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STABLE Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation
Motherboard

SIENAD8-2L2T

User Manual

English



Version 1.21

Published Oct. 20245

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- (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 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.



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	1
1.1 Package Contents	1
1.2 Specifications	2
1.3 Unique Features	5
1.4 Motherboard Layout	6
1.5 Onboard LED Indicators	9
1.6 I/O Panel	11
1.7 Block Diagram	13
Chapter 2 Installation	14
2.1 Screw Holes	14
2.2 Pre-installation Precautions	15
2.3 Installing the CPU	16
2.4 Installation of Memory Modules (DIMM)	20
2.5 Expansion Slots (PCI Express Slots)	22
2.6 Onboard Headers and Connectors	24
2.7 Unit Identification purpose LED/Switch	32
2.8 Dr. Debug	33
2.9 ATX PSU Power Connections	39
2.10 Dual LAN and Teaming Operation Guide	40
2.11 M.2_SSD (NGFF) Module Installation Guide	41
Chapter 3 UEFI Setup Utility	43
3.1 Introduction	43
3.1.1 UEFI Menu Bar	43

3.1.2	Navigation Keys	44
3.2	Main Screen	45
3.2.1	Motherboard Information	46
3.2.2	Processor Information	46
3.2.3	Memory Information	47
3.3	Advanced Screen	48
3.3.1	CPU Configuration	49
3.3.2	Chipset Configuration	50
3.3.3	Storage Configuration	52
3.3.4	NVMe Configuration	53
3.3.5	ACPI Configuration	54
3.3.6	USB Configuration	55
3.3.7	Super IO Configuration	56
3.3.8	Serial Port Console Redirection	57
3.3.9	H/W Monitor	60
3.3.10	PCI Subsystem Settings	61
3.3.11	AMD CBS	62
3.3.12	AMD PBS	63
3.3.13	PSP Firmware Versions	65
3.3.14	Network Stack Configuration	66
3.3.15	Driver Health	68
3.3.16	Tls Auth Configuration	69
3.3.17	Instant Flash	70
3.4	Server Mgmt	71

3.4.1	BMC Network Configuration	73
3.4.2	DNS Configuration	75
3.4.3	System Event Log	77
3.4.4	BMC Tools	78
3.5	Event Logs	79
3.6	Security	80
3.6.1	Key Management	81
3.7	Boot Screen	85
3.7.1	CSM Parameters	86
3.8	Exit Screen	87
Chapter 4 Software Support		88
4.1	Download and Install Operating System	88
4.2	Download and Install Software Drivers	88
4.3	Contact Information	88
Chapter 5 Troubleshooting		89
5.1	Troubleshooting Procedures	89
5.2	Technical Support Procedures	91
5.3	Returning Merchandise for Service	91
Appendix A NCSI Configurations		92

Chapter 1 Introduction

Thank you for purchasing ASRock Rack **SIENAD8-2L2T** motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

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

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

1.1 Package Contents

- ASRock Rack SIENAD8-2L2T motherboard
(ATX form factor: 12" x 9.6", 30.5cm x 24.4cm)
- Quick installation guide
- 1 I/O shield
- 1 ATX 4P to 24P power cable (8cm)
- 2 Screws for M.2 sockets



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

1.2 Specifications

SIENAD8-2L2T	
Physical Status	
Form Factor	ATX
Dimension	12" x 9.6" (30.5cm x 24.4cm)
Processor System	
CPU	Supports AMD EPYC™ 8004 series processors
Socket	Single Socktet SP6 (LGA4844)
Chipset	System on Chip
System Memory	
DIMM Quantity	8 DIMM slots (2DPC/1DPC)
Type	Supports DDR5 288-pin RDIMM
Max. Capacity per DIMM	96GB (2Rx4)
Max. DIMM Frequency	4800MHz
Voltage	1.1V
<i>Note: Memory capacity, frequency, and voltage support is to be validated.</i>	
PCIe Expansion Slots (SLOT7 close to CPU)	
PCIe x16	SLOT7: PCIe5.0/CXL1.1 x16
	SLOT5: PCIe5.0/CXL1.1 x16
	SLOT3: PCIe5.0 x16
	SLOT1: PCIe5.0/CXL1.1 x16
PCIe x8	SLOT6: PCIe5.0 x8
Other PCIe Expansion Connectors	
M.2	2 M-key (PCIe5.0 x4), supports 22110/2280 form factor
MCIO	2 MCIO (PCIe5.0 x8)
Ethernet	
Additional GbE Controller	Intel® X710-AT2: 2 RJ45 (10GbE) Intel® i210: 2 RJ45 (1GbE)
Server Management	
BMC Controller	ASPEED AST2600
IPMI Dedicated GLAN	1 Realtek RTL8211F for dedicated management GLAN
Graphics	
Controller	ASPEED AST2600
VRAM	DDR4 512 MB
Rear I/O	
UID Button/LED	1 UID button w/ LED
Video Port	1 DB15 (VGA)
USB	2 Type-A (USB3.2 Gen1)
RJ45	2 RJ45 (10GbE), 2 RJ45 (1GbE), 1 dedicated IPMI

Internal Connectors/Headers	
Power Connector	1 (4-pin, ATX PSU signal) w/ ATX 24-pin adapter cable, 3 (8-pin, ATX 12V)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN1/LAN2 activity LED, locate, SMBus
System Panel Header	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
NMI Header	1
Front Lan LED Header	1
COM Header	1
Speaker Header	1 (4-pin)
Fan Header	6 (6-pin)
Thermal Sensor Header	1
TPM Header	1 (13-pin, SPI)
SGPIO Header	4
HSBP	1
SMBus Header	1
PMbus Header	1
IPMB Header	1
Clear CMOS	1 (contact pads)
USB Header	1 (19-pin, USB3.2 Gen1)
Others	1 header (9-pin, NCSI), 1 Buzzer
LED Indicators	
Standby Power LED	1 (5VSB)
80 Debug Port LED	1
Fan Fail LED	6
BMC Heartbeat LED	1
System BIOS	
Type	AMI UEFI BIOS; 256 Mb SPI Flash ROM
Features	ASRock Rack Instant Flash, ACPI 6.4 and about compliance wake up events, SMBIOS 3.5.0 and above, Plug and Play(PnP)
Hardware Monitor	
Temperature	CPU, MB, LAN, Card side, TR1 Temperature sensing
Fan	Fan Tachometer Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) Fan Multi-Speed Control
Voltage	VDDCR_CPU, VDDCR_SOC, VDDIO, VDD_18_S5, VDD_33_S5, VDD_11_S3, +3V, +5V, +12V, +BAT, +1V8SB, 3VSB, 5VSB

Support OS	
OS	Microsoft® Windows®: - Server 2019 (64bit) - Server 2022 (64bit) Linux®: - RedHat Enterprise Linux Server 8.6 (64bit) / Server 9.0 (64bit) - SUSE SLES 15.4 (64bit) - Ubuntu 20.04.5 (64bit) / 22.04.2 (64bit) Hypervisor:: - VMWare ESXi/ 7.0 U3i / 8.0 <i>*Please refer to the website for the latest OS support list.</i>
Environment	
Temperature	Operation temperature: 10°C ~ 35°C Non operation temperature: -40°C ~ 70°C
Humidity	Non operation humidity: 20% ~ 90% (Non condensing)

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



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

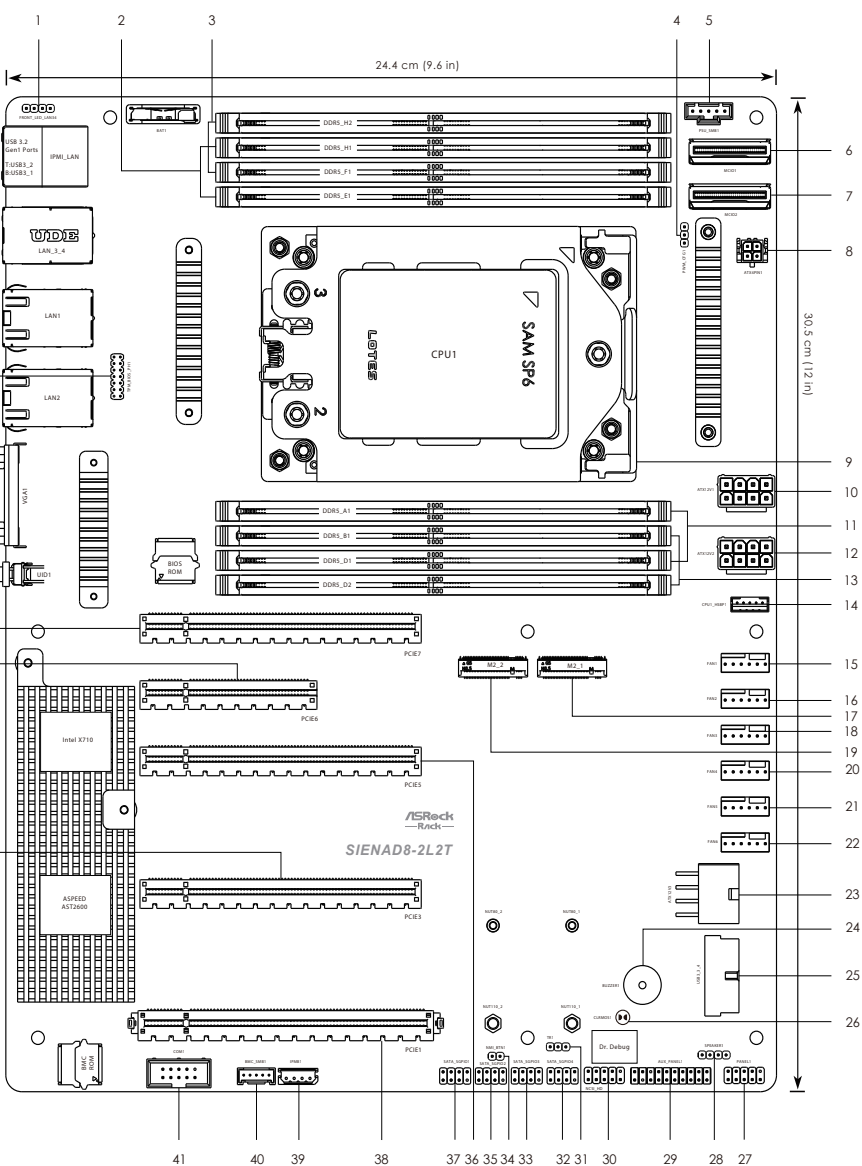


If installing Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If installing the drivers only, it will pass the WHQL tests.

