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Stable and
Reliable Solution

Server/Workstation
Motherboard

TURIND8X-2T/500W

User Manual

English

Version 1.10
Published Oct. 2026

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

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WARNING



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

ASRock Rack's Website: www.ASRockRack.com

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.

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

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



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

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Chapter 1 Introduction

Thank you for purchasing ASRock Rack ***TURIND8X-2T/500W*** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

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

Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock Rack website without further notice. Find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com

Please visit the website for specific information and technical support: http://www.asrockrack.com/support/

1.1 Package Contents

- ASRock Rack TURIND8X-2T/500W motherboard (EEB form factor: 12.63 in x 13 in)
- Quick installation guide
- 1 I/O shield
- 1 MCIO X4 to 4 SATA cable (63 cm)
- 2 Screws for M.2 sockets

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

English

1.2 Specifications

TURIND8X-2T/500W	
Physical Status	
Form Factor	EEB
Dimension	12.63 in x 13 in (320.8 mm x 330.2 mm)
Processor System	
CPU	Supports AMD EPYC™ 9005/9004 (with AMD 3D V-Cache™ Technology) and 97x4 series processors
Socket	1 Socket SP5 (LGA 6096)
Thermal Design Power (TDP)	Up to 500W
Chipset	System on Chip
System Memory	
Supported DIMM Quantity	8 DIMM slots (1DPC)
Supported Type	Supports DDR5 288-pin RDIMM, RDIMM-3DS
Max. Capacity per DIMM	RDIMM: 128 GB (2Rx4) RDIMM-3DS: 256 GB (2Rx4)
Max. Frequency	6400 MHz
Voltage	1.1V
Note: Memory capacity, frequency, and voltage support is to be validated.	
PCIe Expansion Slot (Slot7 close to CPU)	
PCIe x16	SLOT6: PCIe 5.0/CXL 2.0* x16
	SLOT5: PCIe 5.0 x16
	SLOT4: PCIe 5.0/CXL 2.0* x16
	SLOT3: PCIe 5.0 x16
	SLOT2: PCIe 5.0/CXL 2.0* x16
	SLOT1**: PCIe 5.0 x16
	SLOT0: PCIe 5.0/CXL 2.0* x16
PCIe x8	SLOT7***: PCIe 5.0 x8
**Supports CXL 1.1 while installing AMD EPYC 9004 (with AMD 3D V-Cache™ Technology) and 97x4 series processors* ***SLOT1 shared lanes with 1 MCIO and 1 M.2. SLOT1 auto-switch to PCIe 5.0 x8 when either 1 MCIO or 1 M.2 populated.* ****SLOT7 share lanes with 2 MCIO. When SLOT7 occupied, 1 MCIO will not function and 1 MCIO can be enabled by jumper setting. When selecting 1 MCIO, SLOT7 will switch to PCIex4.*	
Other PCIe Expansion Connectors	
M.2	1 M-key (PCIe 5.0 x4 or 4 SATA 6 Gb/s), supports 22110/2280 form factor 1 M-key** (PCIe 5.0 x4), supports 22110/2280 form factor
MCIO	2 MCIO*** (PCIe 5.0 x4 or 4 SATA 6 Gb/s) 1 MCIO (PCIe 5.0 x4 or 4 SATA 6 Gb/s) 1 MCIO** (PCIe 5.0 x4)

SATA/SAS Storage	
PCH Built-in Storage	AMD EPYC 9005/9004 (16 SATA 6 Gb/s): 3 MCIO, 4 SATA via optional M2U2_HD_G4 M.2 device
Ethernet	
Additional Ethernet Controller	Broadcom BCM57416: 2 RJ45 (10GbE)
Server Management	
BMC Controller	ASPEED AST2600
Dedicated IPMI LAN	1 Realtek RTL8211F for dedicated management LAN
Graphics	
Controller	ASPEED AST2600
VRAM	DDR4 512 MB
Rear I/O	
UID Button/LED	1 UID button w/ LED
VGA Port	1 DB15 (VGA)
Serial Port	1 DB9 (COM)
USB Port	2 Type-A (USB 3.2 Gen1)
LAN Port	2 RJ45 (10 GbE), 1 dedicated IPMI
Internal Connectors/Headers	
Power Connector	1 (24-pin, ATX main power), 3 (8-pin, ATX 12V), 1 (6-pin 12V GFX power)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN activity LED, locate, SMBus
System Panel Header	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
NMI Header	1
COM Header	1
VGA Header	1
Speaker Header	1 (4-pin)
Fan Header	8 (6-pin)
Thermal Sensor Header	1
TPM Header	1 (13-pin, SPI)
SGPIO Header	2
HSBP	1
SMbus	1
PMbus	1
IPMB Header	1
Clear CMOS	1 (contact pads)
USB Header	1 (19-pin, 2 USB 3.2 Gen1)
LED Indicators	
Standby Power LED	1 (5VSB)
80 Debug Port LED	1
Fan Fail LED	8
BMC Heartbeat LED	1

System BIOS	
Type	AMI UEFI BIOS: 256 Mb (32 MB) SPI Flash ROM
Features	ASRock Rack Instant Flash, ACPI 6.4 (and above) compliance wake-up events, SMBIOS 3.5.0 and above, Plug and Play(PnP)
Hardware Monitor	
Temperature	CPU, MB, TR temperature sensing
Fan	Fan tachometer CPU quiet fan (Allow chassis fan speed auto-adjust by CPU temperature.) Fan multi-speed control
Voltage	VCORE,VCCSA,VCCM,3V, 5V, 12V, +1.05V_PCH_AUX,+BAT, 3VSB, 5VSB,VCCIO,+2.5V_VPP
Support OS	
OS	Microsoft® Windows: (for EPYC 9004) - Server 2019 (64 bit) - Server 2022 (64 bit) Microsoft® Windows: (for EPYC 9005) - Server 2019 (64 bit) - Server 2022 (64 bit) - Server 2025 (64 bit) Linux: (for EPYC 9004) - Red Hat Enterprise Linux Server 8.6 (64 bit) / Server 8.7 (64 bit) / Server 9.0 (64 bit) / Server 9.1 (64 bit) - SUSE SLES 15.4 (64 bit) - Ubuntu 20.04.5 (64 bit) / 22.04 (64 bit) / 22.10 (64 bit) Linux: (for EPYC 9005) - Red Hat Enterprise Linux Server 8.10 (64 bit) / Server 9.4 (64 bit) - SUSE SLES 15.6 (64 bit) - Ubuntu 22.04.5 (64 bit) / 24.04.2 (64 bit) Hypervisor: (for EPYC 9004) - VMWare® ESXi 7.0 U3i / 8.0 - CITRIX Hypervisor 8.2.1 **Please refer to the website for the latest OS support list.*
Environment	
Temperature	Operating temperature: 10°C ~ 35°C Non operating temperature: -40°C ~ 70°C
Humidity	Non operating humidity: 20% ~ 90% (non-condensing)

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

English

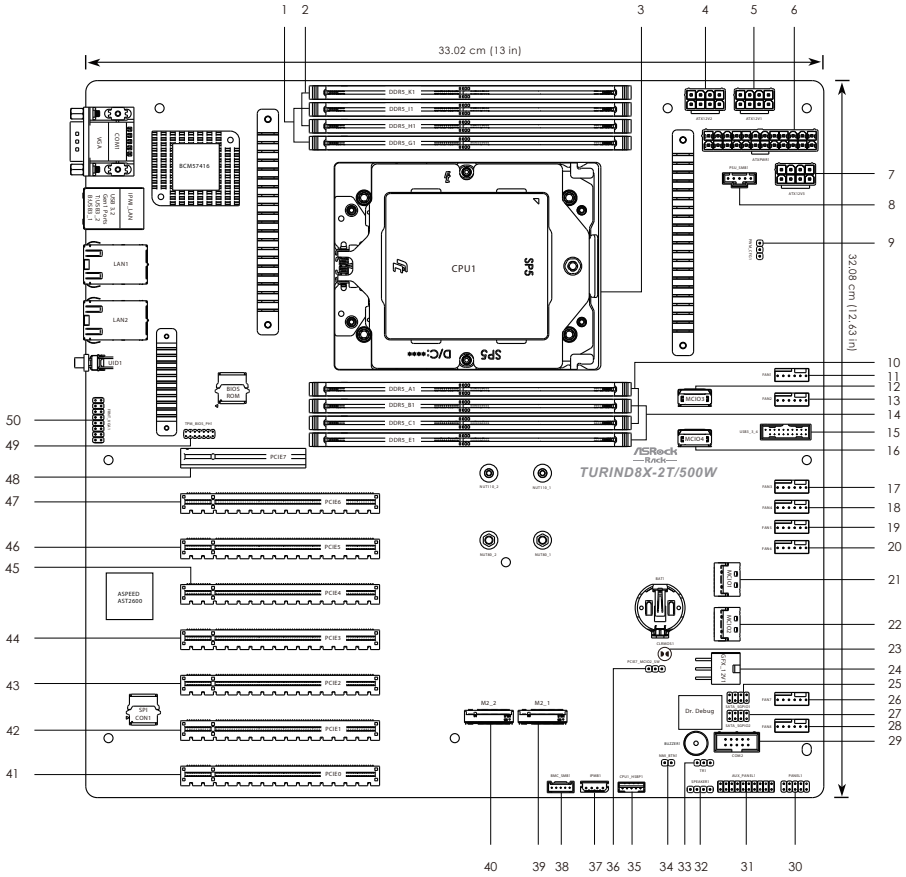
This motherboard supports Wake from on Board LAN. To use this function, please make sure that the "Wake on Magic Packet from power off state" is enabled in Device Manager > Intel® Ethernet Connection > Power Management. And the "PCI Devices Power On" is enabled in UEFI SETUP UTILITY > Advanced > ACPI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

