OPEN

Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

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Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation

Motherboard

GENOAD8X-2T/BCM

User Manual

English

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.

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)

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

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 **GENOAD8X-2T/BCM** 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 GENOAD8X-2T/BCM motherboard
  (EEB-like form factor: 12.63-in x 13-in)
- Quick installation guide
- 1 x I/O shield
- 1 x MCIO X4 to 4 SATA cable (63cm)
- 2 x screws for M.2 sockets

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

English

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1.2 Specifications

GENOAD8X-2T/BCM	
MB Physical Status	
Form Factor	EEB like
Dimension	12.63" x 13" (320.8 x 330.2mm)
Processor System	
CPU	Supports AMD EPYC 9004 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 Slot (Slot7 close to CPU)	
Slot 7	PCIe5.0 x8
Slot 6	PCIe5.0 / CXL1.1 x16
Slot 5	PCIe5.0 x16
Slot 4	PCIe5.0 / CXL1.1 x16
Slot 3	PCIe5.0 x16
Slot 2	PCIe5.0 / CXL1.1 x16
Slot 1	PCIe5.0 x16
Slot 0	PCIe5.0 / CXL1.1 x16
Note	** SLOT7 shares lanes with MCIO1 and MCIO2. MCIO1 and MCIO2 will be disabled when SLOT7 is populated* ** SLOT1 shares lanes with MCIO4 and M2_2. SLOT1 auto-switch to PCIe5.0 x8 when MCIO4 and M2_2 are populated*
Other PCIe Expansion Connectors	
M.2	M2_1 (PCIe5.0 x4 or 4 SATA 6Gb/s), supports 22110/2280 form factor M2_2 (PCIe5.0 x4), supports 22110/2280 form factor
MCIO	3 MCIO1~3 (PCIe5.0 x4 or 4 SATA 6Gb/s) 1 MCIO4 (PCIe5.0 x4)
SATA/SAS Storage	
CPU Built-in Storage	AMD EPYC 9004 (16 SATA 6Gb/s): 3 MCIO, 4 SATA via optional M2U2_HD_G4 M.2 device
Ethernet	
Additional Ethernet Controller	Broadcom BCM57416: 2 RJ45 (10GbE)

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
VGA Port	1 DB15 (VGA)
Serial Port	1 DB9 (COM)
USB	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (10GbE), 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 (24-pin, ATX main power), 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 Header	1
COM Header	1
VGA Header	1
Speaker Header	1 (4-pin)
Fan Header	8 (6-pin)
Thermal Sensor Header	1

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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 (64 bit)
	Linux®:
	- RedHat Enterprise Linux Server 8.6 (64bit) / Server 8.7 (64bit) / Server 9.0 (64bit) / Server 9.1 (64bit)
	- SUSE SLES 15.4 (64 bit)
	- UBuntu 20.04.5 (64 bit) / 22.04 (64 bit) / 22.10 (64 bit)
	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 our 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

33.02 cm (13 in)

32.08 cm (12.63 in)

GENOAD8X-2T/BCM
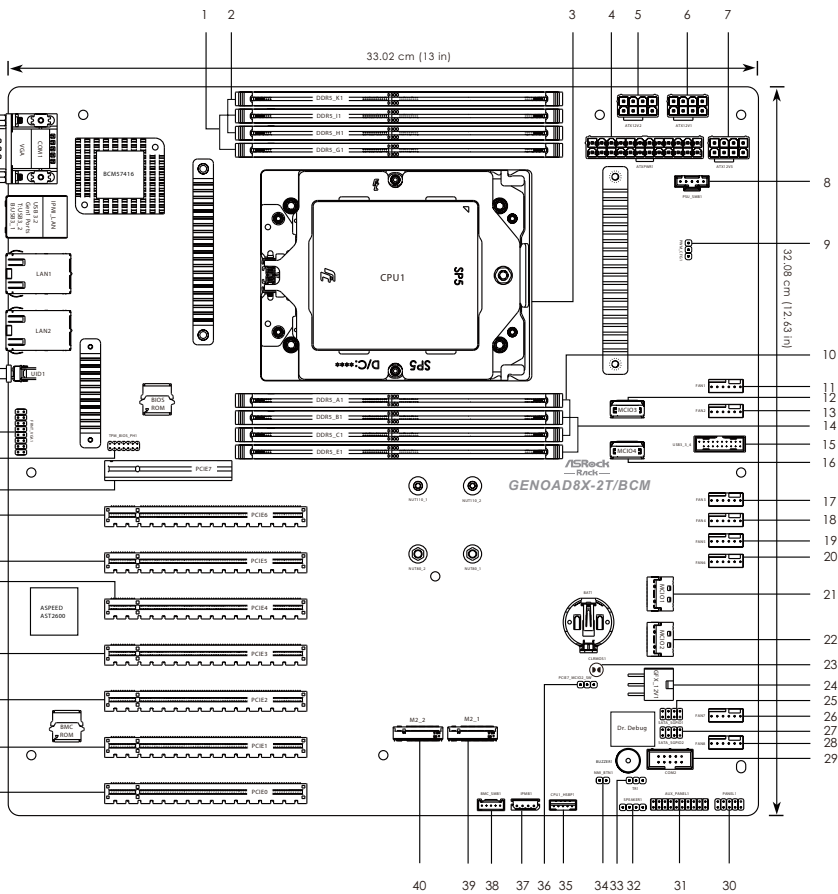
No.	Description
1	2 x 288-pin DDR5 DIMM Slots (DDR5_G1, DDR5_I1)*
2	2 x 288-pin DDR5 DIMM Slots (DDR5_H1, DDR5_K1)*
3	AMD Socket SP5 (SM-LGA-6096) (CPU1)
4	ATX Power Connector (ATXPWR1)
5	ATX 12V Power Connector (ATX12V2)
6	ATX 12V Power Connector (ATX12V1)
7	ATX 12V Power Connector (ATX12V3)
8	PSU SMBus Header (PSU_SMB1)
9	PWM Configuration Header (PWM_CFG1)
10	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_C1)*
11	System Fan Connector (FAN1)
12	Mini Cool Edge IO x4 Connector (MCIO3)
13	System Fan Connector (FAN2)
14	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_E1)*
15	USB 3.2 Gen1 Header (USB3_3_4)
16	Mini Cool Edge IO x4 Connector (MCIO4)
17	System Fan Connector (FAN3)
18	System Fan Connector (FAN4)
19	System Fan Connector (FAN5)
20	System Fan Connector (FAN6)
21	Mini Cool Edge IO x4 Connector (MCIO1)
22	Mini Cool Edge IO x4 Connector (MCIO2)
23	Clear CMOS Pad (CLRMOS1)
24	Graphics 12V Power Connector (GFX_12V1)
25	SATA SGPIO Connector (SATA_SGPIO1)
26	System Fan Connector (FAN7)
27	SATA SGPIO Connector (SATA_SGPIO2)
28	System Fan Connector (FAN8)
29	COM Port Header (COM2)
30	System Panel Header (PANEL1)
31	Auxiliary Panel Header (AUX_PANEL1)
32	Speaker Header (SPEAKER1)
33	Thermal Sensor Header (TR1)
34	Non Maskable Interrupt Button (NMI_BTN1)

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No.	Description
35	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
36	PCIE Signal Source Selection Jumper (PCIE7_MCIO2_SW)
37	Intelligent Platform Management Bus Header (IPMB1)
38	BMC SMBus Header (BMC_SMB1)
39	M.2 Socket (M2_1) (Type 2280/22110)
40	M.2 Socket (M2_2) (Type 2280/22110)
41	PCI Express 5.0 x16 Slot (PCIE0)
42	PCI Express 5.0 x16 Slot (PCIE1)
43	PCI Express 5.0 x16 Slot (PCIE2)
44	PCI Express 5.0 x16 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	PCI Express 5.0 x8 Slot (PCIE7)
49	SPI TPM Header (TPM_BIOS_PH1)
50	Front VGA Header (FRNT_VGA1)