1.3 Unique Features

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

1.4 Motherboard Layout

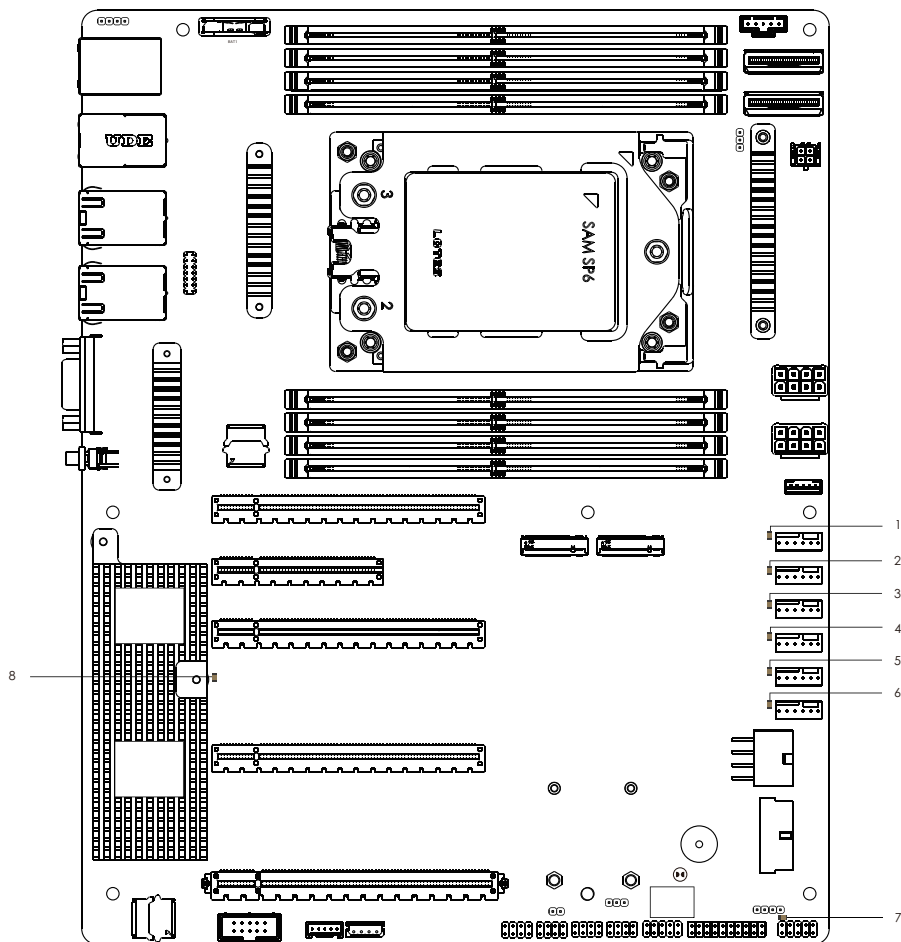


No.	Description
1	Front LAN LED Header (FRONT_LED_LAN34)
2	2 x 288-pin DDR5 DIMM Slots (DDR5_E1, DDR5_H1)*
3	2 x 288-pin DDR5 DIMM Slots (DDR5_F1, DDR5_H2)*
4	PWM Configuration Header (PWM_CFG1)
5	PSU SMBus (PSU_SMB1)
6	Mini Cool Edge IO Connector (MCIO1)
7	Mini Cool Edge IO Connector (MCIO2)
8	Micro-Fit Power Connector (ATX4PIN1)
9	AMD Socket SP6 (LGA4844) (CPU1)
10	ATX 12V Power Connector (ATX12V1)
11	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_D1)*
12	ATX 12V Power Connector (ATX12V2)
13	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_D2)*
14	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
15	System Fan Connector (FAN1)
16	System Fan Connector (FAN2)
17	M.2 Socket (M2_1) (Type 2280 / 22110)
18	System Fan Connector (FAN3)
19	M.2 Socket (M2_2) (Type 2280 / 22110)
20	System Fan Connector (FAN4)
21	System Fan Connector (FAN5)
22	System Fan Connector (FAN6)
23	ATX 12V Power Connector (ATX12V3)
24	BUZZER1
25	USB 3.2 Gen1 Header (USB3_3_4)
26	Clear CMOS Pad (CLRMO1)
27	System Panel Header (PANEL1)
28	Speaker Header (SPEAKER1)
29	Auxiliary Panel Header (AUX_PANEL1)
30	NCSI Header (NCSI_HD)
31	Thermal Sensor Header (TR1)
32	SATA SGPIO Connector (SATA_SGPIO4)
33	SATA SGPIO Connector (SATA_SGPIO3)
34	Non Maskable Interrupt Button (NMI_BTN1)

No.	Description
35	SATA SGPIO Connector (SATA_SGPIO2)
36	PCI Express 5.0/CXL1.1 x16 Slot (PCIE5)
37	SATA SGPIO Connector (SATA_SGPIO1)
38	PCI Express 5.0/CXL1.1 x16 Slot (PCIE1)
39	Intelligent Platform Management Bus header (IPMB1)
40	BMC SMBus Header (BMC_SMB1)
41	COM Port Header (COM1)
42	PCI Express 5.0 x16 Slot (PCIE3)
43	PCI Express 5.0 x8 Slot (PCIE6)
44	PCI Express 5.0/CXL1.1 x16 Slot (PCIE7)
45	SPI TPM Header (TPM_BIOS_PH1)

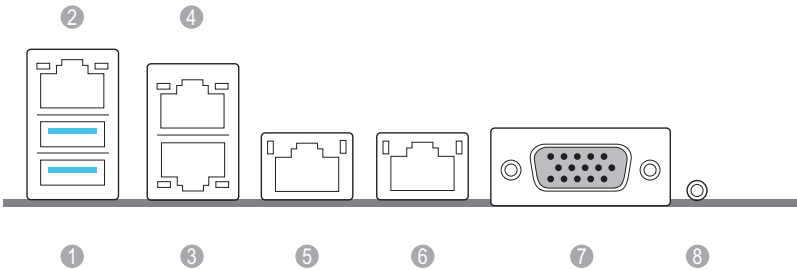
**For DIMM installation and configuration instructions, please see p.20 (Installation of Memory Modules (DIMM)) for more details.*

1.5 Onboard LED Indicators



No.	Item	Status	Description
1	FAN_LED1	Red	FAN1 failed
2	FAN_LED2	Red	FAN2 failed
3	FAN_LED3	Red	FAN3 failed
4	FAN_LED4	Red	FAN4 failed
5	FAN_LED5	Red	FAN5 failed
6	FAN_LED6	Red	FAN6 failed
7	SB_PWR1	Green	STB PWR ready
8	BMC_LED1	Green	BMC heartbeat LED

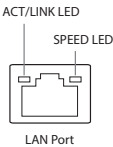
1.6 I/O Panel



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

LAN Port LED Indications

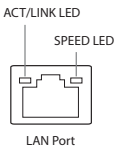
*There is an LED on both sides of IPMI LAN port. Please refer to the table below for the LAN port LED indications.



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	Orange	100Mbps connection
On	Link	Green	1Gbps connection

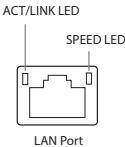
**There is an LED on both sides of the 1G LAN port. Please refer to the table below for the LAN port LED indications.



1G LAN Port LED Indications

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

***There is an LED on both sides of the 10G LAN port. 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	100Mbps connection or no link
Blinking Yellow	Data Activity	Yellow	1Gbps connection
On	Link	Green	10Gbps connection

Chapter 2 Installation

This is a ATX form factor (12" x 9.6", 30.5cm x 24.4cm) motherboard. Before installing the motherboard, study the configuration of the chassis to ensure that the motherboard fits into it.



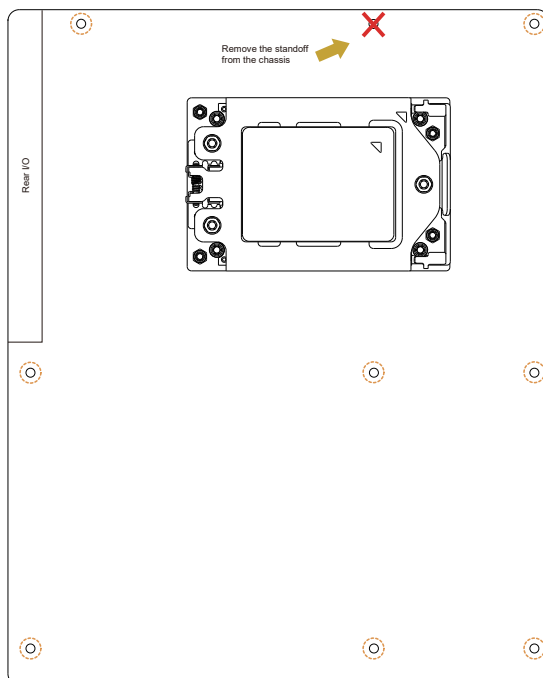
1. Ensure the motherboard battery is installed before unplugging the power cord or installing/removing the motherboard.
2. Before installing or removing any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to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

2.1 Screw Holes

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



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





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

2.2 Pre-installation Precautions

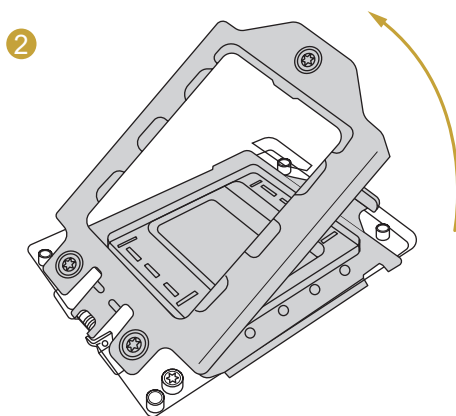
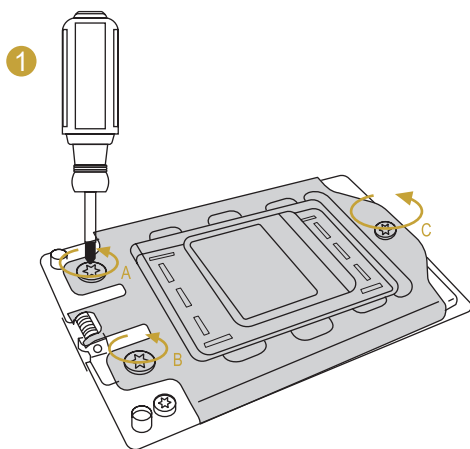
Take note of the following precautions before installing motherboard components or change any motherboard settings.

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.