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

1.3 Unique Features

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

1.4 Motherboard Layout

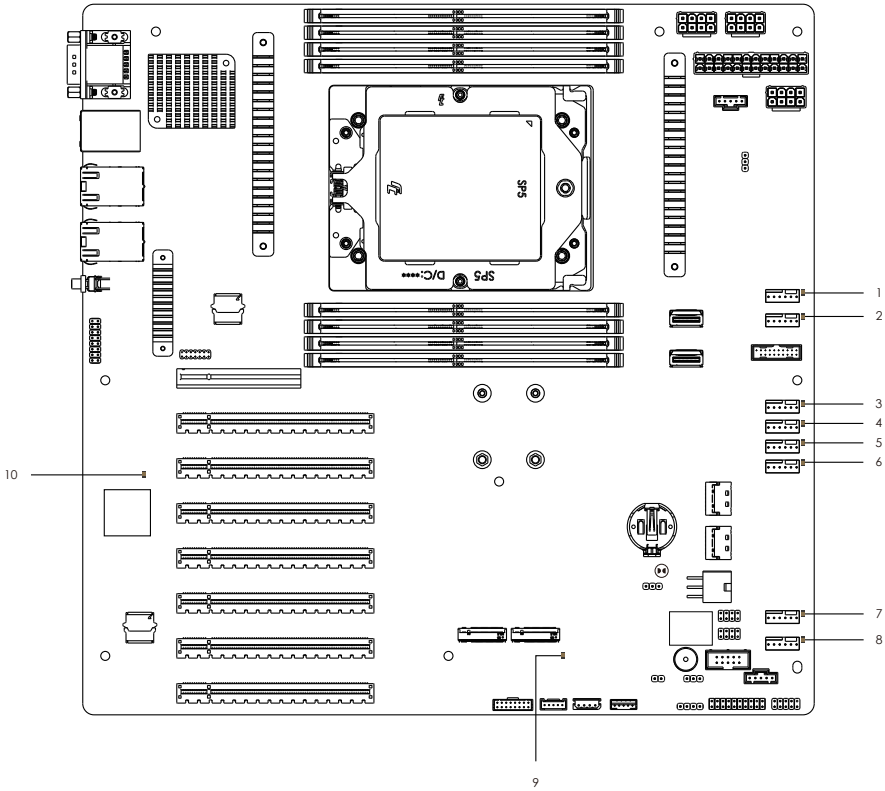


No.	Description
1	2 x 288-pin DDR5 DIMM Slots (DDR5_G1, DDR5_I1)*
2	2 x 288-pin DDR5 DIMM Slots (DDR5_H1, DDR5_K1)*
3	AMD Socket SP5 (LGA6096) (CPU1)
4	ATX 12V Power Connector (ATX12V2)
5	ATX 12V Power Connector (ATX12V1)
6	ATX Power Connector (ATXPWR1)
7	ATX 12V Power Connector (ATX12V3)
8	PSU SMBus Header (PSU_SMB1)
9	PWM Configuration Header (PWM_CFG1)
10	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_C1)*
11	System Fan Header (FAN1)
12	Mini Cool Edge IO x4 Connector (MCIO3)
13	System Fan Header (FAN2)
14	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_E1)*
15	USB 3.2 Gen1 Header (USB3_3_4)
16	Mini Cool Edge IO x4 Connector (MCIO4)
17	System Fan Header (FAN3)
18	System Fan Header (FAN4)
19	System Fan Header (FAN5)
20	System Fan Header (FAN6)
21	Mini Cool Edge IO x4 Connector (MCIO1)
22	Mini Cool Edge IO x4 Connector (MCIO2)
23	Clear CMOS Pad (CLRMOS1)
24	Graphics 12V Power Connector (GFX_12V1)
25	SATA SGPIO Header (SATA_SGPIO1)
26	System Fan Header (FAN7)
27	SATA SGPIO Header (SATA_SGPIO2)
28	System Fan Header (FAN8)
29	COM Port Header (COM2)
30	System Panel Header (PANEL1)
31	Auxiliary Panel Header (AUX_PANEL1)
32	Speaker Header (SPEAKER1)
33	Thermal Sensor Header (TR1)
34	Non Maskable Interrupt Button (NMI_BTN1)

No.	Description
35	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
36	PCIE Signal Source Selection Jumper (PCIE7_MCIO2_SW)
37	Intelligent Platform Management Bus Header (IPMB1)
38	BMC SMBus Header (BMC_SMB1)
39	M.2 Socket (M2_1) (Type 22110/2280)
40	M.2 Socket (M2_2) (Type 22110/2280)
41	PCI Express 5.0 x16 Slot (PCIE0)
42	PCI Express 5.0 x16 Slot (PCIE1)
43	PCI Express 5.0 x16 Slot (PCIE2)
44	PCI Express 5.0 x16 Slot (PCIE3)
45	PCI Express 5.0 x16 Slot (PCIE4)
46	PCI Express 5.0 x16 Slot (PCIE5)
47	PCI Express 5.0 x16 Slot (PCIE6)
48	PCI Express 5.0 x8 Slot (PCIE7)
49	SPI TPM Header (TPM_BIOS_PH1)
50	Front VGA Header (FRNT_VGA1)

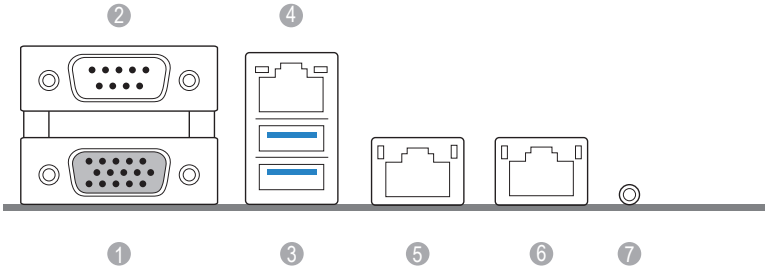
**For DIMM installation and configuration instructions, please see p.20 (Installing the Memory Modules (DIMM)) for more details.*

1.5 Onboard LED Indicators



No.	Item	Status	Description
1	LED_FAN1	Red	FAN1 failed
2	LED_FAN2	Red	FAN2 failed
3	LED_FAN3	Red	FAN3 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN5	Red	FAN5 failed
6	LED_FAN6	Red	FAN6 failed
7	LED_FAN7	Red	FAN7 failed
8	LED_FAN8	Red	FAN8 failed
9	SB_PWR1	Green	STB PWR ready
10	BMC_LED1	Blinking four times and then off	Start initialization after AC power-on or BMC reset
		Blinking at 1Hz	BMC ready
		Steady on Steady off Other frequency	Error (The actual behavior depends on the state at the time of failure.)

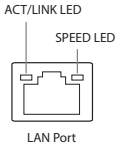
1.6 I/O Panel



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

LAN Port LED Indications

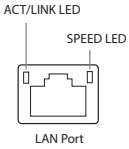
*There are two LEDs on the IPMI LAN port specified for link activity and speed. Please refer to the table below for the LAN port LED indications.



IPMI LAN Port LED Indications

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

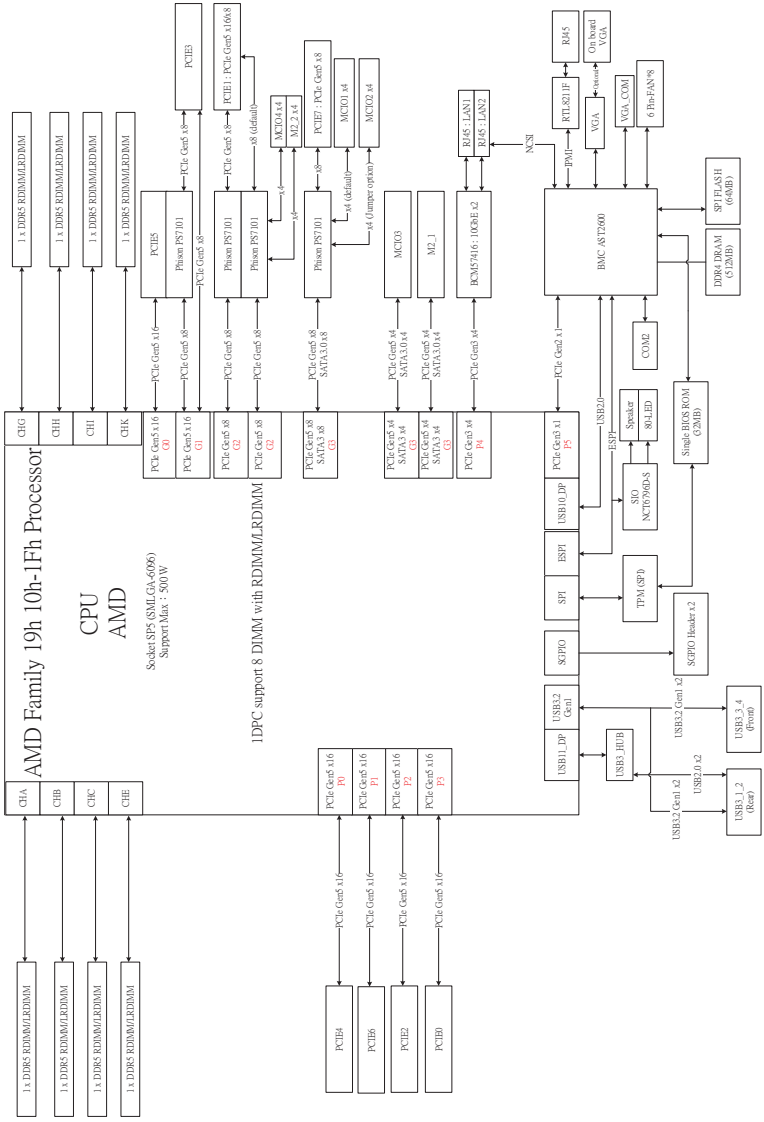
**There are two LEDs on the 10G LAN port specified for link activity and speed. Please refer to the table below for the LAN port LED indications.



10G LAN Port LED Indications

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

1.7 Block Diagram



English

Chapter 2 Installation

This is an EEB form factor (320.8 mm x 330.2 mm) motherboard. Before installing the motherboard, study the configuration of the chassis to ensure that the motherboard fits into it.



1. *Ensure the motherboard battery is installed before unplugging the power cord or installing/removing the motherboard.*
2. *Before installing or removing any component, ensure that the power supply is off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.*

2.1 Screw Holes

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



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

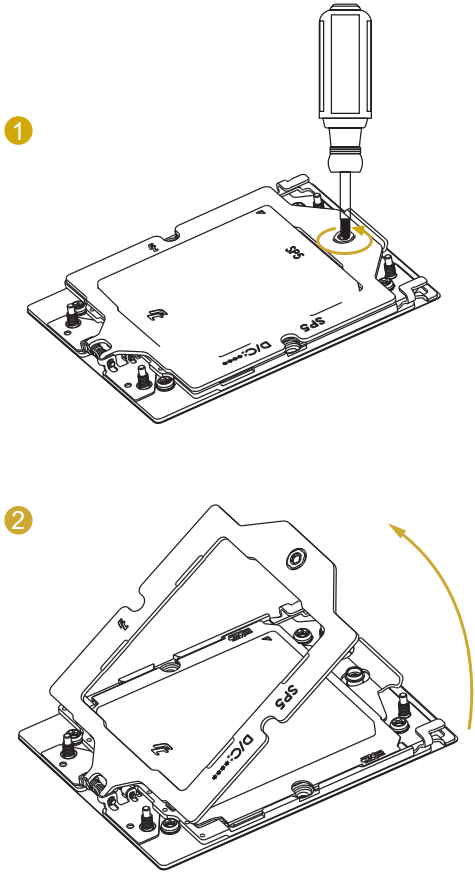
2.2 Pre-installation Precautions

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

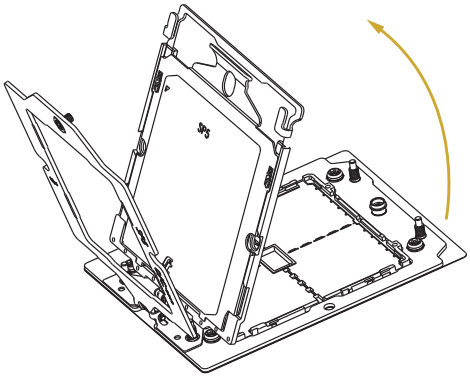
1. Unplug the power cord from the wall socket before touching any components.
2. To avoid damaging the motherboard's components due to static electricity, NEVER place the motherboard directly on the carpet or the like. Also remember to use a grounded wrist strap or touch a safety grounded object before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

