8	B35	G2_TXN8
A36	G2_RXN8	B36	G2_TXP8
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

MCIO3 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G3_RXP0	B2	G3_TXP0
A3	G3_RXN0	B3	G3_TXN0
A4	GND	B4	GND
A5	G3_RXP1	B5	G3_TXP1
A6	G3_RXN1	B6	G3_TXN1
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	RST0_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	G3_RXP2	B14	G3_TXP2
A15	G3_RXN2	B15	G3_TXN2
A16	GND	B16	GND
A17	G3_RXP3	B17	G3_TXP3
A18	G3_RXN3	B18	G3_TXN3
A19	GND	B19	GND
A20	G3_RXP4	B20	G3_TXP4
A21	G3_RXN4	B21	G3_TXN4
A22	GND	B22	GND
A23	G3_RXP5	B23	G3_TXP5
A24	G3_RXN5	B24	G3_TXN5
A25	GND	B25	GND
A26	BP_TYPE	B26	SMB_SCL
A27	WAKE#	B27	SMB_SDA
A28	GND	B28	GND
A29	DP	B29	RST0_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	G3_RXP6	B32	G3_TXP6
A33	G3_RXN6	B33	G3_TXN6
A34	GND	B34	GND
A35	G3_RXP7	B35	G3_TXP7
A36	G3_RXN7	B36	G3_TXN7
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

MCIO4 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	P3_RXN0	B2	P3_TXP0
A3	P3_RXP0	B3	P3_TXN0
A4	GND	B4	GND
A5	P3_RXN1	B5	P3_TXP1
A6	P3_RXP1	B6	P3_TXN1
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	RST1_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	P3_RXN2	B14	P3_TXP2
A15	P3_RXP2	B15	P3_TXN2
A16	GND	B16	GND
A17	P3_RXN3	B17	P3_TXP3
A18	P3_RXP3	B18	P3_TXN3
A19	GND	B19	GND
A20	P3_RXN4	B20	P3_TXP4
A21	P3_RXP4	B21	P3_TXN4
A22	GND	B22	GND
A23	P3_RXN5	B23	P3_TXP5
A24	P3_RXP5	B24	P3_TXN5
A25	GND	B25	GND
A26	BP_TYPE	B26	SMB_SCL
A27	WAKE#	B27	SMB_SDA
A28	GND	B28	GND
A29	DP	B29	RST1_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	P3_RXN6	B32	P3_TXP6
A33	P3_RXP6	B33	P3_TXN6
A34	GND	B34	GND
A35	P3_RXN7	B35	P3_TXP7
A36	P3_RXP7	B36	P3_TXN7
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

MCIO5 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	P3_RXN8	B2	P3_TXP8
A3	P3_RXP8	B3	P3_TXN8
A4	GND	B4	GND
A5	P3_RXN9	B5	P3_TXP9
A6	P3_RXP9	B6	P3_TXN9
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	RST1_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	P3_RXN10	B14	P3_TXP10
A15	P3_RXP10	B15	P3_TXN10
A16	GND	B16	GND
A17	P3_RXN11	B17	P3_TXP11
A18	P3_RXP11	B18	P3_TXN11
A19	GND	B19	GND
A20	P3_RXN12	B20	P3_TXP12
A21	P3_RXP12	B21	P3_TXN12
A22	GND	B22	GND
A23	P3_RXN13	B23	P3_TXP13
A24	P3_RXP13	B24	P3_TXN13
A25	GND	B25	GND
A26	BP_TYPE	B26	SMB_SCL
A27	WAKE#	B27	SMB_SDA
A28	GND	B28	GND
A29	DP	B29	RST1_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	P3_RXN14	B32	P3_TXP14
A33	P3_RXP14	B33	P3_TXN14
A34	GND	B34	GND
A35	P3_RXN15	B35	P3_TXP15
A36	P3_RXP15	B36	P3_TXN15
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

English

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2.7 ATX PSU Power Connections

This motherboard support ATX power input. Please refer to the table below for the required connections between the motherboard and the power supply.

ATX PSU

PSU

(via a 24pin-to-4pin
Converter Cable)

12V 8pin   ATX 4pin
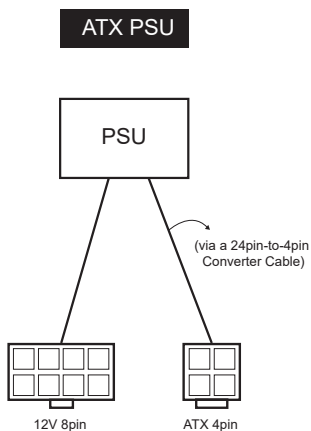
The following diagram illustrates how to connect the bundled ATX 24pin-to-4pin converter cable.

24pin-to-4pin
Converter Cable

* Make sure the latch and the socket
are aligned in the right direction.
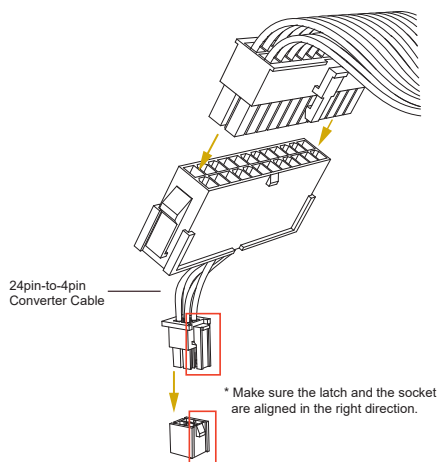
2.8 Dr. Debug

Dr. Debug is used to provide code information, which makes troubleshooting even easier. Please see the diagrams below for reading the Dr. Debug codes.

Code	Description
0x10	PEI_CORE_STARTED
0x11	PEI_CAR_CPU_INIT
0x15	PEI_CAR_NB_INIT
0x19	PEI_CAR_SB_INIT
0x31	PEI_MEMORY_INSTALLED
0x32	PEI_CPU_INIT
0x33	PEI_CPU_CACHE_INIT
0x34	PEI_CPU_AP_INIT
0x35	PEI_CPU_BSP_SELECT
0x36	PEI_CPU_SMM_INIT
0x37	PEI_MEM_NB_INIT
0x3B	PEI_MEM_SB_INIT
0x4F	PEI_DXE_IPL_STARTED
0x60	DXE_CORE_STARTED
0x61	DXE_NVRAM_INIT
0x62	DXE_SBRUN_INIT

English

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0x63	DXE_CPU_INIT
0x68	DXE_NB_HB_INIT
0x69	DXE_NB_INIT
0x6A	DXE_NB_SMM_INIT
0x70	DXE_SB_INIT
0x71	DXE_SB_SMM_INIT
0x72	DXE_SB_DEVICES_INIT
0x78	DXE_ACPI_INIT
0x79	DXE_CSM_INIT
0x90	DXE_BDS_STARTED
0x91	DXE_BDS_CONNECT_DRIVERS
0x92	DXE_PCI_BUS_BEGIN
0x93	DXE_PCI_BUS_HPC_INIT
0x94	DXE_PCI_BUS_ENUM
0x95	DXE_PCI_BUS_REQUEST_RESOURCES
0x96	DXE_PCI_BUS_ASSIGN_RESOURCES
0x97	DXE_CON_OUT_CONNECT
0x98	DXE_CON_IN_CONNECT

0x99	DXE_SIO_INIT
0x9A	DXE_USB_BEGIN
0x9B	DXE_USB_RESET
0x9C	DXE_USB_DETECT
0x9D	DXE_USB_ENABLE
0xA0	DXE_IDE_BEGIN
0xA1	DXE_IDE_RESET
0xA2	DXE_IDE_DETECT
0xA3	DXE_IDE_ENABLE
0xA4	DXE_SCSI_BEGIN
0xA5	DXE_SCSI_RESET
0xA6	DXE_SCSI_DETECT
0xA7	DXE_SCSI_ENABLE
0xA8	DXE_SETUP_VERIFYING_PASSWORD
0xA9	DXE_SETUP_START
0xAB	DXE_SETUP_INPUT_WAIT
0xAD	DXE_READY_TO_BOOT
0xAE	DXE_LEGACY_BOOT

0xAF	DXE_EXIT_BOOT_SERVICES
0xB0	RT_SET_VIRTUAL_ADDRESS_MAP_BEGIN
0xB1	RT_SET_VIRTUAL_ADDRESS_MAP_END
0xB2	DXE_LEGACY_OPROM_INIT
0xB3	DXE_RESET_SYSTEM
0xB4	DXE_USB_HOTPLUG
0xB5	DXE_PCI_BUS_HOTPLUG
0xB6	DXE_NVRAM_CLEANUP
0xB7	DXE_CONFIGURATION_RESET
0xF0	PEI_RECOVERY_AUTO
0xF1	PEI_RECOVERY_USER
0xF2	PEI_RECOVERY_STARTED
0xF3	PEI_RECOVERY_CAPSULE_FOUND
0xF4	PEI_RECOVERY_CAPSULE_LOADED
0xE0	PEI_S3_STARTED
0xE1	PEI_S3_BOOT_SCRIPT
0xE2	PEI_S3_VIDEO_REPOST