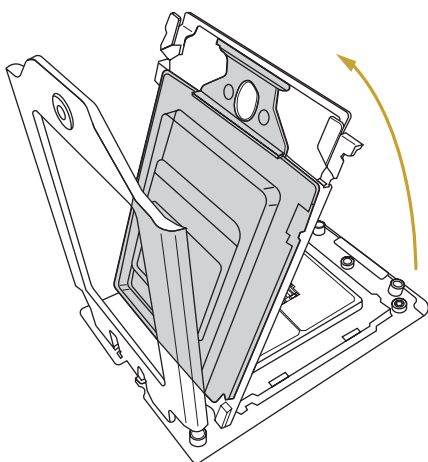
2.3 Installing the CPU



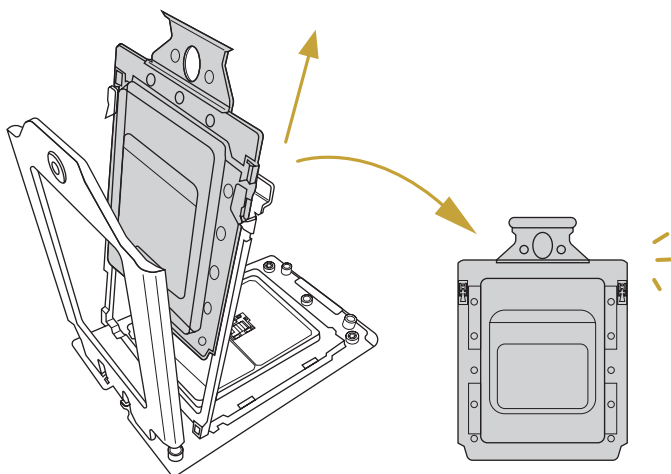
1. Before inserting the CPU into the socket, please check if the PnP cap is on the socket, if the CPU surface is unclean, or if there are any bent pins in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug all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



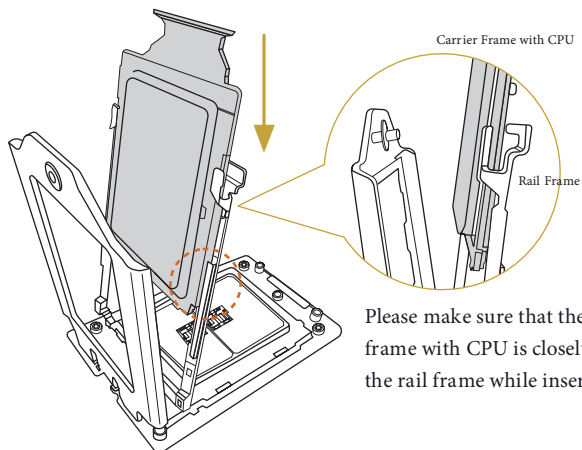
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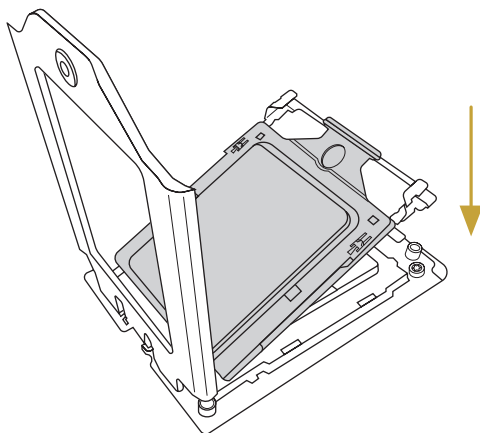


Please make sure that the carrier frame with CPU is closely attached to the rail frame while inserting it.

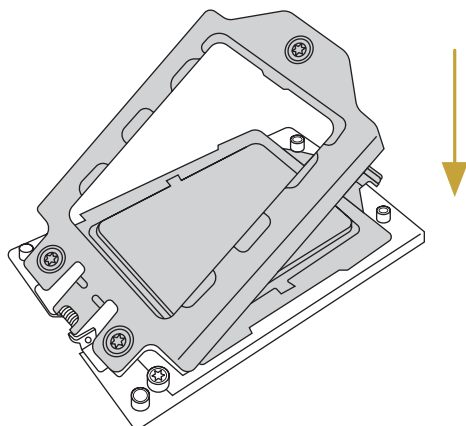


Install the carrier frame with CPU. Don't separate them.

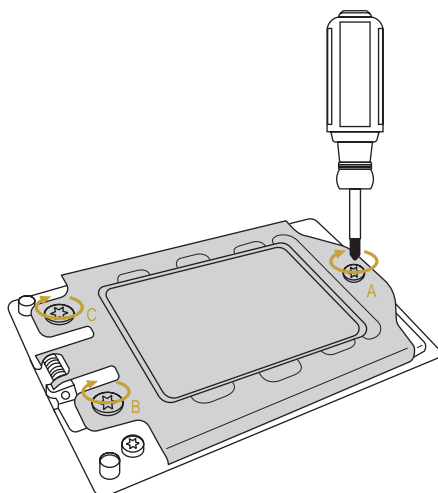
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8

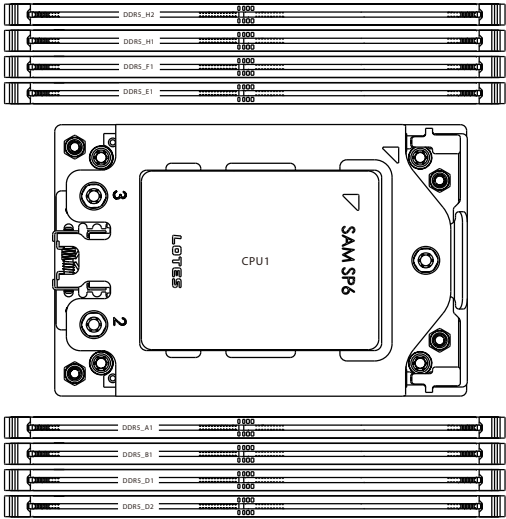


2.4 Installation of Memory Modules (DIMM)

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

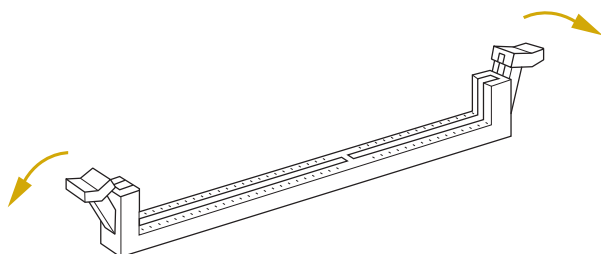
DIMM Count	1	2	4	6	8
Channel Count	1	2	4	6	6
H2			V	V	V
H1					V
F1				V	V
E1		V	V	V	V
DIMM Channel					
CPU1					
A1	V	V	V	V	V
B1				V	V
D1					V
D2			V	V	V

The Symbol V indicates the slot is populated.

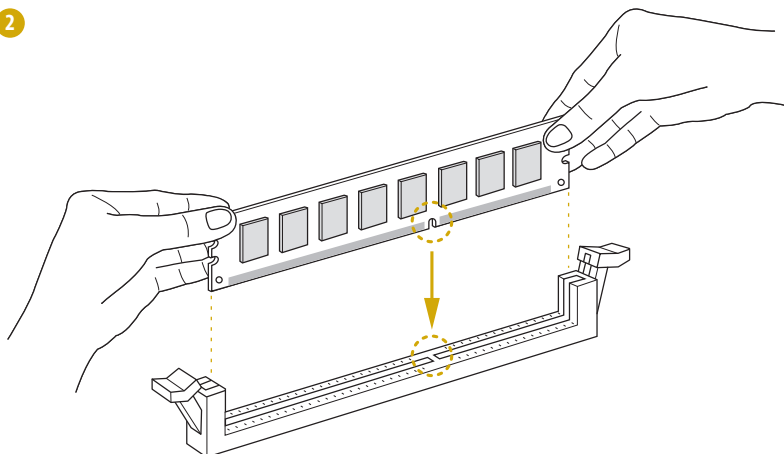


1. It is not allowed to install a DDR, DDR2, DDR3 or DDR4 memory module into a DDR5 slot; otherwise, this motherboard and DIMM may be damaged.
2. For dual channel configuration, it needs to install identical (the same brand, speed, size and chip-type) DDR5 DIMM pairs.
3. It is unable to activate Dual Channel Memory Technology with singular memory installed.

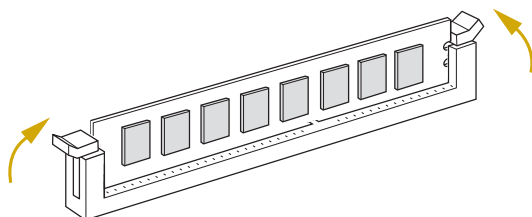
1



2



3



2.5 Expansion Slots (PCI Express Slots)

There are 5 PCI Express slots on this motherboard.

PCIe slots:

PCIe7 (PCIe 5.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

PCIe6 (PCIe 5.0 x8 slot, from CPU) is used for PCI Express x8 lane width cards.

PCIe5 (PCIe 5.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

PCIe3 (PCIe 5.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

PCIe1 (PCIe 5.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIe7	5.0	x16	x16	CPU1
PCIe6	5.0	x8	x8	CPU1
PCIe5	5.0	x16	x16	CPU1
PCIe3	5.0	x16	x16	CPU1
PCIe1	5.0	x16	x16	CPU1

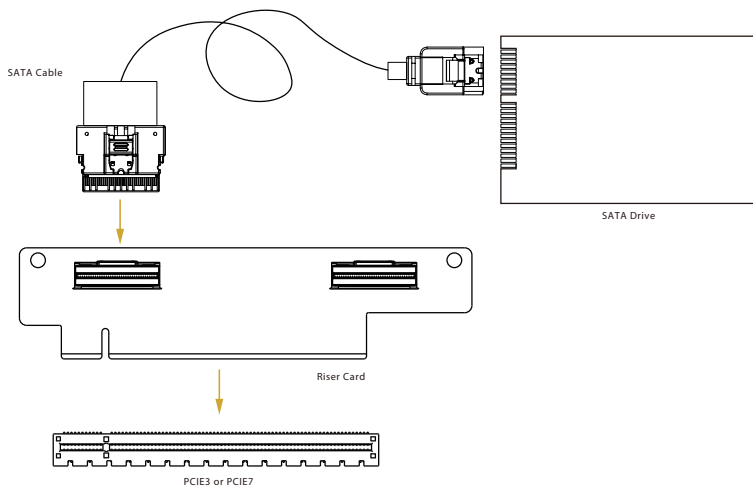
** For PCIe7 and PCIe3 SATA configurations. Please refer to P22.*

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.