2.3 Installing the CPU

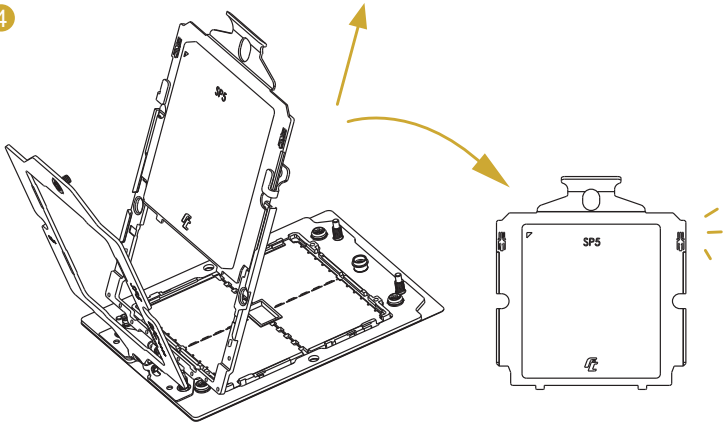
1. *Before inserting the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug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



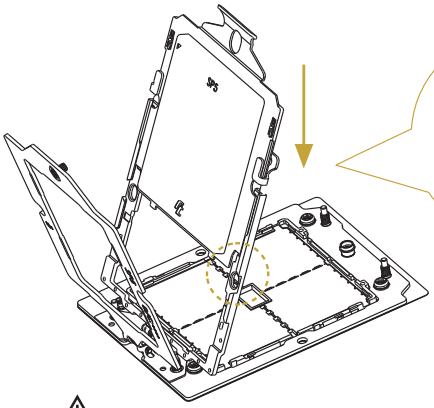
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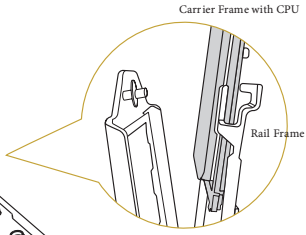


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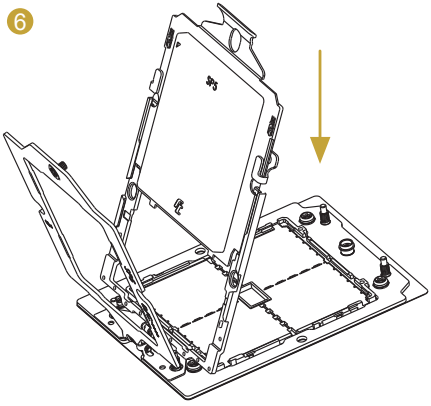




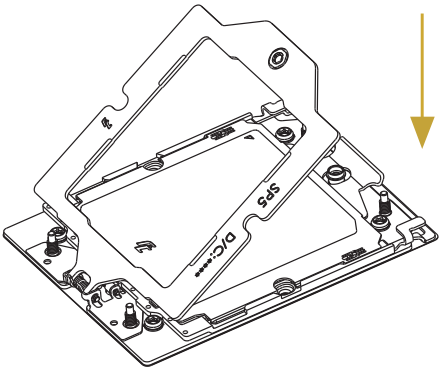
Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

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

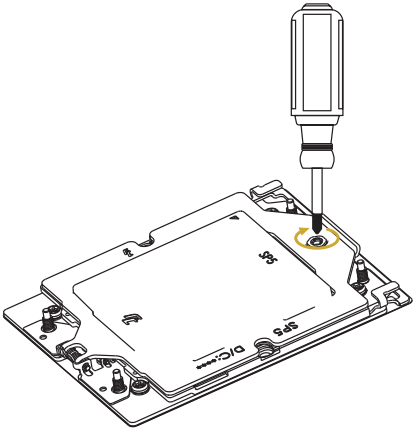
6



7

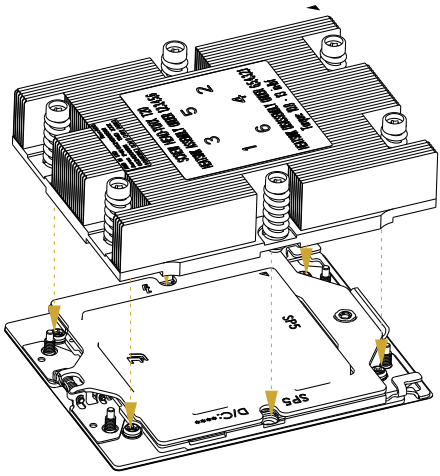


8

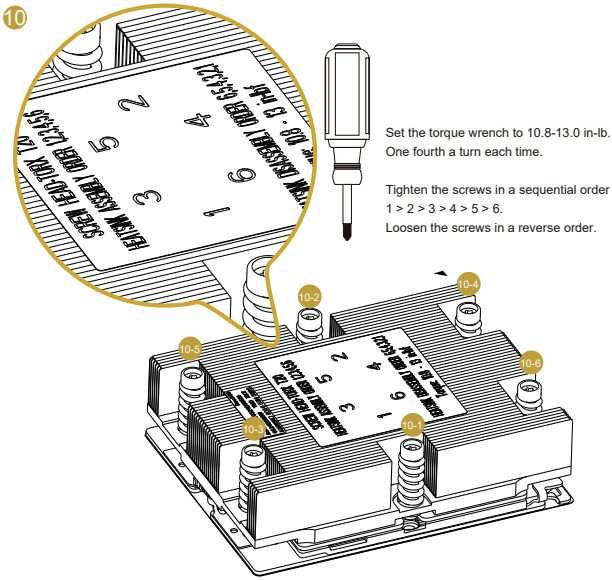


English

9



10



Set the torque wrench to 10.8-13.0 in-lb.
One fourth a turn each time.

Tighten the screws in a sequential order
1 > 2 > 3 > 4 > 5 > 6.
Loosen the screws in a reverse order.

2.4 Installing the Memory Modules (DIMM)

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

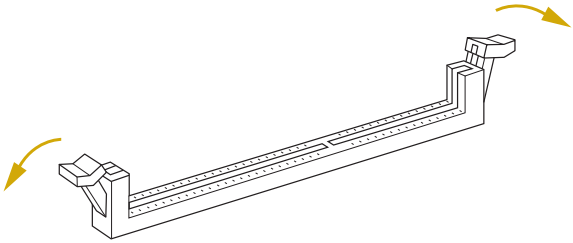
1. *Before installing a memory module, make sure to turn off the computer and unplug the powercord from the power outlet to prevent damage to the memory module.*
2. *For Eight channel configuration, It needs to install identical (the same brand, speed, size and chip-type) DDR5 DIMM groups.*
3. *It is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

Recommended Memory Configurations

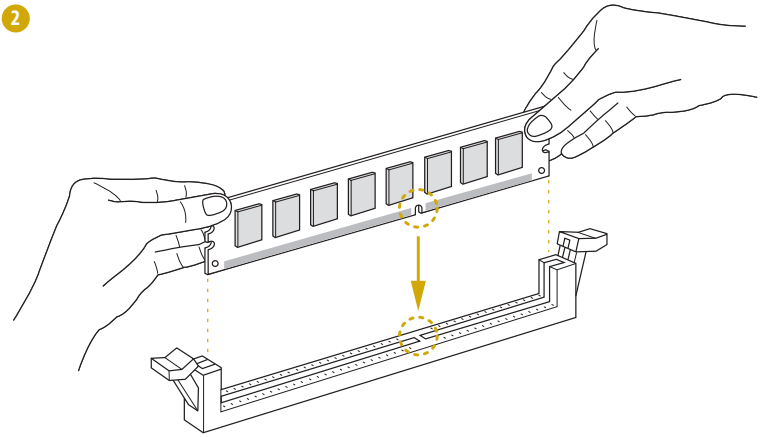
	CPU1							
	A1	B1	C1	E1	G1	H1	I1	K1
1 DIMM	V							
2 DIMMS	V				V			
4 DIMMS	V		V		V		V	
8 DIMMS	V	V	V	V	V	V	V	V

The symbol V indicates the slot is populated.

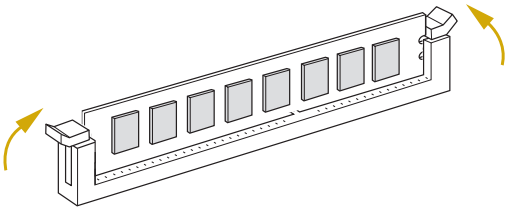
1



2



3



2.5 Expansion Slots (PCI Express Slots)

There are eight PCI Express slots on this motherboard.

PCIE slots:

PCIE0 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE1 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE2 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE3 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE4 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE5 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE6 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE7 (PCIE 5.0 x8 slot, from CPU1) is used for PCI Express x8 lane width cards.

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

Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before starting the installation.
Step 2. Remove the system unit cover (if the motherboard is already installed in a chassis).
Step 3. Remove the bracket facing the slot that intending to use. Keep the screws for later use.
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.
Step 5. Fasten the card to the chassis with screws.
Step 6. Replace the system cover.



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

2.6 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is “Short”. If no jumper cap is placed on the pins, the jumper is “Open”. The illustration shows a 3-pin jumper whose pin1 and pin2 are “Short” when a jumper cap is placed on these 2 pins.



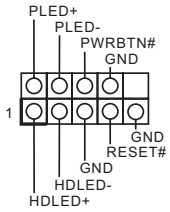
	1_2	2_3
PCIE Signal Source Selection Jumper (3-pin PCIE7_MCIO2_SW) (see p.6, No. 36)	 PCIE7(x4) + MCIO2(x4)	 PCIE7(x8) (Default)

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

2.7 Onboard Headers and Connectors

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

System Panel Header
(9-pin PANEL1)
(see p.6, No. 30)



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

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

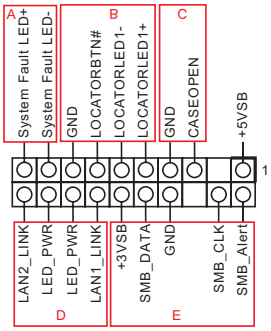
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

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

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

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

Auxiliary Panel Header
(18-pin AUX_PANEL1)
(see p.6, No. 31)



This header supports multiple functions on the front panel, including front panel SMB, internet status indicator.

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

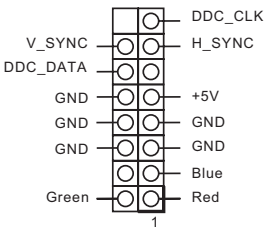
B. Locator LED (4-pin LOCATOR)
This header is for the locator switch and LED on the front panel.

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

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

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

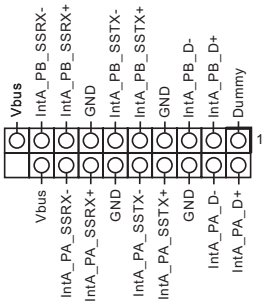
Front VGA Header
(15-pin FRNT_VGA1)
(see p.6, No. 50)



Please connect either end of VGA_2X8 cable to VGA header.

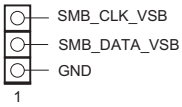
English

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



Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

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



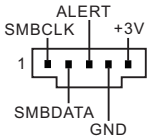
The header is used for PWM configurations.