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

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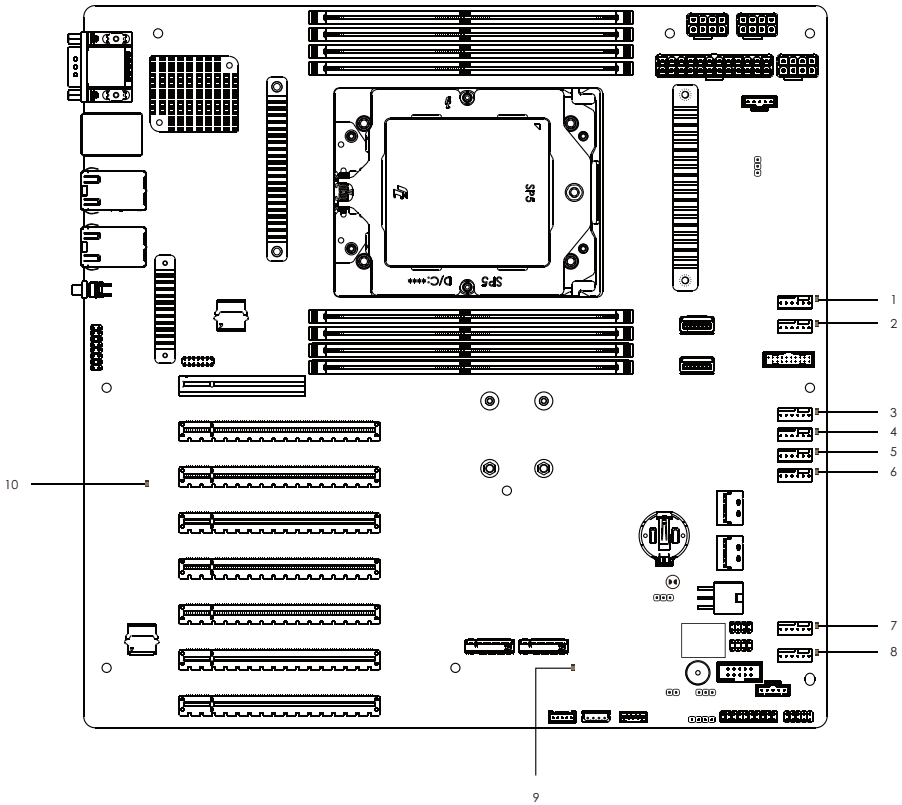
No.	Item	Status	Description
1	LED_FAN1	Red	FAN1 failed
2	LED_FAN2	Red	FAN2 failed
3	LED_FAN3	Red	FAN3 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN5	Red	FAN5 failed
6	LED_FAN6	Red	FAN6 failed
7	LED_FAN7	Red	FAN7 failed
8	LED_FAN8	Red	FAN8 failed
9	SB_PWR1	Green	STB PWR ready
10	BMC_LED1	Green	BMC heartbeat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

1.6 I/O Panel
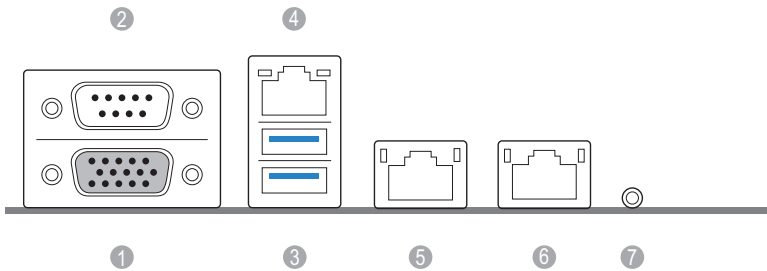
No.	Description	No.	Description
1	VGA Port (VGA)	5	10G LAN RJ-45 Port (LAN1)**
2	Serial Port (COM1)	6	10G LAN RJ-45 Port (LAN2)**
3	USB 3.2 Gen1 Ports (USB3_1_2)	7	UID Switch (UID1)
4	IPMI LAN Header (IPMI_LAN1)*		

LAN Port LED Indications

*There are two LEDs next to the IPMI LAN port. Please refer to the table below for the LAN port LED indications.
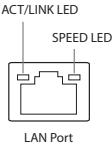
IPMI LAN Port LED Indications

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 are two LEDs on each 10G LAN port. Please refer to the table below for the LAN port LED indications.

ACT/LINK LED
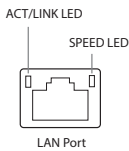
SPEED LED

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
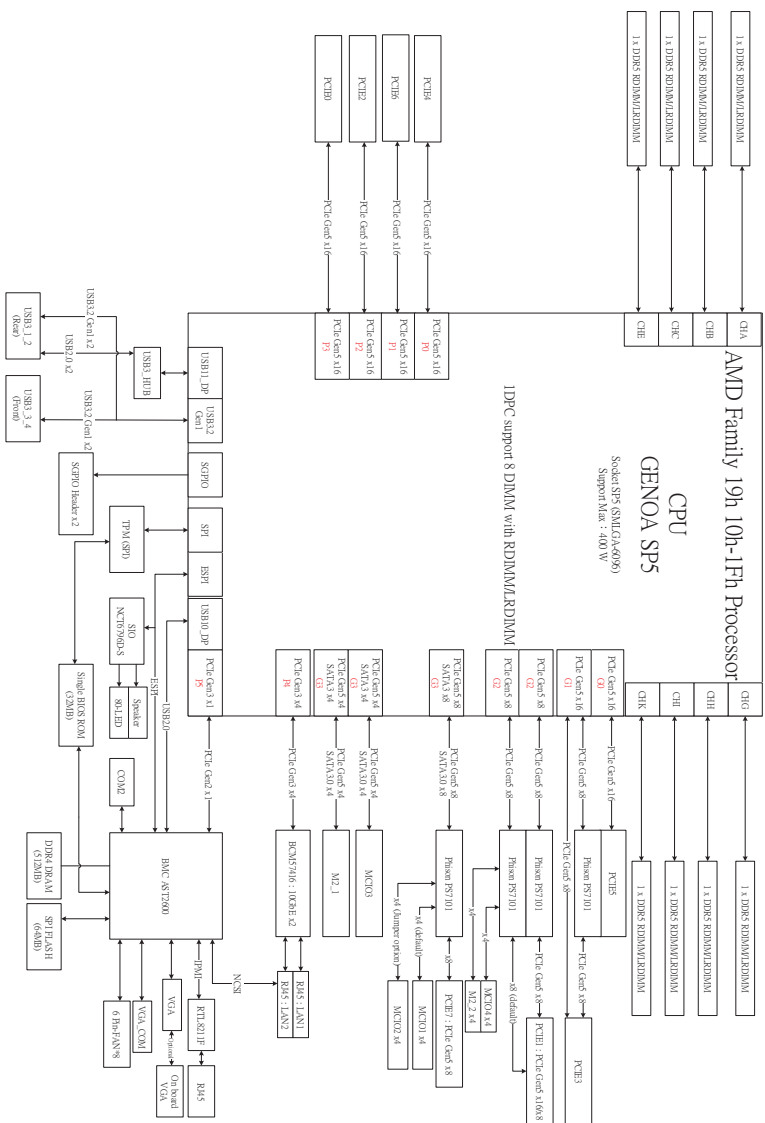
Chapter 2 Installation

This is an EEB-like form factor (12.63" x 13", 32.08 x 33.02cm) 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.