SATA option on PCIe slot

PCIe7 and PCIe3 can support SATA by changing the option in BIOS. Please refer to p.49. Under the "PCIe Mode Selection" item, there are SATA and PCIe options for user to select. It is recommended to use the 1U2G-RB1U2SL-G4 riser card with the corresponding cable to connect SATA drives. The installation is shown below.

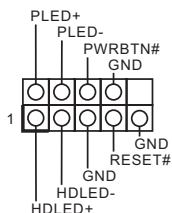


2.6 Onboard Headers and Connectors



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. 27)



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):

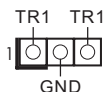
Connect to the power status indicator on the chassis front panel. The LED is on when the system is operating. The LED is off when the system is in S4 sleep state or powered off (S5).

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.

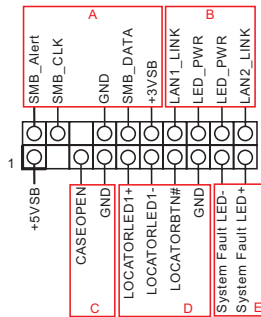
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting the chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

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



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

Auxiliary Panel Header
(18-pin AUX PANEL1)
(see p.6, No. 29)



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 (2-pin LAN1_LED, LAN2_LED)

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

C. Chassis intrusion pin (2-pin CHASSIS)

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

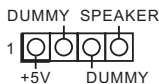
D. Locator LED (4-pin LOCATOR)

This header is for the locator switch and LED on the front panel.

E. System Fault LED (2-pin SYSTEM STATUS)

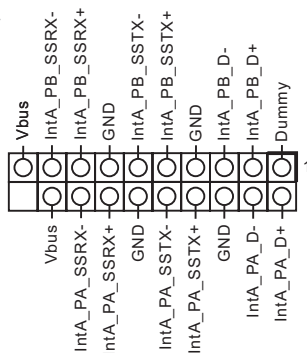
This header is for the Fault LED on the system.

Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 28)



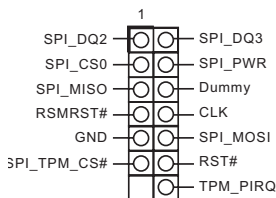
Please connect the chassis speaker to this header.

USB 3.2 Gen1 Header
(19-pin USB3_3_4)
(see p.6, No. 25)



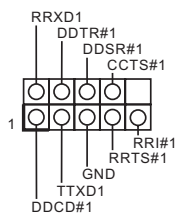
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 45)



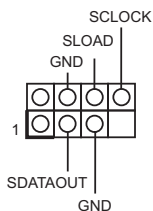
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

COM Port Header
(9-pin COM1)
(see p.6, No. 41)



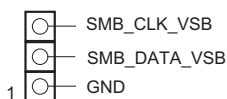
This COM1 header supports a serial port module.

SATA SGPIO Connectors
(7-pin SATA_SGPIO1)
(see p.6, No. 37)
(7-pin SATA_SGPIO2)
(see p.6, No. 35)
(7-pin SATA_SGPIO3)
(see p.6, No. 33)
(7-pin SATA_SGPIO4)
(see p.6, No. 32)



The headers support Serial Link interface for onboard SATA connections.

PWM Configuration
Header
(3-pin PWM_CFG1)
(see p.6, No. 4)



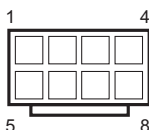
This header is used for PWM configurations.

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



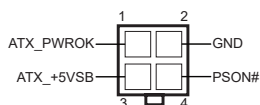
Please connect a NMI device to this header.

ATX 12V Power
Connectors
(8-pin ATX12V1)
(see p.6, No. 10)
(8-pin ATX12V2)
(see p.6, No. 12)
Right Angle
(8-pin ATX12V3)
(see p.6, No. 23)



This motherboard provides three 8-pin ATX 12V power connectors.

Micro-Fit Power
Connector
(4-pin ATX4PIN1)
(ATX 24pin-to-4pin)
(see p.6, No. 8)

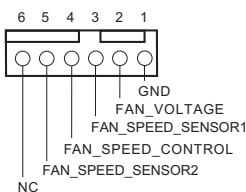


The motherboard provides one 4-pin power/signal connector which is a required input for ATX power source.

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

System Fan Connectors

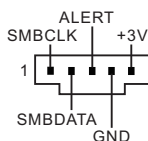
(6-pin FAN1)
(see p.6, No. 15)
(6-pin FAN2)
(see p.6, No. 16)
(6-pin FAN3)
(see p.6, No. 18)
(6-pin FAN4)
(see p.6, No. 20)
(6-pin FAN5)
(see p.6, No. 21)
(6-pin FAN6)
(see p.6, No. 22)



Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

PSU SMBus

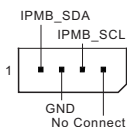
(PSU_SMB1)
(see p.6, No. 5)



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

Intelligent Platform Management Bus header

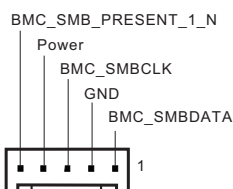
(4-pin IPMB1)
(see p.6, No. 39)



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.

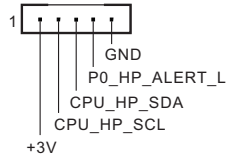
Baseboard Management Controller SMBus Header

(5-pin BMC_SMB1)
(see p.6, No. 40)



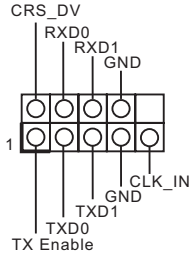
This header is used for the SMBUS devices.

Backplane PCI Express
Hot-Plug Connector
(5-pin CPU1_HSBP1)
(see p.6, No. 14)



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

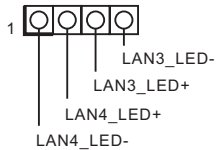
NCSI Header
(7-pin NCSI_Hd)
(see p.6, No. 30)



The onboard NCSI header is used for external connections.

**Before using this feature, user have to configure Firmware NCSI firstly. Refer to Appendix A for more information.*

Front LAN LED Header
(4-pin FRONT_LED_LAN34)
(see p.6, No. 1)



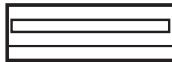
This 4-pin connector is used for the front LAN status indicator.

Clear CMOS Pad
(CLRMOS1)
(see p.6, No. 26)



CLRMOS1 allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.

MCIO Connectors
(MCIO1)
(see p.6, No. 6)
(MCIO2)
(see p.6, No. 7)



The connectors are used for the PCIE devices.

MCIO1 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	RXP0	B2	TXP0
A3	RXN0	B3	TXN0
A4	GND	B4	GND
A5	RXP1	B5	TXP1
A6	RXN1	B6	TXN1
A7	GND	B7	GND
A8	BP_TYPE	B8	SCL
A9	WAKE#	B9	SDA
A10	GND	B10	GND
A11	DP	B11	RST0_L
A12	DN	B12	PRSNT_N
A13	GND	B13	GND
A14	RXP2	B14	TXP2
A15	RXN2	B15	TXN2
A16	GND	B16	GND
A17	RXP3	B17	TXP3
A18	RXN3	B18	TXN3
A19	GND	B19	GND
A20	RXP4	B20	TXP4
A21	RXN4	B21	TXN4
A22	GND	B22	GND
A23	RXP5	B23	TXP5
A24	RXN5	B24	TXN5
A25	GND	B25	GND
A26	BP_TYPE	B26	SCL
A27	WAKE#	B27	SDA
A28	GND	B28	GND
A29	DP	B29	RST0_L
A30	DN	B30	PRSNT_N
A31	GND	B31	GND
A32	RXP6	B32	TXP6
A33	RXN6	B33	TXN6
A34	GND	B34	GND
A35	RXP7	B35	TXP7
A36	RXN7	B36	TXN7
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

MCIO2 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	RXP8	B2	TXP8
A3	RXN8	B3	TXN8
A4	GND	B4	GND
A5	RXP9	B5	TXP9
A6	RXN9	B6	TXN9
A7	GND	B7	GND
A8	BP_TYPE	B8	SCL
A9	WAKE#	B9	SDA
A10	GND	B10	GND
A11	DP	B11	RST0_L
A12	DN	B12	PRSENT_N
A13	GND	B13	GND
A14	RXP10	B14	TXP10
A15	RXN10	B15	TXN10
A16	GND	B16	GND
A17	RXP11	B17	TXP11
A18	RXN11	B18	TXN11
A19	GND	B19	GND
A20	RXP12	B20	TXP12
A21	RXN12	B21	TXN12
A22	GND	B22	GND
A23	RXP13	B23	TXP13
A24	RXN13	B24	TXN13
A25	GND	B25	GND
A26	BP_TYPE	B26	SCL
A27	WAKE#	B27	SDA
A28	GND	B28	GND
A29	DP	B29	RST0_L
A30	DN	B30	PRSENT_N
A31	GND	B31	GND
A32	RXP14	B32	TXP14
A33	RXN14	B33	TXN14
A34	GND	B34	GND
A35	RXP15	B35	TXP15
A36	RXN15	B36	TXN15
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

2.7 Unit Identification purpose LED/Switch

Use the UID button to locate the server working on 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 turned 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.

