Stable and
Reliable Solution

Server/Workstation

Motherboard

GNR2D16-2T

User Manual

English

WARNING

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

ASRock Rack's Website: www.ASRockRack.com

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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"

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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)

Licensee's specific rights may vary from country to country.

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.

CE

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

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

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

UKCA

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

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 **GNR2D16-2T** 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 software 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 GNR2D16-2T motherboard
  (EEB form factor: 12.24" x 13.3", 31.1cm x 33.8cm)
- Quick installation guide
- 1 I/O shield
- 1 Mini SAS HD to 4* SATA cable (60cm)
- 2 screws for M.2 sockets
- 4 x CPU Non-Fabric carriers (2xE2A, 2xE2B)

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

1.2 Specifications

GNR2D16-2T	
MB Physical Status	
Form Factor	EEB
Dimension	12.24" x 13.3" (31.1cm x 33.8cm)
Processor System	
CPU	Supports Intel® Xeon® 6700E-series processors
Socket	1+1 Socket E2 (LGA4710)
Chipset	System on Chip
System Memory	
Supported DIMM Quantity	8+8 DIMM slots (1DPC)
Supported Type	DDR5 RDIMM
Max. Capacity per DIMM	RDIMM: 128GB
Max. DIMM Frequency	RDIMM: 6400MT/s
Voltage	1.1V
Note	*memory support is to be validated*
PCIe Expansion Slots	
PCIe x16	SLOT1: PCIe5.0/CXL2.0 x16 [CPU1]
	SLOT2: PCIe5.0/CXL2.0 x16 [CPU0]
	SLOT3: PCIe5.0/CXL2.0 x16 [CPU1]
	SLOT4: PCIe5.0/CXL2.0 x16 [CPU0]
	SLOT5: PCIe5.0/CXL2.0 x16 [CPU1]
PCIe x8	SLOT6: PCIe5.0/CXL2.0 x8 [CPU0]
Other PCIe Expansion Connectors	
M.2	2 M-key (PCIe5.0 x2), supports 22110/2280 form factor [CPU0]
MCIO	1 MCIO (PCIe5.0/CXL2.0 x8) [CPU0]
SATA/SAS Storage	
Additional SATA Controller	8 SATA 6Gb/s by ASM1164: 2 Mini-SAS HD
Ethernet	
Additional GbE Controller	2 RJ45 (10GbE) by Intel® X710-AT2
Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA)
Rear I/O	
UID Button/ LED	1 UID button w/ LED
Video Output	1 DB15 (VGA)
USB	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (10GbE), 1 dedicated IPMI

Hardware Monitor	
Temperature	CPU, MB, Card side Temperature Sensing
Fan	Fan Tachometer
	CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature)
	Fan Multi-Speed Control
Voltage	PSU +12V & +5VSB & +3.3V, +3VSB, PVNN_PCH, P1V05_PCH_STBY, P1V8_PCH_STBY, +BAT, PVCCIN_CPU0, PVCCIN_CPU1, PVCCINFAON_CPU0, PVCCINFAON_CPU1, PVCCFA_EHV_FIVRA_CPU0, PVCCFA_EHV_FIVRA_CPU1, PVCCD_HV_CPU0, PVCCD_HV_CPU1

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; 512Mb SPI Flash ROM
Features	Plug and Play, ACPI 4.0 and above compliance wake up events, SMBIOS 3.4 and above, ASRock Rack Instant Flash

Internal Connectors/Headers	
PSU Connectors	1 (24-pin, ATX PSU signal), 4 (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 (9-pin)
Fan Headers	8 (6-pin)
TPM Header	1 (13-pin, SPI)
RAID Header	1
HSBP	2
IPMB Header	1
SMbus Headers	2
PMbus Header	1
Clear CMOS	1 (contact pads)
USB Header	1 header (19-pin, 2 USB3.2 Gen1)
Others	1 Micro SD card slot, 1 mini SAS HD connector

LED Indicators	
Standby Power LED	1 (5VSB)
80 Debug Port LED	1
Fan Fail LED	8
BMC Heartbeat LED	1

CPLD Heartbeat LED	1
System Caterr LED	1
Support OS	
OS	Microsoft® Windows®
	- Server 2022 (64 bit)
	- Server 2025 (64 bit)
	Linux®
	- Red Hat Enterprise Linux Server 9.4 (64 bit)
	- SUSE Enterprise Linux Server 15 SP6 (64 bit)
	- Ubuntu 24.04 (64 bit)
	Please refer to the website for the latest OS support list.
Environment	
Operating Temperature	10°C ~ 35°C (50 - 95°F)
Non-operating Temperature	-40°C ~ 70°C (-40 - 158°F)

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

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

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

1.3 Unique Features

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

1.4 Motherboard Layout

33.8 cm (13.3 in)

31.1 cm (12.24 in)

ASRock Rack
GNR2D16-2T

⚠ *The illustration here is for references only. The actual layout may slightly vary depending on the model and the version used.*

No.	Description
1	ATX 12V Power Connector (ATX12V2)
2	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
3	2 DDR5 DIMM Slots (DDR5_N1, DDR5_P1)*
4	2 DDR5 DIMM Slots (DDR5_M1, DDR5_O1)*
5	2 DDR5 DIMM Slots (DDR5_B1, DDR5_D1)*
6	ATX Power Connector (ATXPWR1)
7	ATX 12V Power Connector (ATX12V1)
8	System Fan Connector (FAN2)
9	PSU SMBus (PSU_SMB1)
10	System Fan Connector (FAN1)
11	PWM Configuration Header (PWM_CFG1)
12	Backplane PCI Express Hot-Plug Connector (CPU0_HSBP1)
13	2 DDR5 DIMM Slots (DDR5_A1, DDR5_C1)*
14	Socket E2 (LGA4710) (CPU0)
15	2 DDR5 DIMM Slots (DDR5_I1, DDR5_K1)*
16	2 DDR5 DIMM Slots (DDR5_E1, DDR5_G1)*
17	Mini Cool Edge IO Connector (MCIO1)
18	ATX 12V Power Connector (ATX12V3)
19	Mini-SAS HD Connector (MiniSAS_1)
20	ATX 12V Power Connector (ATX12V4)
21	USB 3.2 Gen1 Header (USB3_1_2)
22	System Fan Connector (FAN3)
23	System Fan Connector (FAN4)
24	System Fan Connector (FAN5)
25	System Fan Connector (FAN6)
26	System Fan Connector (FAN7)
27	System Fan Connector (FAN8)
28	System Panel Header (PANEL1)
29	Clear CMOS Pad (CLRMOS1)
30	Auxiliary Panel Header (AUX_PANEL1)
31	M.2 Socket (M2_1) (Type 2280 / 22110)
32	M.2 Socket (M2_2) (Type 2280 / 22110)
33	SPI TPM Header (TPM1)
34	MicroSD Card Slot (SDC1)

English

No.	Description
35	2 DDR5 DIMM Slots (DDR5_F1, DDR5_H1)*
36	COM Port Header (COM1)
37	Virtual RAID On CPU Header (RAID_1)
38	Intelligent Platform Management Bus Header (IPMB_1)
39	BMC SMBus Header (BMC_SMB_2)
40	BMC SMBus Header (BMC_SMB_1)
41	Non Maskable Interrupt Button (NMI_BTN1)
42	PCI Express 5.0/CXL2.0 x16 Slot (PCIE1)
43	PCI Express 5.0/CXL2.0 x16 Slot (PCIE2)
44	PCI Express 5.0/CXL2.0 x16 Slot (PCIE3)
45	PCI Express 5.0/CXL2.0 x16 Slot (PCIE4)
46	PCI Express 5.0/CXL2.0 x16 Slot (PCIE5)
47	PCI Express 5.0/CXL2.0 x8 Slot (PCIE6)
48	2 DDR5 DIMM Slots (DDR5_J1, DDR5_L1)*
49	Socket E2 (LGA4710) (CPU1)

For DIMM installation and configuration instructions, please see p.20 (Installation of Memory Modules (DIMM)) for more details.

1.5 Onboard LED Indicators
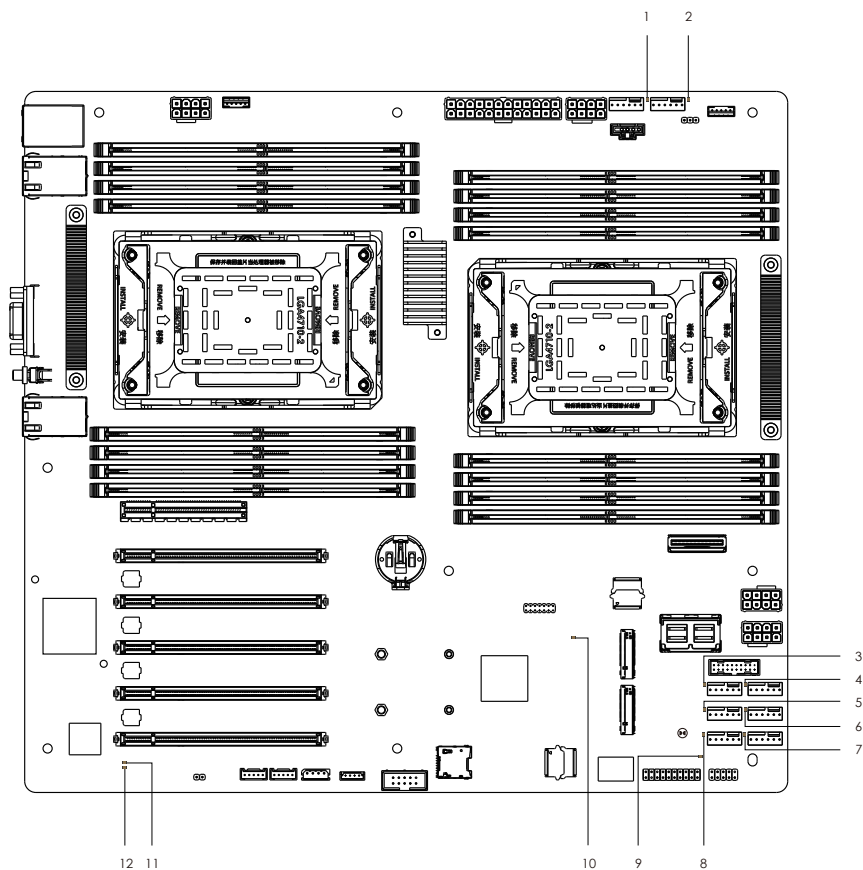
No.	Item	Status	Description
1	FAN_LED2	Red	FAN2 failed
2	FAN_LED1	Red	FAN1 failed
3	FAN_LED4	Red	FAN4 failed
4	FAN_LED3	Red	FAN3 failed
5	FAN_LED6	Red	FAN6 failed
6	FAN_LED5	Red	FAN5 failed
7	FAN_LED7	Red	FAN7 failed
8	FAN_LED8	Red	FAN8 failed
9	SB_PWR1	Green	STB PWR ready
10	BMC_LED1	Green	BMC heartbeat LED
11	LED_CATERR1	Red	CPU CATERR failed
12	LED_CPLD_HB1	Green	CPLD heartbeat LED

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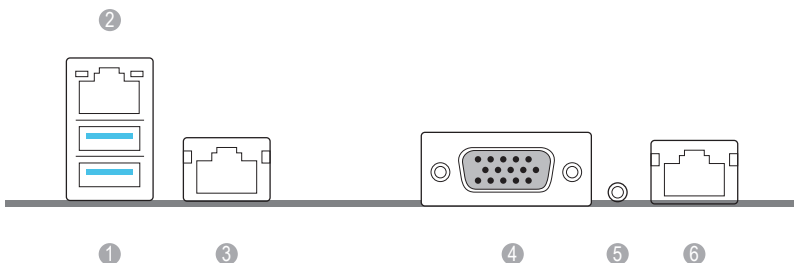
No.	Description	No.	Description
1	USB 3.2 Gen1 Ports (USB3_1_2)	4	VGA Port (VGA1)
2	LAN RJ-45 Port (IPMI_LAN)*	5	UID Switch (UID1)
3	10G LAN RJ-45 Port (LAN1, shared NIC)**	6	10G LAN RJ-45 Port (LAN2)**