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

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.*

English

2.3 Installing the CPU
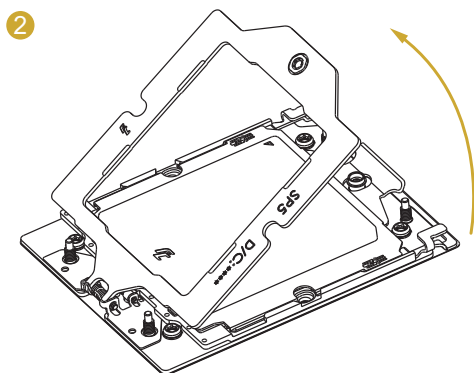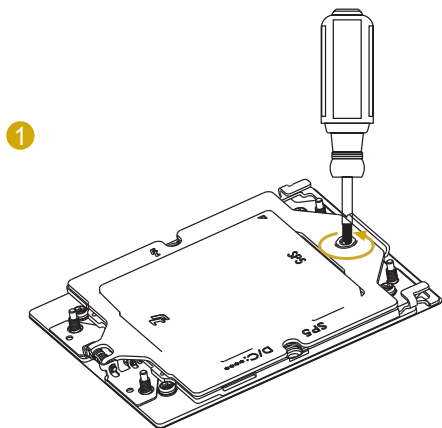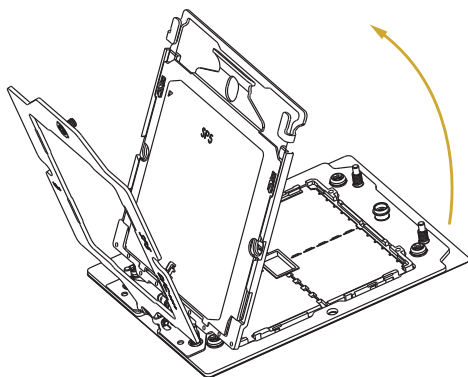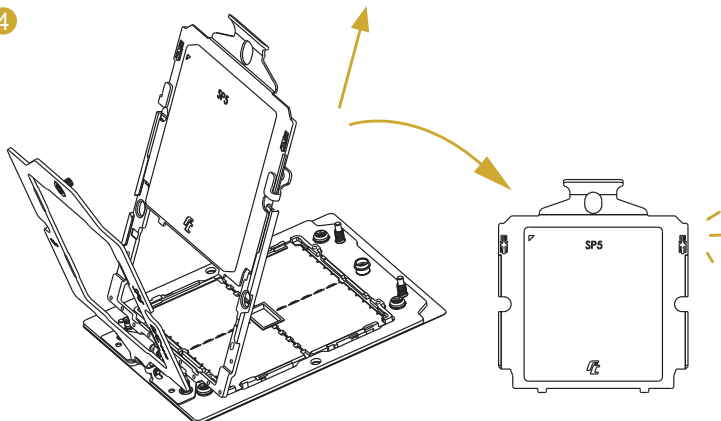
⑤
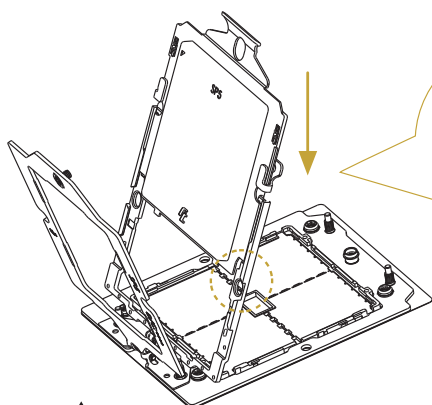
Carrier Frame with CPU
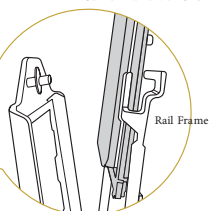
Rail Frame

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.

⑥

⑨

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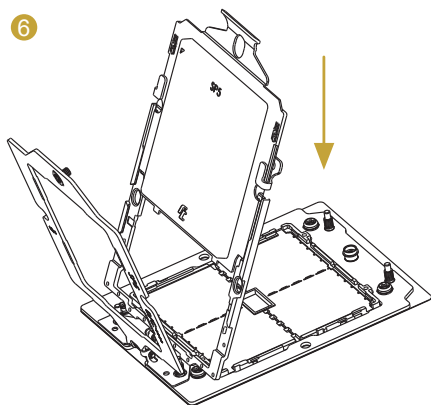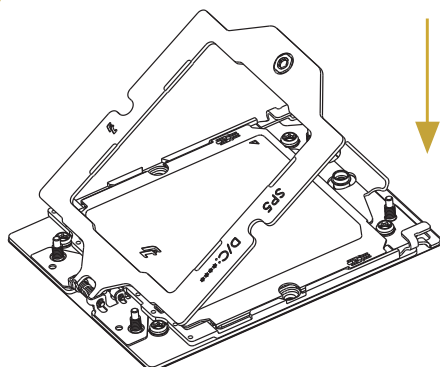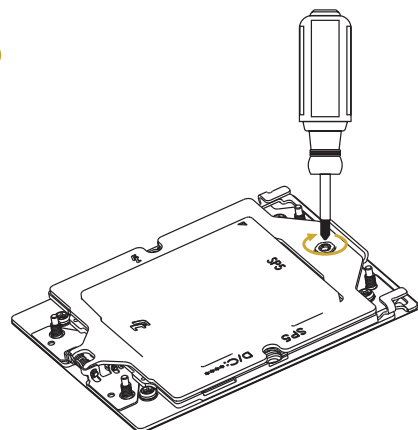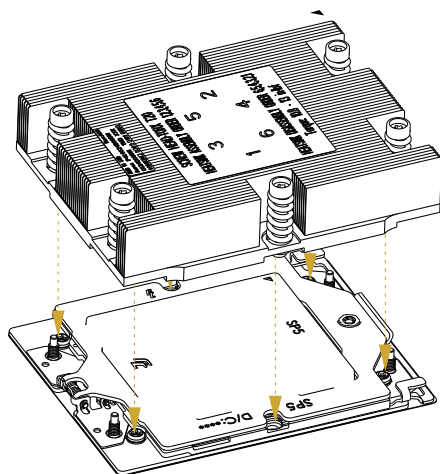
Set your torque wrench to 1.54 in-lb.
One fourth a turn each time.

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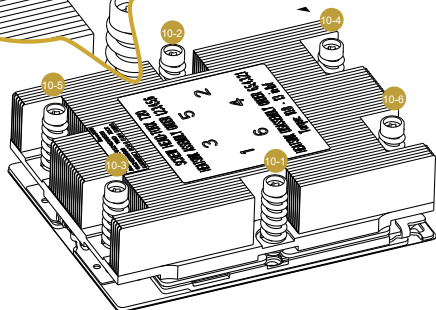
2.4 Installation of Memory Modules (DIMM)

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

1. For Eight channel configuration, It needs to install identical (the same brand, speed, size and chip-type) DDR5 DIMM groups.
2. Eight Channel Memory Technology is enabled only when 8 or 16 memory modules are installed.
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.
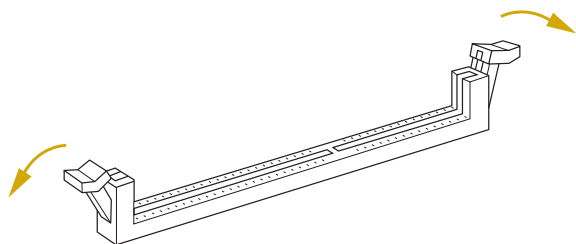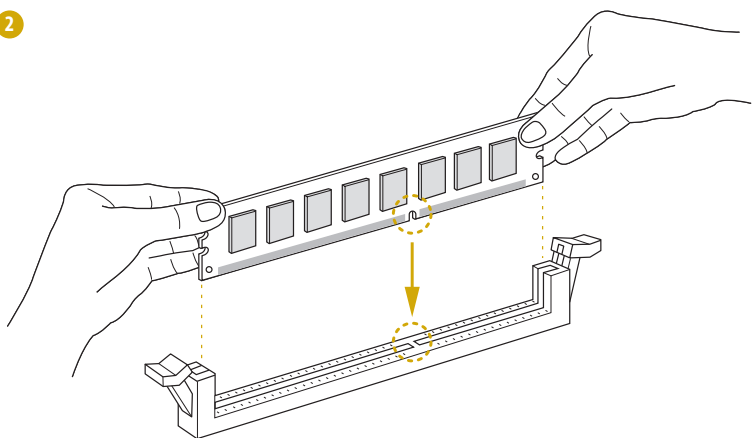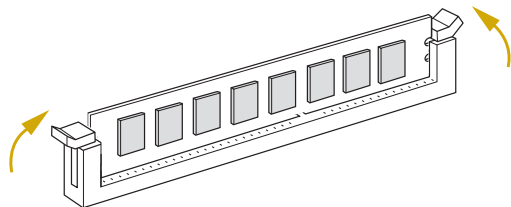
2.5 Expansion Slots (PCI Express Slots)

There are eight PCI Express slots on this motherboard.

PCIE slots:

PCIE0 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE1 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE2 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE3 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 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.
PCIE7 (PCIE 5.0 x8 slot, from CPU1) is used for PCI Express x8 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE0	5.0	x16	x16	CPU1
PCIE1	5.0	x16	x16	CPU1
PCIE2	5.0	x16	x16	CPU1
PCIE3	5.0	x16	x16	CPU1
PCIE4	5.0	x16	x16	CPU1
PCIE5	5.0	x16	x16	CPU1
PCIE6	5.0	x16	x16	CPU1
PCIE7	5.0	x8	x8	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.