2.8 Dr. Debug

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

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

0x63 DXE_CPU_INIT

0x68 DXE_NB_HB_INIT

0x69 DXE_NB_INIT

0x6A DXE_NB_SMM_INIT

0x70 DXE_SB_INIT

0x71 DXE_SB_SMM_INIT

0x72 DXE_SB_DEVICES_INIT

0x78 DXE_ACPI_INIT

0x79 DXE_CSM_INIT

0x90 DXE_BDS_STARTED

0x91 DXE_BDS_CONNECT_DRIVERS

0x92 DXE_PCI_BUS_BEGIN

0x93 DXE_PCI_BUS_HPC_INIT

0x94 DXE_PCI_BUS_ENUM

0x95 DXE_PCI_BUS_REQUEST_RESOURCES

0x96 DXE_PCI_BUS_ASSIGN_RESOURCES

0x97 DXE_CON_OUT_CONNECT

0x98 DXE_CON_IN_CONNECT

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

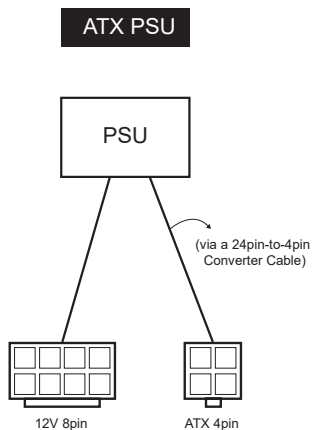
0xAF	DXE_EXIT_BOOT_SERVICES
0xB0	RT_SET_VIRTUAL_ADDRESS_MAP_BEGIN
0xB1	RT_SET_VIRTUAL_ADDRESS_MAP_END
0xB2	DXE_LEGACY_OPROM_INIT
0xB3	DXE_RESET_SYSTEM
0xB4	DXE_USB_HOTPLUG
0xB5	DXE_PCI_BUS_HOTPLUG
0xB6	DXE_NVRAM_CLEANUP
0xB7	DXE_CONFIGURATION_RESET
0xF0	PEI_RECOVERY_AUTO
0xF1	PEI_RECOVERY_USER
0xF2	PEI_RECOVERY_STARTED
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

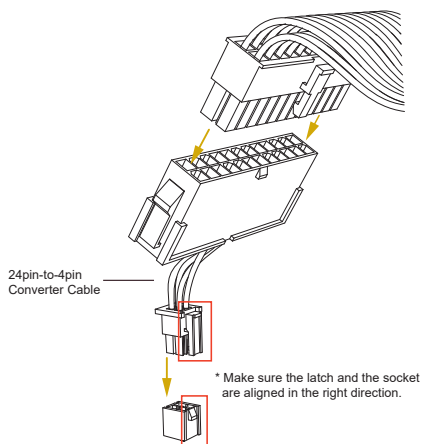
0xD8	DXE_INVALID_PASSWORD
0xD9	DXE_BOOT_OPTION_LOAD_ERROR
0xDA	DXE_BOOT_OPTION_FAILED
0xDB	DXE_FLASH_UPDATE_FAILED
0xDC	DXE_RESET_NOT_AVAILABLE
0xE8	PEI_MEMORY_S3_RESUME_FAILED
0xE9	PEI_S3_RESUME_PPI_NOT_FOUND
0xEA	PEI_S3_BOOT_SCRIPT_ERROR
0xEB	PEI_S3_OS_WAKE_ERROR

2.9 ATX PSU Power Connections

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



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



2.10 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

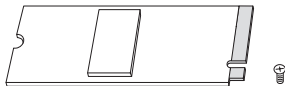
Select the adapter to the primary adapter and click the **Set Primary** button.

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.

2.11 M.2_SSD (NGFF) Module Installation Guide

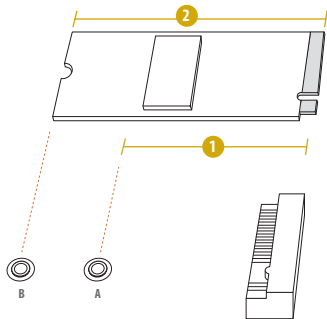
The M.2 Socket (M2_1/M2_2, Key M) supports type 2280/22110 M.2 SATA 6.0 Gb/s module or M.2 PCI Express module up to Gen5 x4 (32GT/s x4).

Installing the M.2_SSD Module



Step 1

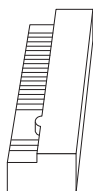
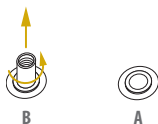
Prepare a M.2 SSD module and the screw.



Step 2

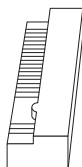
Depending on the PCB type and length of the M.2 SSD module, find the corresponding nut location to be used.

No.	1	2
Nut Location	A (NUT80_1/NUT80_2)	B (NUT110_1/NUT110_2)
PCB Length	8cm	11cm
Module Type	Type 2280	Type 22110



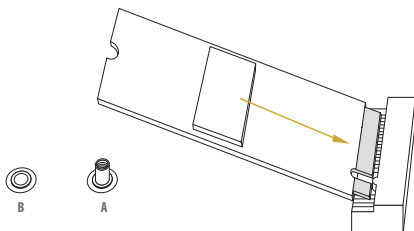
Step 3

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



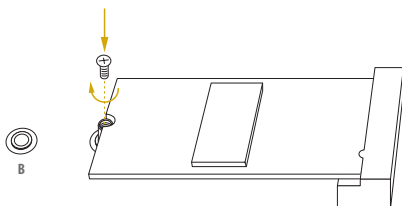
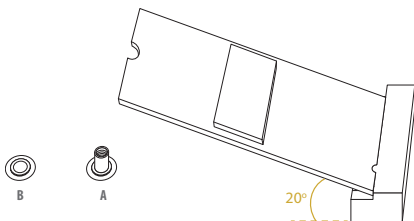
Step 4

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.

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 during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue with its test routines.

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



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

3.1.1 UEFI Menu Bar

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

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Server Mgmt	To manage the server
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.

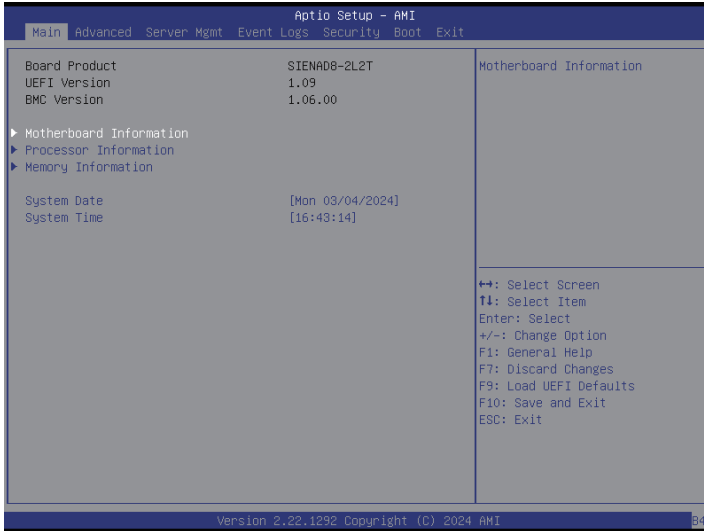
3.1.2 Navigation Keys

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

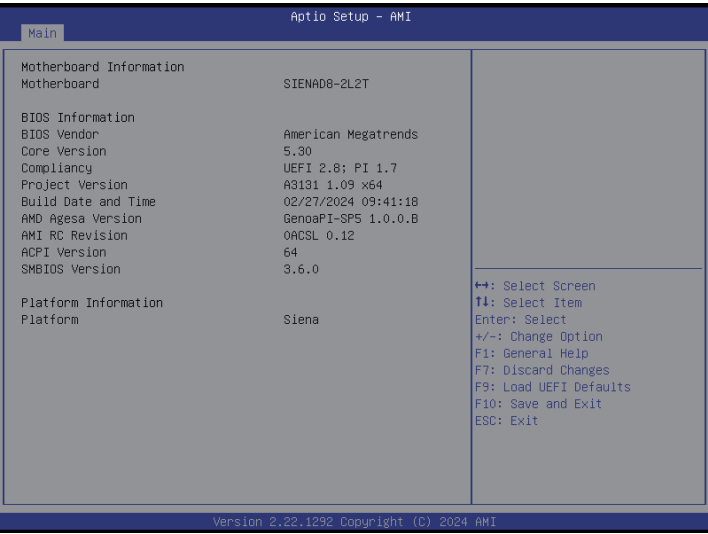
3.2 Main Screen

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.



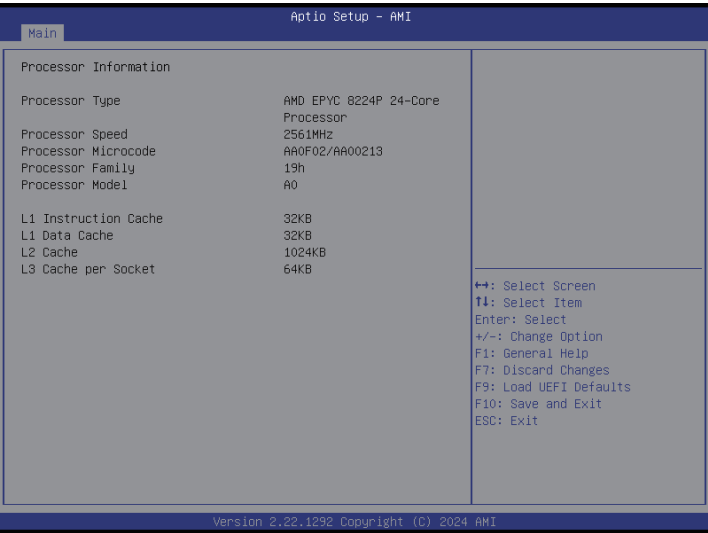
3.2.1 Motherboard Information

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



3.2.2 Processor Information

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



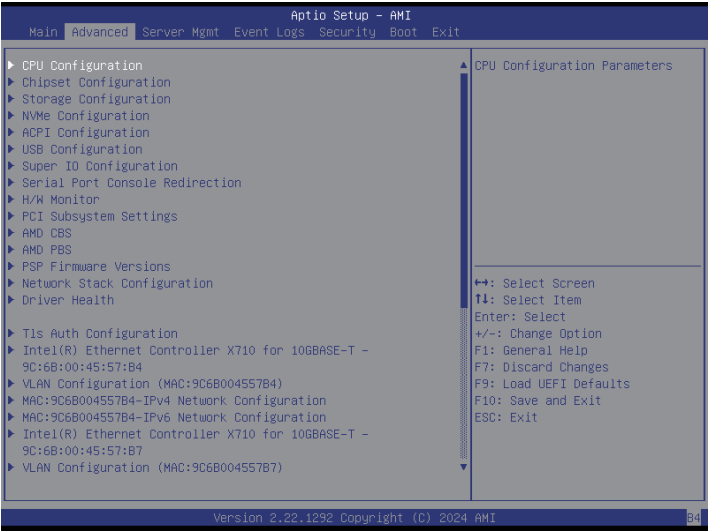
3.2.3 Memory Information

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



3.3 Advanced Screen

In this section, 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 (X710)

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

Onboard LAN (I210 LAN1)

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

Onboard LAN (I210 LAN2)

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

PCIE Mode Selection

This item is for PCIE Mode Configuration.

PCIE7/PCIE3 Mode Selection

Select SATA or PCIE work in PCIE port.

PCIE Link Width

This displays the PCIE Link Width.

PCIE1/PCIE3/PCIE5/PCIE6/PCIE7/MCIO1/MCIO2 Link Width

The default values for PCIE1/PCIE3/PCIE5/PCIE7 are [x16], PCIE6 is [x8] MCIO1/MCIO2 are [x4x4].