0xE3	PEI_S3_OS_WAKE
0x50	PEI_MEMORY_INVALID_TYPE
0x53	PEI_MEMORY_NOT_DETECTED
0x55	PEI_MEMORY_NOT_INSTALLED
0x57	PEI_CPU_MISMATCH
0x58	PEI_CPU_SELF_TEST_FAILED
0x59	PEI_CPU_NO_MICROCODE
0x5A	PEI_CPU_ERROR
0x5B	PEI_RESET_NOT_AVAILABLE
0xD0	DXE_CPU_ERROR
0xD1	DXE_NB_ERROR
0xD2	DXE_SB_ERROR
0xD3	DXE_ARCH_PROTOCOL_NOT_AVAILABLE
0xD4	DXE_PCI_BUS_OUT_OF_RESOURCES
0xD5	DXE_LEGACY_OPROM_NO_SPACE
0xD6	DXE_NO_CON_OUT
0xD7	DXE_NO_CON_IN

English

0xD8	DXE_INVALID_PASSWORD
0xD9	DXE_BOOT_OPTION_LOAD_ERROR
0xDA	DXE_BOOT_OPTION_FAILED
0xDB	DXE_FLASH_UPDATE_FAILED
0xDC	DXE_RESET_NOT_AVAILABLE
0xE8	PEI_MEMORY_S3_RESUME_FAILED
0xE9	PEI_S3_RESUME_PPI_NOT_FOUND
0xEA	PEI_S3_BOOT_SCRIPT_ERROR
0xEB	PEI_S3_OS_WAKE_ERROR

2.9 Identification purpose LED/Switch

With the UID button, user can be able to locate the server working on from behind a rack of servers.

Unit Identification purpose LED/Switch (UID1)		When the UID button on the front or rear panel is pressed, the front/rear UID blue LED indicator will be truned on. Press the UID button again to turn off the indicator.

> 1. Press and hold the UID button for 4 seconds, the BMC will trigger an external reset.
> 2. Press and hold the UID button for 10 seconds, the BMC will reset and load default values.

2.10 M.2 SSD Module Installation Guide

The M.2 Socket (M2_1/M2_2, Key M) supports type 2280/22110 M.2 PCI Express module up to Gen5 x4 (32GT/s x4).

Installing the M.2 SSD Module
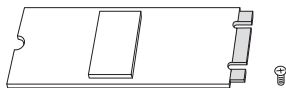
Step 1

Prepare a M.2_SSD module and the screw.
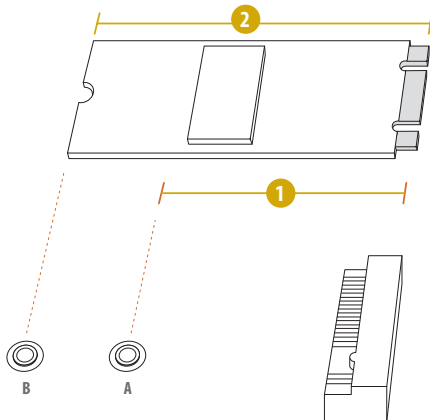
Step 2

Depending on the PCB type and length of the M.2 SSD module, find the corresponding nut location to be used.

M2_1:

No.	1
Nut Location	A (NUT80_1)
PCB Length	8cm
Module Type	Type2280

M2_2:

No.	1	2
Nut Location	A (NUT80_2)	B (NUT110_2)
PCB Length	8cm	11cm
Module Type	Type2280	Type 22110
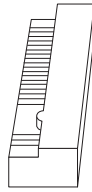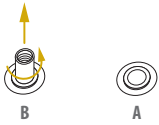
Step 3

Move the standoff based on the module type and length.
Skip Step 3 and 4 and go straight to Step 5 if using the default nut. Otherwise, release the standoff by hand.

B **A**
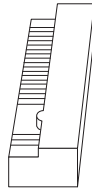
Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.

B **A**
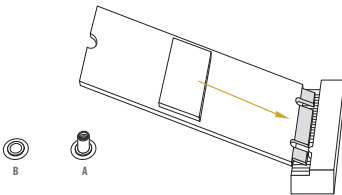
Step 5

Align and gently insert the M.2 SSD module into the M.2 slot. Please be aware that the M.2 SSD module only fits in one orientation.

B **A**

B **A** 20°
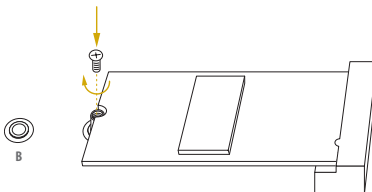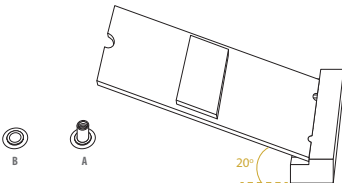
Step 6

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

B

English

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2.11 Dual LAN and Teaming Operation Guide

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection for twice the transmission bandwidth, making data transmission more effective and improving the quality of transmission of distant images. Fault tolerance on the dual LAN network prevents network downtime by transferring the workload from a failed port to a working port.

> ⚠️ *The speed of transmission is subject to the actual network environment or status even with Teaming enabled.*

Before setting up Teaming, please make sure whether the Switch (or Router) supports Teaming (IEEE 802.3ad Link Aggregation). specify a preferred adapter in Intel PROSet. Under normal conditions, the Primary adapter handles all non-TCP/IP traffic. The Secondary adapter will receive fallback traffic if the primary fails. If the Preferred Primary adapter fails, but is later restored to an active status, control is automatically switched back to the Preferred Primary adapter.

Step 1

From **Device Manager**, open the properties of a team.

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

Select the adapter that wants to be the primary adapter and click the **Set Primary** button.

The software will choose an adapter of the highest capability (model and speed) to act as the default primary upon not specify a preferred primary adapter. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

Chapter 3 UEFI Setup Utility

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure the system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. Run the UEFI SETUP UTILITY when starting up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue with its test routines.

Restart the system by pressing <Ctrl> + <Alt> + <Delete> to enter the UEFI SETUP UTILITY after POST, or by pressing the reset button on the system chassis. This allows user to restart by turning the system off and then back on.

> ⚠️ *Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions are for reference purpose only, and they may not exactly match what seeing on the screen.*

3.1.1 UEFI Menu Bar

The top of the screen has a menu bar with the following selections:

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Security	To set up the security features
Server Mgmt	To manage the server
Event Logs	For event log configuration
Boot	To set up the default system device to locate and load the Operating System
Exit	To exit the current screen or the UEFI SETUP UTILITY

Use < ← > key or < → > key to choose among the selections on the menu bar, and then press <Enter> to get into the sub screen.

English

3.1.2 Navigation Keys

Please check the following table for the function description of each navigation key.

Navigation Key(s)	Function Description
← / →	Moves cursor left or right to select Screens
↑ / ↓	Moves cursor up or down to select items
+ / -	To change option for the selected items
<Tab>	Switch to next function
<Enter>	To bring up the selected screen
<PGUP>	Go to the previous page
<PGDN>	Go to the next page
<HOME>	Go to the top of the screen
<END>	Go to the bottom of the screen
<F1>	To display the General Help Screen
<F7>	Discard changes and exit the UEFI SETUP UTILITY
<F9>	Load optimal default values for all the settings
<F10>	Save changes and exit the UEFI SETUP UTILITY
<F12>	Print screen
<ESC>	Jump to the Exit Screen or exit the current screen

3.2 Main Screen

Once entering the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows user to set the system time and date.

```
             Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
      Main  Advanced  Security  Server Mgmt  Event Logs  Boot  Exit

      Board Product                  BERGAMOD8-2L2T           Mother Board Information
      UEFI Version                   1.04
      BMC Version                    1.00.00

    ▶ Mother Board Information
    ▶ Processor Information
    ▶ Memory Information

      System Date                    [Mon 07/10/2023]
      System Time                    [22:41:25]


                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Option
                                                              F1: General Help
                                                              F7: Discard Changes
                                                              F9: Load UEFI Defaults
                                                              F10: Save and Exit
                                                              ESC: Exit




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```

English

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3.2.1 Mother Board Information

Press <Enter> to view the information of the motheboard.