> 1. *SLOT7 shares lanes with MCIO1 and MCIO2. MCIO1 and MCIO2 will be disabled when SLOT7 is populated.*
> 2. *SLOT1 shares lanes with MCIO4 and M2_2. SLOT1 auto-switch to PCIe5.0 x8 when MCIO4 and M2_2 are populated.*

2.6 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.
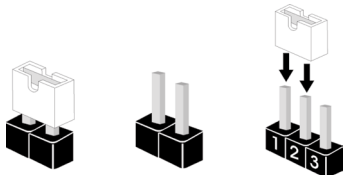
PCIE Signal Source Selection Jumper (3-pin PCIE7_MCIO2_SW) (see p.6, No. 36)	**1_2** PCIE7(x4) + MCIO2(x4)	**2_3** PCIE7(x8) (Default)

> ⚠
> 1. *SLOT7 shares lanes with MCIO1 and MCIO2. MCIO1 and MCIO2 will be disabled when SLOT7 is populated.*
> 2. *SLOT1 shares lanes with MCIO4 and M2_2. SLOT1 auto-switch to PCIe5.0 x8 when MCIO4 and M2_2 are populated.*

2.7 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. 30)

PLED+
PLED-
PWRBTN#
GND
1
GND
RESET#
GND
HDLED-
HDLED+
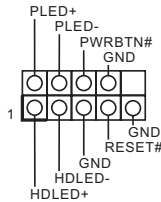
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

🔍 **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 connect-ing 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. 31)
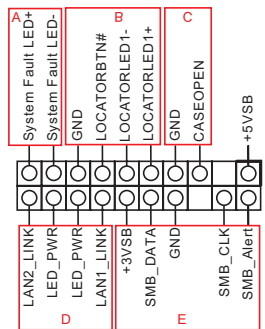
This header supports multiple functions on the front panel, including front panel SMB, internet status indicator.

Top row labels (A): System Fault LED+, System Fault LED-, GND, LOCATORBTN#, (B): LOCATORLED1-, LOCATORLED1+, GND, (C): CASEOPEN, +5VSB

Bottom row labels (D): LAN2_LINK, LED_PWR, LED_PWR, LAN1_LINK, (E): +3VSB, SMB_DATA, GND, SMB_CLK, SMB_Alert

1

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

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

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. 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.

E. 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.

Front VGA Header
(15-pin FRNT_VGA1)
(see p.6, No.50)

Left labels: V_SYNC, DDC_DATA, GND, GND, GND, Green
Right labels: DDC_CLK, H_SYNC, +5V, GND, GND, Blue, Red

1
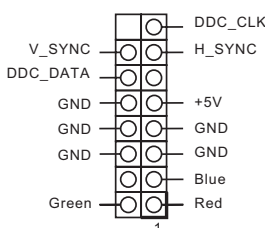
Please connect either end of VGA_2X8 cable to VGA header.

USB 3.2 Gen1 Header:
(19-pin USB3_3_4)
(see p.6, No. 15)

Vbus
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PB_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy

Vbus
IntA_PA_SSRX-
IntA_PA_SSRX+
GND
IntA_PA_SSTX-
IntA_PA_SSTX+
GND
IntA_PA_D-
IntA_PA_D+
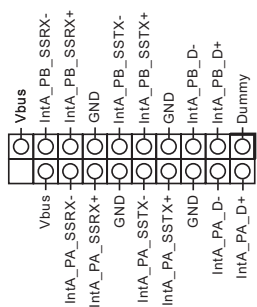
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

PWM Configuration
Header
(3-pin PWM_CFG1)
(see p.6, No. 9)

SMB_CLK_VSB
SMB_DATA_VSB
GND
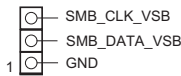
The header is used for PWM configurations.

Non Maskable Interrupt
Button Header
(2-pin NMI_BTN1)
(see p.6, No. 34)

GND
CONTROL

Please connect a NMI device to this header.

PSU SMBus Header
(PSU_SMB1)
(see p.6, No. 8)

ALERT
SMBCLK   +3V

SMBDATA
GND
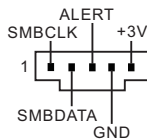
PSU SMBus monitors the status of the power supply, fan and system temperature.

BMC SMB Header
(5-pin BMC_SMB1)
(see p.6, No. 38)

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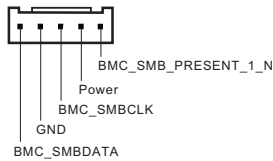
The header is used for the SM BUS devices.

English

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Backplane PCI Express
Hot-Plug Connector
(5-pin CPU1_ HSBP1)
(see p.6, No. 35)

+3V
CPU_HP_SCL
CPU_HP_SDA
P0_HP_ALERT_L
GND

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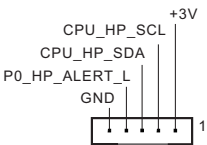
The header is used for the hot
plug feature of HDDs on the
backplane.

System Fan Connectors
(6-pin FAN1)
(see p.6, No. 11)
(6-pin FAN2)
(see p.6, No. 13)
(6-pin FAN3)
(see p.6, No. 17)
(6-pin FAN4)
(see p.6, No. 18)
(6-pin FAN5)
(see p.6, No. 19)
(6-pin FAN6)
(see p.6, No. 20)
(6-pin FAN7)
(see p.6, No. 26)
(6-pin FAN8)
(see p.6, No. 28)

6 5 4 3 2 1

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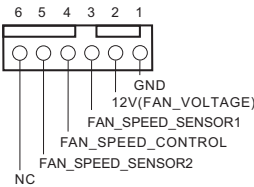
Please connect fan cables to
the fan connectors and match
the black wire to the ground
pin. All fans support Fan
Control.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 49)

TPM_CS#
GND
RSMRST#
MISO
SPI_CS
SPI_WP

1

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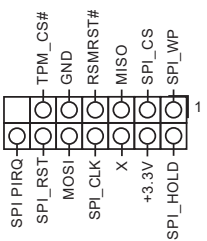
This connector supports SPI
Trusted Platform Module
(TPM) system, which can
securely store keys, digital
certificates, passwords, and
data. A TPM system also helps
enhance network security,
protects digital identities, and
ensures platform integrity.

ATX Power Connector
(24-pin ATXPWR1)
(see p.6, No. 4)
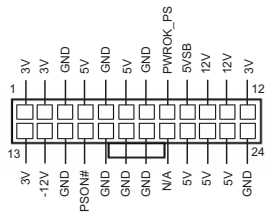
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX Power Connectors
(8-pin ATX12V1)
(see p.6, No. 6)
(8-pin ATX12V2)
(see p.6, No. 5)
(8-pin ATX12V3)
(see p.6, No. 7)
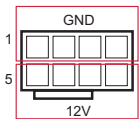
This motherboard provides three ATX power connectors.

Graphics 12V Power
Connector
(6-pin GFX_12V1)
(see p.6, No. 24)
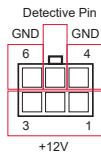
This motherboard provides a 6-pin Graphics 12V power connector. * Install the PSU's power cable to this connector when 4 graphics cards are installed.

Intelligent Platform
Management Bus Header
(4-pin IPMB1)
(see p.6, No. 37)
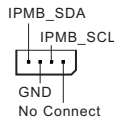
This 4-pin connector is used to provide a cabled baseboard or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Serial General Purpose
Input/Output Headers
(7-pin SATA_SGPIO1)
(see p.6, No. 25)
(7-pin SATA_SGPIO2)
(see p.6, No. 27)
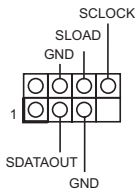
These headers support Serial Link interface for onboard SATA connections.