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



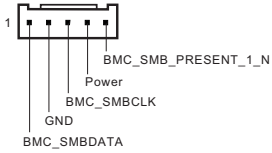
Please connect a NMI device to this header.

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



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

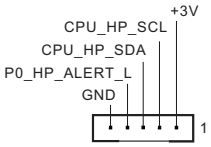
BMC SMB Header
(5-pin BMC_SMB1)
(see p.6, No. 38)



The header is used for the SM BUS devices.

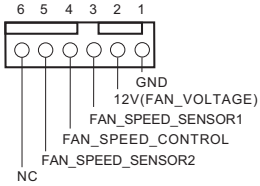
English

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



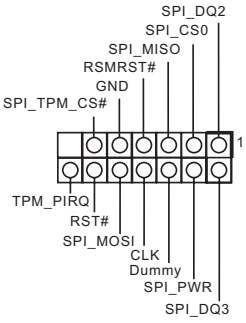
The header is used for the hot plug feature of HDDs on the backplane.

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



Please connect fan cables to the fan headers and match the black wire to the ground pin. All fans support Fan Control. The max. current is 5A and the max. power is 60 Watts.

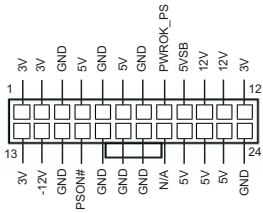
SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 49)



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.

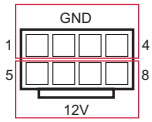
English

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



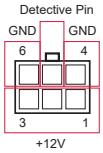
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

ATX Power Connectors
(8-pin ATX12V1)
(see p.6, No. 5)
(8-pin ATX12V2)
(see p.6, No. 4)
(8-pin ATX12V3)
(see p.6, No. 7)



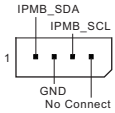
This motherboard provides three ATX power connectors.

Graphics 12V Power Connector
Right Angle:
(6-pin GFX_12V1)
(see p.6, No. 24)



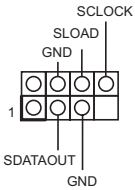
This motherboard provides a 6-pin Graphics 12V power connector. * Install the PSU's power cable to this connector when the graphics cards are installed.

Intelligent Platform Management Bus Header
(4-pin IPMB1)
(see p.6, No. 37)

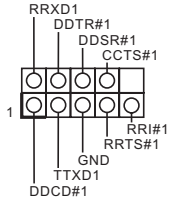
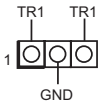
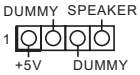
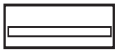


This 4-pin connector is used to provide a cabled baseboard or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Serial General Purpose Input/Output Headers
(7-pin SATA_SGPIO1)
(see p.6, No. 25)
(7-pin SATA_SGPIO2)
(see p.6, No. 27)



These headers support Serial Link interface for onboard SATA connections.

Serial Port Header (9-pin COM2) (see p.6, No. 29)		This COM header supports a serial port module.
Thermal Sensor Header (3-pin TR1) (see p.6, No. 33)		Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which wishing to monitor its temperature.
Chassis Speaker Header (4-pin SPEAKER1) (see p.6, No. 32)		Please connect the chassis speaker to this header.
Clear CMOS Pad (CLRCMOS1) (see p.6, No. 23)		This allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.
MCIO x8 Connectors **Right Angle:** (MCIO1) (see p.6, No. 21) (MCIO2) (see p.6, No. 22) **Vertical:** (MCIO3) (see p.6, No. 12) (MCIO4) (see p.6, No. 16)		These connectors are used for the PCIE devices.

MCIO1 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	G3_RXP0	B2	G3_TXP0
A3	G3_RXN0	B3	G3_TXN0
A4	GND	B4	GND
A5	G3_RXP1	B5	G3_TXP1
A6	G3_RXN1	B6	G3_TXN1
A7	GND	B7	GND
A8	BP_TYPE	B8	SMB_SCL
A9	WAKE#	B9	SMB_SDA
A10	GND	B10	GND
A11	DP	B11	BUF_RST0_L
A12	DN	B12	R_PRSNT_N
A13	GND	B13	GND
A14	G3_RXP2	B14	G3_TXP2
A15	G3_RXN2	B15	G3_TXN2
A16	GND	B16	GND
A17	G3_RXP3	B17	G3_TXP3
A18	G3_RXN3	B18	G3_TXN3
A19	GND	B19	GND
1	P_GND1	2	P_GND2
3	NP_NC1	4	NP_NC2
5	P_GND3	6	P_GND4

MCIO2 Pin Definition

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

MCIO3 Pin Definition

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

MCIO4 Pin Definition

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

2.8 Identification purpose LED/Switch

Use the UID button to locate the specific server working on a rack.

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

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

2.9 Dual LAN and Teaming Operation Guide

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



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

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

Step 1

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

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

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

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

2.10 Replacing the CMOS Battery

1. *Ensure the battery is installed before unplugging the power cord or installing/removing the motherboard.*
2. *Always turn off the computer and unplug the power cord before replacing the battery.*
3. *For safety, please replace the battery with the same or equivalent type recommended by the manufacturer.*
4. *Dispose of the used batteries in accordance with local regulations.*

Refer to the section **1.4 Motherboard Layout** to locate the battery.

**The illustration is for reference only. The actual installation may be slightly different by socket design.*

Step 1

Shut down and unplug the computer.
Flat: Gently press the socket clip.
Upright: Gently push the socket clip away from the battery.

Step 2

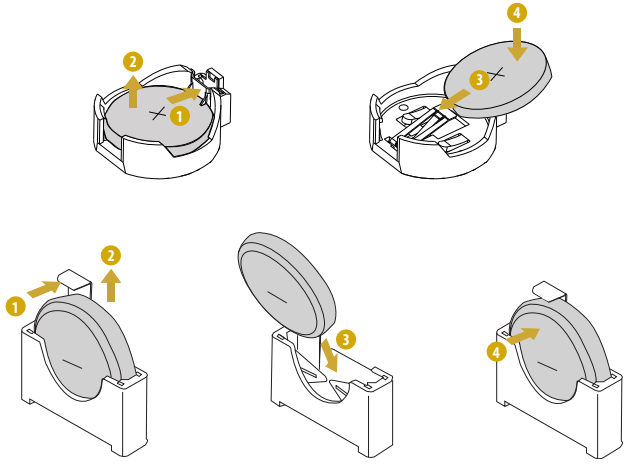
Flat: Remove the battery when it pops up. Or press down on one end of the battery to pop it up and remove it.
Upright: Remove the battery.

Step 3

Flat: Insert a new battery into the socket with the positive side (+ sign) facing up.
Upright: Insert a new battery into the socket with the positive side (+ sign) facing the open side of the socket clip.

Step 4

Press the battery down until it clicks into place.



Replacing the Wired CMOS Battery

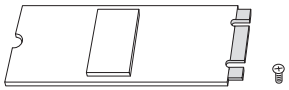
To replace a wired CMOS battery, completely power down the computer and unplug it from the power source. Locate the old battery, carefully trace its wires to the small connector on the motherboard, and unplug it. Install a new battery in its place and connect it to the motherboard.



2.11 M.2 SSD Module Installation Guide

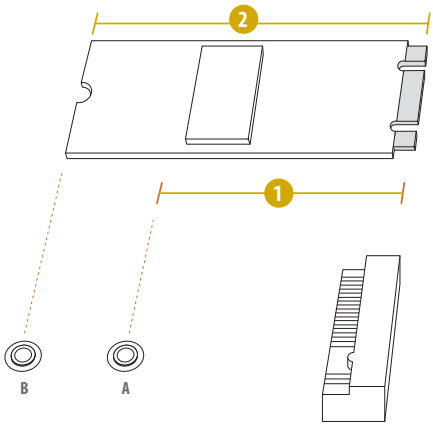
The M.2 Socket (M2_1/M2_2, Key M) supports type 22110/2280 M.2 PCI Express module up to Gen5 x4.

Installing the M.2 SSD Module



Step 1

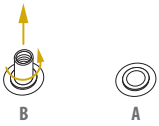
Prepare a M.2_SSD module and the screw.

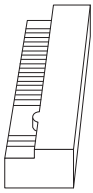


Step 2

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

No.	1	2
Nut Location	A	B
PCB Length	8 cm	11 cm
Module Type	Type 2280	Type 22110

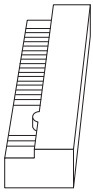




Step 3

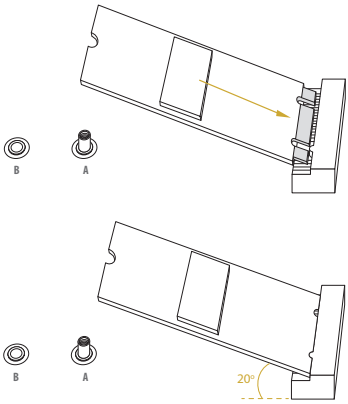
Move the standoff based on the module type and length.
Skip Step 3 and 4 and go straight to Step 5 if using the default nut. Otherwise, release the standoff by hand.





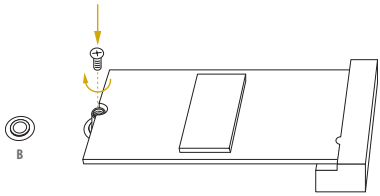
Step 4

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



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.



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.

2.12 Dr. Debug

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

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

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

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

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

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 UTI ITY 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

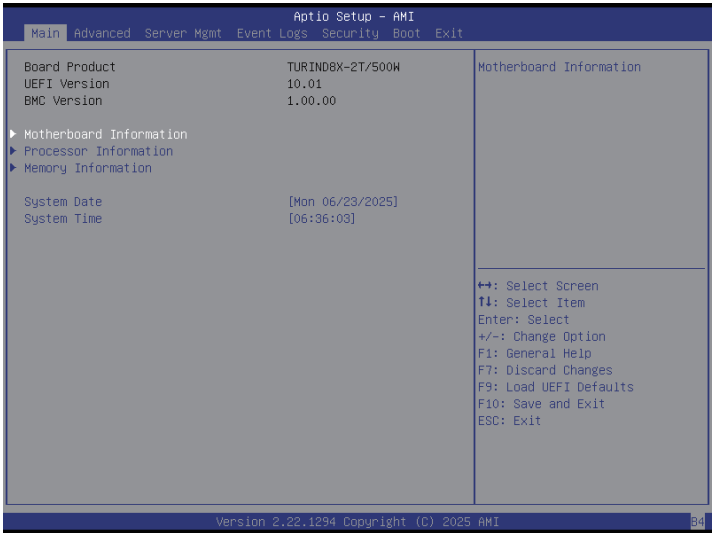
3.1.2 Navigation Keys

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.