```
          Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
  Main

  Mother Board Information
  MotherBoard                    BERGAMOD8-2L2T

  BIOS Information
  BIOS Vendor                    American Megatrends
  Core Version                   5.27
  Compliancy                     UEFI 2.8; PI 1.7
  Project Version                A3084 1.04 x64
  Build Date and Time            07/13/2023 19:30:42
  AGESA PI Version               GenoaPI-SP5 1.0.0.7
  AMI RC Revision                A3084 0.20
  ACPI Version                   64
  SMBIOS Version                 3.5.0
                                                      ↔: Select Screen
  Platform Information                                ↑↓: Select Item
  Platform                       Genoa                Enter: Select
                                                      +/-: Change Option
                                                      F1: General Help
                                                      F7: Discard Changes
                                                      F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit



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```

3.2.2 Processor Information

Press <Enter> to view the information of the processor.

```
          Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
  Main

  Processor Information

  Processor Type   : AMD Eng Sample: 100-000000997-01

  Processor Speed  : 2160MHz
  Microcode Update : A10F10/A101020
  Processor Family: 19h
  Processor Model: 11h

  L1 Instruction Cache: 32 KB/8-way
        L1 Data Cache: 32 KB/8-way
              L2 Cache: 1024 KB/8-way
   L3 Cache per Socket: 384 MB/16-way
                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Option
                                                      F1: General Help
                                                      F7: Discard Changes
                                                      F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit



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```

3.2.3 Memory Information

Press <Enter> to view the information of the memory.

```
            Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
    Main

    Memory Information

    Total Memory                    16 GB

    Memory Present Number           1
    Memory Not Present Number       7

    DDR5_A1                         DDR5-4800 16GB RDIMM
    DDR5_B1                         None
    DDR5_C1                         None
    DDR5_E1                         None
    DDR5_G1                         None
    DDR5_H1                         None
    DDR5_I1                         None            ↔: Select Screen
    DDR5_K1                         None            ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Option
                                                    F1: General Help
                                                    F7: Discard Changes
                                                    F9: Load UEFI Defaults
                                                    F10: Save and Exit
                                                    ESC: Exit


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```

3.3 Advanced Screen

In this section, allows user to set the configurations for the following items: CPU Configuration, Chipset Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, PCI Subsystem Settings, AMD CBS, AMD PBS, PSP Firmware Versions, Network Stack Configuration, Driver Health, Tls Auth Configuration and Instant Flash.

```
              Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
        Main   Advanced   Security   Server Mgmt   Event Logs   Boot   Exit

 ▶ CPU Configuration                                    ▲  CPU Configuration Parameters
 ▶ Chipset Configuration
 ▶ Storage Configuration
 ▶ NVMe Configuration
 ▶ ACPI Configuration
 ▶ USB Configuration
 ▶ Super IO Configuration
 ▶ Serial Port Console Redirection
 ▶ H/W Monitor
 ▶ PCI Subsystem Settings
 ▶ AMD CBS
 ▶ AMD PBS
 ▶ PSP Firmware Versions
 ▶ Network Stack Configuration                              ↔: Select Screen
 ▶ Driver Health                                            ↑↓: Select Item
 ▶ Tls Auth Configuration                                   Enter: Select
 ▶ Intel(R) Ethernet Controller X710 for 10GBASE-T -        +/-: Change Option
   00:00:00:00:01:00                                        F1: General Help
 ▶ VLAN Configuration (MAC:000000000100)                    F7: Discard Changes
 ▶ MAC:000000000100-IPv4 Network Configuration              F9: Load UEFI Defaults
 ▶ MAC:000000000100-IPv6 Network Configuration              F10: Save and Exit
 ▶ Intel(R) Ethernet Controller X710 for 10GBASE-T -        ESC: Exit
   00:00:00:00:01:01
 ▶ VLAN Configuration (MAC:000000000101)
 ▶ MAC:000000000101-IPv4 Network Configuration          ▼

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```

⚠ *Setting wrong values in this section may cause the system to malfunction.*

3.3.1 CPU Configuration

```
            Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
        Advanced

SVM Mode                        [Enabled]              Enable/disable CPU
                                                       Virtualization




                                                       ↔: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Option
                                                       F1: General Help
                                                       F7: Discard Changes
                                                       F9: Load UEFI Defaults
                                                       F10: Save and Exit
                                                       ESC: Exit


            Version 2.22.1285. Copyright (C) 2023 American Megatrends, Inc.
```
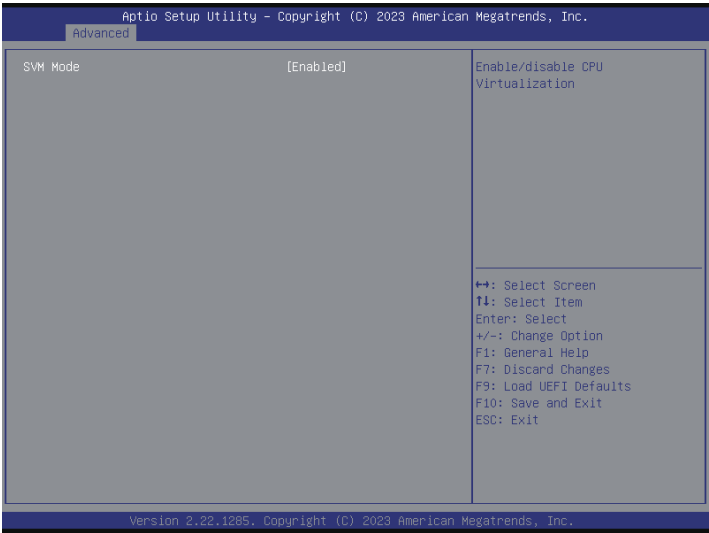
SVM Mode

Enable or disable CPU Virtualization.

3.3.2 Chipset Configuration


```
                    Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
         Advanced

  Chipset Configuration                                          Configure Onboard VGA

  Onboard VGA                             [Enabled]
  Onboard LAN (X710)                      [Enabled]
  Onboard LAN (I210-1)                    [Enabled]
  Onboard LAN (I210-2)                    [Enabled]

▶ MCIO Mode Selection
▶ PCIE Link Width
▶ PCIE Link Speed
▶ PCIE Hotplug
▶ PCIE ASPM

  Onboard Debug Port LED                  [On]                   →←: Select Screen
                                                                 ↑↓: Select Item
                                                                 Enter: Select
                                                                 +/-: Change Option
                                                                 F1: General Help
                                                                 F7: Discard Changes
                                                                 F9: Load UEFI Defaults
                                                                 F10: Save and Exit
                                                                 ESC: Exit



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```

Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN (X710/I210-1/I210-2)

Use this to enable or disable the Onboard LAN function.

MCIO Mode Selection

This item is for MCIO Mode Configuration.

MCIO3 PCIE/SATA Mode
Configure MCIO3 PCIE/SATA Mode.

PCIE Link Width

This displays the PCIE Link Width.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6 Link Width
The default values for PCIE1 and PCIE3 are [x8], others are [x16].

MCIO2/MCIO1 Link Width
The default values for MCIO2 and MCIO1 are [x4x4/x4x4].

MCIO3 Link Width
The default value for MCIO3 is [x4x4].

MCIO5/MCIO4 Link Width
The default values for MCIO5 and MCIO4 are [x4x4/x4x4].

PCIE Link Speed

This displays the PCIE Link Speed.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE6 Link Speed
The default values for PCIE1/2/3/4/5/6 are [Auto].

MCIO2/MCIO1 Link Speed
The default values for MCIO2 and MCIO1 are [Auto].

MCIO3 Link Speed
The default value for MCIO3 is [Auto].

MCIO5/MCIO4 Link Speed
The default values for MCIO5 and MCIO4 are [Auto].

M2_1/M2_2 Link Speed
The default values for M2_1 and M2_2 are [Auto].

PCIE Hotplug

Select this item to enable or disable Hot Plug for PCIE1/2/3/4/5/6/7, M2_1/M2_2, MCIO1/2/3/4/5 globally.

PCIE ASPM

Selec this item to disable ASPM support in all PCIe root ports. The default value is [Auto].

Onboard Debug Port LED

Use this item to configure the onboard Dr. Debug LED.