Serial Port Header (9-pin COM2) (see p.6, No. 29)	RRXD1 DDTR#1 DDSR#1 CCTS#1 1 RRI#1 RRTS#1 GND TTXD1 DDCD#1	This COM header supports a serial port module.
Thermal Sensor Header (3-pin TR1) (see p.6, No. 33)	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.
Chassis Speaker Header (4-pin SPEAKER1) (see p.6, No. 32)	DUMMY　SPEAKER 1 +5V　　DUMMY	Please connect the chassis speaker to this header.
Clear CMOS Pad (CLRCMOS1) (see p.6, No. 23)		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. 21) (MCIO2) (see p.6, No. 22) (MCIO3) (see p.6, No. 12) (MCIO4) (see p.6, No. 16)		These connectors are used for the PCIE devices.
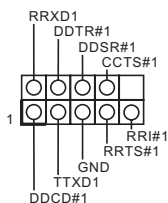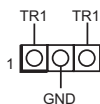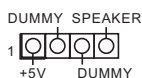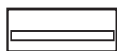
English

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MCIO1 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	BUF_RST0_L
A12	DN	B12	R_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
1	P_GND1	2	P_GND2
3	NP_NC1	4	NP_NC2
5	P_GND3	6	P_GND4

MCIO2 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G3_RXP4	B2	G3_TXP4
A3	G3_RXN4	B3	G3_TXN4
A4	GND	B4	GND
A5	G3_RXP5	B5	G3_TXP5
A6	G3_RXN5	B6	G3_TXN5
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	BUF_RST0_L
A12	DN	B12	R_PRSNT_N
A13	GND	B13	GND
A14	G3_RXP6	B14	G3_TXP6
A15	G3_RXN6	B15	G3_TXN6
A16	GND	B16	GND
A17	G3_RXP7	B17	G3_TXP7
A18	G3_RXN7	B18	G3_TXN7
A19	GND	B19	GND
1	P_GND1	2	P_GND2
3	NP_NC1	4	NP_NC2
5	P_GND3	6	P_GND4

MCIO3 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G3_RXP8	B2	G3_TXP8
A3	G3_RXN8	B3	G3_TXN8
A4	GND	B4	GND
A5	G3_RXP9	B5	G3_TXP9
A6	G3_RXN9	B6	G3_TXN9
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	BUF_RST0_L
A12	DN	B12	R_PRSNT_N
A13	GND	B13	GND
A14	G3_RXP10	B14	G3_TXP10
A15	G3_RXN10	B15	G3_TXN10
A16	GND	B16	GND
A17	G3_RXP11	B17	G3_TXP11
A18	G3_RXN11	B18	G3_TXN11
A19	GND	B19	GND
1	P_GND1	2	P_GND2
3	NP_NC1	4	NP_NC2
5	P_GND3	6	P_GND4

MCIO4 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G2_RXP12	B2	G2_TXP12
A3	G2_RXN12	B3	G2_TXN12
A4	GND	B4	GND
A5	G2_RXP13	B5	G2_TXP13
A6	G2_RXN13	B6	G2_TXN13
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	BUF_RST0_L
A12	DN	B12	R_PRSNT_N
A13	GND	B13	GND
A14	G2_RXP14	B14	G2_TXP14
A15	G2_RXN14	B15	G2_TXN14
A16	GND	B16	GND
A17	G2_RXP15	B17	G2_TXP15
A18	G2_RXN15	B18	G2_TXN15
A19	GND	B19	GND
1	P_GND1	2	P_GND2
3	NP_NC1	4	NP_NC2
5	P_GND3	6	P_GND4

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

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

English

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 Gen4 x4 (16GT/s x4).

Installing the M.2 SSD Module
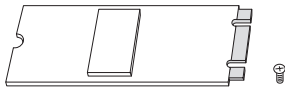
Step 1

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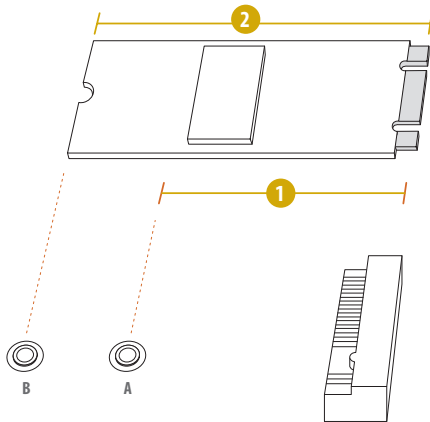
Step 2

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

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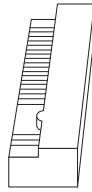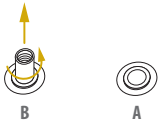
Step 3

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**
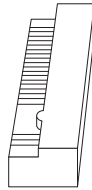
Step 4

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**
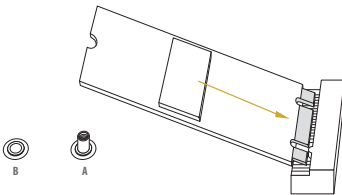
Step 5

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°
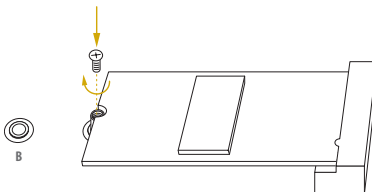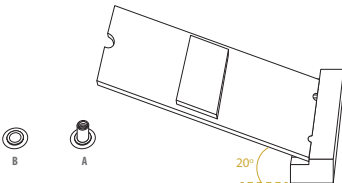
Step 6

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

41

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
Server Mgmt	To manage the server
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Event Logs	For event log configuration
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.

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                    GENOAD8X-2T/BCM             Mother Board Information
      UEFI Version                     1.10
      BMC Version                      1.07.00

   ▶ Mother Board Information
   ▶ Processor Information
   ▶ Memory Information

      System Date                      [Wed 10/18/2023]
      System Time                      [10:43:36]

                                                                  ↔: 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.
```

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                        GENOAD8X-2T/BCM

  BIOS Information
  BIOS Vendor                        American Megatrends
  Core Version                       5.27
  Compliancy                         UEFI 2.8; PI 1.7
  Project Version                    A3019 1.04 x64
  Build Date and Time                03/30/2023 16:24:28
  AGESA PI Version                   GenoaPI-SP5 1.0.0.6
  AMI RC Revision                    A3019 0.19
  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


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

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  : 2162MHz
  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


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

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                                     ↔: Select Screen
 ▶ Network Stack Configuration                               ↑↓: Select Item
 ▶ Driver Health                                             Enter: Select
 ▶ Tls Auth Configuration                                    +/-: Change Option
 ▶ Broadcom NetXtreme-E 2Px10GBASE-T OCP 3.0 Ethernet -      F1: General Help
   00:07:00:08:00:09                                         F7: Discard Changes
 ▶ VLAN Configuration (MAC:000700080009)                     F9: Load UEFI Defaults
 ▶ MAC:000700080009-IPv4 Network Configuration               F10: Save and Exit
 ▶ MAC:000700080009-IPv6 Network Configuration               ESC: Exit
 ▶ Broadcom NetXtreme-E 2Px10GBASE-T OCP 3.0 Ethernet -
   00:07:00:08:00:0A
 ▶ VLAN Configuration (MAC:0007008000A)
 ▶ MAC:0007008000A-IPv4 Network Configuration            ▼

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

⚠ *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.
```
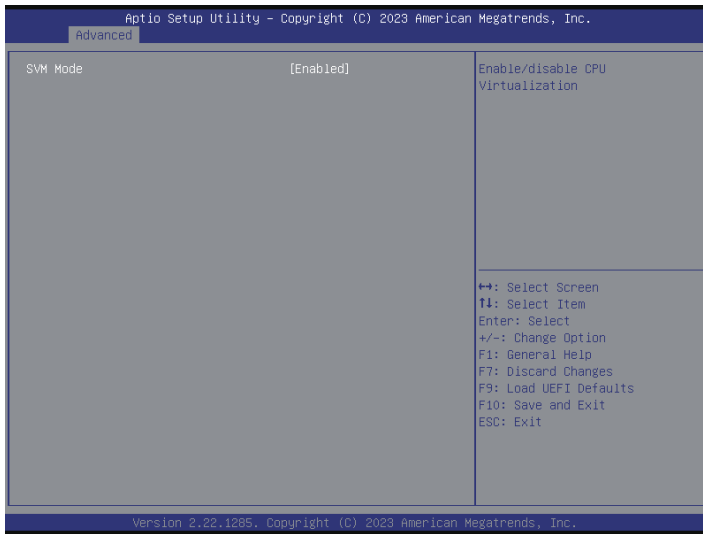
SVM Mode

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                          [Enabled]
   Serial Port 2 Mode                   [SOL]

 ▶ 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

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

Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN

Use this to enable or disable the Onboard LAN function.

Serial Port 2 Mode

Use this to set Serial Over LAN or COM mode.

MCIO Mode Selection

This item is for MCIO Mode Configuration.

MCIO1 Mode Selection
Select SATA or PCIE work in MCIO port.

MCIO2 Mode Selection
Select SATA or PCIE work in MCIO port.

MCIO3 Mode Selection
Select SATA or PCIE work in MCIO port.