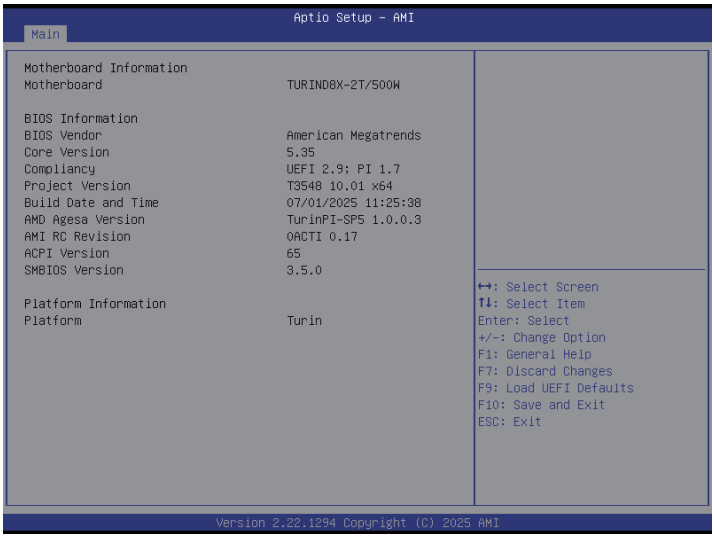


The screenshots in this user manual are examples and for references only. The actual images may slightly vary depending on the model and the version used.

English

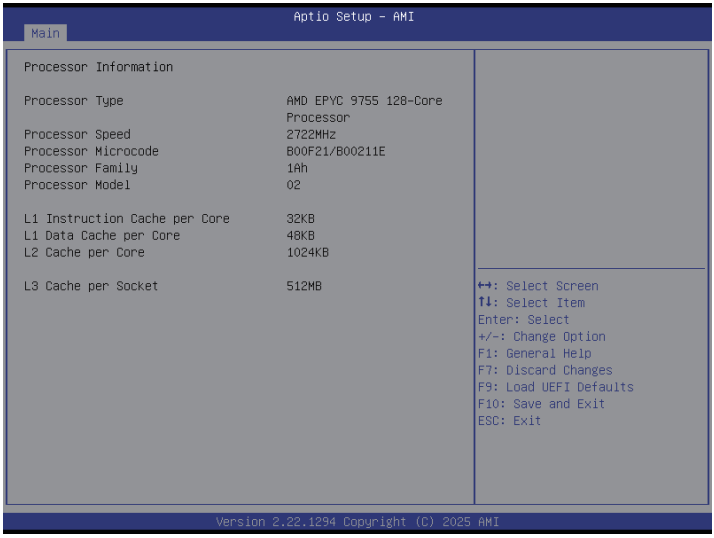
3.2.1 Motherboard Information

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



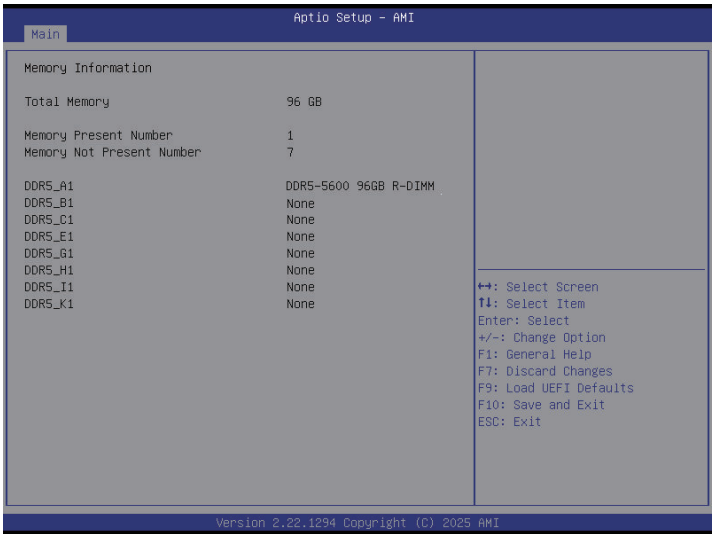
3.2.2 Processor Information

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



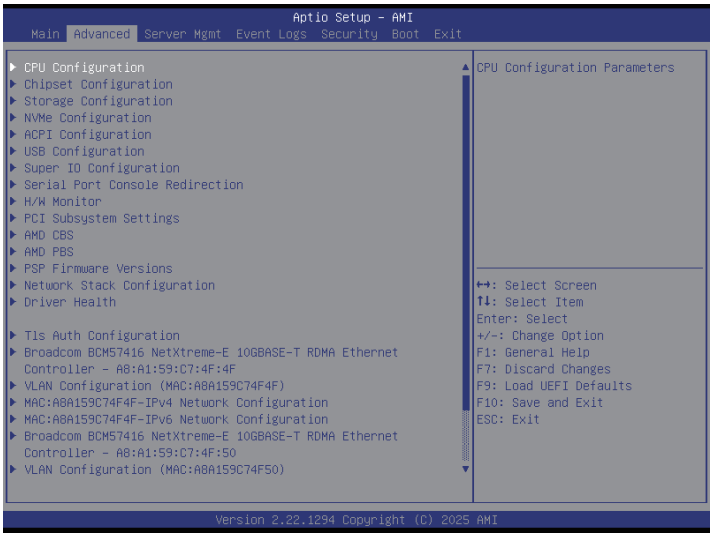
3.2.3 Memory Information

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



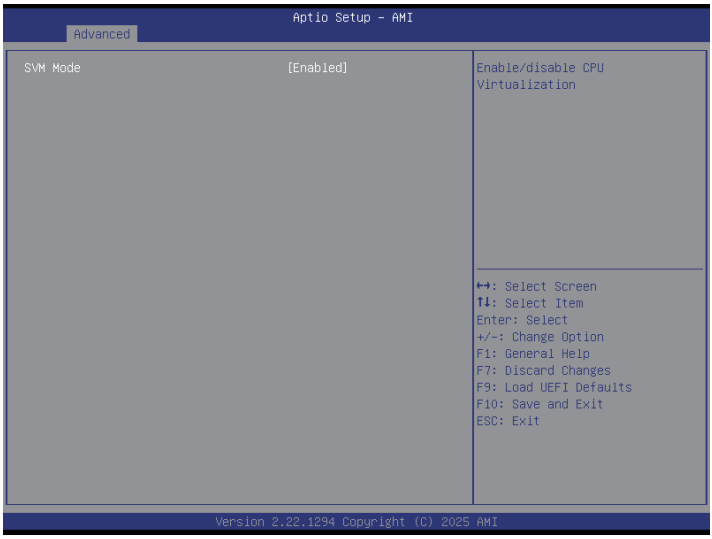
3.3 Advanced Screen

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



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

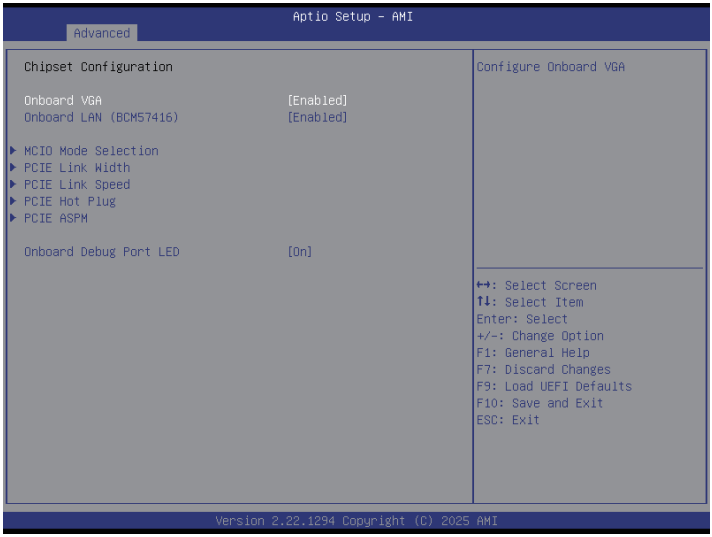
3.3.1 CPU Configuration



SVM Mode

Enable or disable CPU Virtualization.

3.3.2 Chipset Configuration



Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN

Use this to enable or disable the Onboard LAN function.

MCIO Mode Selection

This item is for MCIO Mode configuration.

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

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

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

PCIE Link Width

This item is for PCIE Link Width configuration.

PCIE0/1/2/3/4/5/6 Link Width
This displays the PCIE0/1/2/3/4/5/6 Link Width. The default value for PCIE0/1/2/3/4/5/6 is [x16], Selection items: [x16], [x8x8], [x8x4x4], [x4x4x8] and [x4x4x4x4].

PCIE7/MCIO1 Link Width
This displays the PCIE7/MCIO1 Link Width. The default value for PCIE7/MCIO1 is [x8], Selection items: [x8] and [x4x4].

PCIE Link Speed

Select this item to configure PCIE Link Speed.

PCIE1 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE1-3/M2_2 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE1-4/MCIO4 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE3 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE5 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE7/MCIO1 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE7-2/MCIO2 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

MCIO3 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

M2_1 Link Speed
This displays the PCIE Link Speed. The default value is [Auto]-up to Gen5 (32/GT/s).

PCIE Hot Plug

Select this item to configure PCIE Hot Plug.

PCIE0 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE0.

PCIE1 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE1.

PCIE1-4/MCIO4 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE1-4/MCIO4.

PCIE2 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE2.

PCIE3 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE3.

PCIE4 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE4.

PCIE5 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE5.

PCIE6 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE6.

PCIE7/MCIO1 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE7/MCIO1.

PCIE7-2/MCIO2 Hot Plug
Select this item to enable or disable the Hot Plug for PCIE7-2/MCIO2.

MCIO3 Hot Plug
Select this item to enable or disable the Hot Plug for MCIO3.

PCIE ASPM

Selec this item to configure PCIE ASPM.

PCIE-E ASPM Support (Global)
Selec this item to disable ASPM support in all PCIe root ports. The default value is [Auto].

PCIE0 ASPM Support
Selec this item to configure ASPM support for PCIE0. The default value is [Auto].

PCIE1 ASPM Support
Selec this item to configure ASPM support for PCIE1. The default value is [Auto].

PCIE1-3/M2_2 ASPM Support
Selec this item to configure ASPM support for PCIE1-3/M2_2. The default value is [Auto].

PCIE1-4/MCIO4 ASPM Support
Selec this item to configure ASPM support for PCIE1-4/MCIO4. The default value is [Auto].

PCIE2 ASPM Support
Selec this item to configure ASPM support for PCIE2. The default value is [Auto].

PCIE3 ASPM Support
Selec this item to configure ASPM support for PCIE3. The default value is [Auto].

PCIE4 ASPM Support
Selec this item to configure ASPM support for PCIE4. The default value is [Auto].

PCIE5 ASPM Support
Selec this item to configure ASPM support for PCIE5. The default value is [Auto].

PCIE6 ASPM Support
Selec this item to configure ASPM support for PCIE6. The default value is [Auto].

PCIE7/MCIO1 ASPM Support
Selec this item to configure ASPM support for PCIE7/MCIO7. The default value is [Auto].

PCIE7-2/MCIO2 ASPM Support

Selec this item to configure ASPM support for PCIE7-2/MCIO2. The default value is [Auto].

MCIO3 ASPM Support

Selec this item to configure ASPM support for MCIO3. The default value is [Auto].

M2_1 ASPM Support

Selec this item to configure ASPM support for M2_1. The default value is [Auto].

Onboard Debug Port LED

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

3.3.3 Storage Configuration



Hard Disk S.M.A.R.T.