3.3.3 Storage Configuration

```
             Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
         Advanced

   SATA Hot Plug                          [Enabled]              SATA Hot Plug

 ▶ MCIO3_SATA0 : Not Detected
 ▶ MCIO3_SATA1 : Not Detected
 ▶ MCIO3_SATA2 : Not Detected
 ▶ MCIO3_SATA3 : Not Detected
 ▶ MCIO3_SATA4 : Not Detected
 ▶ MCIO3_SATA5 : Not Detected
 ▶ MCIO3_SATA6 : Not Detected
 ▶ MCIO3_SATA7 : Not Detected
 ▶ M2_1(SATA) : Not Detected
 ▶ M2_2(SATA) : Not Detected
                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Option
                                                              F1: General Help
                                                              F7: Discard Changes
                                                              F9: Load UEFI Defaults
                                                              F10: Save and Exit
                                                              ESC: Exit

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```

SATA Hot Plug

Use this to enable or disable the SATA Hot Plug Function.

3.3.4 NVMe Configuration

```
                Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
    Advanced

  NVMe Configuration                                      Launch NVMe driver

  Launch NVMe driver                  [Enabled]

  No NVME Device Found




                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit




                Version 2.22.1285. Copyright (C) 2023 American Megatrends, Inc.
```
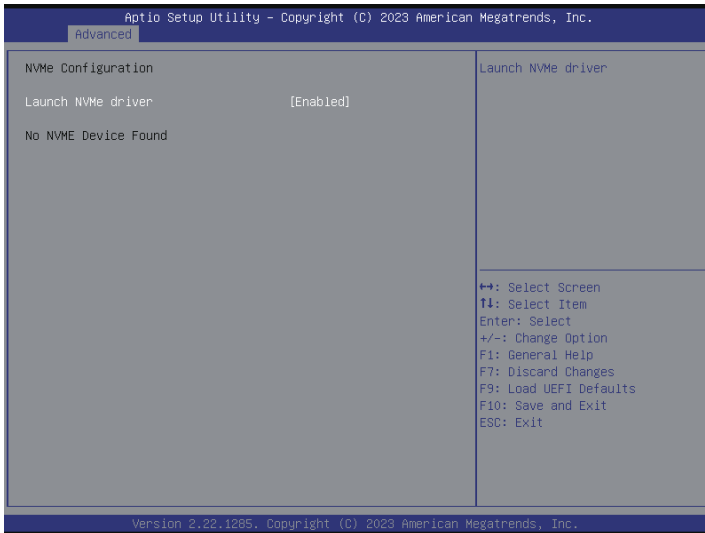
The NVMe Configuration displays the NVMe controller and Drive information.

Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

3.3.5 ACPI Configuration

```
           Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
    Advanced

   ACPI Configuration                                    Allow the system to be waked
                                                         up by a PCIE device and enable
   PCIE Devices Power On              [Enabled]          wake on LAN.
   Ring-In Power On                  [Disabled]
   RTC Alarm Power On                [By OS]




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit



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```

PCIE Devices Power On

Allow the system to be waked up by a PCIE device and enable wake on LAN.

Ring-In Power On

Allow the system to be waked up by onboard COM port modem Ring-In Singals.

RTC Alarm Power On

Allow the system to be waked up by real time clock alarm. Set it to By OS to let it be handled by the operating system.

RTC Alarm Date
Use this item to set Date of RTC power on feature.

RTC Alarm Hour
Use this item to set Hour of RTC power on feature.

RTC Alarm Minute
Use this item to set Minute of RTC power on feature.

RTC Alarm Second
Use this item to set Second of RTC power on feature.

3.3.6 USB Configuration

```
           Aptio Setup Utility — Copyright (C) 2023 American Megatrends, Inc.
    Advanced

  USB Configuration

  USB Controllers:
       2 XHCIs
  USB Devices:
       1 Drive, 1 Keyboard, 1 Mouse, 5 Hubs


                                              ↔: Select Screen
                                              ↑↓: Select Item
                                              Enter: Select
                                              +/−: Change Option
                                              F1: General Help
                                              F7: Discard Changes
                                              F9: Load UEFI Defaults
                                              F10: Save and Exit
                                              ESC: Exit



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```
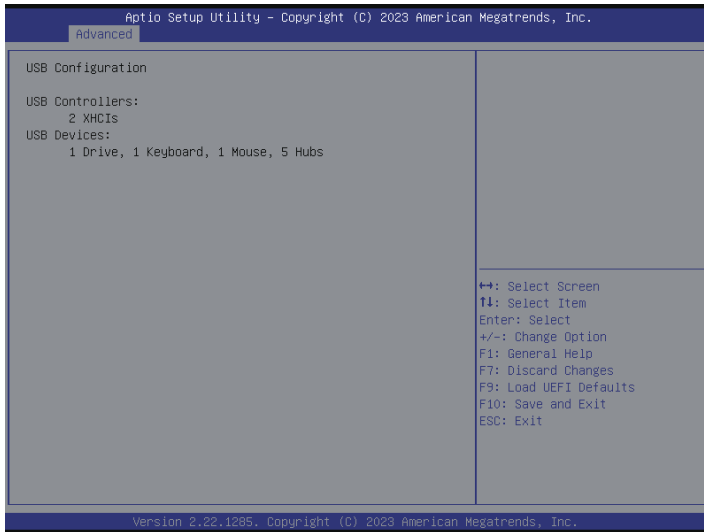
This displays the USB Controllers and USB Devices information.

3.3.7 Super IO Configuration


```
                    Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
        Advanced

    AST2600 Super IO Configuration                            Set Parameters of COM1

    Super IO Chip                        AST2600
  ▶ Serial Port 1 Configuration
  ▶ SOL Configuration



                                                              ↔: Select Screen
                                                              ↑↓: Select Item
                                                              Enter: Select
                                                              +/-: Change Option
                                                              F1: General Help
                                                              F7: Discard Changes
                                                              F9: Load UEFI Defaults
                                                              F10: Save and Exit
                                                              ESC: Exit


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```

Serial Port 1 Configuration

Use this item to set parameters of Serial Port 1 (COM1).

Serial Port
Use this item to enable or disable the serial port.

Change Settings
Use this item to select an optimal setting for Super IO device.

SOL Configuration

Use this item to set parameters of SOL.

SOL Port
Use this item to enable or disable the SOL Port.

Change Settings
Use this item to select an optimal setting for Super IO device.

3.3.8 Serial Port Console Redirection

```
          Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
              Advanced

                                                          Console Redirection Enable or
     COM1                                                 Disable.
     Console Redirection                [Disabled]
   ▶ Console Redirection Settings

     SOL
     Console Redirection                [Disabled]
   ▶ Console Redirection Settings

     Serial Port for Out-of-Band Management/
     Windows Emergency Management Services (EMS)
     Console Redirection EMS            [Enabled]
   ▶ Console Redirection Settings
                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit



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```

COM1 / SOL

Console Redirection

Use this to enable or disable Console Redirection. If this item is set to Enabled allowing to select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this to configure Console Redirection Settings, and specify how the computer and the host computer to which are connected exchange information. Both computers should have the same or compatible settings.

Terminal Type
Use this to select the preferred terminal emulation type for out-of-band management.

Option	Description
VT100	ASCII character set
VT100Plus	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second

Use this to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [38400], [57600] and [115200].

Data Bits

Use this to set the data transmission size. The options include [7] and [8] (Bits).

Parity

Use this to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space].

Stop Bits

The item indicates the end of a serial data packet. The standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.

Flow Control

Use this to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None] and [Hardware RTS/CTS].

VT-UTF8 Combo Key Support

Use this to enable or disable the VT-UTF8 Combo Key Support for ANSI/VT100 terminals.

Recorder Mode

Use this to enable or disable Recorder Mode to capture terminal data and send it as text messages.

Resolution 100x31

Use this to enable or disable extended terminal resolution support.

Putty KeyPad

Use this to select Function Key and Keypad on Putty.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Console Redirection EMS

Use this to enable or disable Console Redirection EMS. If this item is set to Enabled allowing to select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this to configure Console Redirection Settings, and specify how the remote computer and the host computer to which are connected exchange information. Both computers should have the same or compatible settings.

Out-of-Band Mgmt Port

Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

Terminal Type EMS

Use this to select the preferred terminal emulation type for out-of-band management. It is recommended to select [VT-UTF8].

Option	Description
VT100	ASCII character set
VT100+	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second EMS

Use this to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [57600] and [115200].

Flow Control EMS

Use this to set the flow control to 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 restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/ CTS], and [Software Xon/Xoff].

Data Bits

Parity

Stop Bits

3.3.9 H/W Monitor

In this section, it allows user to monitor the status of the hardware on the system, including the parameters of the CPU temperature, motherboard temperature, CPU fan speed, chassis fan speed, and the critical voltage.

3.3.10 PCI Subsystem Settings

```
              Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
        Advanced

  Re-Size BAR Support                [Disabled]              If system has Resizable BAR
  SR-IOV Support                     [Disabled]              capable PCIe Devices, this
                                                             option Enables or Disables
                                                             Resizable BAR Support.




                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Option
                                                             F1: General Help
                                                             F7: Discard Changes
                                                             F9: Load UEFI Defaults
                                                             F10: Save and Exit
                                                             ESC: Exit


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```

Re-Size BAR Support

Enable or disable this item to Re-Size BAR supported upon the sysem has resizable BAR capable PCIe Devices.

SR-IOV Support

If system has SR-IOV capable PCIe Devices, this option Enables or Disables Single Root IO Virtualization Support.