LAN Port LED Indications

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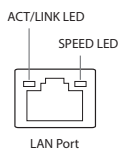
IPMI LAN Port LED Indications

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

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

ACT/LINK LED
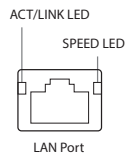
SPEED LED

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	Yellow	1Gbps connection
On	Link	Green	10Gbps connection

1.7 Block Diagram
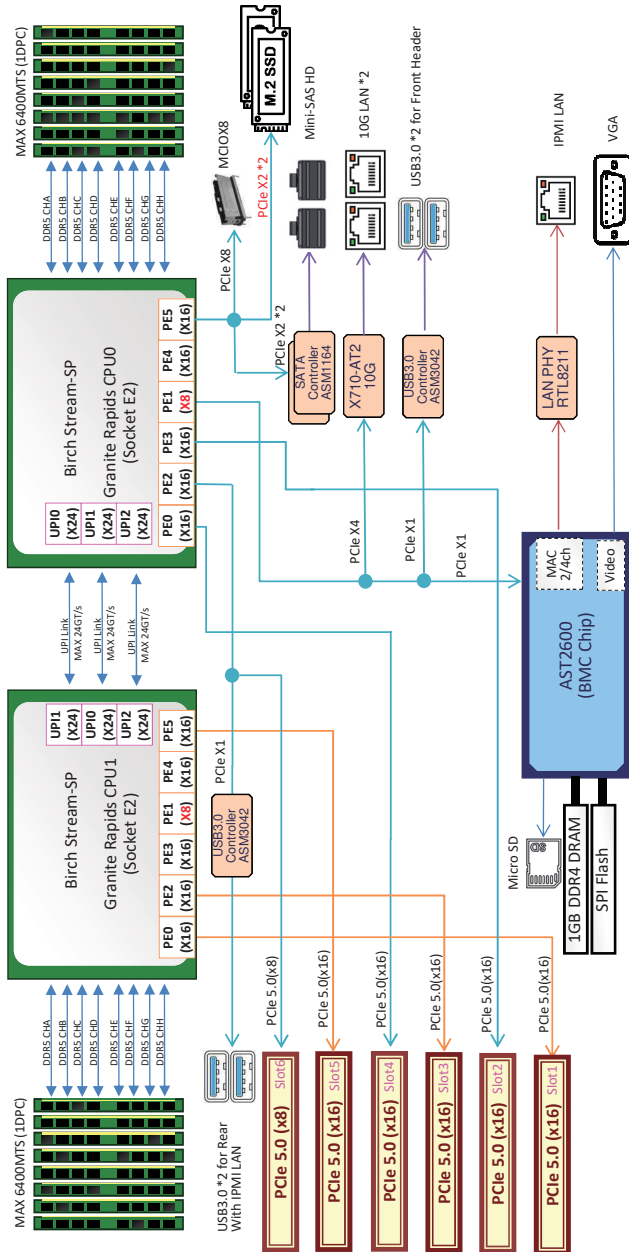
Chapter 2 Installation

This is a EEB form factor (12'' x13'', 30.5cm x 33cm) 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.*

Rear I/O

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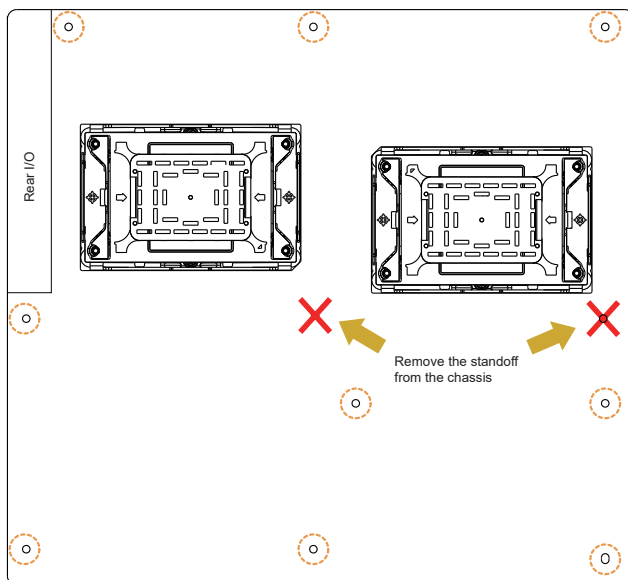
⚠️ *Do not over-tighten the screws! Doing so may damage the motherboard.*

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 server damage to the motherboard, peripherals, and/or components.*

2.3 Installing the CPU and Heatsink

> 1. *Unplug all power cables before installing the CPU.*
> 2. *Illustration in this documentation are examples only.*

Carrier Used

Carrier Type	Xeon® SP XCC	Xeon® SP MCC/LCC
Carrier Code	E2A	E2B
Shim	No	Yes
Carrier Height	16.70mm	17.55mm

XCC Carrier

No Shim

16.70mm

MCC Carrier

Shim Installed

17.55mm
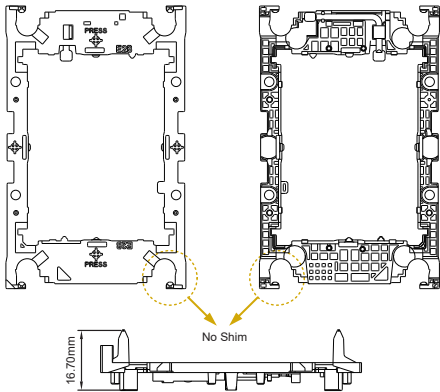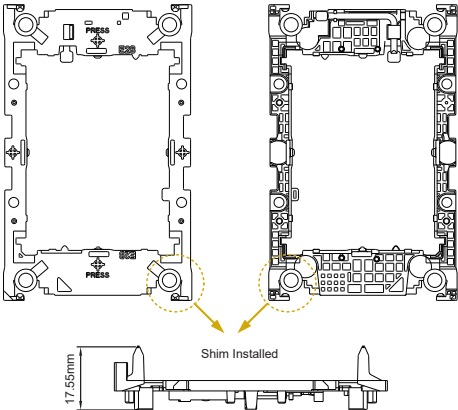
1. Before inserting the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all power cables before installing the CPU.

Socket Dust Cover

2

CPU
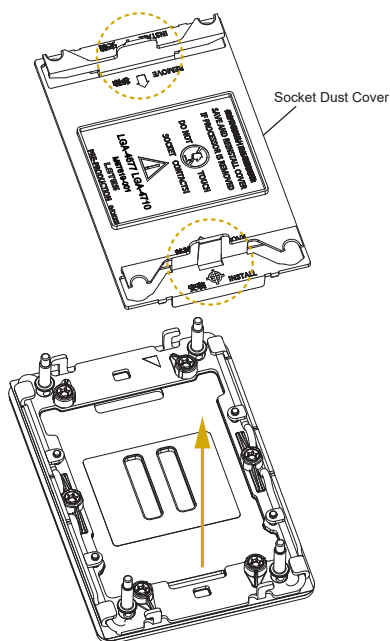
Installing CPU:
Align the Pin1 mark to install the CPU

P1 Mark

CPU Carrier

CPU
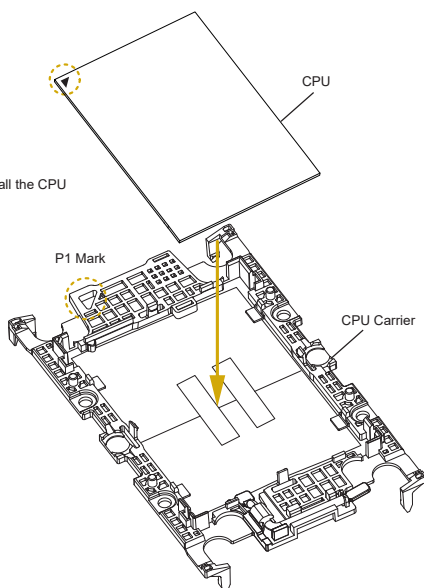
Removing CPU:
Press the lever to remove the CPU

2

CPU Carrier

1

180°

5

CPU Carrier

6

Heatsink

CPU Carrier

Socket
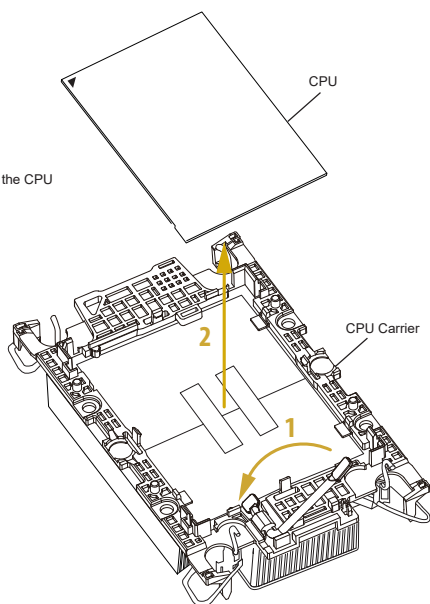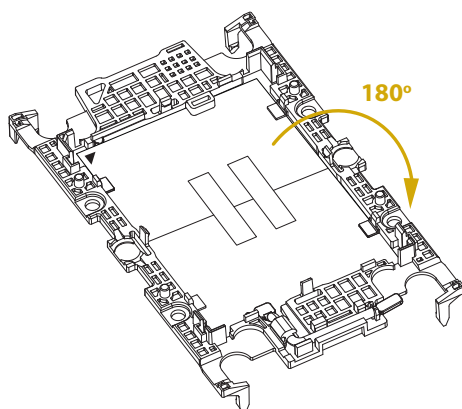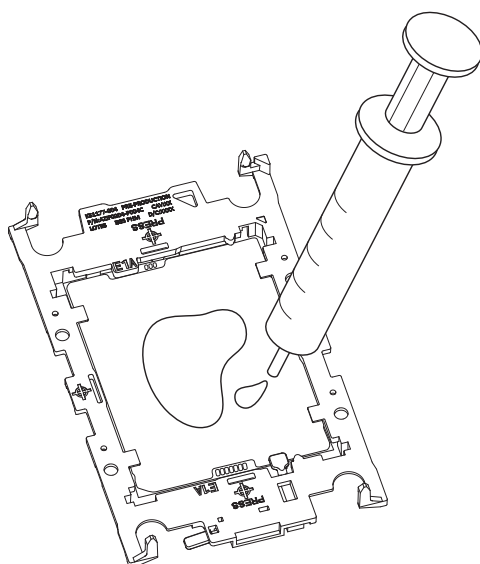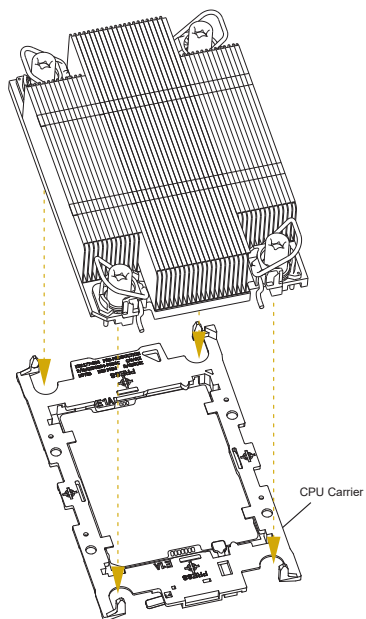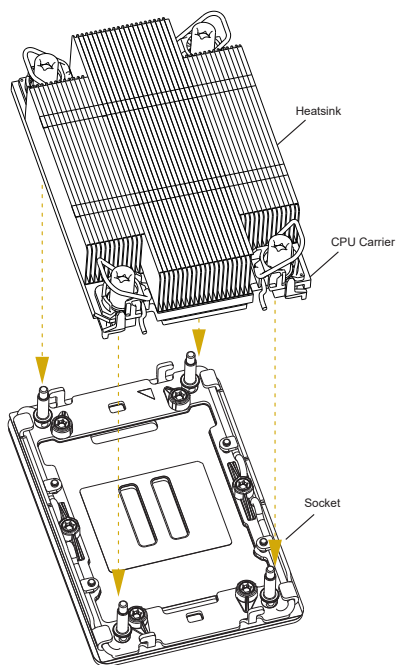
7
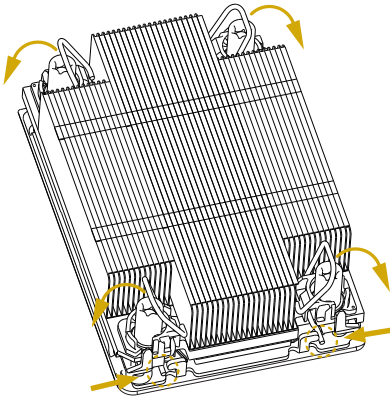
8
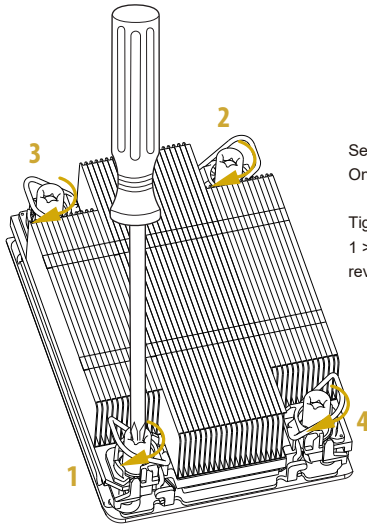
Set the torque wrench to 6-12 in-lb.
One fourth a turn each time.