PCIe Link Speed

This displays the PCIe Link Speed.

PCIe1/PCIe5/PCIe7 Link Speed

Set the AMD CBS/CXL Common Options/CXL Control to Disable and press F10 to save the changed value so that allowing user to configure this item.

PCIe3/PCIe6/MCIO1/MCIO2/M2_1/M2_2 Link Speed

All of the default values are [Auto].

PCIe Hot Plug

Select this item to enable or disable Hot Plug for PCIe1/PCIe3/PCIe5/PCIe6/PCIe7, MCIO1/MCIO2, M2_1/M2_2 globally.

PCIe ASPM

Select this item to onfigure the PCIe ASPM.

PCI-E ASPM Support (Global)

Select this item can disable ASPM support in all PCIe root ports.

PCIe1/PCIe3/PCIe5/PCIe6/PCIe7/MCIO1/MCIO2/M2_1/M2_2 ASPM Support

Use this item to configure the ASPM support to PCIe1/3/5/6/7, MCIO1/2 and M2_1/M2_2.

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

Designates All SATA port as Hot Pluggable.

3.3.4 NVMe Configuration



The NVMe Configuration displays the NVMe Device Options Settings.

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

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

RTC Alarm Power On

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

RTC Alarm Date

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

RTC Alarm Hour

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

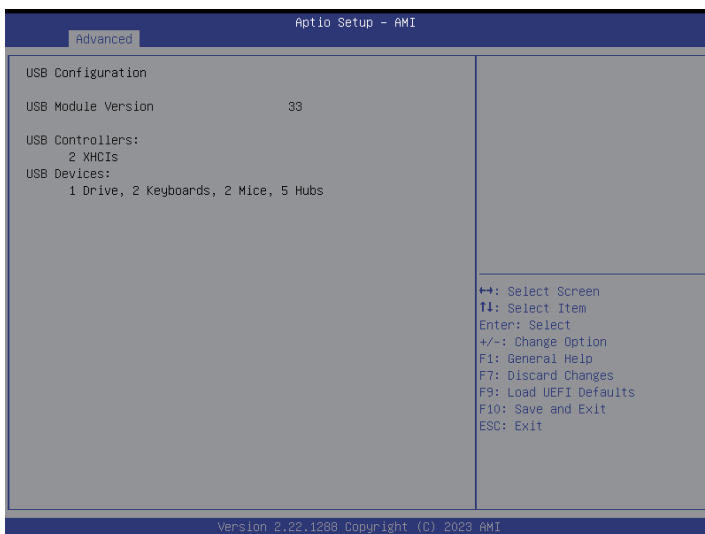
RTC Alarm Minute

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

RTC Alarm Second

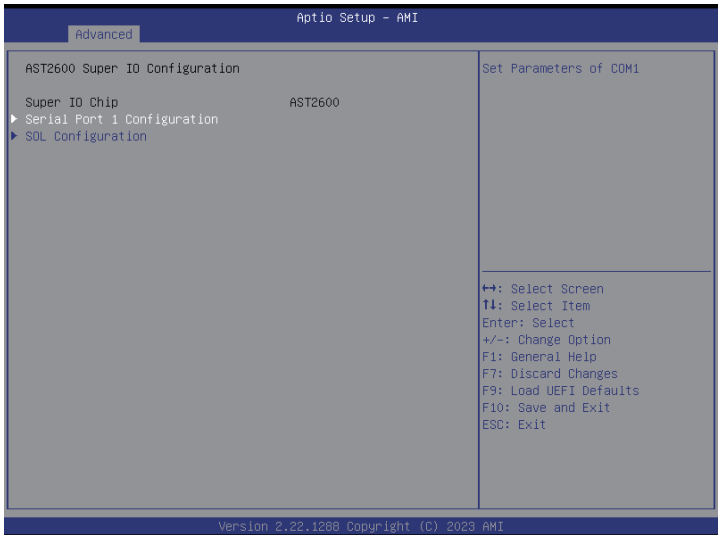
Use this item to set Second of RTC power on feature.

3.3.6 USB Configuration



This displays the USB Module Version, Controllers and USB Devices information.

3.3.7 Super IO Configuration



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).

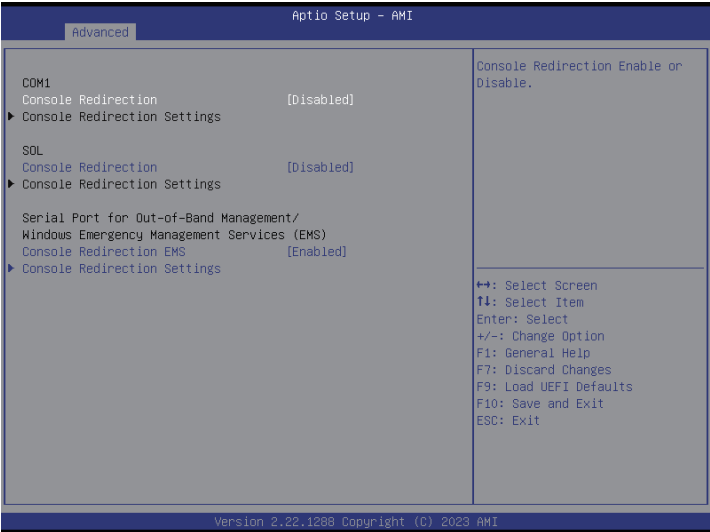
SOL Port

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.

3.3.8 Serial Port Console Redirection



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

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

Microsoft 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].

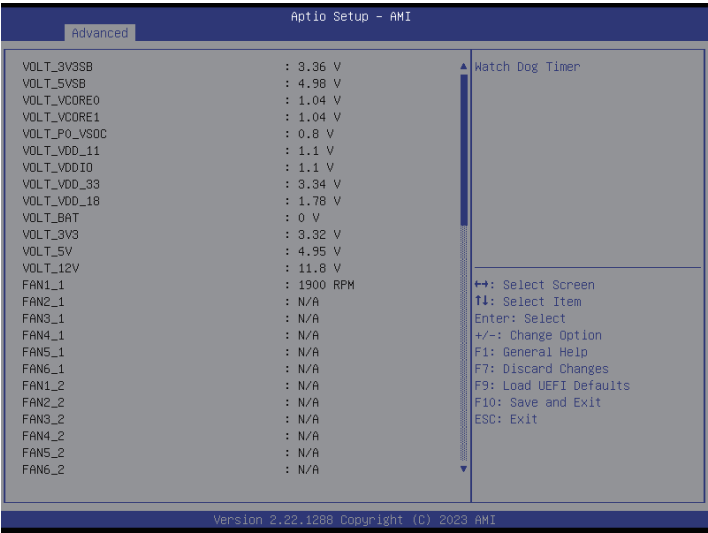
Data Bits EMS

Parity EMS

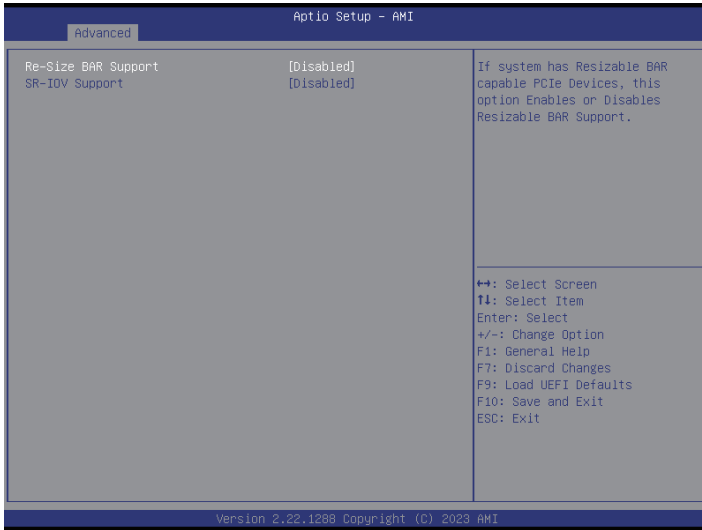
Stop Bits EMS

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



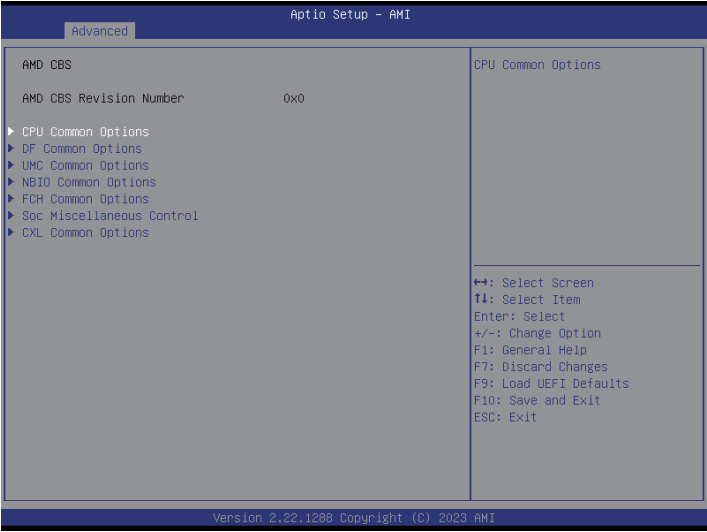
Re-Size BAR Support

If the system has Resizable BAR capable PCIe Devices, this option enables or disables the Resizable BAR Support.

SR-IOV Support

If the system has SR-IOV capable PCIe Devices, this option enables or disables the 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 define the time scale.

SMI Scale Unit

Use this to define the unit of time scale.

SMI Period

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

GHEs Notify Type

This specifies the notification type for deferred/corrected errors.

GHEs UnCorr Notify Type

This specifies the notification type for uncorrected errors.

PCIe GHEs Notify Type

This specifies the notification type for PCIe corrected errors.

PCIe UnCorr GHES Notify Type

This specifies the notification type for PCIe uncorrected errors.

PCIe Root Port Corr Err Mask Reg

Use this to initialize the PCIe AER Corrected Error Mask register of root port.

PCIe Root Port UnCorr Err Mask Reg

Use this to initialize the PCIe AER Uncorrected Error Mask register of root port.

PCIe Root Port UnCorr Err Sev Reg

Use this to initialize the PCIe AER Uncorrected Error Severity registers of root port.

PCIe Device Corr Err Mask Reg

Use this to initialize the PCIe AER Corrected Error Mask register of PCIe device.

PCIe Device UnCorr Err Mask Reg

Use this to initialize the PCIe AER Uncorrected Error Mask register of PCIe device.