3.3.11 AMD CBS

```
                Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
        Advanced

     AMD CBS                                                CPU Common Options

     AMD CBS Revision Number            0x0

   ▶ CPU Common Options
   ▶ DF Common Options
   ▶ UMC Common Options
   ▶ NBIO Common Options
   ▶ FCH Common Options
   ▶ Soc Miscellaneous Control
   ▶ Workload Tuning
   ▶ CXL Common Options
                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit

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```

CPU Common Options

Use this item to configure CPU Common options.

DF Common Options

Use this item to configure DF Common options.

UMC Common Options

Use this item to configure UMC Common options.

NBIO Common Options

Use this item to configure NBIO Common options.

FCH Common Options

Use this item to configure FCH Common options.

Soc Miscellaneous Control

Use this item to configure Soc Miscellaneous Control options.

Workload Tuning Options

Use this item to configure Workload Tuning options.

CXL Common Options

Use this item to configure CXL Common options.

3.3.12 AMD PBS

```
              Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
        Advanced

   AMD PBS                                              AMD CPM RAS related settings
  ▶ RAS
  ▶ CXL Range Encryption




                                                        ↦↤: Select Screen
                                                        ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit



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```
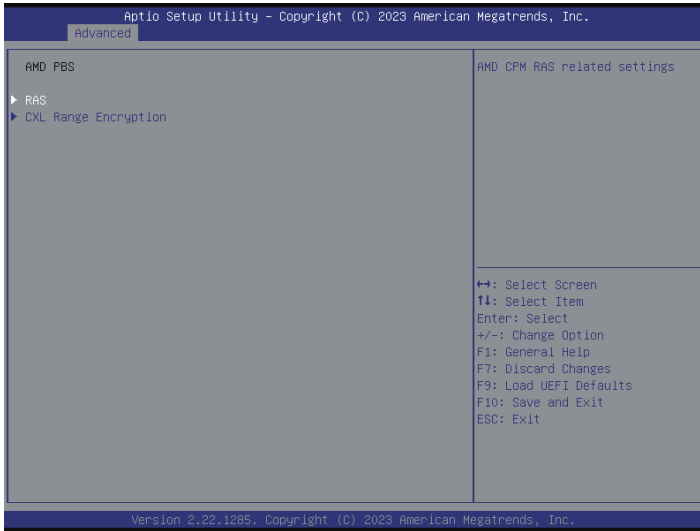
RAS

Use this item to configure AMD CPM RAS related settings.

RAS Periodic SMI Control
Use this to enable or disable Periodic SMI for polling [MCA Threshold] error.

SMI Threshold
This limits the number of [MCA Threshold and Deferred Error SMI source] per a unit time.

SMI Scale
Use this to define the time scale.

SMI Scale Unit
Use this to define the unit of time scale.

SMI Period
Use this to define the polling interval with ms unit. Input 0 value to disable this function.

GHES Notify Type
This specifies the notification type for deferred/corrected errors.

GHES UnCorr Notify Type
This specifies the notification type for uncorrected errors.

PCIe GHES Notify Type
This specifies the notification type for PCIe corrected errors.

PCIe UnCorr GHES Notify Type
This specifies the notification type for PCIe uncorrected errors.

PCIe Root Port Corr Err Mask Reg
Use this to initialize the PCIe AER corrected error mask register of root port.

PCIe Root Port UnCorr Err Mask Reg
Use this to initialize the PCIe AER uncorrected error mask register of root port.

PCIe Root Port UnCorr Err Sev Reg
Use this to initialize the PCIe AER uncorrected error severity registers of root port.

PCIe Device Corr Err Mask Reg
Use this to initialize the PCIe AER corrected error mask register of PCIe device.

PCIe Device UnCorr Err Mask Reg
Use this to initialize the PCIe AER uncorrected error mask register of PCIe device.

PCIe Device UnCorr Error Sev Reg
Use this to initialize the PCIe AER uncorrected error severity registers of PCIe device

CXL DP CIE Mask Enable
Use this to enable or disable masking of CXL DP correctable error-internal error.

DRAM Hard Post Package Repair
Use this to enable or disable the spare DRAM rows to replace malfunctioning rows via an in-field repair mechanism.

HEST DMC Structure Support
Use this to enable or disable HEST DMC (Deffered Maching Check) structure support.

CXL Error Report Support
Use this to enable or disable CXL error reporting.

CXL Range Encryption

Configure AMD CXL range encryption setting.

Range 1/2/3/4/5/6/7 Memory Base
Use this item to enter memory range base address.

Range 1/2/3/4/5/6/7 Memory Limit
Use this item to enter memory range limit address.

Start CXL Range Encryption
Use this to encrypt all memory ranges.

3.3.13 PSP Firmware Versions

```
                    Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
          Advanced

    PSP Firmware Versions

    ABL Version                       10078013
    PSP BootLoader Version            00.29.00.88
    SMU FW Version                    04.71.101.00
    SEV FW Version                    01.01.37.05
    PHY FW Version                    00.01.37.00
    MPIO FW Version                   01.00.20.3A
    TF MPDMA FW Version               00.47.03.00
    PM MPDMA FW Version               00.47.3A.00
    GMI FW Version                    AB.01.27.00
    RIB FW Version                    02.00.08.32
    SEC FW Version                    0D.0E.90.67
    PMU FW Version                    00.00.90.47          ↔: Select Screen
    EMCR FW Version                   00.00.E0.44          ↑↓: Select Item
    uCode B0 Version                  A101020              Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit

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```

The PSP Firmware Verions displays the version information of ABL, PSP BootLoader, SMU FW, SEV FW, PHY FW, MPIO FW, TF MPDMA FW, PM MPDMA FW, GMI FW, RIB FW, SEC FW, PMU FW, EMCR FW and uCode B0.

3.3.14 Network Stack Configuration
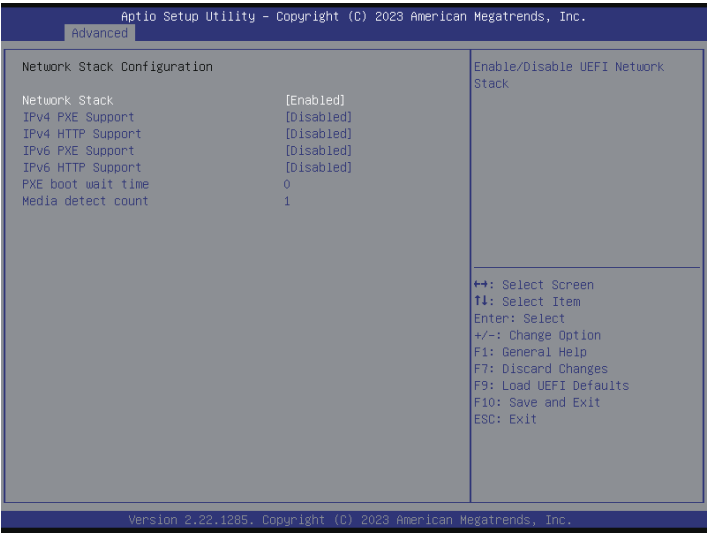
Network Stack

Use this to enable or disable UEFI Network Stack.

IPv4 PXE Support

Use this to enable or disable IPv4 PXE boot support. If disabled, IPv4 PXE boot support will not be available.

IPv4 HTTP Support

Use this to enable or disable IPv4 HTTP boot support. If disabled, IPv4 HTTP boot support will not be available.

IPv6 PXE Support

Use this to enable or disable IPv6 PXE boot support. If disabled, IPv6 PXE boot support will not be available.

IPv6 HTTP Support

Use this to enable or disable IPv6 HTTP boot support. If disabled, IPv6 HTTP boot support will not be available.

PXE boot wait time

Wait time in seconds to press ESC key to abort the PXE boot. Use either +/- or numeric keys to set the value.

Media detect count

Number of times the presence of media will be checked. Use either +/- or numeric keys to set the value.

3.3.15 Driver Health


```
              Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
      Advanced

 ▶ Intel(R) 40GbE 4.5.05      Healthy                    Provides Health Status for the
 ▶ Intel(R) 40GbE 4.5.05      Healthy                    Drivers/Controllers




                                                         ↔: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit



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```

Inter (R) 40GbE 4.5.05   Healthy

Provides Health Status for the Drivers/Controllers.