Tighten the screws in a sequential order
1 > 2 > 3 > 4. Loosen the screws in a
reverse order.

2.4 Installation of Memory Modules (DIMM)

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

CPU0	CPU1
DDR5_A1, B1, C1, D1, E1, F1, G1 H1	DDR5_I1, J1, K1, L1, M1, N1, O1, P1

> ⚠️ *1. Before installing a memory module, make sure to turn off the computer and unplug the powercord from the power outlet to prevent damage to the memory module.*
> *2. 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.*
> *3. For sixteen channel configurations, it needs to install identical (the same brand, speed, size and chip-type) DDR5 DIMMs.*

Recommended Memory Configurations

1 CPU Configurations (Single P)

DDR5	CPU0							
	A1	B1	C1	D1	E1	F1	G1	H1
1 DIMM	V							
4 DIMMS	V		V		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 CPU Configurations (Dual P)

DDR5	CPU0							
	A1	B1	C1	D1	E1	F1	G1	H1
2 DIMMS	V							
8 DIMMS	V		V		V		V	
8 DIMMS		V		V		V		V
16 DIMMS	V	V	V	V	V	V	V	V

DDR5	CPU1							
	I1	J1	K1	L1	M1	N1	O1	P1
2 DIMMS	V							
8 DIMMS	V		V		V		V	
8 DIMMS		V		V		V		V
16 DIMMS	V	V	V	V	V	V	V	V

The symbol V indicates the slot is populated.

English
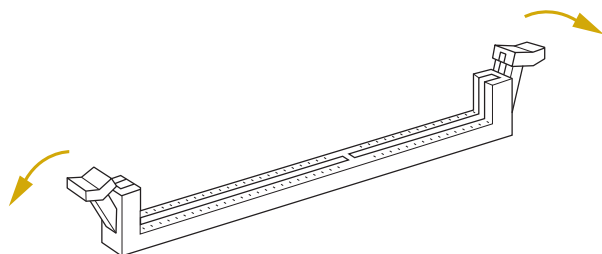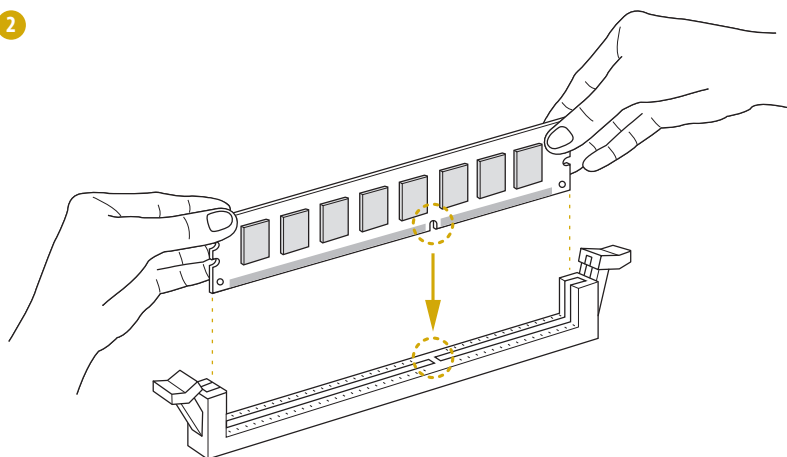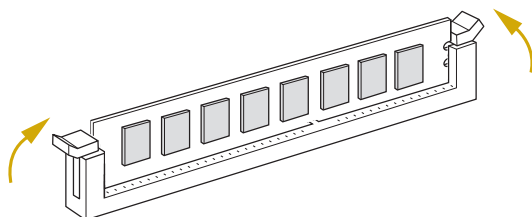
2.5 Expansion Slots (PCI Express Slots)

There are 6 PCI Express slots on this motherboard.

PCIE slots:

PCIE6 (PCIE 5.0 x8 slot, from CPU0) is used for PCI Express x8 lane width cards.

PCIE5 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.

PCIE4 (PCIE 5.0 x16 slot, from CPU0) 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.

PCIE2 (PCIE 5.0 x16 slot, from CPU0) 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.

Slot	Generation	Mechanical	Electrical	Source
PCIE6	5.0	x8	x8	CPU0
PCIE5	5.0	x16	x16	CPU1
PCIE4	5.0	x16	x16	CPU0
PCIE3	5.0	x16	x16	CPU1
PCIE2	5.0	x16	x16	CPU0
PCIE1	5.0	x16	x16	CPU1

Installing an expansion card

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

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

Step 3.   Remove the bracket facing the slot that intending to use on the chassis. Keep the screw for later use.

Step 4.   Install the PCIE card to the riser card.

Step 5.   Align the riser-card assembly connector with the slot on the system board. Press firmly until the riser-card assembly is completely seated on the slot.

Step 6.   Fasten the card to the chassis with the screw.

Step 7.   Replace the system cover.

English

2.6 Onboard Headers and Connectors

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

System Panel Header
(9-pin PANEL1)
(see p.6, No.28)
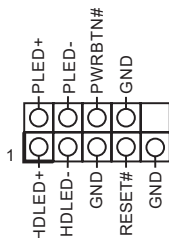
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

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

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

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

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

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

Auxiliary Panel Header
(18-pin AUX PANEL1)
(see p.6, No.30)
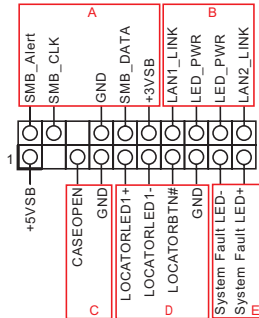
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

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

B. Internet status indicator (4-pin LAN, LED):
This header allows user to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

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

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

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

Non Maskable Interrupt
Button Header
(NMI_BTN1)
(see p.6, No.41)

Please connect a NMI device to this header.

PWM Configuration
Header
(3-pin PWM_CFG1)
(see p.6, No.11)
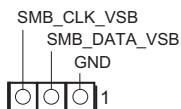
This header is used for PWM configurations.

English

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USB 3.2 Gen1 Header
(19-pin USB3_1_2)
(see p.6, No.21)

N/A
N/A
N/A
GND
N/A
N/A
GND
N/A
N/A
USB3_PWR_TA

N/A
USB2_TYPEA_R_DP
USB2_TYPEA_R_DN
GND
TYPEA_USB3_TX_DP2
TYPEA_USB3_TX_DN2
GND
TYPEA_USB3_RX_DP2
TYPEA_USB3_RX_DN2
USB3_PWR_TA
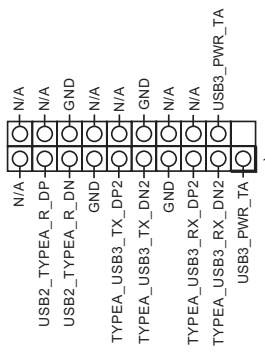
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

SPI TPM Header
(13-pin TPM1)
(see p.6, No.33)

SPI_DQ3
SPI_PWR
Dummy
CLK
SPI_MOSI
RST#
TPM_PIRQ

SPI_DQ2
SPI_CS0
SPI_MISO
RSMRST#
GND
SPI_TPM_CS#
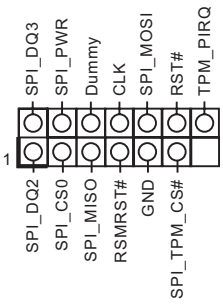
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

COM Port Header
(9-pin COM1)
(see p.6, No.36)

RRXD1
DDTR#1
DDSR#1
CCTS#

DDCD#1
TTXD1
GND
RRTS#1
RRI#1
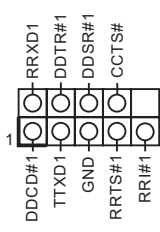
This COM1 header supports a serial port module.

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

3V
3V
GND
5V
GND
5V
GND
PWROK_PS
5VSB
12V
12V
3V

3V
-12V
GND
PSON#
GND
GND
N/A
5V
5V
5V
GND
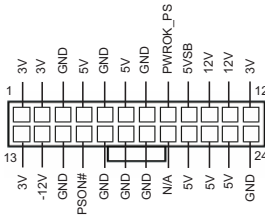
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

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ATX 12V Power
Connectors
(8-pin ATX12V1)
(see p.6, No.7)
(8-pin ATX12V2)
(see p.6, No.1)
(8-pin ATX12V3)
(see p.6, No.18)

```
         GND
1  ┌──┬──┬──┐  4
   │  │  │  │
5  └──┴──┴──┘  8
        12V
```

```
        12V
8  ┌──┬──┬──┐  5
   │  │  │  │
4  └──┴──┴──┘  1
        GND
```
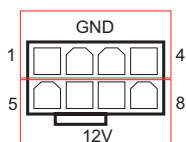
This motherboard provides
four 8-pin ATX 12V power
connectors.

(8-pin ATX12V4
(see p.6, No.20)

```
         GND
1  ┌──┬──┬──┐  4
   │  │  │  │
5  └──┴──┴──┘  8
        12V
```
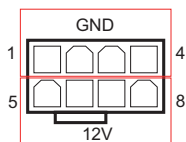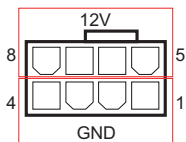
System Fan Connectors
(6-pin FAN1)
(see p.6, No.10)
(6-pin FAN2)
(see p.6, No.8)
(6-pin FAN3)
(see p.6, No.22)
(6-pin FAN4)
(see p.6, No.23)
(6-pin FAN5)
(see p.6, No.24)
(6-pin FAN6)
(see p.6, No.25)
(6-pin FAN7)
(see p.6, No.26)
(6-pin FAN8)
(see p.6, No.27)

```
6  5  4  3  2  1
○  ○  ○  ○  ○  ○
            GND
         FAN_VOLTAGE
      FAN_SPEED_SENSOR1
   FAN_SPEED_CONTROL
FAN_SPEED_SENSOR2
NC
```
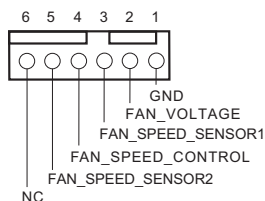
Please connect fan cables to
the fan connectors and match
the black wire to the ground
pin. All fans support Fan
Control.