PCIE Link Width

This displays the PCIE0/1/2/3/4/5/6 Link Width.
The default value for PCIE is [x16].

PCIE Link Speed

This displays the PCIE1/3/5/7, MCIO1/2/3 and M2_1 Link Speed. The default value is [Auto].

PCIE Hotplug

Select this item to configure Hot Plug for PCIE0/1/2/3/4/5/6/7, M2_1, MCIO1/2/3 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

      ▶ MCIO1_SATA0 : Not Detected
      ▶ MCIO1_SATA1 : Not Detected
      ▶ MCIO1_SATA2 : Not Detected
      ▶ MCIO1_SATA3 : Not Detected
      ▶ MCIO2_SATA0 : Not Detected
      ▶ MCIO2_SATA1 : Not Detected
      ▶ MCIO2_SATA2 : Not Detected
      ▶ MCIO2_SATA3 : Not Detected
      ▶ MCIO3_SATA0 : Not Detected
      ▶ MCIO3_SATA1 : Not Detected                               ↔: Select Screen
      ▶ MCIO3_SATA2 : Not Detected                               ↑↓: Select Item
      ▶ MCIO3_SATA3 : Not Detected                               Enter: Select
      ▶ M2_1(SATA) : Not Detected                                +/-: 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.
```

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.
```
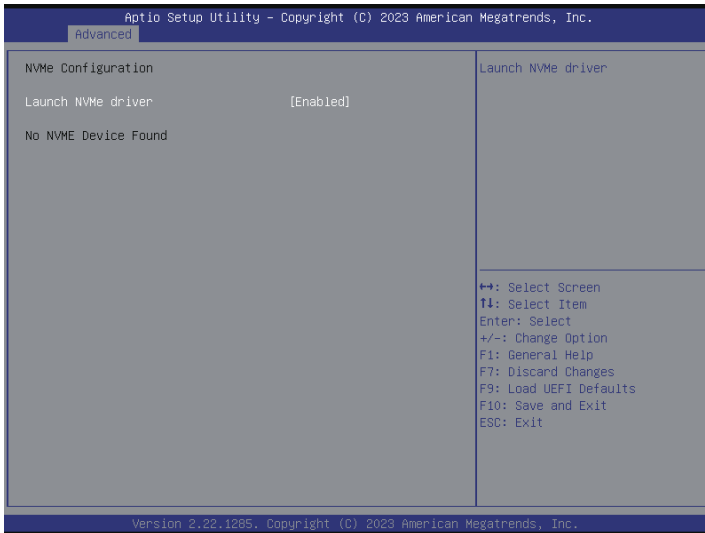
The NVMe Configuration displays the NVMe controller and Drive information.

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               [Disabled]           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

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

PCIE Devices Power On

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

Ring-In Power On

Use this item to enable or disable Ring-In signals to turn on the system from the power-soft-off mode.

RTC Alarm Power On

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.6 USB Configuration

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

  USB Configuration

  USB Controllers:
       2 XHCIs
  USB Devices:
       8 Drives, 2 Keyboards, 2 Mice, 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




                Version 2.22.1285. Copyright (C) 2023 American Megatrends, Inc.
```
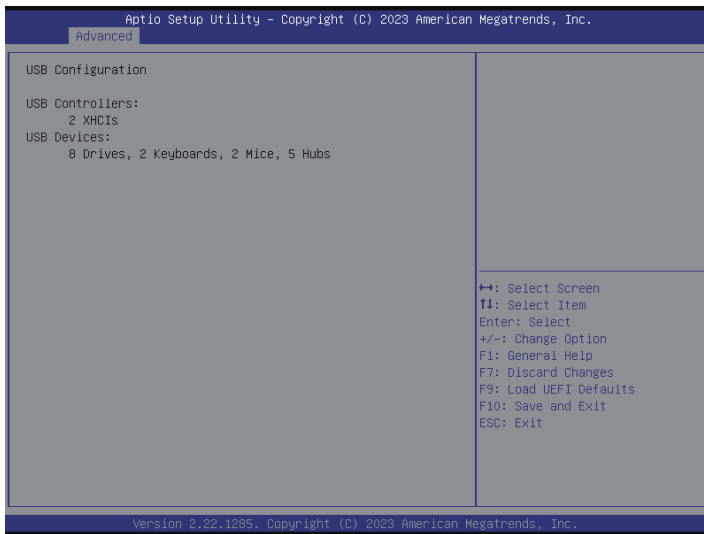
This displays the USB Controllers and USB Devices information.

English

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.

SOL Configuration

Use this item to set parameters of SOL.

SOL Port
Use this item to set parameters of SOL.

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


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

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. It is recommended to select [VT-UTF8].

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

English

57

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 computer and the host computer to which are connected exchange information.

Out-of-Band Mgmt Port

Microsof t 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

English

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.

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

   H/W Monitor

   VOLT_3V3SB                  : 3.44 V
   VOLT_5VSB                   : 4.89 V
   VOLT_VCORE0                 : 0.76 V
   VOLT_VCORE1                 : 0.76 V
   VOLT_P0_VSOC                : 0.88 V
   VOLT _VDD_11                : 1.1 V
   VOLT _VDDIO                 : 1.12 V
   VOLT _VDD_33                : 3.36 V
   VOLT _VDD_18                : 1.8 V
   VOLT_VHOST                  : 1.06 V
   VOLT_VDD0                   : 2.48 V
   VOLT_VDDP                   : 1.8 V          ↔: Select Screen
   VOLT_BAT                    : 3.22 V         ↑↓: Select Item
   VOLT_3V3                    : 3.28 V         Enter: Select
   VOLT_5V                     : 4.95 V         +/-: Change Option
   VOLT_12V                    : 12.1 V         F1: General Help
   TEMP_CPU                    : 42 °C          F7: Discard Changes
   FSC_INDEX                   : 47 °C          F9: Load UEFI Defaults
   TEMP_DDR5_A1                : N/A            F10: Save and Exit
   TEMP_DDR5_B1                : N/A            ESC: Exit
   TEMP_DDR5_C1                : N/A
   TEMP_DDR5_E1                : N/A
   TEMP_DDR5_G1                : N/A

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```

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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```
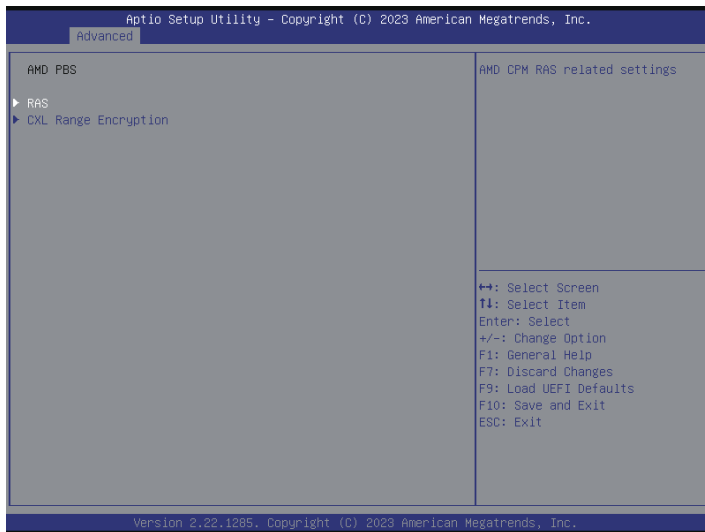
RAS

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 defines the time scale.

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

SMI Period
Use this to defines 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.

English

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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 B1 Version                  A101121                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 B1.

3.3.14 Network Stack Configuration

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

  Network Stack                    [Enabled]              Enable/Disable UEFI Network
  IPv4 PXE Support                 [Disabled]             Stack
  IPv4 HTTP Support                [Disabled]
  IPv6 PXE Support                 [Disabled]
  IPv6 HTTP Support                [Disabled]
  PXE boot wait time               0
  Media detect count               1




                                                         ↔: 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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```

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

▶ Broadcom NXE Gigabit Ethernet Driver      Healthy          Provides Health Status for the
▶ Broadcom NXE Gigabit Ethernet Driver      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




              Version 2.22.1285. Copyright (C) 2023 American Megatrends, Inc.
```
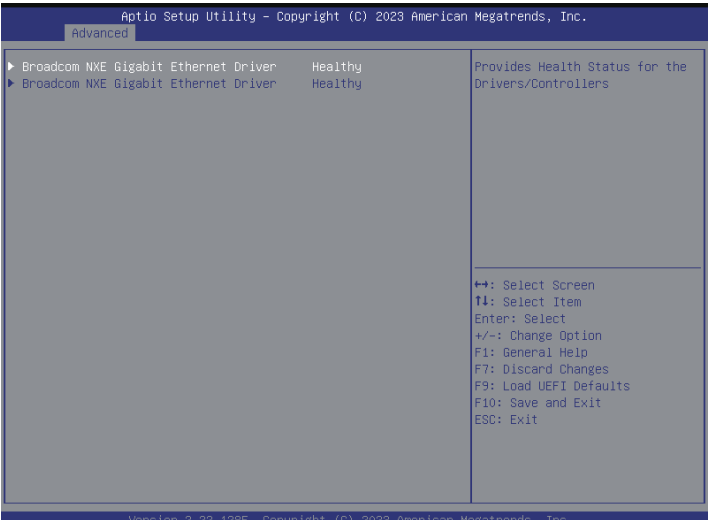
Broadcom NXE Gigabit Ethernet Driver   Healthy

Provides Health Status for the Drivers/Controllers.