3.3.16 Tls Auth Configuration

```
              Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
         Advanced

                                                            Press <Enter> to configure
    ▶ Server CA Configuration                               Server CA.

    ▶ Client Cert Configuration




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit



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```
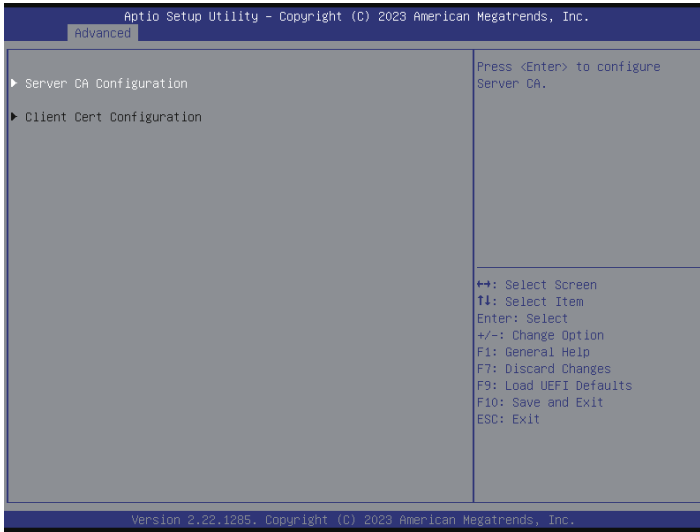
Server CA Configuration

Press <Enter> to configure Server CA.

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

Client Cert Configuration

Press <Enter> to configure Client Cert.

3.3.17 Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI update tool allows user to update system UEFI without entering operating systems first like MSDOS or Windows®. Just save the new UEFI file to the USB flash drive, floppy disk or hard drive and launch this tool, then update the UEFI only in a few clicks without preparing an additional floppy diskette or other complicated flash utility. Please be noted that the USB flash drive or hard drive must use FAT32/16/12 file system. Execute the Instant Flash utility, the utility will show the UEFI files and the respective information. Select the proper UEFI file to update UEFI, and reboot the system after the UEFI update process is completed.

3.4 Security

This section allows user to set or change the supervisor/user password for the system. For the user password item is allowed user to clear it.

```
           Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
     Main  Advanced  Security  Server Mgmt  Event Logs  Boot  Exit

   Supervisor Password              Not Installed          Set or change the password for
   User Password                    Not Installed          the administrator account.
                                                           Only the administrator has
   Supervisor Password                                     authority to change the
   User Password                                           settings in the UEFI Setup
                                                           Utility. Leave it blank and
 ▶ Secure Boot                                             press enter to remove the
                                                           password.


                                                           ↔: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit


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```

Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Use this to enable or disable Secure Boot Control. The default value is [Disabled]. Enable to support Windows Server 2012 R2 or later versions Secure Boot.

Secure Boot Mode

Secure Boot mode selector: Standard/Custom. In Custom mode Secure Boot Variables can be configured without authentication.

English

3.4.1 Key Management

In this section, expert users can modify Secure Boot Policy variables without full authenti-
cation.

```
           Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
                    Security

    Vendor Keys                          Valid             Install factory default Secure
                                                           Boot keys after the platform
    Factory Key Provision            [Disabled]            reset and while the System is
  ▶ Install default Secure Boot keys                       in Setup mode
  ▶ Clear Secure Boot keys
  ▶ Enroll Efi Image
  ▶ Export Secure Boot variables

    Secure Boot variable | Size| Keys| Key Source
  ▶ Platform Key         (PK)|    0|    0| No Keys
  ▶ Key Exchange Keys   (KEK)|    0|    0| No Keys
  ▶ Authorized Signatures (db)|   0|    0| No Keys
  ▶ Forbidden  Signatures(dbx)|   0|    0| No Keys      ↔: Select Screen
  ▶ Authorized TimeStamps(dbt)|   0|    0| No Keys      ↑↓: Select Item
  ▶ OsRecovery Signatures(dbr)|   0|    0| No Keys      Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit


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```

Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in
Setup mode.

Install Default Secure Boot Keys

Please install default secure boot keys if it's the first time to use secure boot.

Clear Secure Boot Keys

This force system to setup Mode-Clear all Secure Boot Variables. Change takes effect after
reboot.

Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 hash of the binary into Au-
thorized Signature Database (db).

Export Secure Boot Variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system de-
vice.

Platform Key (PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

Key Exchange Keys (KEK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

Authorized Signatures (db)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

English

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

Forbidden Signatures (dbx)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

Authorized TimeStamps (dbt)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

OsRecovery Signatures (dbr)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, External, Mixed

3.5 Server Mgmt
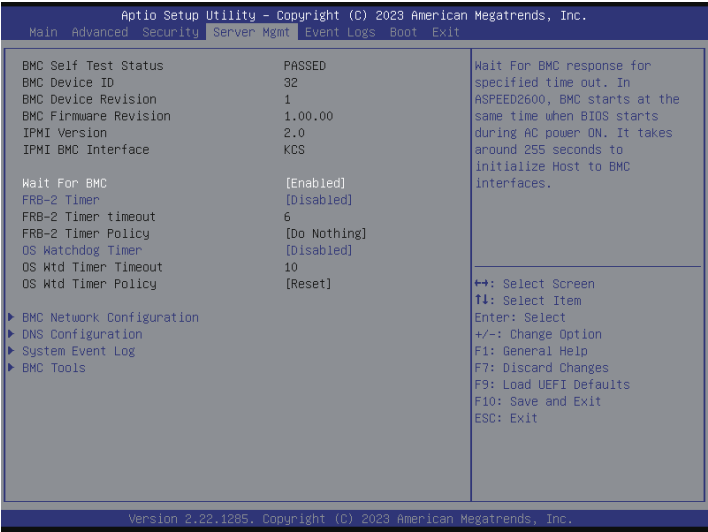
Wait For BMC

Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 255 seconds to initialize Host to BMC interfaces.

FRB-2 Timer

Use this item to enable or disable FRB-2 timer (POST timer)

FRB-2 Timer Timeout

Use this to define the FRB-2 Time Expiration between 1 to 30 value.

FRB-2 Timer Policy

Configure how the system should respond. If the FRB-2 Timer expires is disabled, this item is not available.

OS Watchdog Timer

Use this item to enable or disable OS Watchdog Timer. If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads.

OS Wtd Timer Timeout

Configure the OS Boot Watchdog Timer Expiration between 1 to 30 min value. If the OS Boot Watchdog Timer is disabled, this item is not available.

OS Wtd Timer Policy

Configure how the system should respond if the OS Boot Watchdog Timer expires. If the OS Boot Watchdog Timer is disabled, this item is not available.

BMC Network Configuration

Use this to configure BMC network parameters.

DNS Configuration

Select this item to configure DNS parameters.

System Event Log

Press <Enter> to change the SEL event log configuration.

BMC Tools

Use this item to configure about KCS control, restore AC power loss and load BMC default settings.

3.5.1 BMC Network Configuration


```
                  Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
                                        Server Mgmt

    BMC Network Configuration                                   Enable/Disable bonding, if you
                                                                want to enable bonding please
 ▶ Bonding Setting                                              enable all Lan channel first
    Bonding Status                    Enabled
 ▶ Bond0 enable setting
    Bond0 status                      Enabled

    ***************************
    Configure IPV4 support
    ***************************
    Lan channel    (Failover)
    Manual setting IPMI LAN           [No]
    Configuration address source      Unspecified
    Station IP address                0.0.0.0                   ←→: Select Screen
    Current subnet mask               0.0.0.0                   ↑↓: Select Item
    Current MAC address               00-00-00-00-00-00         Enter: Select
    Current router IP address         0.0.0.0                   +/-: Change Option
    VLAN                              [Disabled]                F1: General Help
                                                                F7: Discard Changes
    ***************************                                 F9: Load UEFI Defaults
    Configure IPV6 support                                      F10: Save and Exit
    ***************************                                 ESC: Exit
    Lan channel    (Failover)
    IPV6 Support                      [Disabled]


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```

Bonding Setting

Select this item to enabled or disabled bonding. Please enable all lan channel first when want to enable bonding.

Lan channel (Failover)

Manual Setting IPMI LAN

If [No] is selected, the IP address is assigned by DHCP. If using a static IP address, toggle to [Yes], and the changes take effect after the system reboots. The default value is [No].

Configuration Address Source

Select to configure BMC network parameters statically or dynamically(by BIOS or BMC). Configuration options: [Static] and [DHCP].

Static: Manually enter the IP Address, Subnet Mask and Gateway Address in the BIOS for BMC LAN channel configuration.
DHCP: IP address, Subnet Mask and Gateway Address are automatically assigned by the network's DHCP server.

The default login information for the IPMI web interface is:
    Username: admin
    Password: admin

For more instructions on how to set up remote control environment and use the IPMI management platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/faq.asp

VLAN

Enable or disable Virtual Local Area Network.

If [Enabled] is selected, configure the items below.
VLAN ID: Select this item to configure the VLAN ID setting, the Maximum value is 4094 and the Minimum value is 1.
VLAN Priority: Select this item to configure the VLAN Priotity setting. the Maximum value is 7 and the Minimum value is 0.

IPV6 Support

Enable or disable LAN IPV6 Support.

Manual Setting IPMI LAN(IPV6)

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.