MicroSD Card Slot (SDC1)
(see p.6, No.34)
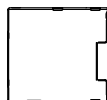
Carefully insert the SD Card
into the slot until it clicks.

PSU SMBus (PSU_SMB1) (see p.6, No.9)	ALERT SMBCLK +3VSB 1 SMBDATA GND	PSU SMBus monitors the status of the power supply, fan and system temperature.
Intelligent Platform Management Bus header (4-pin IPMB_1) (see p.6, No.38)	GND No connect IPMB_SCL IPMB_SDA	This 4-pin connector is used to provide a cabled base-board 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.
BMC SMBus Headers (5-pin BMC_SMB_1) (see p.6, No.40) (5-pin BMC_SMB_2) (see p.6, No.39)	BMC_SMB_PRESENT_1_N Power BMC_SMBCLK GND BMC_SMBDATA	These headers are used for the SM BUS devices.
Backplane PCI Express Hot-Plug Connector (5-pin CPU0_HSBP1) (see p.6, No.12) (5-pin CPU1_HSBP1) (see p.6, No.2)	1 GND P0_HP_ALERT_L CPU_HP_SDA CPU_HP_SCL +3V +3V CPU_HP_SCL CPU_HP_SDA P0_HP_ALERT_L GND 1	This header is used for the hot plug feature of HDDs on the backplane.
Clear CMOS Pad (CLRMOS1) (see p.6, No.29)		CLRMOS1 allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.
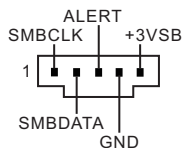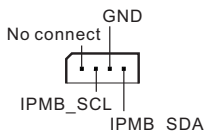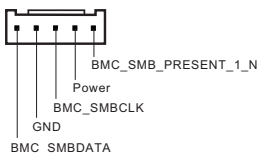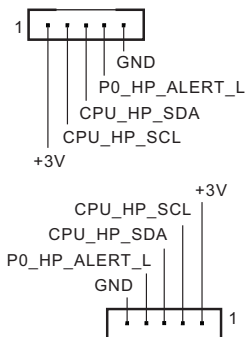
Mini-SAS HD Connector (MiniSAS_1) (see p.6, No.19)		The connector supports MiniSAS-to-SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.
Virtual RAID On CPU Header (4-pin RAID_1) (see p.6, No.37)	GND +3VSB GND VROC RAID KEY 1	This connector supports Intel® Virtual RAID on CPU and NVME/AHCI RAID on CPU PCIE.
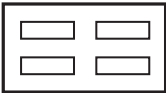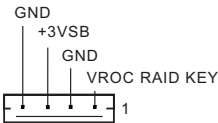
With the introduction of the Intel VROC product, there are three modes of operation:

SKU	HW key required	Key features
Pass-thru	Not needed	• Pass-thru only (no RAID) • LED Management • Hot Plug Support • RAID 0 support for Intel Fultondale NVMe SSDs
Standard	VROCSTANMOD	• Pass-thru SKU features • RAID 0, 1, 10
Premium	VROCPREMMOD	• Standard SKU features • RAID 5 • RAID 5 Write Hole Closure
ISS	VROCISSDMOD	

*Only Intel SSDs are supported.

*For further details on VROC, please refer to the official information released by Intel.

MCIO Connector (MCIO1) (see p.6, No.17)		The connector is used for the PCIE device.
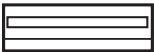
MCIO1 Pin Definition [CPU0]

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	PE5_RX_DP15	B2	PE5_TX_C_DN15
A3	PE5_RX_DN15	B3	PE5_TX_C_DP15
A4	GND	B4	GND
A5	PE5_RX_DP14	B5	PE5_TX_C_DP14
A6	PE5_RX_DN14	B6	PE5_TX_C_DN14
A7	GND	B7	GND
A8	MCIO1_BP_TYPE	B8	MCIO1_SCL1
A9	MCIO1_2WIRE_RST_N	B9	MCIO1_SDA1
A10	GND	B10	GND
A11	PCIE_GEN5_MCIO1A_CLKP	B11	MCIO1_PERST_BUF1_N
A12	PCIE_GEN5_MCIO1A_CLKN	B12	MCIO1_PRSNT1_N
A13	GND	B13	GND
A14	PE5_RX_DP13	B14	PE5_TX_C_DP13
A15	PE5_RX_DN13	B15	PE5_TX_C_DN13
A16	GND	B16	GND
A17	PE5_RX_DP12	B17	PE5_TX_C_DP12
A18	PE5_RX_DN12	B18	PE5_TX_C_DN12
A19	GND	B19	GND
A20	PE5_RX_DP11	B20	PE5_TX_C_DP11
A21	PE5_RX_DN11	B21	PE5_TX_C_DN11
A22	GND	B22	GND
A23	PE5_RX_DN10	B23	PE5_TX_C_DP10
A24	PE5_RX_DP10	B24	PE5_TX_C_DN10
A25	GND	B25	GND
A26	-	B26	MCIO1_SCL2
A27	-	B27	MCIO1_SDA2
A28	GND	B28	GND
A29	PCIE_GEN5_MCIO1B_CLKP	B29	MCIO1_PERST_BUF2_N
A30	PCIE_GEN5_MCIO1B_CLKN	B30	MCIO1_PRSNT2_N
A31	GND	B31	GND
A32	PE5_RX_DP9	B32	PE5_TX_C_DP9
A33	PE5_RX_DN9	B33	PE5_TX_C_DN9
A34	GND	B34	GND
A35	PE5_RX_DN8	B35	PE5_TX_C_DP8
A36	PE5_RX_DP8	B36	PE5_TX_C_DN8
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

2.7 Unit Identification purpose LED/Switch

The UID button allows user 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, BMC will trigger an external reset.*
2. Press and hold the UID button for 10 seconds, BMC will reset and load default values.

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

English

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

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

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

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

English

2.9 Dual LAN and Teaming Operation Guide

Dual LAN with Teaming enabled on this motherboard allows two single connections to act as one single connection(s) 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 to the primary adapter and click the **Set Primary** button.

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

2.10 M.2 SSD Module Installation Guide

The M.2 Socket (M2_1/M2_2, Key M) supports type 2280/22110 M.2 PCI Express module up to Gen5 x2 (32GT/s x2).

Installing the M.2_SSD Module
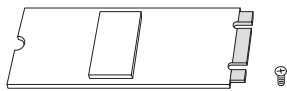
Step 1

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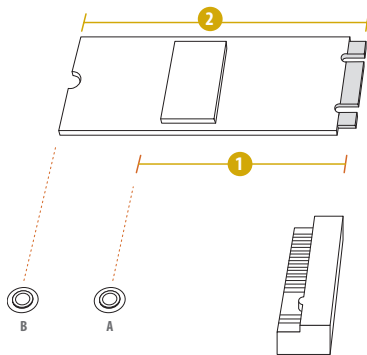
Step 2

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 (NUT2280_1/NUT2280_2)	B (NUT22110_1/NUT22110_2)
PCB Length	8cm	11cm
Module Type	Type 2280	Type 22110
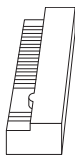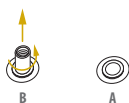
Step 3

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
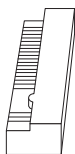
Step 4

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
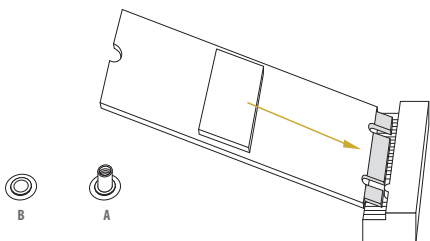
Step 5

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°
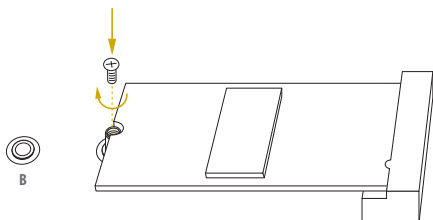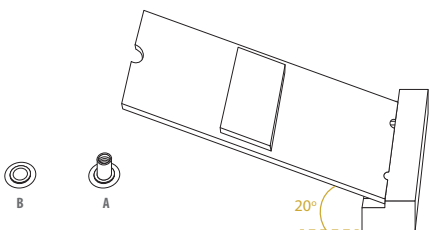
Step 6

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

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 UTIITY 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
Event Logs	For event log configuration
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Exit	To exit the current screen or the UEFI SETUP UTILITY

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

English

3.1.2 Navigation Keys

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

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

3.2 Main Screen

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

```
                              Aptio Setup - AMI
     Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

      Board Product              GNR2D16-2T           Motherboard Information
      UEFI Version               1.10
      BMC Version                1.16.00
      CPLD_MB Version            1.03

    ▶ Motherboard Information
    ▶ Processor Information
    ▶ Memory Information

      System Date                [Mon 01/20/2025]
      System Time                [23:49:03]


                                                     ↔: 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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```

⚠️ *The screenshots in this user manual are examples and for references only. The actual im-ages may slightly vary depending on the model and the version used.*

English

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3.2.1 Mother Board Information

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

```
                              Aptio Setup – AMI
   Main

   Motherboard Information
   Motherboard                  GNR2D16-2T

   BIOS Information
   BIOS Vendor                  American Megatrends
   Core Version                 5.35
   Compliancy                   UEFI 2.9; PI 1.7
   Project Version              A3241 1.10 x64
   Build Date and Time          01/15/2025 21:56:51
   Intel RC Revision            3544.P25
   AMI RC Revision              0ACQZ 0.68
   BIOS ACM                     1.0.7
   SINIT ACM                    1.0.7
   ACPI Version                 65                      ↔: Select Screen
   SMBIOS Version               3.7.0                   ↑↓: Select Item
                                                        Enter: Select
   Platform Information                                 +/-: Change Option
   Platform                     BeechnutCityRP          F1: General Help
   Processor                    A06D1 – GNR XCC Bx      F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit



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```

3.2.2 Processor Information

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

```
                              Aptio Setup – AMI
   Main

   Processor Information
   Processor BSP Revision       A06D1 – GNR B0
   Processor Socket             CPU1    |    CPU2
   Processor ID                 000A06D1 |  000A06D1
   Processor Frequency          2.700GHz |  2.700GHz
   Processor Core               48-Core  |   48-Core
   Memory Channel                     8  |         8
   Processor Max Ratio               1BH |       1BH
   Processor Min Ratio               08H |       08H
   Microcode Revision           01000370 |  01000370
   L1 Cache RAM                    112KB |     112KB
   L2 Cache RAM                   2048KB |    2048KB
   L3 Cache RAM                 294912KB |  294912KB
   CPU1 Version                 Intel(R) Xeon(R) 6747P  ↔: Select Screen
   CPU2 Version                 Intel(R) Xeon(R) 6747P  ↑↓: Select Item
                                                        Enter: Select
   Intel Turbo Boost            Support                 +/-: Change Option
   Intel VT-d Technology        Support                 F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit



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```

3.2.3 Memory Information

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

```
                           Aptio Setup - AMI
     Main

   Memory Information                                  ▲

   Total Memory                  512 GB

   DDR5_A1                       DDR5-4800 DRx4 64GB
                                 R-DIMM
   DDR5_B1                       DDR5-4800 DRx4 64GB
                                 R-DIMM
   DDR5_C1                       DDR5-4800 DRx4 64GB
                                 R-DIMM
   DDR5_D1                       DDR5-4800 DRx4 64GB
                                 R-DIMM
   DDR5_E1                       DDR5-4800 DRx4 64GB
                                 R-DIMM                ↔: Select Screen
   DDR5_F1                       DDR5-4800 DRx4 64GB   ↑↓: Select Item
                                 R-DIMM                Enter: Select
   DDR5_G1                       DDR5-4800 DRx4 64GB   +/-: Change Option
                                 R-DIMM                F1: General Help
   DDR5_H1                       DDR5-4800 DRx4 64GB   F7: Discard Changes
                                 R-DIMM                F9: Load UEFI Defaults
   DDR5_I1                       None                  F10: Save and Exit
   DDR5_J1                       None                  ESC: Exit
   DDR5_K1                       None
   DDR5_L1                       None
   DDR5_M1                       None                  ▼