3.3.16 Tls Auth Configuration

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

▶ Server CA Configuration                              Press <Enter> to configure
                                                        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


          Version 2.22.1285. Copyright (C) 2023 American Megatrends, Inc.
```
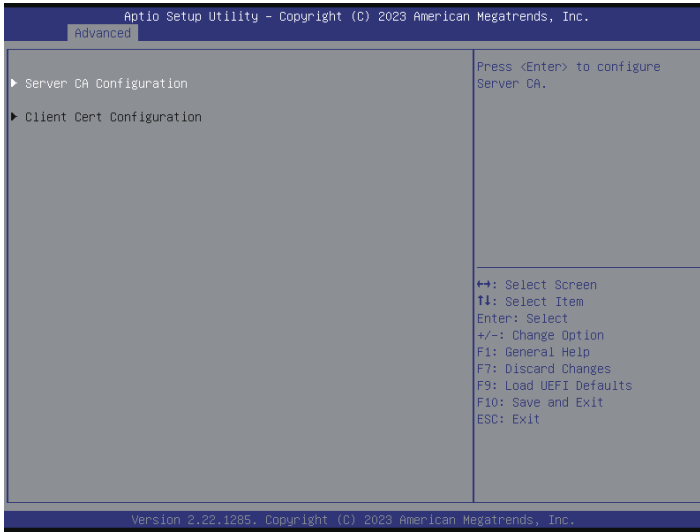
Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.17 Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI updatetool 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

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3.4.1 Install Default Secure Boot Keys

Please install default secure boot keys if it is the first time to use secure boot. Select Clear
Secure Boot keys item to clear the asigned secure boot keys.

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

     System Mode State              Setup                    Please install default secure
                                                             boot keys if it's the first
     Secure Boot                    [Disabled]               time you use secure boot.
                                    Not Active

     Secure Boot Mode               [Custom]
  ▶  Install default Secure Boot keys
  ▶  Clear Secure Boot keys

  ▶  Key Management

                                                             →←: 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.
```

3.4.2 Clear Secure Boot Keys

Force System to Setup Mode-Clear all Secure Boot Variables. Change takes effect after re-boot.

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

    System Mode State              User                    Force System to Setup Mode –
                                                           clear all Secure Boot
    Secure Boot                    [Disabled]              Variables. Change takes effect
                                   Not Active              after reboot

    Secure Boot Mode               [Custom]
  ▶ Install default Secure Boot keys
  ▶ Clear Secure Boot keys

  ▶ Key Management
                                                           ─────────────────────────────
                                                           ↔: 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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3.4.3 Key Management

In this section, expert users can modify Secure Boot Policy variables without full authentication.

```
         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       ↔: Select Screen
 ▶ Forbidden  Signatures(dbx)|    0|    0| No Keys       ↑↓: Select Item
 ▶ Authorized TimeStamps(dbt)|    0|    0| No Keys       Enter: Select
 ▶ OsRecovery Signatures(dbr)|    0|    0| No Keys       +/-: 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.
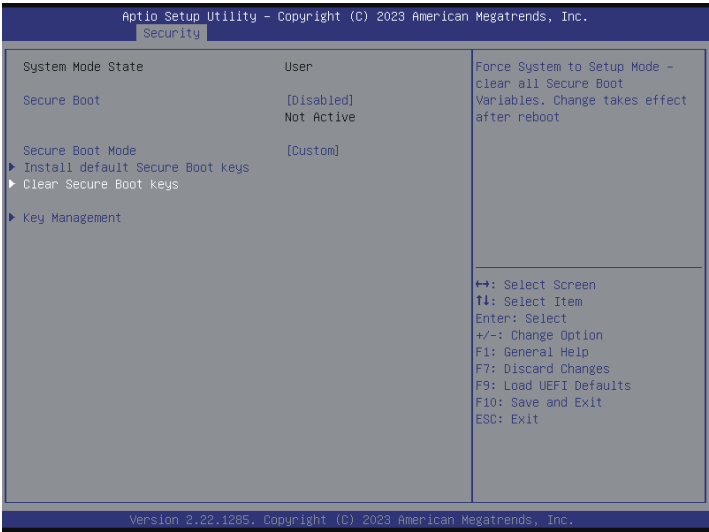
Install Default Secure Boot Keys

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 Authorized Signature Database (db).

Export Secure Boot Variables

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

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
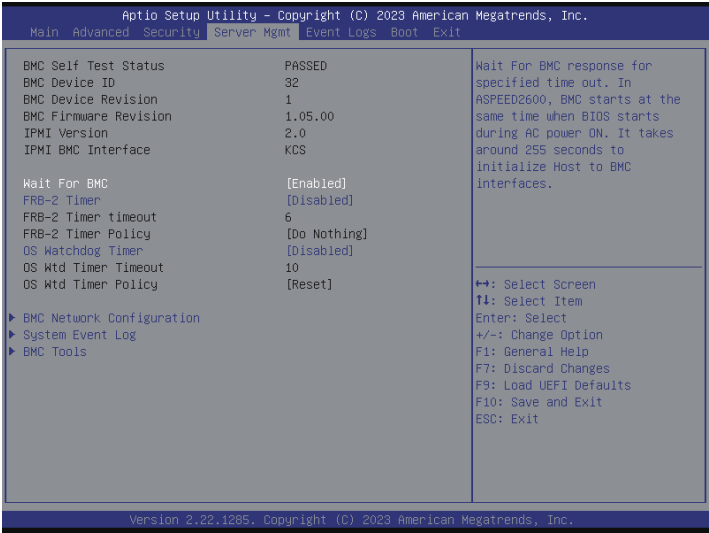
Wait For BMC

Wait For BMC response for specified time out. BMC starts at the same time when BIOS starts during AC power ON. It takes around 90 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.

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 setings.

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      DHCP
   Station IP address                192.168.36.141          ↔: Select Screen
   Current subnet mask               255.255.252.0           ↑↓: Select Item
   Current MAC address               F6-4B-45-C1-9B-26       Enter: Select
   Current router IP address         192.168.36.1            +/-: 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                      [Enabled]
   Manual setting IPMI LAN(IPV6)     [No Change]        ▼

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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.

VLAN

Enabled/Disabled Virtual Local Area Network.
If [Enabled] is selected, configure the items below.

IPV6 Support
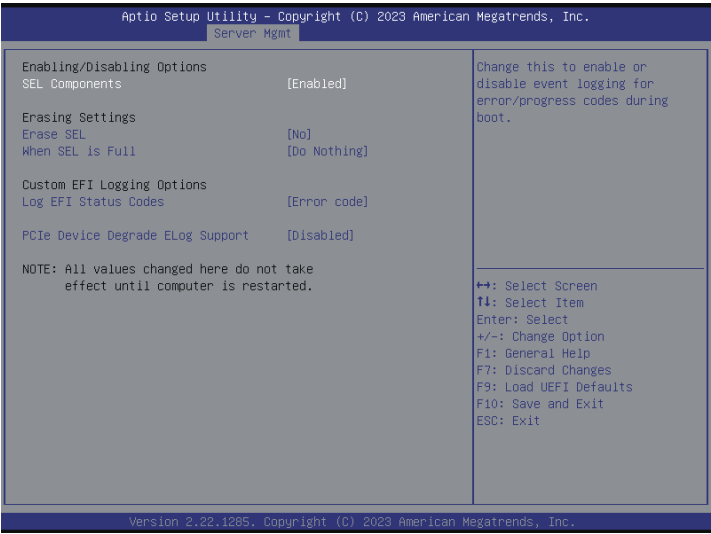
Enabled/Disable LAN1 IPV6 Support.

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.

English

3.5.2 System Event Log

```
           Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
                                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]
                                                              →←: Select Screen
  NOTE: All values changed here do not take                   ↑↓: Select Item
        effect until computer is restarted.                   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 ro disable event logging for error/progress codes during boot.