3.5.2 DNS Configuration

```
          Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
                       Server Mgmt

DNS Configuration                                        Manual DNS Configuration

Manual DNS Configuration          [YES]

Domain Name Service Configuration
DNS Service                       [Enabled]

Host Configuration
Host Name Settings                [Automatic]
Host Name                         AMIA2429C088648

BMC Registration Settings
bond Register BMC                 [Enabled]
bond Register Method              [Nsupdate]                →←: Select Screen
                                                            ↑↓: Select Item
Domain Name Configuration                                   Enter: Select
Domain Setting                    [bond0_v4]                +/-: Change Option
                                                            F1: General Help
Domain Name Server Configuration                            F7: Discard Changes
Domain Name Server Setting        [bond0]                   F9: Load UEFI Defaults
IP Priority                       [IPv4]                    F10: Save and Exit
                                                            ESC: Exit



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```

Manual DNS Configuration

Select this item to manual configure DNS.

If [YES] is selected, configure the items below.

DNS Service

Use this item to enable or disable DNS Service Configuration.

Host Name Settings

Use this item to automatic or manual Host Name Settings.

Bond Register BMC

Use this item to enable or disable Bond Register BMC.

Bond Register Method

Use this item to configure Bond Register Method with Nsupdate or DHCP client FQDN/ Hostname..

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

Domain Name Server Setting

This item supports Manual and Bond0 DNS Server Settings.

IP Priority

This item supports IPV4 and IPV6 IP Priority.

3.5.3 System Event Log

```
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                        Server Mgmt

Enabling/Disabling Options                        Change this to enable or
SEL Components                    [Enabled]        disable event logging for
                                                  error/progress codes during
Erasing Settings                                  boot.
Erase SEL                        [No]
When SEL is Full                 [Do Nothing]

Custom EFI Logging Options
Log EFI Status Codes             [Error code]

PCIe Device Degrade ELog Support [Disabled]

NOTE: All values changed here do not take
      effect until computer is restarted.        ←→: Select Screen
                                                 ↑↓: Select Item
                                                 Enter: Select
                                                 +/-: Change Option
                                                 F1: General Help
                                                 F7: Discard Changes
                                                 F9: Load UEFI Defaults
                                                 F10: Save and Exit
                                                 ESC: Exit

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```

SEL Components

Change this to enable or disable event logging for error/progress codes during boot.

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full

Use this to choose options for reactions to a full SEL.

Log EFI Status Codes

Use this item to disable the logging of EFI Status Codes or log only error code or only progress code or both.

PCIe Device Degrade ELog Support

Use this item to enable or disable PCIe Device Degrade Error Logging Support.

3.5.4 BMC Tools

```
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                                    Server Mgmt

   BMC Tools                                              Select the KSC interface state
                                                          after POST end. If [Enabled]
   KCS control                      [No change]           is selected, the BMC will
    KCS control Current State       Enabled               remain KCS interface after
                                                          POST stage. If [Disabled] is
   Restore AC Power Loss            [No change]           selected, the BMC will disable
    Restore AC Power Current State  Last State            KCS interface after POST stage

 ▶ Load BMC Default Settings

                                                          ↔: Select Screen
                                                          ↑↓: Select Item
                                                          Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit

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```
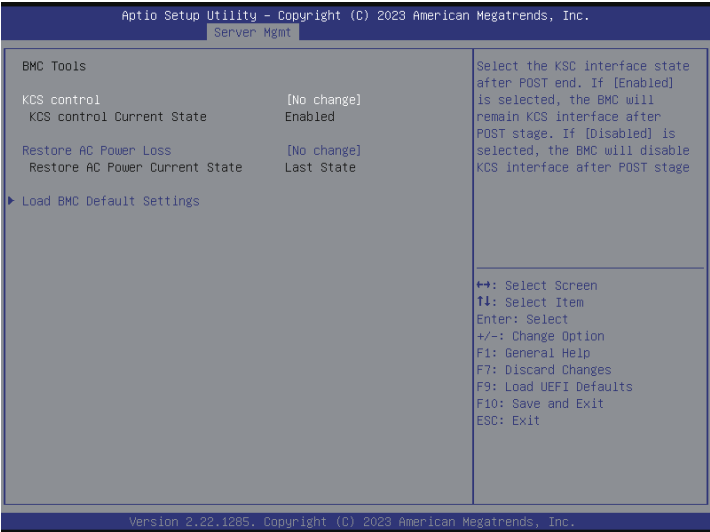
KCS Control

Select this KCS interface state after POST end. If [Enabled] us selected, the BMC will remain KCS interface after POST stage. If [Disabled] is selected, the BMC will disable KCS interface after POST stage
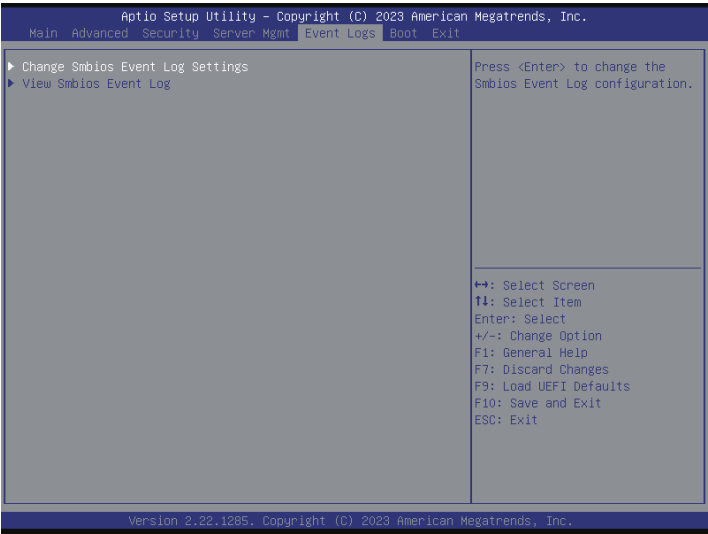
Restore AC Power Loss

This allows user to set the power state after an unexpected AC/power loss. If [Power Off] is selected, the AC/power remains off when the power recovers. If [Power On] is selected, the AC/power resumes and the system starts to boot up when the power recovers. If [Last State] is selected, it will recover to the state before AC/power loss.

Load BMC Default Settings

Use this item to Load BMC Default Settings

English

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3.6 Event Logs

```
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        Main  Advanced  Security  Server Mgmt  Event Logs  Boot  Exit

     ▶ Change Smbios Event Log Settings                      Press <Enter> to change the
     ▶ View Smbios Event Log                                 Smbios Event Log configuration.













                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/–: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit




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```

Change Smbios Event Log Settings

Use this item to configure the Smbios Event Log Settings.
When entering the item, the screen displays following sub-items:

Smbios Event Log
Use this item to enable or disable all features of the SMBIOS Event Logging during system boot.

Erase Event Log
Choose options for erasing Smbios Event Log. Erasing is done prior to any logging activation during reset.

When Log is Full
Use this item to choose options for reactions to a full Smbios Event Log. The options include [Do Nothing] and [Erase Immediately].

Log System Boot Event
Choose option to enable/disable logging of System boot event.

MECI (Multiple Event Count Increment)
Use this item to enter the increment value for the multiple event counter. The valid range is from 1 to 255.

METW (Multiple Event Time Window)
Use this item to specify the number of minutes which must pass between duplicate log entries which utilize a multiple-event counter. The value ranges from 0 to 99 minutes.

Log EFI Status Code

Enable or disable the logging of EFI Status Codes as OEM reserved type E0 (if not already converted to legacy).

Convert EFI Status Codes to Standard Smbios Type

Enable or disable the converting of EFI Status Codes to Standard Smbios Types (Not all may be translated).
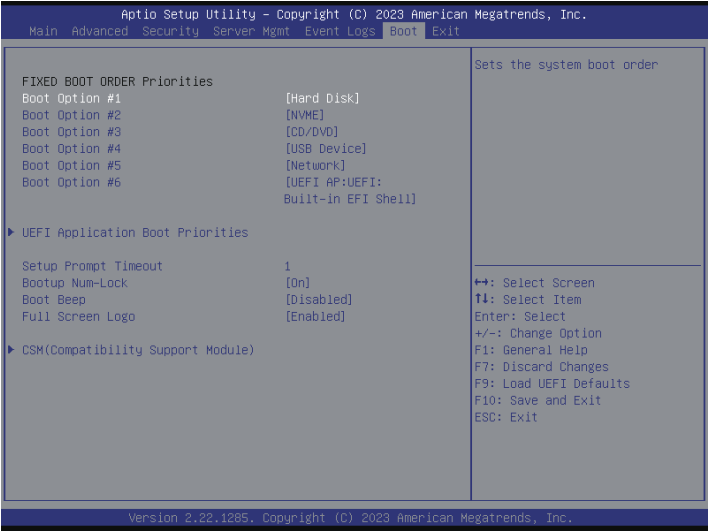
View Smbios Event Log

Press <Enter> to view the Smbios Event Log records.