S.M.A.R.T stands for Self-Monitoring, Analysis, and Reporting Technology. It is a monitoring system for computer hard disk drives to detect and report on various indicators of reliability.

SATA Hot Plug

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

3.3.4 NVMe Configuration



Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

3.3.5 ACPI Configuration



PCIE Devices Power On

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

Ring-In Power On

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

RTC Alarm Power On

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

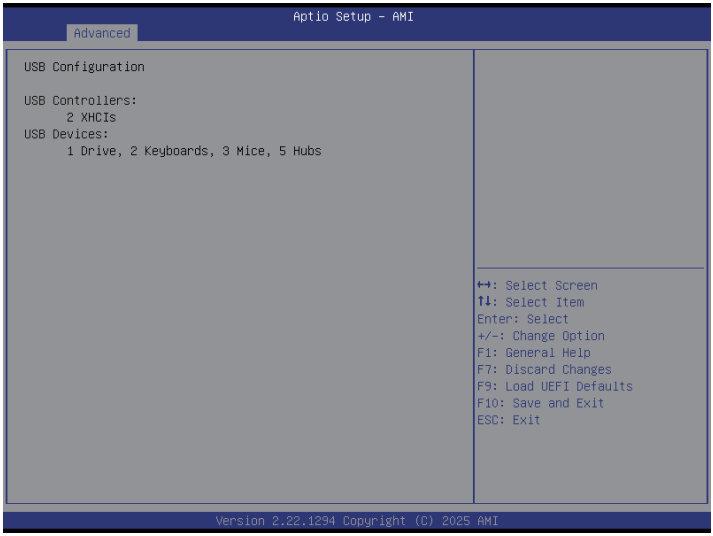
RTC Alarm Date
Use this item to set Date of RTC power on feature.

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

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

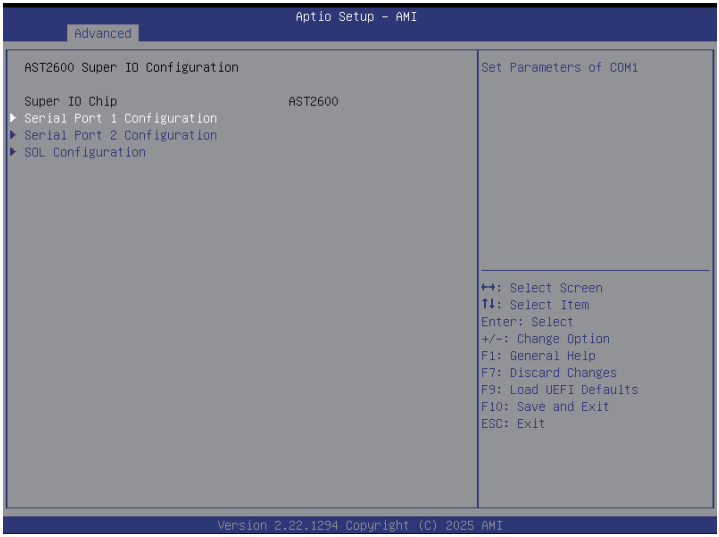
RTC Alarm Second
Use this item to set Second of RTC power on feature.

3.3.6 USB Configuration



This displays the USB Controllers and USB Devices information.

3.3.7 Super IO Configuration



Serial Port 1 Configuration

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

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.

Serial Port 2 Configuration

Use this item to set parameters of Serial Port (COM2).

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

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

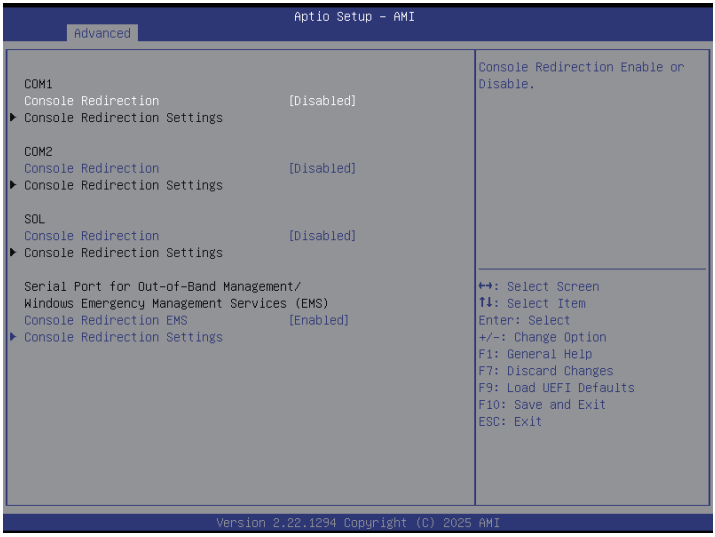
SOL Configuration

Use this item to set parameters of SOL.

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.

3.3.8 Serial Port Console Redirection



COM1/COM2/SOL

Console Redirection

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

Console Redirection Settings

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

Terminal Type

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

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

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

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

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

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

Flow Control
Use this to set the flow control to prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None] and [Hardware RTS/CTS].

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

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

Resolution 100x31
Use this to enable or disable extended terminal resolution support.

Putty Keypad
Use this to select Function Key and Keypad on Putty.

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

Console Redirection EMS

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

Console Redirection Settings

Use this to configure Console Redirection Settings, and specify how the computer and the host computer to which are connected exchange information.

Out-of-Band Mgmt Port

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

Terminal Type EMS

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

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

Bits Per Second EMS

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

Flow Control EMS

Use this to set the flow control to prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to restart the flow. Hardware flow uses two wires to send start/stop signals. The options include [None], [Hardware RTS/CTS], and [Software Xon/Xoff].

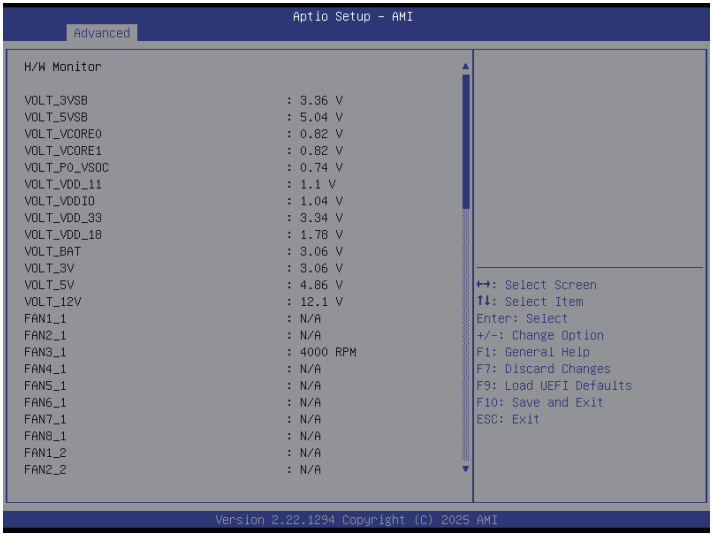
Data Bits

Parity

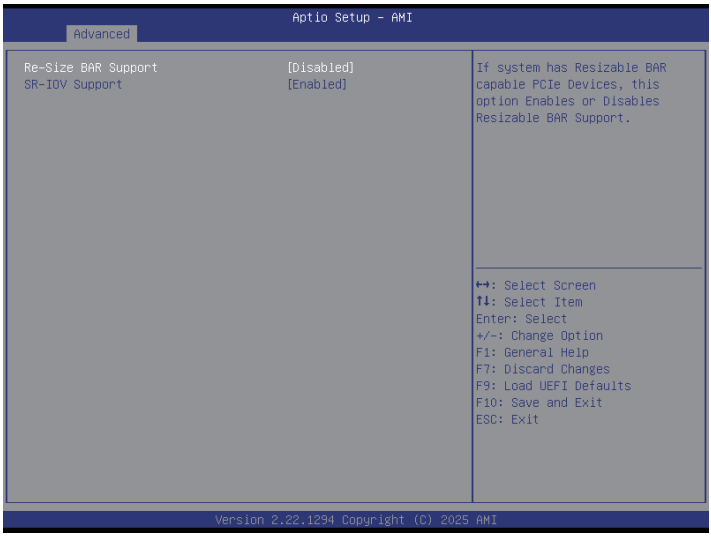
Stop Bits

3.3.9 H/W Monitor

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



3.3.10 PCI Subsystem Settings



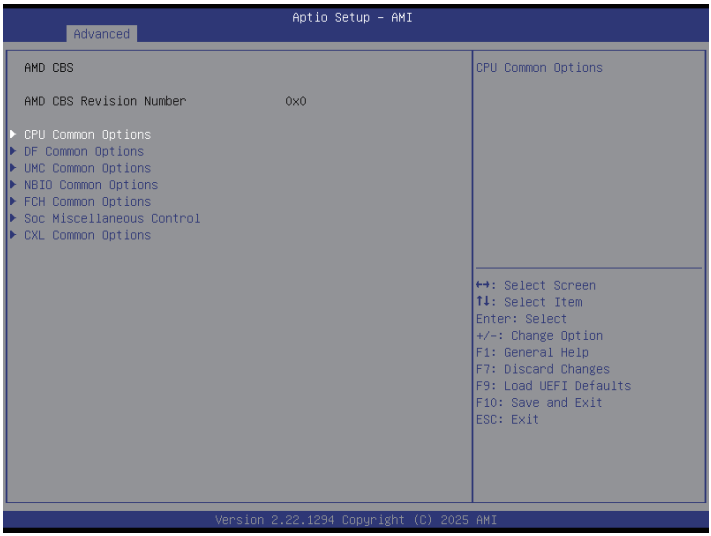
Re-Size BAR Support

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

SR-IOV Support

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

3.3.11 AMD CBS



CPU Common Options

Use this item to configure CPU Common options.

DF Common Options

Use this item to configure DF Common options.

UMC Common Options

Use this item to configure UMC Common options.

NBIO Common Options

Use this item to configure NBIO Common options.

FCH Common Options

Use this item to configure FCH Common options.

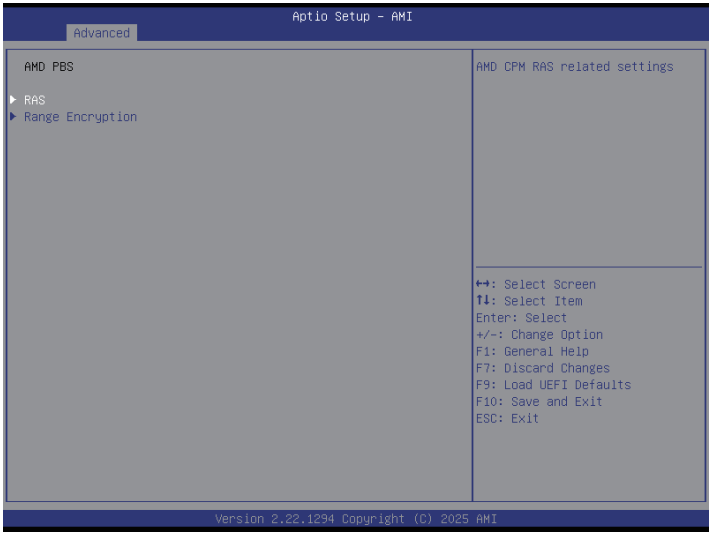
Soc Miscellaneous Control

Use this item to configure Soc Miscellaneous Control options.