PCIe Device UnCorr Error Sev Reg

Use this to initialize the PCIe AER Uncorrected Error Severity registers of PCIe device

CXL DP CIE Mask Enable

Use this to enable or disable masking of CXL DP Correctable Error-Internal Error.

DRAM Hard Post Package Repair

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

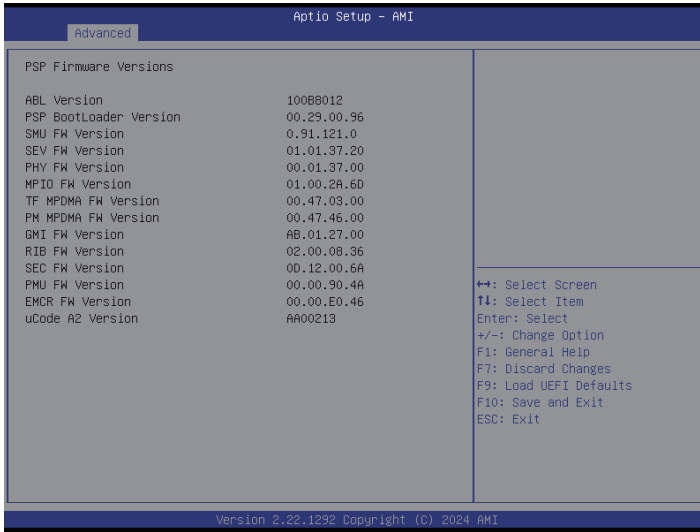
HEST DMC Structure Support

Use this to enable or disable HEST DMC (Deferred Maching Check) Structure Support.

CXL Error Report Support

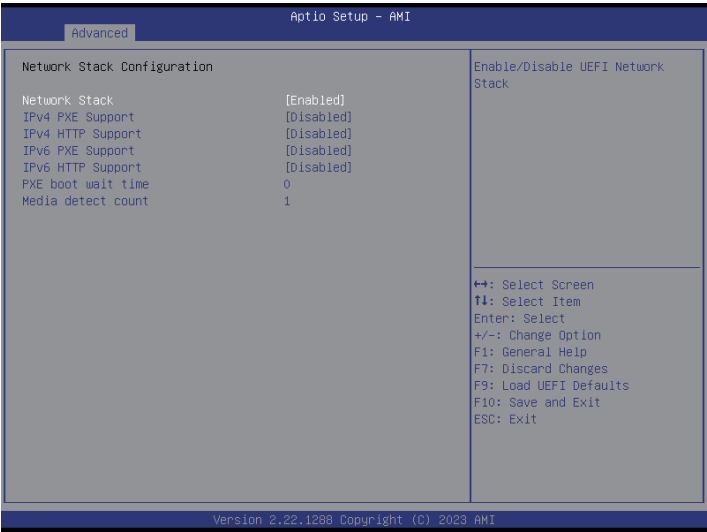
Use this to enable or disable CXL Error Reporting.

3.3.13 PSP Firmware Versions



The PSP Firmware Versions displays the version information of ABL, PSP BootLoader, SMU FW, SEV FW, PHY FW, MPIO FW, TF MPDMA FW, PM MPDMA FW, GMI FW, RIB FW, SEC FW, PMU FW, EMCR FW and uCode A2.

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.

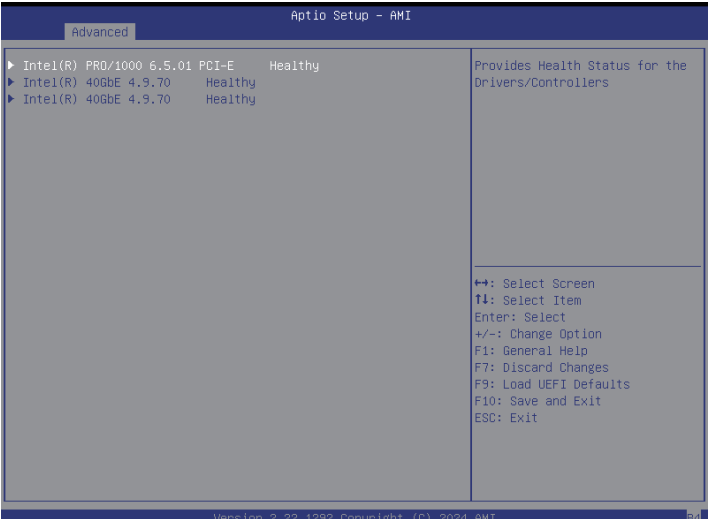
PXE boot wait time

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



Intel(R) PRO/1000 6.5.01 PCI-E Healthy

Provides Health Status for the Drivers/Controllers.

Intel(R) 40GbE 4.9.70 Healthy

Provides Health Status for the Drivers/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.

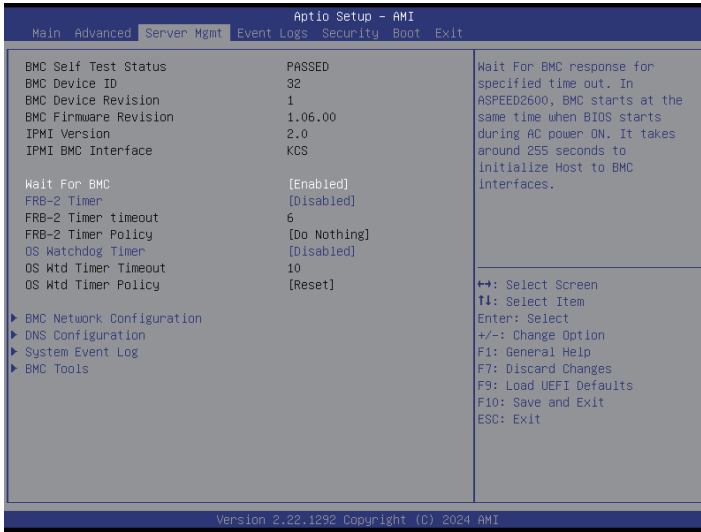
Delete Cert

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. In ASPEED2600, 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.

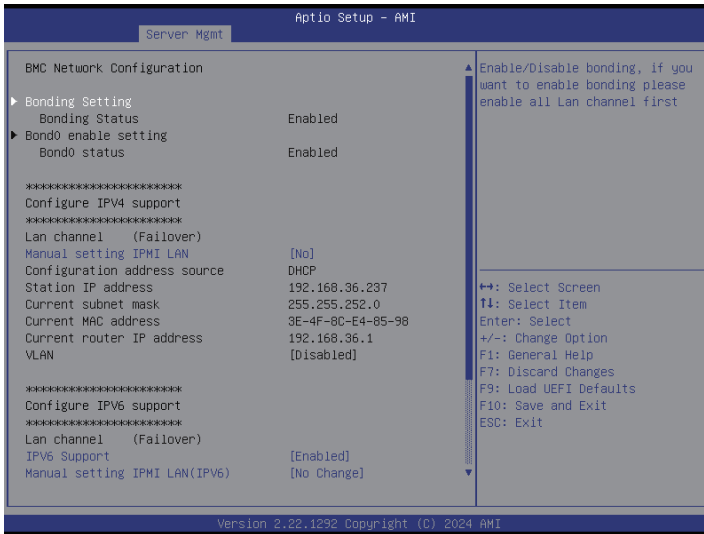
System Event Log

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 Priority setting, the Maximum value is 7 and the Minimum value is 0.

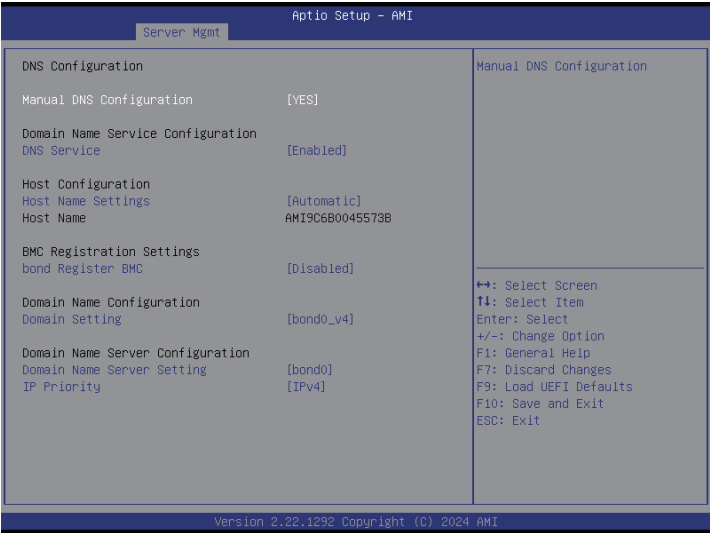
IPv6 Support

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

Select this item to enable or disable Bond Register BMC.

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

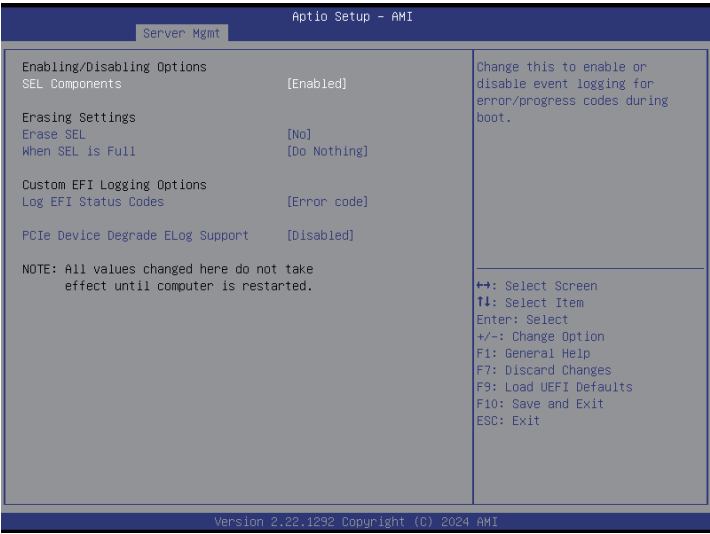
Domain Name Server Setting

Select this item to configure DNS Server Settings.

IP Priority

Select this item to configure IP Priority.

3.4.3 System Event Log



SEL Components

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

Erase SEL

Use this to choose options for erasing SEL.