⚠ *All values changed here do not take effect until computer is restarted.*

3.7 Boot Screen

In this section, it will display the available devices on the system for user to configure the boot settings and the boot priority.

Boot Option #1/#2/#3/#4/#5/#6

Use this to set the system boot order.

UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

Setup Prompt Timeout

Configure the number of seconds to wait for the UEFI setup utility.

Bootup Num-Lock

Select whether Num Lock should be turned on or off when the system boots up.
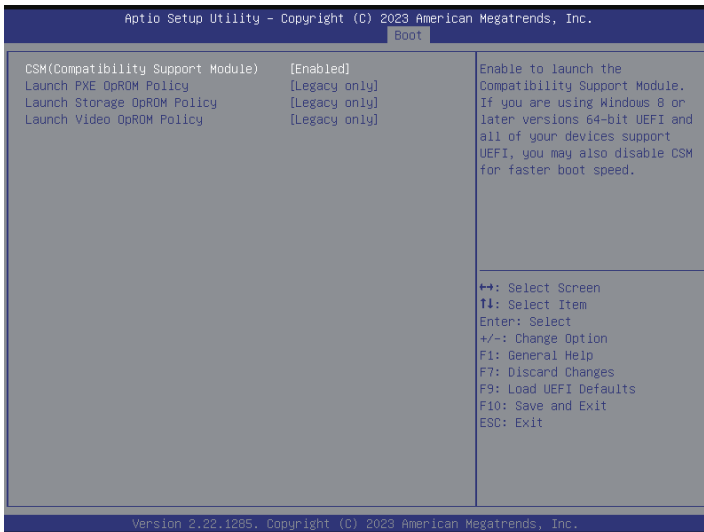
Boot Beep

Select whether the Boot Beep should be turned on or off when the system boots up. Please note that a buzzer is needed.

Full Screen Logo

Enable to display the boot logo or disable to show normal POST message.

3.7.1 CSM Parameters

```
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                                                    Boot

 CSM(Compatibility Support Module)      [Enabled]              Enable to launch the
 Launch PXE OpROM Policy                [Legacy only]          Compatibility Support Module.
 Launch Storage OpROM Policy            [Legacy only]          If you are using Windows 8 or
 Launch Video OpROM Policy              [Legacy only]          later versions 64-bit UEFI and
                                                               all of your devices support
                                                               UEFI, you may also disable CSM
                                                               for faster boot speed.




                                                               ↔: Select Screen
                                                               ↑↓: Select Item
                                                               Enter: Select
                                                               +/-: Change Option
                                                               F1: General Help
                                                               F7: Discard Changes
                                                               F9: Load UEFI Defaults
                                                               F10: Save and Exit
                                                               ESC: Exit



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```

CSM (Compatibility Support Module)

Enable to launch the Compatibility Support Module. Please do not disable unless running a WHCK test. If using Windows 8 or later versions 64-bit UEFI and all of the devices support UEFI, it may also disable CSM for faster boot speed.

Launch PXE OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.
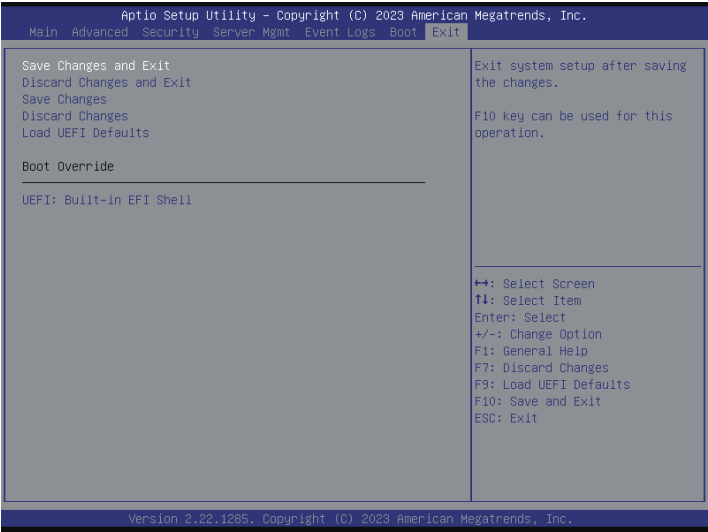
Launch Storage OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

Launch Video OpROM Policy

Select UEFI only to run those that support UEFI option ROM only. Select Legacy only to run those that support legacy option ROM only. Select Do not launch to not execute both legacy and UEFI option ROM.

English

3.8 Exit Screen


```
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    Main   Advanced   Security   Server Mgmt   Event Logs   Boot   Exit

  Save Changes and Exit                                    Exit system setup after saving
  Discard Changes and Exit                                 the changes.
  Save Changes
  Discard Changes                                          F10 key can be used for this
  Load UEFI Defaults                                       operation.

  Boot Override

  UEFI: Built-in EFI Shell



                                                           →←: Select Screen
                                                           ↑↓: Select Item
                                                           Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit


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```

Save Changes and Exit

When selecting this option, the following message "Save configuration changes and exit setup?" will pop-out. Press <F10> key or select [Yes] to save the changes and exit the UEFI SETUP UTILITY.

Discard Changes and Exit

When selecting this option, the following message "Discard changes and exit setup?" will pop-out. Press <ESC> key or select [Yes] to exit the UEFI SETUP UTILITY without saving any changes.

Save Changes

When selecting this option, the following message "Save changes?" will pop-out. Select [Yes] to save all changes.

Discard Changes

When selecting this option, the following message "Discard changes?" will pop-out. Select [Yes] to discard all changes.

Load UEFI Defaults

Load UEFI default values for all the setup questions. F9 key can be used for this operation.

Chapter 4 Software Support

After all the hardware has been installed, it suggests to go to the offical website at http://www.ASRockRack.com and make sure if there are any new updates of the BIOS / BMC firmware for the motherboard.

4.1 Download and Install Operating System

This motherboard supports various Microsoft® Windows® Server / Linux compliant operating systems. Please download the operating system from the OS manufacturer. Please refer to the OS documentation for more instructions.

Please download the Intel® SATA Floppy Image driver from the ASRock Rack's website (www.asrockrack.com) to the USB drive while installing OS in SATA RAID mode.

4.2 Download and Install Software Drivers

This motherboard supports various Microsoft® Windows® compliant drivers. Please download the required drivers from the website at http://www.ASRockRack.com.

To download necessary drivers, go to the product page, click on the "Download" tab, choose the operating system that is used, and then download the using driver.

4.3 Contact Information

Contact ASRock Rack or want to know more about ASRock Rack, welcome to visit ASRock Rack's website at http://www.ASRockRack.com; or contact the dealer for further information.

English

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.

> ⚠️ *Always unplug the power cord before adding, removing or changing any hardware components. Failure to do so may cause physical injuries and damages to motherboard components.*

1. Disconnect the power cable and check whether the PWR LED is off.
2. Unplug all cables, connectors and remove all add-on cards from the motherboard. Make sure that the jumpers are set to default settings.
3. Confirm that there are no short circuits between the motherboard and the chassis.
4. Install a CPU and fan on the motherboard, then connect the chassis speaker and power LED.

If there is no power...
1. Confirm that there are no short circuits between the motherboard and the chassis.
2. Make sure that the jumpers are set to default settings.
3. Check the settings of the 115V/230V switch on the power supply.
4. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.

If there is no video...
1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...
1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR5 RDIMM/RDIMM-3DS
3. Install more than one DIMM modules that should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...

1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether the power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to the related problem on ASRock Rack's FAQ page: http://www.asrockrack.com/support

English

5.2 Technical Support Procedures

If the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

1. Contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

Contact ASRock Rack's technical support at:
http://www.asrockrack.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of the invoice marked with the date of purchase is required. By calling the vendor or going to RMA website (http://event. asrockrack.com/tsd.asp) to obtain a Returned Merchandise Authorization (RMA) number.

The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when returning the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

Contact the distributor first for any product related problems during the warranty period.

Contact Information

If it needs to contact ASRock Rack or want to know more about ASRock Rack, you're welcome to visit ASRock Rack's website at http://www.asrockrack.com; or contact the dealer for further information. For technical questions, please submit a support request form at https://event.asrockrack.com/tsd.asp

ASRock Rack Incorporation

e-mail: ASRockRack_sales@asrockrack.com

ASRock Rack EUROPE B.V.

Bijsterhuizen 11-11
6546 AR Nijmegen
The Netherlands
Phone: +31-24-345-44-33

ASRock Rack America, Inc.

13848 Magnolia Ave, Chino, CA91710 U.S.A.
Phone: +1-909-590-8308
Fax: +1-909-590-1026

English