CXL Common Options

Use this item to configure CXL Common options.

3.3.12 AMD PBS



RAS

Use this item to configure AMD CPM RAS related settings.

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

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

SMI Scale
Use this to defines the time scale.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Range Encryption

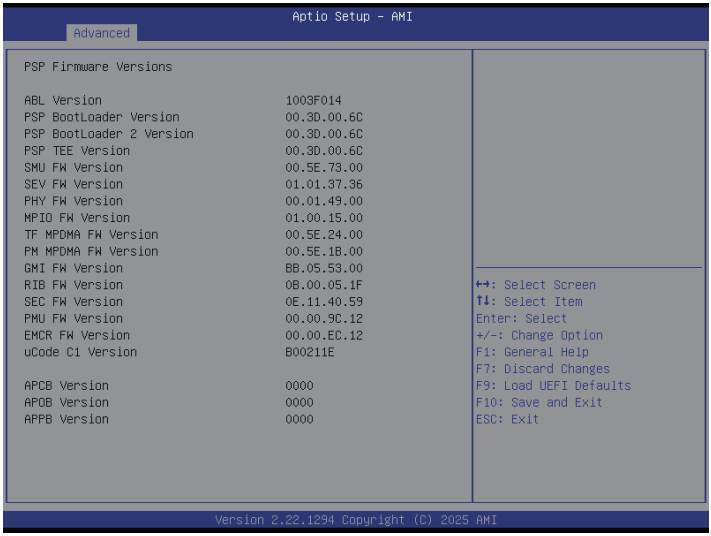
Configure AMD range encryption setting.

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

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

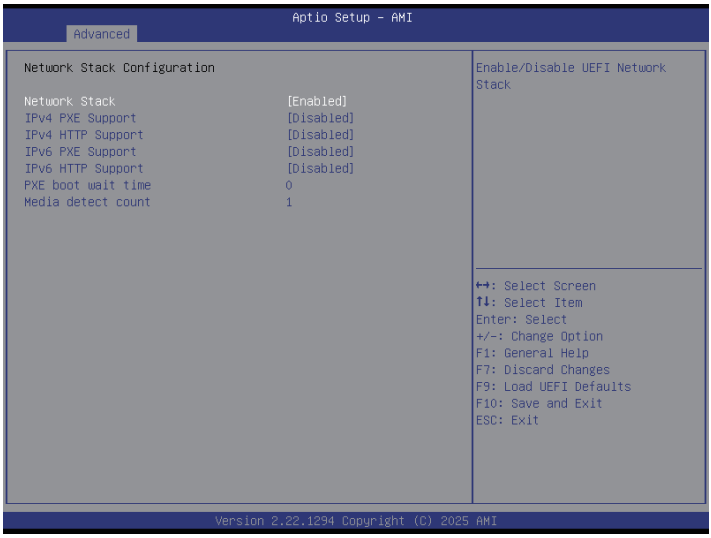
Start Range Encryption
Use this to encrypt all memory ranges..

3.3.13 PSP Firmware Versions



The PSP Firmware Verions displays the version information of ABL, PSP BootLoader, PSP TEE, SMU FW, SEV FW, PHY FW, MPIO FW, TF MPDMA FW, PM MPDMA FW, GMI FW, RIB FW, SEC FW, PMU FW, EMCR FW, uCode B1, APCB, APOB and APPB.

3.3.14 Network Stack Configuration



Network Stack

Use this to enable or disable UEFI Network Stack.

Ipv4 PXE Support

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

Ipv4 HTTP Support

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

Ipv6 PXE Support

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

Ipv6 HTTP Support

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

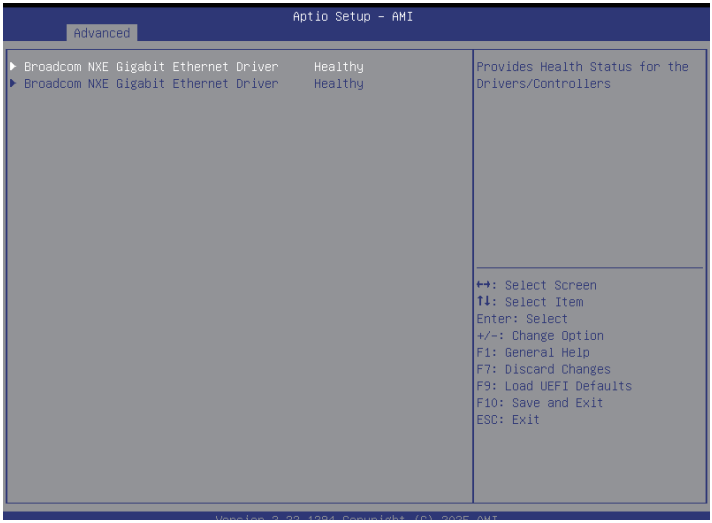
PXE boot wait time

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

Media detect count

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

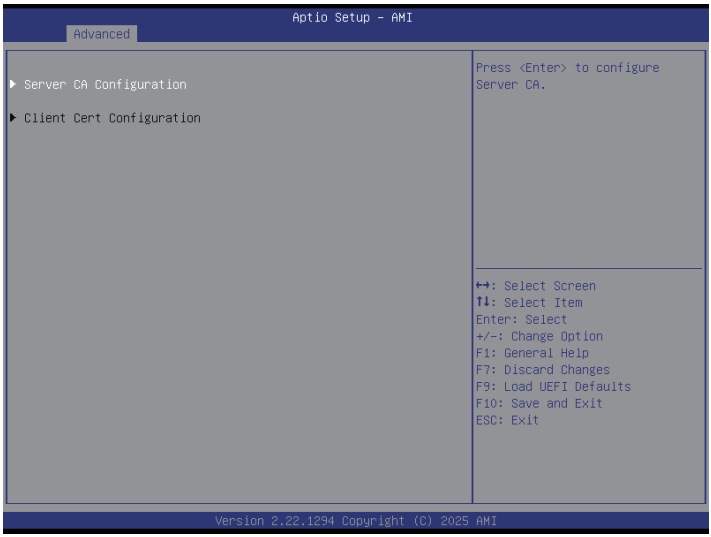
3.3.15 Driver Health



Broadcom NXE Gigabit Ethernet Driver Healthy

Provides Health Status for the Drivers and Controllers.

3.3.16 Tls Auth Configuration



Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Enroll Cert

Press <Enter> to enroll cert.

Delete Cert

Press <Enter> to delete cert.

3.3.17 Instant Flash

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

3.4 Server Mgmt



Wait For BMC

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

FRB-2 Timer

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

FRB-2 Timer Timeout

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

FRB-2 Timer Policy

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

OS Watchdog Timer

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

OS Wtd Timer Timeout

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

OS Wtd Timer Policy

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

BMC Network Configuration

Use this to configure BMC network parameters.

DNS Configuration

Use this to configure DNS parameters.

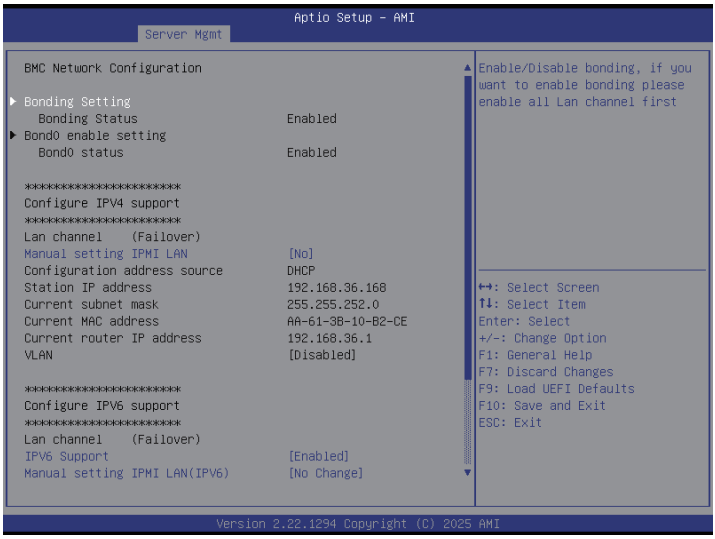
System Event Log

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 setings.

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.

Lan channel (Failover)

Manual Setting IPMI LAN

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

Configuration Address Source

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

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

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

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

VLAN

Enabled/Disabled 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.

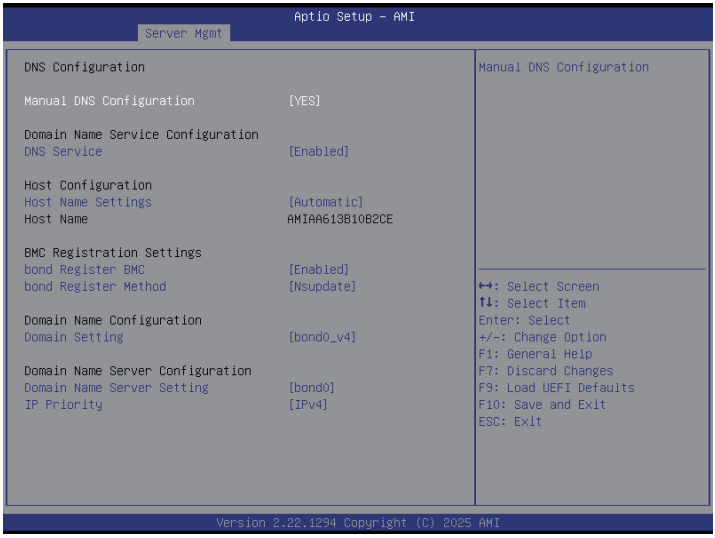
IPV6 Support

Enabled/Disable LAN1 IPV6 Support.

Manual Setting IPMI LAN(IPV6)

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

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

Use this item to enable or disable DNS Service Configuration.

Host Name Settings

Use this item to automatic or manual Host Name Settings.

Bond Register BMC

Use this item to enable or disable Bond Register BMC.

Bond Register Method

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

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

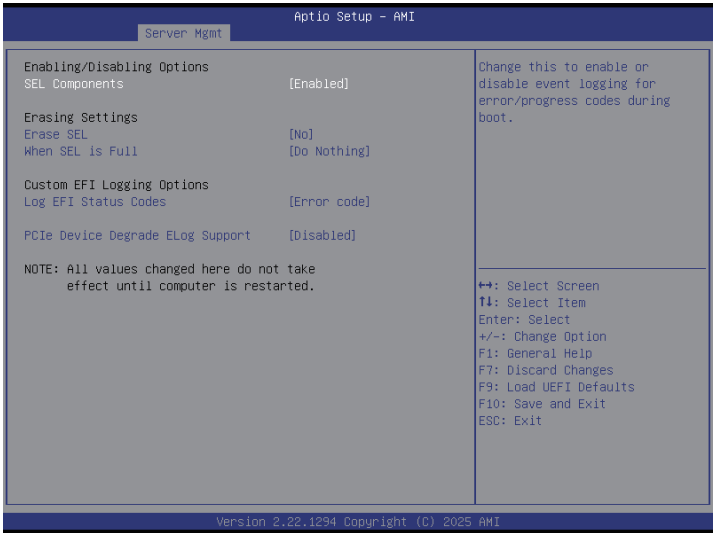
Domain Name Server Setting

This item supports Manual and Bond0 DNS Server Settings.