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```

3.3 Advanced Screen

In this section, set the configurations for the following items: CPU Configuration, Platform Power Configuration, DRAM Configuration, Chipset Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Network StackConfiguration, Intel VMD Technology, Driver Health, Tls Auth Configuration, Intel(R) Ethernet Controller, VLAN Configuration and Instant Flash.

```
                          Aptio Setup - AMI
      Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

  ▶ CPU Configuration                          ▲ CPU Configuration Parameters
  ▶ Platform Power Configuration
  ▶ DRAM Configuration
  ▶ Chipset Configuration
  ▶ NVMe Configuration
  ▶ ACPI Configuration
  ▶ USB Configuration
  ▶ Super IO Configuration
  ▶ Serial Port Console Redirection
  ▶ H/W Monitor
  ▶ Network Stack Configuration
  ▶ Intel VMD technology
  ▶ Driver Health
                                                ↔: Select Screen
  ▶ Tls Auth Configuration                      ↑↓: Select Item
  ▶ Intel(R) Ethernet Controller X710 for 10GBASE-T -   Enter: Select
    9C:6B:00:72:C3:BE                           +/-: Change Option
  ▶ VLAN Configuration (MAC:9C6B0072C3BE)       F1: General Help
  ▶ MAC:9C6B0072C3BE-IPv6 Network Configuration F7: Discard Changes
  ▶ MAC:9C6B0072C3BE-IPv4 Network Configuration F9: Load UEFI Defaults
  ▶ Intel(R) Ethernet Controller X710 for 10GBASE-T -   F10: Save and Exit
    9C:6B:00:72:C3:BF                           ESC: Exit
  ▶ VLAN Configuration (MAC:9C6B0072C3BF)
  ▶ MAC:9C6B0072C3BF-IPv6 Network Configuration
  ▶ MAC:9C6B0072C3BF-IPv4 Network Configuration ▼

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```

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

3.3.1 CPU Configuration

```
                                    Aptio Setup - AMI
        Advanced

  CPU Configuration                                    ▲  Core Disable Bitmap (Hex)
                                                          0: Enable all cores. 0xffff:
  CPU 1 Available Bitmap[1]:  0000000000FFFFFF             Disable all cores
  CPU 1 Available Bitmap[2]:  0000000000FFFFFF
  CPU 2 Available Bitmap[1]:  0000000000FFFFFF
  CPU 2 Available Bitmap[2]:  0000000000FFFFFF
  Active Processor 1 Cores[1]              0
  Active Processor 1 Cores[2]              0
  Active Processor 2 Cores[1]              0
  Active Processor 2 Cores[2]              0

  Intel Hyper Threading Technology        [Enabled]

  Enable Intel(R) TXT                     [Disabled]    ↔: Select Screen
  Intel Virtualization Technology         [Enabled]     ↑↓: Select Item
  Enable SMX                              [Disabled]    Enter: Select
                                                        +/-: Change Option
  Memory Encryption (TME)                 [Disabled]    F1: General Help
  Total Memory Encryption                 [Disabled]    F7: Discard Changes
  Multi-Tenant(TME-MT)                                  F9: Load UEFI Defaults
  Memory integrity                        [Disabled]    F10: Save and Exit
  TME Encryption Algorithm                []            ESC: Exit
  Trust Domain Extension (TDX)            [Disabled]
  TDX Secure Arbitration Mode             [Disabled]
  Loader (SEAM Loader)                                 ▼

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```

Active Processor 1 Cores [1]/[2]

Core Disable Bitmap (Hex)
0: Enable all cores.
0xffff: Didable all cores.

Active Processor 2 Cores [1]/[2]

Core Disable Bitmap (Hex)
0: Enable all cores.
0xffff: Didable all cores.

Intel Hyper Threading Technology

Intel Hyper Threading Technology allows multiple threads to run on each core, so that the overall performance on threaded software is improved.

Enable Intel(R) TXT

Enables Intel Trusted Execution Technology Configuration.

Intel Virtualization Technology

Intel Virtualization Technology allows a platform to run multiple operating systems and applications in independent partitions, so that one computer system can function as multiple virtual systems.

Enable SMX

Use this item to enable Safer Mode Extensions.

Memory Encryption (TME)

Use this item to enable or disable Memory Encryption (TME).

Total Memory Encryption Multi-Tenant (TME-MT)

Use this item to enable or disable Total Memory Encryption-Multi-Tenant (TME-MT). Can be enabled only if Socket Configuration -> Porcessor Configuration -> Limit CPU PA to 46 bits=Disable.

Memory Integrity

Use this item to enable or disable memory Integrity.

TME Encryption Algorithm

Use this item to select TME Encryption Algorithm.

Trust Domain Extension (TDX)

Use this item to enable or disable Trust Domain Extension (TDX).

TDX Secure Arbitration Mode Loader (SEAM Loader)

Use this item to enable or disable TDX Secure Arbitration Mode Loader (SEAM Loader).

SGX Factory Reset

Perform SGX Factory Reset, on subsequent boot: delete all registration data, if SGX enabled will force Initial Platform Establishment flow.

SW Guard Extensions (SGX)

Use this item to enable or disable Software Guard Extensions (SGX).

SGX PRMRR Size Requested

Use this item to select the SGX PRMRR Size per domain.

SGX QoS

Use this item to enable or disable SGX Quality of Service.

Select Owner EPOCH input type

Each EPOCH is 64bit, keys value should be different than 0. After generating new epoch via 'Change to New Random Owner EPOCHs', the selection reverts back to 'Manual User Defined Owner EPOCHs'. In next boot keys will be hidden and state will be 'SGX Owner EPOCH activated'.

DCU Streamer Prefetcher

DCU streamer prefetcher is an L1 data cache prefetcher (MSR 1A4h [2])

Hardware Prefetcher

Automatically prefetch data and code for the processor. Enable for better performance.

Adjacent Cache Line Prefetch

Automatically prefetch the subsequent cache line while retrieving the currently requested cache line. Enable for better performance.

AES-NI

Use this item to enable or disable AES-NI support.

SNC

Use this item to enable or disable SNC mode. Configure this item to Disable, BIOS will enable UMA mode. Number of clusters is determined by BIOS based on detected SKU.

English

3.3.2 Platform Power Configuration

```
                              Aptio Setup — AMI
      Advanced

  Platform Power Configuration                         Enable/Disable EIST (P-States)

  CPU P State Control
  Intel SpeedStep Technology        [Enabled]
  Turbo Mode                        [Enabled]
  AVX P1                            [Nominal]
  Intel SST-PP                      [Auto]
  Dynamic SST-PP                    [Disabled]
  -------------------------------------------------------
  SST-PP          Core    P1      Package
  Level  Capable  Count   Ratio   TDP (W)  TjMax
  -------------------------------------------------------
    0      No     072     21      330      099
    1      No     072     25      330      100        ↔: Select Screen
    2      No     056     24      330      103        ↑↓: Select Item
    3      Yes    048     27      330      107        Enter: Select
    4      Yes    048     31      330      109        +/-: Change Option
  -------------------------------------------------------       F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
  CPU Hardware PM State Control                         F10: Save and Exit
  Hardware P-States                 [Native Mode]       ESC: Exit

  CPU C State Control
  Enable Monitor MWAIT              [Enabled]

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```

Intel SpeedStep Technology

Intel SpeedStep technology allows processors to switch between multiple frequencies and voltage points for better power saving and heat dissipation. CPU turbo ratio can be fixed when Intel SpeedStep Technology set Disabled and Intel Turbo Boost Technology set Enabled.

> ⚠️ *Please note that enabling this function may reduce CPU voltage and lead to system stability or compatibility issues with some power supplies. Please set this item to [Disabled] if above issues occur.*

Turbo Mode

Use this item to enable the processor to run above its base operating frequency when the operating system requests the highest performance state.

AVX P1

Use this item to select AVX P1 level.

Intel SST-PP

Intel SST-PP Select allows user to choose level. Auto: Choose the lowest level hardware support.

Dynamic SST-PP

Use this item to enable or disable the Dynamic SST-PP.

> ⚠️ *HWP Native Mode is a pre-requisite for enabling Dynamic SST-PP.*

Hardware P-States

This item supports below selections:
Disable: Hardware chooses a P-state based on OS Request (Legacy P-States).
Native Mode: Hardware chooses a P-state based on OS guidance.
Out of Band Mode: Hardware autonomously chooses a P-state (no OS guidance)
Native Mode with No Legacy Support: Hardware autonomously chooses a P-state based on OS guidance with no legacy support.

Enable Monitor MWAIT

Use this item to configure Monitor and MWAIT instructions whether Auto maps to enable.

ACPI C6x Enumeration

Auto: Maps to C6-P as ACPI C2.
Disable: Don't enumerate any C6 state in ACPI
C6 as ACPI C2/C3: Enumerate C6 as ACPI C2/C3 state. PkgC6 is not allowed.
C6-P as ACPI C2/C3: Enumerate C6-P as ACPI C2/C3 state. PkgC6 is allowed.

C1 to Cle Promotion

CPU will promote C1 request to Cle state.

Package C State

Package C State limit, the state Auto maps is program specific.

Power Performance Tuning

Use this item to decides which controls EFB.
OS Controls EPB: Specifies IA32_ENERGY_PERF_BIAS is used.
BIOS Controls EPB: Specifies ENERGY_PERF_BIAS_CONFIG is used.
PECI Controls EPB: Specifies PCS53 is used.

ENERGY_PERF_BIAS_CFG mode

Use this item to use input from ENERGY_PERF_BIAS_CONFIG mode seletion. PERF/Balanced, Perf/Bananced or Power/Power.

PL1 Power Limit

Use this item to configure Package Power Limit 1 (PL1) in watts. PL1 Power Limit is in Watts and the value may vary from 0 to Fused Value. If the value is 0, the fused value will be programmed. A value greater than fused TDP value will not be programmed.

PL1 Time Window

PL1 value in seconds. The value may vary from 1 to 5. Indicates the time window over which TDP value should be maintained.

PL2 Power Limit

PL2 Power Limit in Watts. The value may vary from 0 to 120% Fused TDP Value. If the value is 0, BIOS programs 120% * Fused TDP value.

PL2 Time Window

PL2 value in seconds. The value may vary from 0.012 to 0.039. Indicates the time window over which TDP value should be maintained.

3.3.3 DRAM Configuration

```
                              Aptio Setup - AMI
        Advanced

    DRAM Configuration                                    Enforces Plan Of Record
                                                          restrictions for DDR frequency
    Enforce DDR Memory Frequency POR    [Enforce POR]     programming.
    DRAM Frequency                      [Auto]
    Numa                                [Enabled]

    Mirror Mode                         [Disabled]
    UEFI ARM Mirror                     [Disabled]
    Mirror TAD0                         [Disabled]
    ADDDC Sparing                       [Disabled]
    Patrol Scrub                        [Enable at End of POST]
    Global Scrambling                   [Enabled]
    Intel(R) Flat Memory Mode Support   [Disabled]
    DDR CXL Heterogeneous Interleave    [Disabled]        ++: Select Screen
    support                                               ↑↓: Select Item
    CXL Noncompliant Device Support     [Disabled]        Enter: Select
                                                          +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit


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```

Enforce DDR Memory Frequency POR

Select this time to enable or disable the Enforces Plan of Record restrictions for DDR frequency programming.