When SEL is Full

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

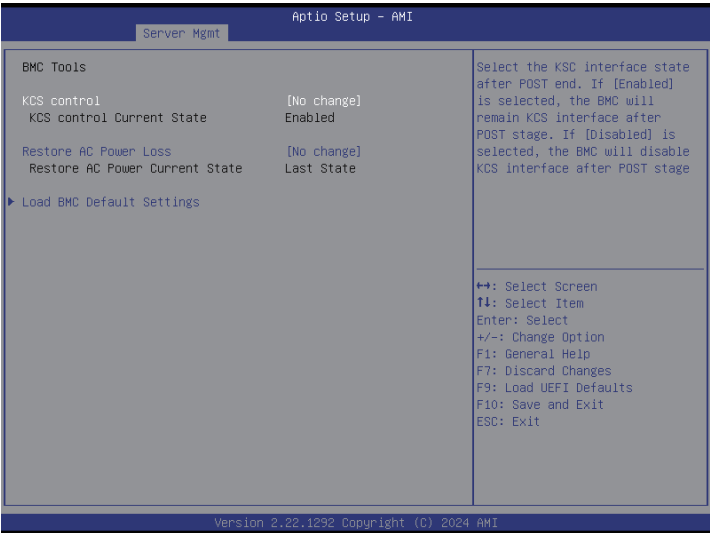
Log EFI Status Codes

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] is 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

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

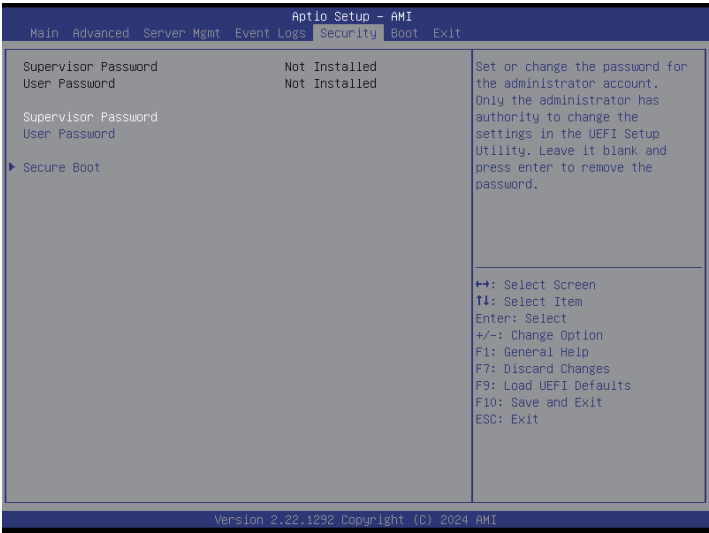
Press <Enter> to view the Smbios Event Log records.



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.



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

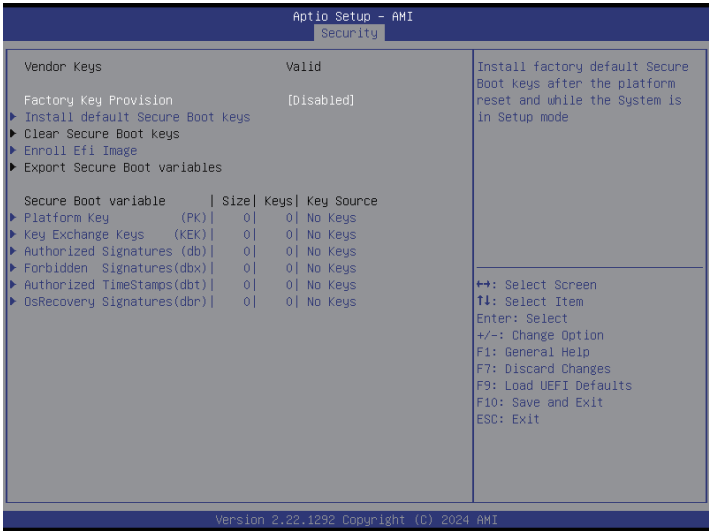
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset.

Secure Boot Mode

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

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

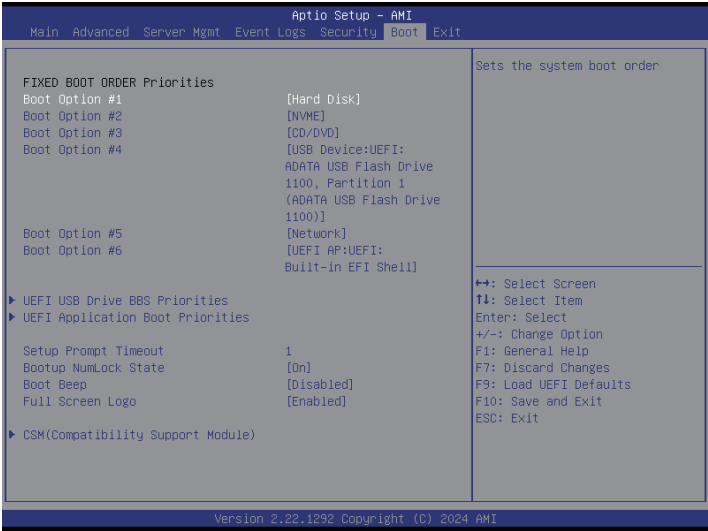
2. Authenticated UEFI Variable

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 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.

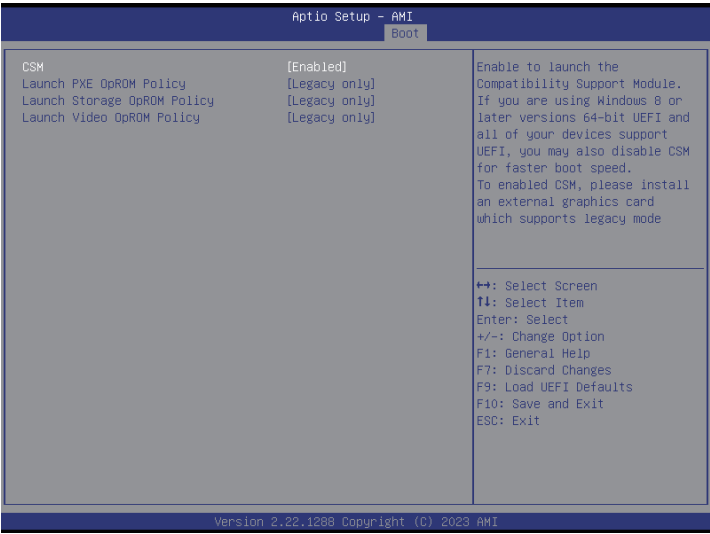
Boot Beep

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

Full Screen Logo

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

3.7.1 CSM Parameters



CSM (Compatibility Support Module)

CSM

Select this item to enable or disable the Compatibility Support Module. Please do not disable unless running a WHCK test. For faster boot speed, it may also disable CSM.

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.

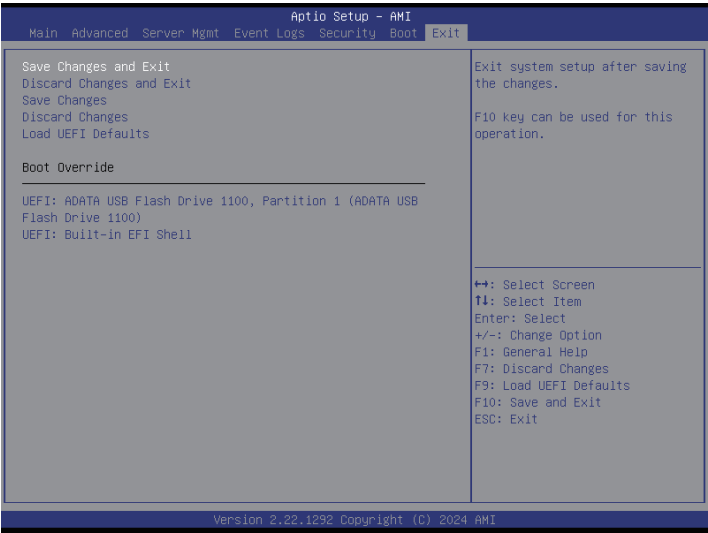
Launch Storage OpROM Policy

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. 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/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 official 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.

4.3 Contact Information

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

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.



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

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

If there is no power...

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

If there is no video...

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

If there are memory errors...

1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR5 RDIMM.
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 adequate 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.

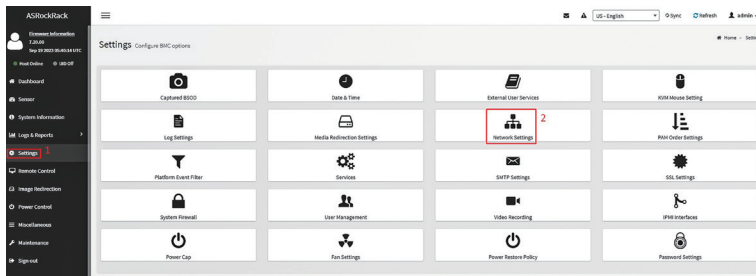
This warranty does not cover damages incurred in shipping or from failure due to alteration, misuse, abuse or improper maintenance of products.

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

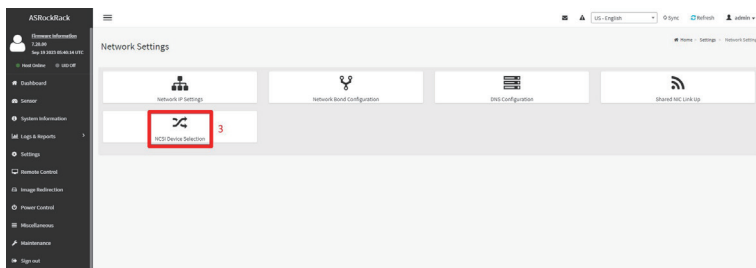
Appendix A NCSI Configurations

Before using NCSI_HD feature, user have to configure Firmware NCSI firstly as below:

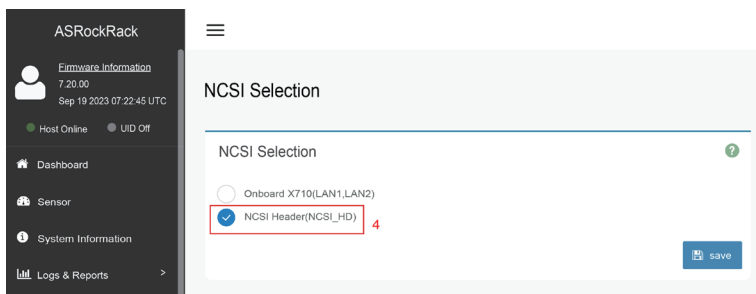
1. Login to the BMC WEB.
2. Select **Settings** tab, then click the **Network Settings** icon.



3. Select **NCSI Device Selection**.



4. Choose the "NCSI Header (NCSI_HD)" option, then click "Save". BMC WEB will need to log in again.



5. Done.

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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