IP Priority

This item supports IPV4 and IPV6 IP Priority.

3.4.3 System Event Log



SEL Components

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

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full

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

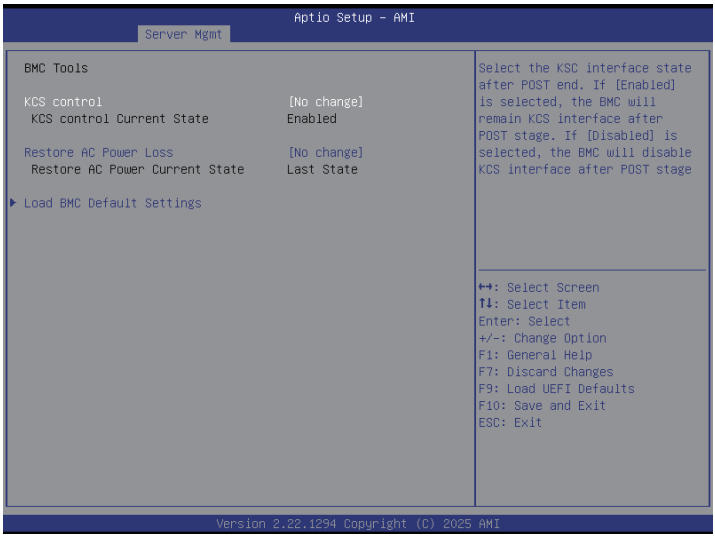
Log EFI Status Codes

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

PCIe Device Degrade ELog Support

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

3.4.4 BMC Tools



KCS Control

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

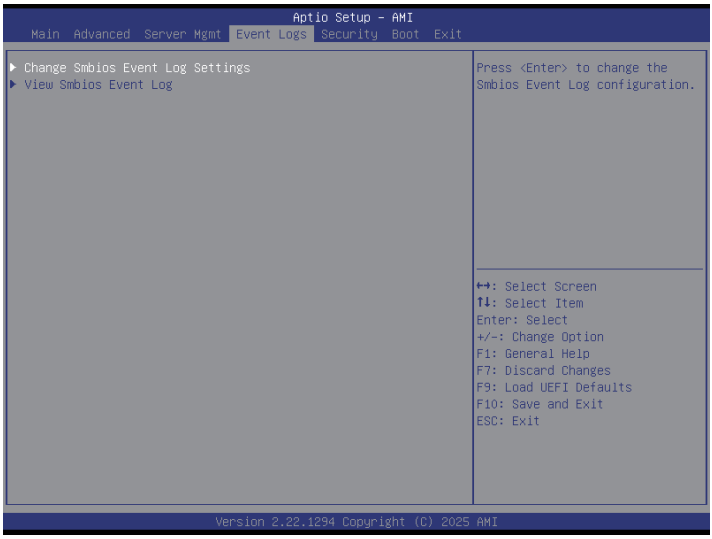
Restore AC Power Loss

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

Load BMC Default Settings

Use this item to Load BMC Default Settings

3.5 Event Logs



Change Smbios Event Log Settings

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

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

Erase Event Log
The options include [No], [Yes, Next reset] and [Yes, Every reset]. If Yes is selected, all logged events will be erased.

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

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

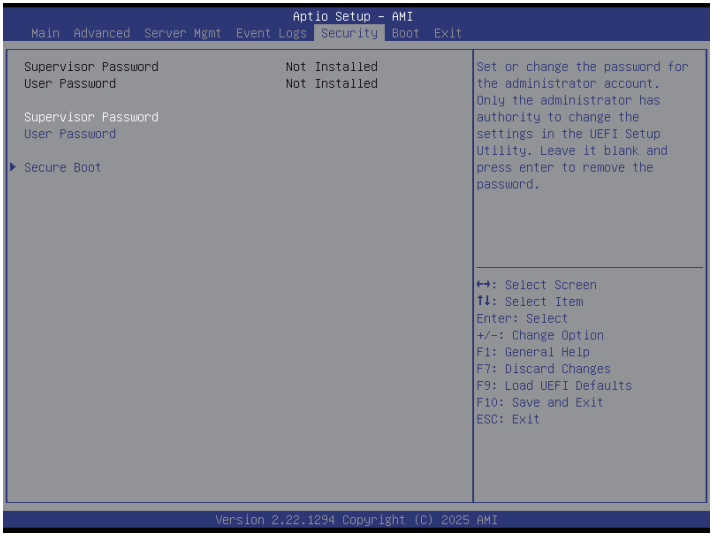
View Smbios Event Log

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.



Supervisor Password

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

User Password

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

Secure Boot

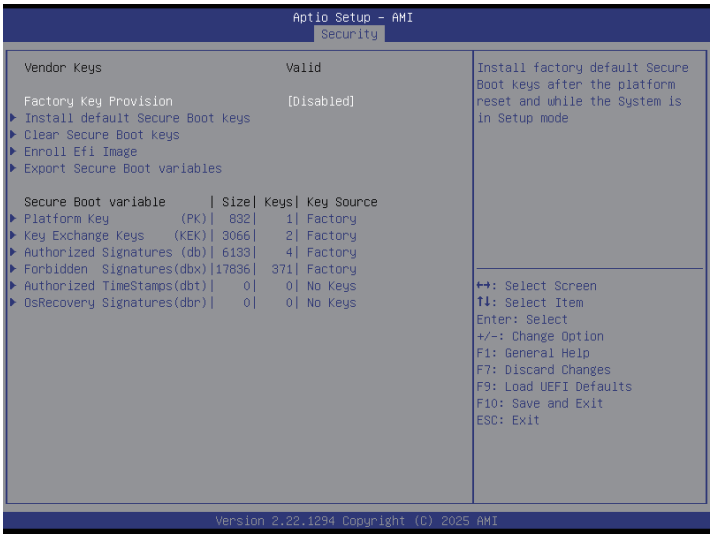
Use this to enable or disable Secure Boot Control. The default value is [Disabled]. Enable to support Windows Server 2012 R2 or later versions Secure Boot.

Secure Boot Mode

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

3.6.1 Key Management

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



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

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

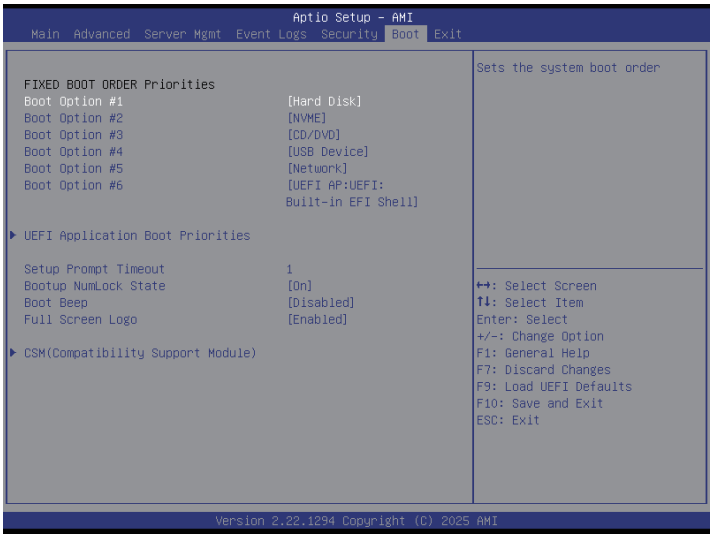
2. Authenticated UEFI Variable

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.



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

Use this to set the system boot order.

UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

Setup Prompt Timeout

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

Bootup Num-Lock

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

Boot Beep

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

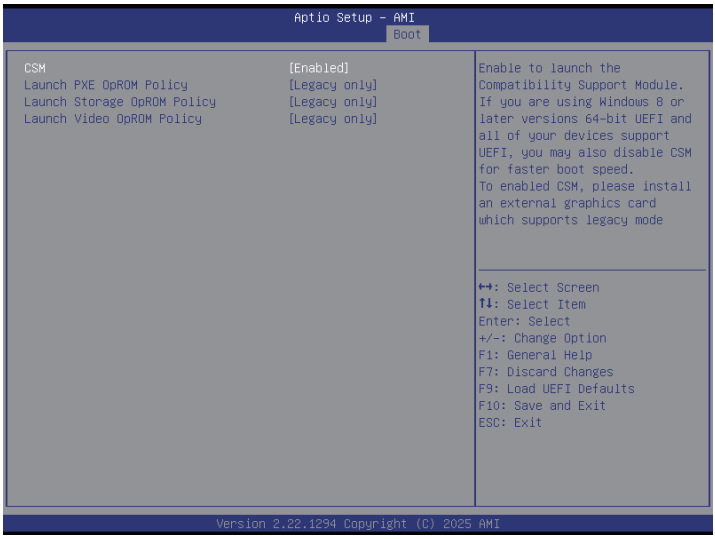
Full Screen Logo

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

CSM (Compatibility Support Module)

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

3.7.1 CSM Parameters



CSM (Compatibility Support Module)

Enable to launch the Compatibility Support Module. If using Windows 8 or later versions 64-bit UEFI and all of the devices support UEFI, it may also disable CSM for faster boot speed.

Launch PXE OpROM Policy

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

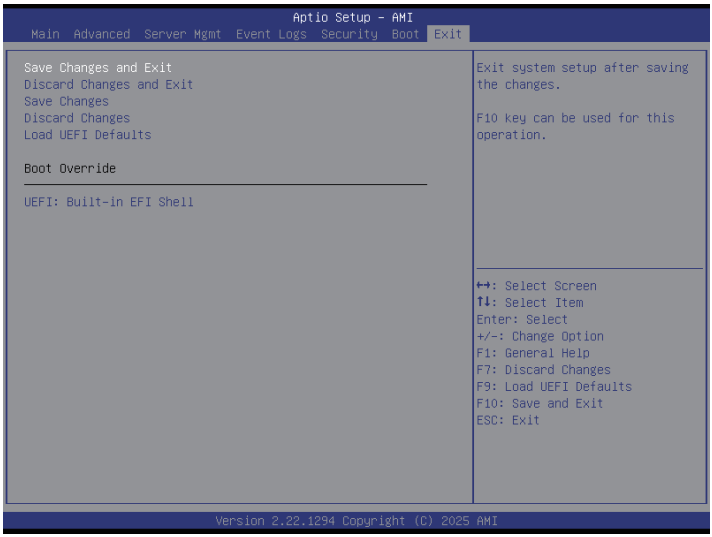
Launch Storage OpROM Policy

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

Launch Video OpROM Policy

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

3.8 Exit Screen



Save Changes and Exit

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

Discard Changes and Exit

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

Save Changes

When selecting this option, the following message “Save changes?” will pop-out. Press <F7> key or select [Yes] to save all changes.

Discard Changes

When selecting this option, the following message “Discard changes?” will pop-out. Press <F7> key or select [Yes] to discard all changes.

Load UEFI Defaults

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

Chapter 4 Software Support

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

4.1 Download and Install Operating System

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

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.

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.

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

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

If there is no power...

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

If there is no video...

1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...

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

Unable to save system setup configurations...

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

Other problems...

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

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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