DRAM Frequency

Maximum Host DDR Memory Frequency Selections in MT/s. If the "AUTO" option has been selected, a frequency is chosen automatically based on the minimum tCK given by the SPD. If Enforce POR is disabled, user will be able to run at higher frequencies than the memory support (limited by processor support).

Numa

Use this item to enable or disable Non Uniform Memory Access (NUMA).

Mirror Mode

Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently reducing the memory capacity by half. Partial Mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Enabling any type of Mirror Mode will disable XPT Prefetch.

UEFI ARM Mirror

Imitate behavior of UEFI based Address Range Mirror with setup option.

English

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Mirror TAD0

Enable Mirror on entire memory for TAD0.

ARM Mirror Percentage

Enter the percentage to be mirrored in basis points. Mirror options are 10%, 15%, 20%, 25%, 30%, 35%, 40%. 25% is represented 2500. Any other number entered will be rounded to nearest greater number, for ex. number > 2000 and <=2500 will be rounded to 2500. And any number >4000, will be rounded to 4000.

ADDDC Sparing

Enable or disable Memory Rank Sparing.

Global Scrambling

Enable - Enables global data scrambling.
Disable - Disables this feature.

Intel(R) Flat Memory Mode Support

Enable or disable Intel(R) Flat Memory Mode support.

DDR CXL Heterogeneous Interleave support

Use this item to enable DDR CXL Heterogeneous Interleave support.

CXL Noncompliant Device Support

Enables DDR CXL Heterogeneous Interleave support.

3.3.4 Chipset Configuration

```
                              Aptio Setup - AMI
        Advanced

    Chipset Configuration                                  Select MMCFG Base, Auto - Auto
                                                           decides based on Si
    MMCFG Base                         [Auto]              Compatibility.
    MMCFG Size                         [Auto]
    MMIO High Base                     [Auto]
    MMIO High Granularity Size         [Auto]
    SR-IOV Support                     [Enabled]
    Re-Size BAR Support                [Disabled]

    Onboard VGA                        [Enabled]
    Onboard LAN                        [Enabled]

  ▶ PCIE Link Width
  ▶ PCIE Link Speed                                        ↔: Select Screen
  ▶ PCIE Hot Plug                                          ↑↓: Select Item
  ▶ PCIE ASPM                                              Enter: Select
                                                           +/-: Change Option
                                                           F1: General Help
                                                           F7: Discard Changes
                                                           F9: Load UEFI Defaults
                                                           F10: Save and Exit
                                                           ESC: Exit


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```

MMCFG Base

Use this item to select MMCFG Base. Auto-Auto decides based on Si compatibility.

MMCFG Size

Use this item to select MMCFG Size. Auto-Auto decides based on Si compatibility.

MMIO High Base

Use this item to select MMIO High Base.

MMIO High Granularity Size

Selects the allocation size used to assign mmioh resources. Per stack mmioh resource assignments are multiples of the granularity where 1 unit per stack is the default allocation.

SR-IOV Support

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

Re-Sized BAR Support

If system has Resizable BAR capable PCIe Devices, this option Enables or Disables Resizable BAR Support.

English

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Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN

Use this item to enable or disable the Boot From Onboard LAN feature.

PCIE Link Width

This displays the PCIE Link Width.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE5, MCIO1 Width
The default value is [Auto] - x16.

PCIE Link Speed
This displays the PCIE Link Speed.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 Link Speed
The default value is [Auto] - up to Gen5 (32GT/s).

MCIO1_1/MCIO1_2/M2_1/M2_2 Link Speed
The default value is [Auto] - up to Gen5 (32GT/s).

PCIE Hot Plug

Select this item to configure PCIE Hot Plug.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 Surprise Hot Plug
This option specifies if the link is considered Surprise Hot Plug capable.

MCIO1_1/MCIO1_2/M2_1/M2_2 Surprise Hot Plug
This option specifies if the link is considered Surprise Hot Plug capable.

PCIE ASPM

Selec this item to disable ASPM support in all PCIe root ports.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 ASPM Support
Use this item to disable ASPM support in PCIe root port. The default value is [Auto].

MCIO1_1/MCIO1_2/M2_1/M2_2 ASPM Support
Use this item to disable ASPM support in PCIe root port. The default value is [Auto].

3.3.5 NVMe Configuration

```
                          Aptio Setup - AMI
        Advanced

      NVMe Configuration                                  Launch NVMe driver

      Launch NVMe driver              [Disabled]

    ▶ Phison ESMP512GKB4C2-E16S



                                                   ↔: 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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```
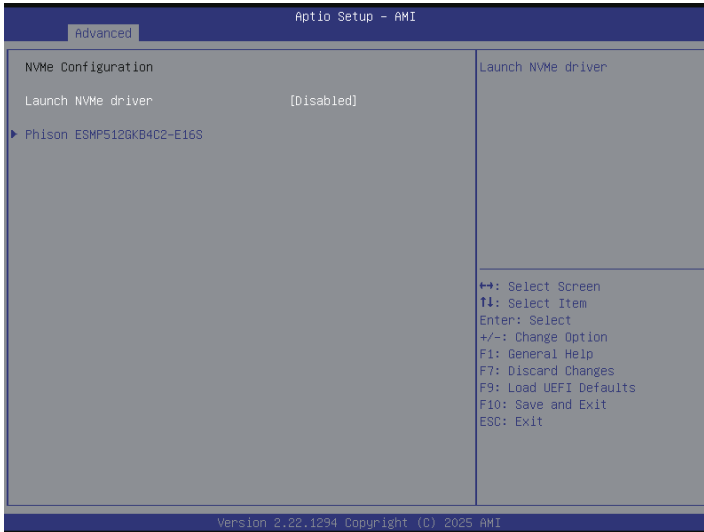
Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

Phison ESMP512GKB4C2-E16S

Self Test Option
Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.

Self Test Action
Select either to test Controller alone or Controller and NameSpace. Selecting Controller and Namespace option will take lot longer to complete the test.

Run Device Self Test
Perform device self test for the corresponding Option and Action selected by user. Pressing 'Esc' key will abort the test. Result shown below is the recent result logged in the device.

3.3.6 ACPI Configuration

```
                          Aptio Setup — AMI
    Advanced

  ACPI Settings                                        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

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```

PCIE Devices Power On

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

Ring-In Power On

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

RTC Alarm Power On

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

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

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

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

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

3.3.7 USB Configuration

```
                              Aptio Setup - AMI
        Advanced

 USB Configuration

 USB Module Version              36

 USB Controllers:
      1 EHCI, 2 XHCIs
 USB Devices:
      1 Drive, 3 Keyboards, 3 Mice, 3 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 2.22.1294 Copyright (C) 2025 AMI
```
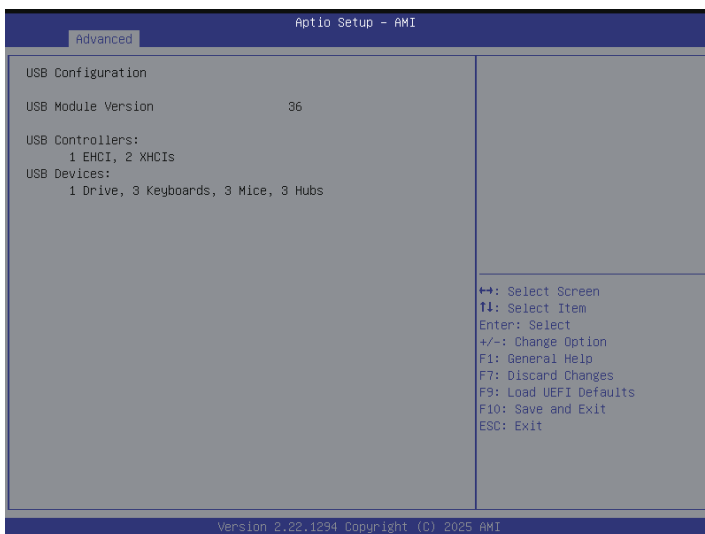
This displays the USB Module Version, Controllers and USB Devices information.

3.3.8 Super IO Configuration

```
                              Aptio Setup - AMI
      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



                      Version 2.22.1294 Copyright (C) 2025 AMI
```
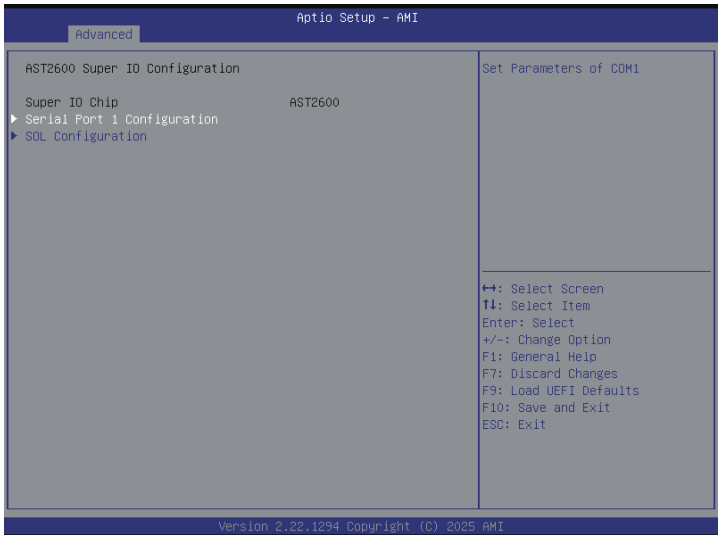
Serial Port 1 Configuration

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

Serial Port
Use this item to enable or disable the Serial Port (COM).

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

SOL Configuration

Use this item to set parameters of Serial Port 2 (COMB).

SOL Port
Use this item to enable or disable the Serial Port (COM).

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

3.3.9 Serial Port Console Redirection

```
                          Aptio Setup - AMI
        Advanced

   Serial Port Console Redirection                    Console Redirection Enable or
                                                      Disable.
   COM1
   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]          ↔: Select Screen
 ▶ Console Redirection Settings                        ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Option
                                                      F1: General Help
                                                      F7: Discard Changes
                                                      F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit



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```

COM1 / SOL

Console Redirection

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

Console Redirection Settings

Use this option 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 item 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

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Bits Per Second

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

Parity

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

Recorder Mode

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

Resolution 100x31

Use this item to enable or disable extended terminal resolution support.

Putty Keypad

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

Console Redirection Settings

Use this option 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 item 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 item 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 item 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 EMS

Parity EMS

Stop Bits EMS

English

3.3.10 H/W Monitor

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

```
                                  Aptio Setup - AMI
         Advanced

 +3VSB                           : 3.4 V                    ▲
 +5VSB                           : 4.95 V
 PVNN_TERM_CPU                   : 1 V
 PVCC3V3_AUX_CPU                 : 3.32 V
 PVCCFA_EHV_CPU0                 : 1.83 V
 PVCCIN_CPU0                     : 1.82 V
 PVCCINFAON_CPU0                 : 0.71 V
 PVCCINFAON_CPU1                 : 0.71 V
 PVCCFA_EHV_CPU                  : 1.8 V
 PVCCD_HV_CPU0                   : 1.11 V
 PVCCIN_CPU1                     : 1.82 V
 +BAT                            : 3.04 V
 +3.3V                           : 3.06 V
 PVCCFA_EHV_CPU1                 : 1.8 V          ↔: Select Screen
 +12V                            : 11.76 V        ↑↓: Select Item
 PVCC_HV_CPU1                    : 1.11 V         Enter: Select
 CPU0 Temp                       : 54 °C          +/-: Change Option
 CPU1 Temp                       : 54 °C          F1: General Help
 FSC_INDEX_0                     : 47 °C          F7: Discard Changes
 FSC_INDEX_1                     : 47 °C          F9: Load UEFI Defaults
 M.2 Temp1                       : N/A            F10: Save and Exit
 M.2 Temp2                       : N/A            ESC: Exit
 PSU1 VIN                        : N/A
 PSU2 VIN                        : N/A
 PSU1 IOUT                       : N/A            ▼

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```

3.3.11 Network Stack Configuration

```
                              Aptio Setup - AMI
    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.