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full
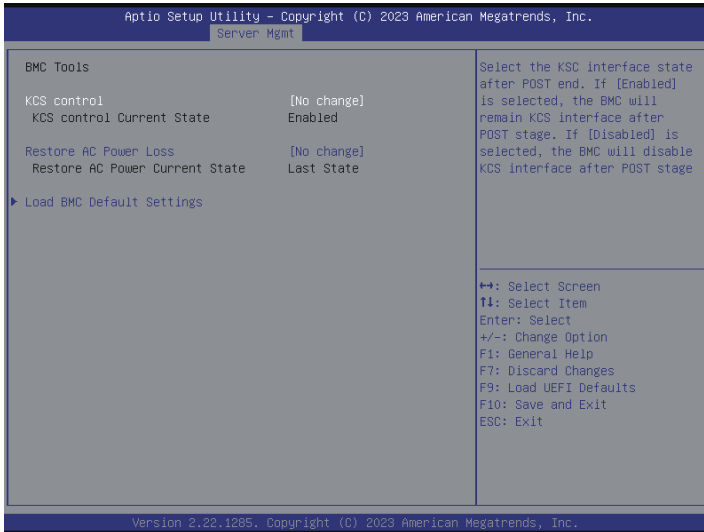
Use this to choose options for reactions to a full SEL.

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.

3.5.3 BMC Tools

```
              Aptio Setup Utility – Copyright (C) 2023 American Megatrends, Inc.
                                   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
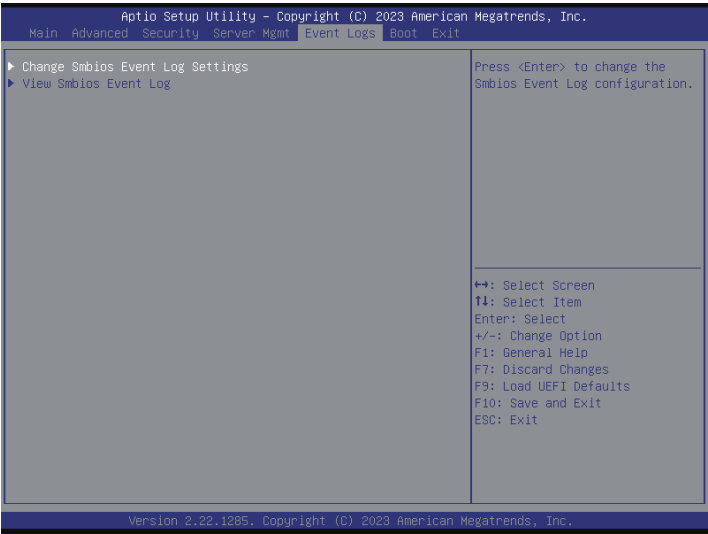
Restore AC Power Loss

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

3.6 Event Logs

```
Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
  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
The options include [No], [Yes, Next reset] and [Yes, Every reset]. If Yes is selected, all logged events will be erased.

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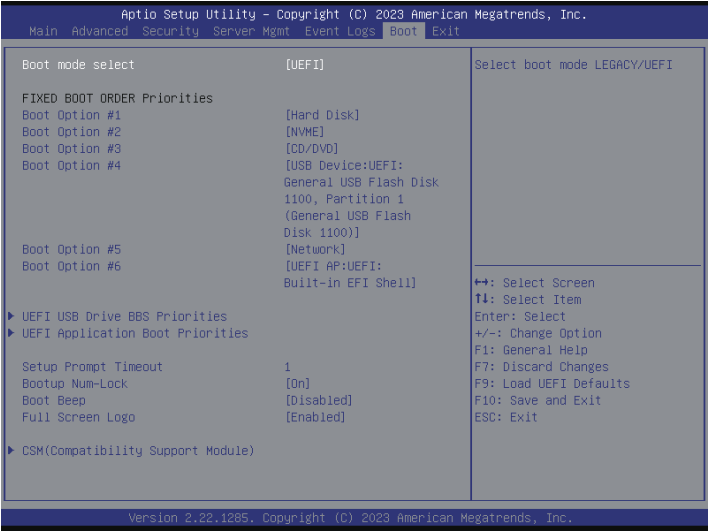
View Smbios Event Log
Press <Enter> to view the Smbios Event Log records.

> ⚠ *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.

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

  Boot mode select                    [UEFI]                    Select boot mode LEGACY/UEFI

  FIXED BOOT ORDER Priorities
  Boot Option #1                      [Hard Disk]
  Boot Option #2                      [NVME]
  Boot Option #3                      [CD/DVD]
  Boot Option #4                      [USB Device:UEFI:
                                      General USB Flash Disk
                                      1100, Partition 1
                                      (General USB Flash
                                      Disk 1100)]
  Boot Option #5                      [Network]
  Boot Option #6                      [UEFI AP:UEFI:
                                      Built-in EFI Shell]      →←: Select Screen
                                                               ↑↓: Select Item
  ▶ UEFI USB Drive BBS Priorities                              Enter: Select
  ▶ UEFI Application Boot Priorities                           +/-: Change Option
                                                               F1: General Help
  Setup Prompt Timeout                1                        F7: Discard Changes
  Bootup Num-Lock                     [On]                     F9: Load UEFI Defaults
  Boot Beep                           [Disabled]               F10: Save and Exit
  Full Screen Logo                    [Enabled]                ESC: Exit

  ▶ CSM(Compatibility Support Module)


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```

Boot mode select

This item is only available upon the CSM is enabled. Use this item to select boot mode LEGACY/UEFI.

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

Use this to set the system boot order.

UEFI USB Drive BBS Priorities

Specifies the Boot Device Priority sequence from available UEFI USB Drives.

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

If this item is set to [On], it will automatically activate the Numeric Lock function after boot-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.
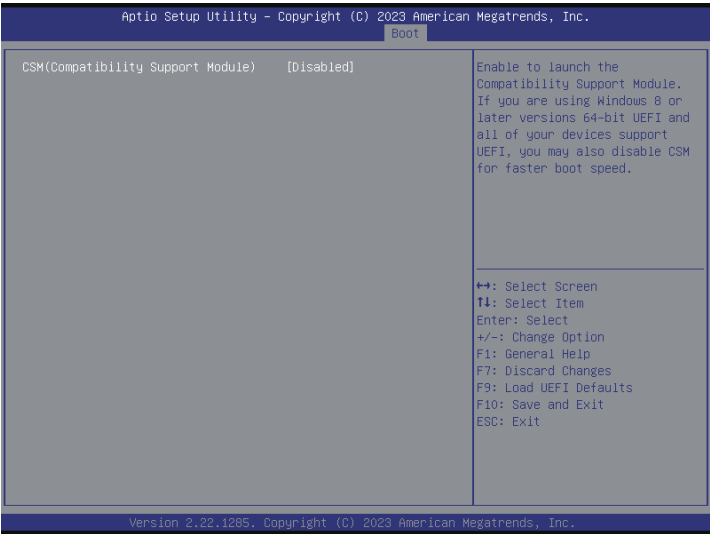
Full Screen Logo

Use this to enable or disable OEM Logo. The default value is [Enabled]

CSM (Compatibility Support Module)

This item is for OpROM execution, boot options filter, etc.

3.7.1 CSM Parameters

CSM (Compatibility Support Module)

Enable to launch the Compatibility Support Module. 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.

3.8 Exit Screen

```
                 Aptio Setup Utility - Copyright (C) 2023 American Megatrends, Inc.
          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:  USB DISK 3.2 PMAP, Partition 1 ( USB DISK 3.2 PMAP)
       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

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

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. Press <F7> key or select [Yes] to save all changes.

Discard Changes

When selecting this option, the following message "Discard changes?" will pop-out. Press <F7> key or 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.

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.

English

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

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.

English

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

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