3.3.12 Intel VMD Technology

```
                          Aptio Setup - AMI
         Advanced

    Intel VMD technology

  ▶ Intel VMD for Volume Management Device on Socket 0
  ▶ Intel VMD for Volume Management Device on Socket 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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```
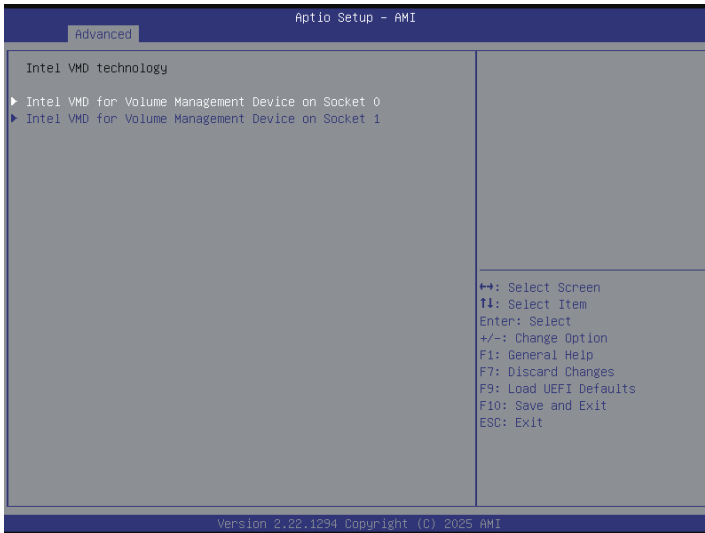
Press <Enter> to bring up the Intel VMD for Volume Management Device Configuration menu.

Intel VMD for Volume Management Device on Socket 0/1

VMD Config for Stack 0 (PCIE4)/Stack 2 (PCIE6)/Stack 3 (PCIE2)/Stack 5 (MCIO1/M2)

Use this item to enable or disable Intel Volume Management Device Technology in this Stack.
When [Enabled] allowing user to configure the options below.

VMD port A/B/E/G

Use this item to enable or disable Intel Volume Management Device Technology on specific root port.

3.3.13 Driver Health
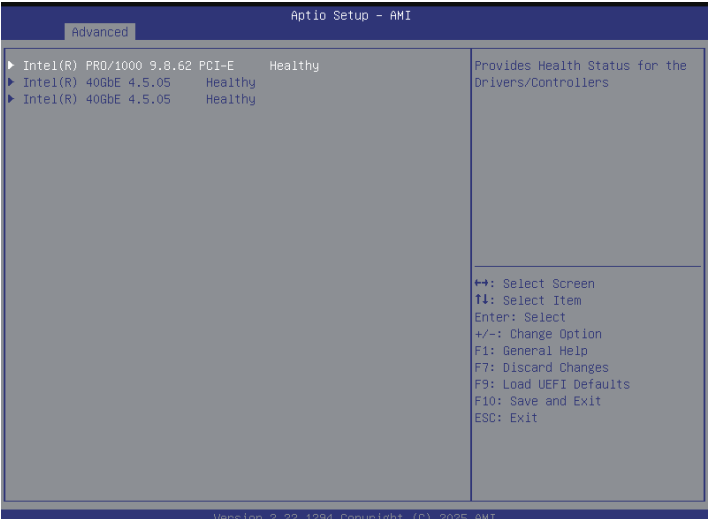
Inter (R) PRO/1000 9.8.62 PCI-E   Healthy

Provides Health Status for the Drivers/Controllers

Intel(R) 40GbE 4.5.05   Healthy

Provides Health Status for the Drivers/Controllers

3.3.14 Tls Auth Configuration

```
                          Aptio Setup – AMI
        Advanced

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

 ▶ Client Cert Configuration




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



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```

Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.15 Intel(R) Ethernet Controller

Configure 10 Gigabit Ethernet device parameters.
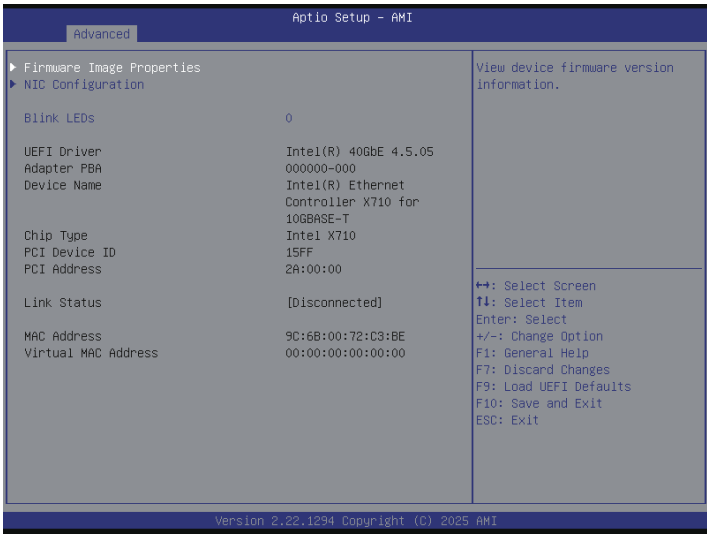
Firmware Image Properties

Select this item to view the device firmware version information.

NIC Configuration

Click this item to configure the network device port.

Link Speed
Specifies the port speed used for the selected boot protocol.

Wake On LAN
Use this item to enable power on of the system via LAN. Note that configuring Wake on LAN in the operating system does not change the value of this setting, but does override the behavior of Wake on LAN in OS controlled power states.

LLDP Agent
Persistently enables or disables firmware's LLDP Agent. Note that disablng firmware's LLDP Agent also disables DCB functionality.

Blink LEDs

Identify the physical network port by blinking the associated LED.

Port Configuration Information

Displays port configuration information including UEFI Driver, Adapter PBA, Device Name, Chip Type, PCI Device ID, PCI Address, Link Status, MAC Address and Virtual MAC Address.

3.3.16 VLAN Configuration


```
                              Aptio Setup - AMI
      Advanced

▶ Enter Configuration Menu                            Press ENTER to enter
                                                      configuration menu for VLAN
                                                      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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```
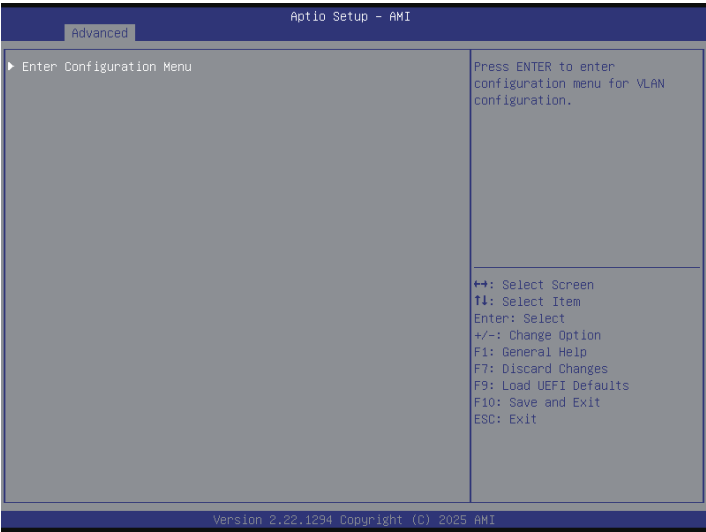
Enter Configuration Menu

Press [Enter] to enter the menu for VLAN configuration.

VLAN ID
Specifies the VLAN ID of new VLAN or existing VLAN, the valid value is 0~4094.

Priority
Specifies the 802.1Q Priority, the valid value is 0~7.

Add VLAN
Use this item to create a new VLAN or update existing VLAN.

Remove VLAN
Use this item to remove selected VLANS.

3.3.17 Instant Flash

Instant Flash is a UEFI flash utility embedded in Flash ROM. This convenient UEFI up-datetool 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 prepar-ing 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 Server Mgmt

```
                              Aptio Setup - AMI
        Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

    BMC Self Test Status          PASSED               Wait For BMC response for
    BMC Device ID                 32                   specified time out. BMC starts
    BMC Device Revision           1                    at the same time when BIOS
    BMC Firmware Revision         1.16.00              starts during AC power ON. It
    IPMI Version                  2.0                  takes around 255 seconds to
    IPMI BMC Interface            KCS                  initialize Host to BMC
                                                       interfaces.
    Wait For BMC                  [Enabled]
    FRB-2 Timer                   [Disabled]
    FRB-2 Timer timeout           6
    FRB-2 Timer Policy            [Do Nothing]
    OS Watchdog Timer             [Disabled]
    OS Wtd Timer Timeout          10
    OS Wtd Timer Policy           [Reset]
                                                       ↔: Select Screen
  ▶ BMC Network Configuration                          ↑↓: Select Item
  ▶ DNS Configuration                                  Enter: Select
  ▶ System Event Log                                   +/-: Change Option
  ▶ BMC Tools                                          F1: General Help
                                                       F7: Discard Changes
                                                       F9: Load UEFI Defaults
                                                       F10: Save and Exit
                                                       ESC: Exit


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```

Wait For BMC

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

FRB-2 Timer

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

FRB-2 Timer Timeout

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

FRB-2 Timer Policy

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

OS Watchdog Timer

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

OS Wtd Timer Timeout

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

OS Wtd Timer Policy

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

BMC Network Configuration

Use this to configure BMC network parameters.

DNS Configuration

Use this to configure DNS parameters.

System Event Log

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

BMC Tools

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

3.4.1 BMC Network Configuration
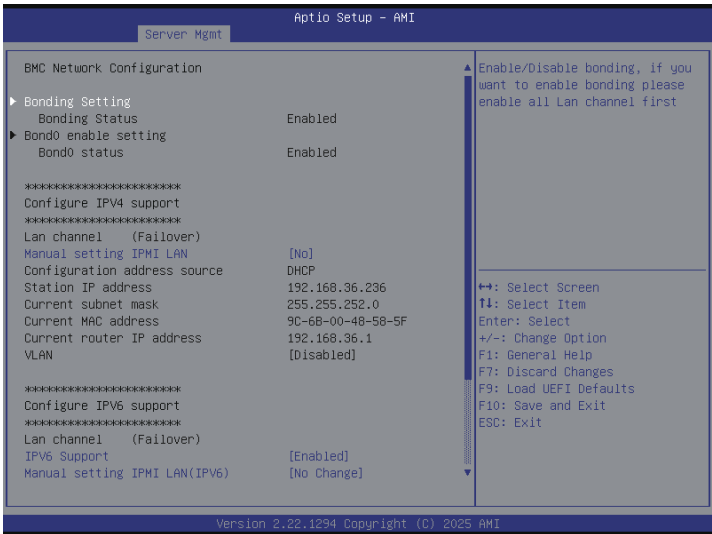
Bonding Setting

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

Manual Setting IPMI LAN

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

Configuration Address Source

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

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

> *The default login information for the IPMI web interface is:*
>   *Username: admin*
>   *Password: admin*
>
>
> *For more instructions on how to set up remote control environment and use the IPMI management platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/faq.asp*

VLAN

Enable or disable Virtual Local Area Network.

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

VLAN ID
Select this item to configure the VLAN ID setting, the Maximum value is 4094 and the Minimum value is 1.

VLAN Priority
Select this item to configure the VLAN Priotity setting. the Maximum value is 7 and the Minimum value is 0.

IPV6 Support

Enable or disable LAN IPV6 Support.

Manual Setting IPMI LAN(IPV6)

Select to configure LAN channel parameters statically or dynamically(by BIOS or BMC). Unspecified option will not modify any BMC network parameters during BIOS phase.

3.4.2 DNS Configuration
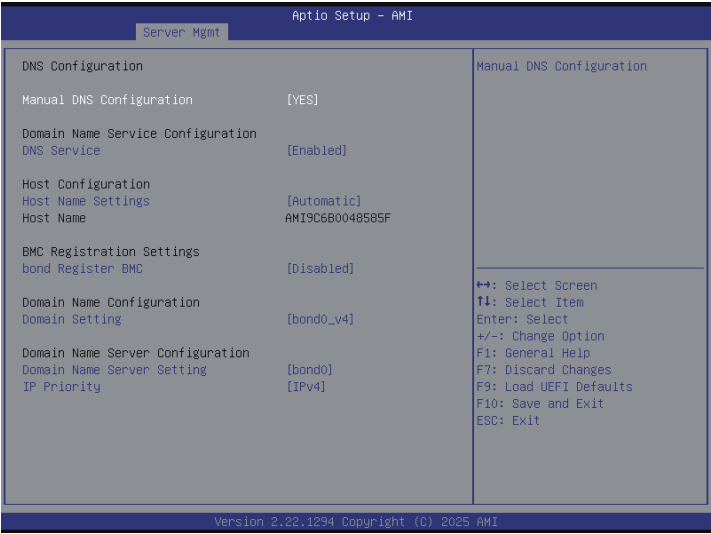
Manual DNS Configuration

Select this item to manual configure DNS.

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

DNS Service

Select this item to enable or disable DNS Service Configuration.

Host Name Settings

Select this item to automatic or manual Host Name Settings.

Bond Register BMC

Use this item to enable or disable Bond Register BMC.

Bond Register Method

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

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

Domain Name Server Setting

Select this item to configure DNS Server Settings.

IP Priority

Select this item to configure IP Priority.

3.4.3 System Event Log

```
                              Aptio Setup – AMI
                 Server Mgmt

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

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

  PCIe Device Degrade ELog Support  [Disabled]

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


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```

SEL Components

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

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full

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

Log EFI Status Codes

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

PCIe Device Degrade ELog Support

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

3.4.4 BMC Tools

```
                                Aptio Setup – AMI
         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


                          Version 2.22.1294 Copyright (C) 2025 AMI
```

KCS Control

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

Restore AC Power Loss

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

Load BMC Default Settings

Use this item to Load BMC Default Settings

English

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3.5 Event Logs


```
                            Aptio Setup - AMI
       Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

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


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



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```
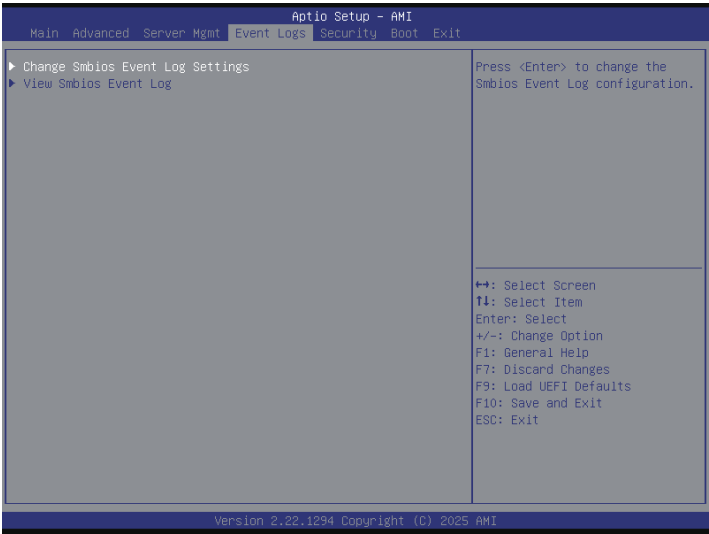
Change Smbios Event Log Settings

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

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

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

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

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

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.*

3.6 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 - AMI
     Main  Advanced  Server Mgmt  Event Logs  Security  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




                    Version 2.22.1294 Copyright (C) 2025 AMI
```
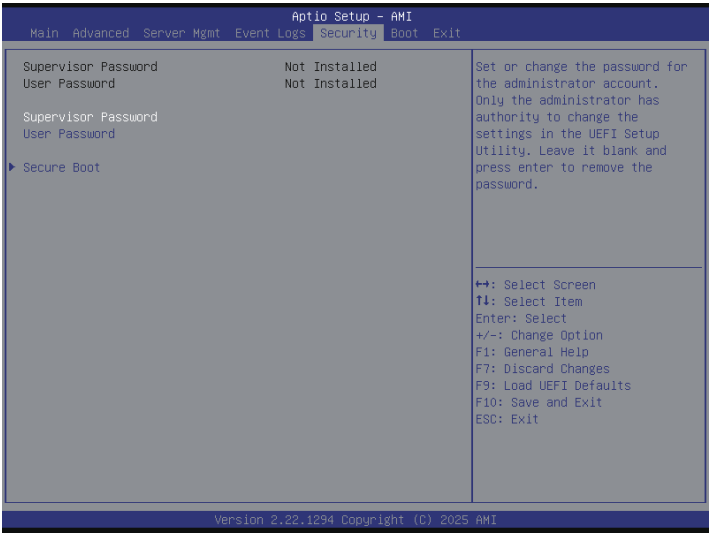
Supervisor Password

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

Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.

Secure Boot Mode

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

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Install Default Secure Boot Keys

Please install default secure boot keys if it's the first time useing secure boot.
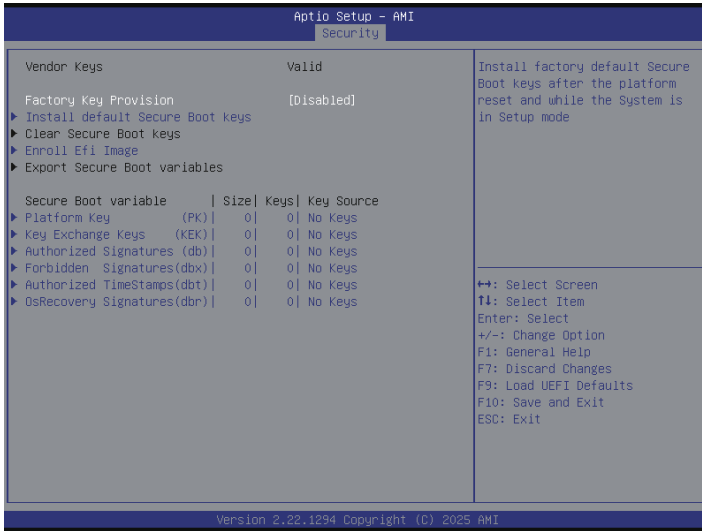
Clear Secure Boot Keys

Use this to clear the secure boot keys.

Expert Key Management

Enables expert users to modify Secure Boot Policy variables without variable authentication.

3.6.1 Expert Key Management

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

```
                        Aptio Setup - AMI
                           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, Modified, 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, Modified, 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

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, 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, Modified, 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, Modified, Mixed

OsRecovery Signatures (dbr)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

English

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)
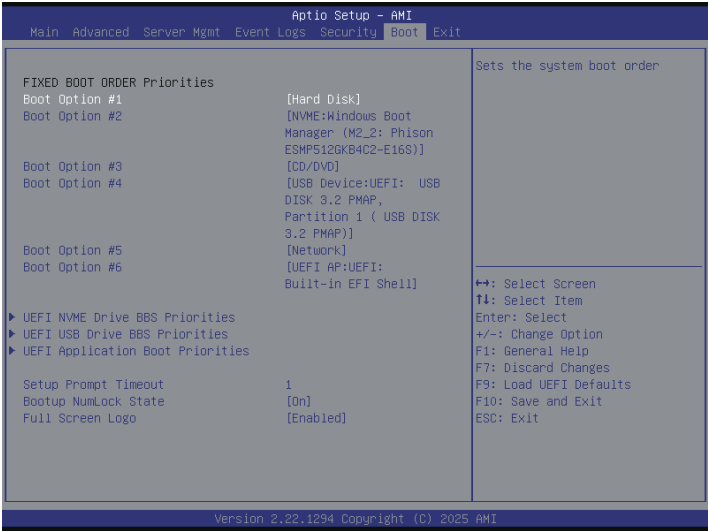
d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

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 - AMI
    Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

                                                    Sets the system boot order
     FIXED BOOT ORDER Priorities
     Boot Option #1              [Hard Disk]
     Boot Option #2              [NVME:Windows Boot
                                 Manager (M2_2: Phison
                                 ESMP512GKB4C2-E16S)]
     Boot Option #3              [CD/DVD]
     Boot Option #4              [USB Device:UEFI:  USB
                                 DISK 3.2 PMAP,
                                 Partition 1 ( USB DISK
                                 3.2 PMAP)]
     Boot Option #5              [Network]
     Boot Option #6              [UEFI AP:UEFI:
                                 Built-in EFI Shell]      ↔: Select Screen
                                                          ↑↓: Select Item
   ▶ UEFI NVME Drive BBS Priorities                       Enter: Select
   ▶ UEFI USB Drive BBS Priorities                        +/-: Change Option
   ▶ UEFI Application Boot Priorities                     F1: General Help
                                                          F7: Discard Changes
     Setup Prompt Timeout        1                        F9: Load UEFI Defaults
     Bootup NumLock State        [On]                     F10: Save and Exit
     Full Screen Logo            [Enabled]                ESC: Exit



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```

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

Use this to set the system boot order.

UEFI NVME Drive BBS Priorities

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

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

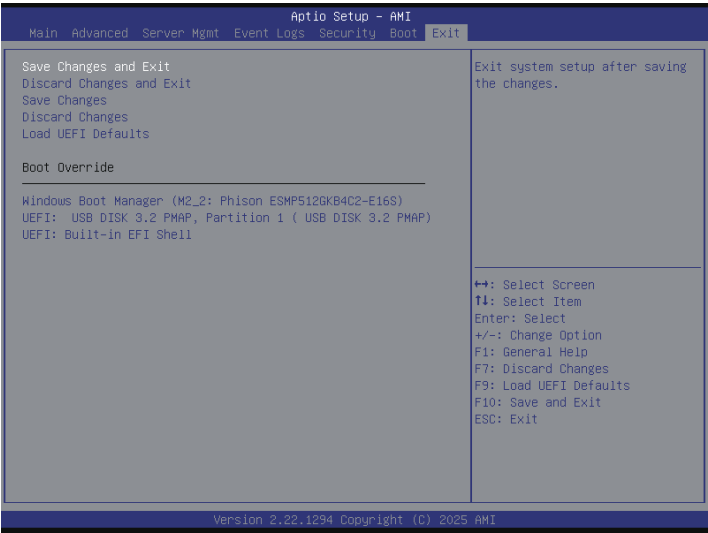Configure the number of seconds to wait for the UEFI setup utility.

Bootup NumLock State

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

Full Screen Logo

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

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3.8 Exit Screen


```
                        Aptio Setup - AMI
     Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

 Save Changes and Exit                          Exit system setup after saving
 Discard Changes and Exit                       the changes.
 Save Changes
 Discard Changes
 Load UEFI Defaults

 Boot Override

 Windows Boot Manager (M2_2: Phison ESMP512GKB4C2-E16S)
 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

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```

Save Changes and Exit

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

Discard Changes and Exit

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

Save Changes

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

Discard Changes

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

Load UEFI Defaults

Use this item to restore or load default values for all the setup options.

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® Rapid Storage Technology driver from the ASRock Rack's website (www.asrockrack. com) to your USB drive while installing OS in SATA RAID mode.

4.2 Download and Install Software Drivers

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

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

4.3 Contact Information

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

English

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.

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

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

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

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

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

Unable to save system setup configurations...

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

Other problems...

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

English

5.2 Technical Support Procedures

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

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

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

5.3 Returning Merchandise for Service

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

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

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

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

Contact Information

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

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