

**OPEN** Industry Standard, Flexible Architecture

**GREEN** Less Heat, Less Power Consumption

**STABLE** Robust Design, Quality Parts

Stable and  
Reliable Solution

**Server/Workstation**

Motherboard

**AM5D4ID2**

User Manual

English



Version 1.00

Published Mar. 2025

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- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
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# Chapter 1 Introduction

Thank you for purchasing ASRock Rack **AM5D4ID2** 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](http://www.ASRockRack.com)*

*About this motherboard technical support, please visit the website for specific information <http://www.asrockrack.com/support/>*

## 1.1 Package Contents

- ASRock Rack AM5D4ID2 motherboard  
(Deep mini-ITX form factor: 6.7" x 8.2", 17.0cm x 20.8cm)
- 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.*



*The illustrations shown in this manual are examples only, the actual system may differ slightly.*

## 1.2 Specifications

| AM5D4ID2                                        |                                                                            |
|-------------------------------------------------|----------------------------------------------------------------------------|
| Physical Status                                 |                                                                            |
| Form Factor                                     | Deep mini-ITX                                                              |
| Dimension                                       | 6.7" x 8.2" (170mm x 208mm)                                                |
| Processor System                                |                                                                            |
| CPU                                             | Supports AMD EPYC™ 4004 and AMD Ryzen™ 9000/8000/7000 Series Processors    |
| Socket                                          | 1 Socket AM5 (LGA1718)                                                     |
| Thermal Design Power (TDP)                      | 120W (Air)/170W (Liquid)                                                   |
| Chipset                                         | KNOLL3 X300                                                                |
| System Memory                                   |                                                                            |
| Supported DIMM Quantity                         | 4 DIMM slots (2DPC)                                                        |
| Supported Type                                  | DDR5 288-pin ECC/non-ECC UDIMM                                             |
| Max. Capacity per DIMM                          | 48GB                                                                       |
| Max. DIMM Frequency                             | 5200MHz (1DPC), 3600MHz (2DPC)                                             |
| Voltage                                         | 1.1V                                                                       |
| <i>Note: Memory support is to be validated.</i> |                                                                            |
| PCIe Expansion Slot (Slot7 close to CPU)        |                                                                            |
| Slot 7                                          | PCIe5.0 x16 [CPU]                                                          |
| Other PCIe Expansion Connector                  |                                                                            |
| M.2 Slot                                        | 2 M-key (PCIe5.0 x4), supports 2280 form factor [CPU]                      |
| Ethernet                                        |                                                                            |
| Additional GbE Controller                       | 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:<br>1 DBI5 (VGA)<br>AMD Processors with Graphics:<br>1 HDMI |

|                                    |                                                                                                             |
|------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Rear I/O</b>                    |                                                                                                             |
| UID Button/LED                     | 1 UID button w/ LED                                                                                         |
| Video Port                         | 1 DB15 (VGA), 1 HDMI                                                                                        |
| USB                                | 2 Type-A (USB3.2 Gen1)                                                                                      |
| RJ45                               | 2 RJ45 (1GbE), 1 dedicated IPMI                                                                             |
| <b>System BIOS</b>                 |                                                                                                             |
| Type                               | AMI UEFI BIOS; 256Mb (32MB) SPI Flash ROM                                                                   |
| Features                           | Plug and Play, ACPI 5.1 compliance wake up events, SMBIOS 2.3                                               |
| <b>Hardware Monitor</b>            |                                                                                                             |
| Temperature                        | CPU, DDR, MB, Card Side                                                                                     |
| Fan                                | Fan Tachometer, Multi-Speed Control, CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature) |
| Voltage                            | 3VSB, 5VSB, VCPU, VCCM, APU VDDP, 1.05V_PROM_S5, 2.5V_PROM, 1.05V_PROM_RUN, BAT, 3V, 5V, 12V                |
| <b>Internal Connectors/Headers</b> |                                                                                                             |
| Power Connector                    | 1 (4-pin, ATX PSU signal) w/ ATX 24-pin adapter cable, 2 (8-pin, ATX 12V) support 12V DC-in                 |
| Auxiliary Panel Header             | 1 (9-pin) chassis intrusion, system fault LED, LAN activity LED                                             |
| System Panel Header                | 1 (9-pin) power switch, reset switch, system power LED, HDD activity LED                                    |
| COM Header                         | 1                                                                                                           |
| Speaker Header                     | 1                                                                                                           |
| Fan Headers                        | 4 (4-pin)                                                                                                   |
| Thermal Sensor Header              | 1                                                                                                           |
| TPM Header                         | 1 (13-pin, SPI)                                                                                             |
| SMbus Header                       | 1                                                                                                           |
| PMbus Header                       | 1                                                                                                           |
| IPMB Header                        | 1                                                                                                           |
| Clear CMOS                         | 1                                                                                                           |
| USB Header                         | 1 header (19-pin, 2 USB3.2 Gen1)                                                                            |
| Others                             | 1 UID header (4-pin), 1 NCSI header (4-pin), 1 IPMI LAN LED header (4-pin), 1 80 debug header (13-pin, LPC) |
| <b>LED Indicators</b>              |                                                                                                             |
| Standby Power LED                  | 1 (5VSB)                                                                                                    |
| Fan Fail LEDs                      | 4                                                                                                           |
| BMC Hearbeat LED                   | 1                                                                                                           |

| Support OS                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OS                        | <p>AMD Ryzen CPU:</p> <p>Microsoft® Windows:</p> <ul style="list-style-type: none"> <li>- Windows® 10 (64bit)</li> <li>- Windows® 11 (64bit)</li> </ul> <p>Linux:</p> <ul style="list-style-type: none"> <li>- RedHat Enterprise Linux Server 8.7 (64bit)</li> <li>- CentOS 8.5 ( 64bit)</li> <li>- SUSE SLES 15.4(64bit)/15.2(64bit)</li> <li>- Ubuntu 22.04.1 (64bit)/21.10 (64bit)/21.04 (64bit)</li> </ul> <p>Hypervisor:</p> <ul style="list-style-type: none"> <li>- VMware® ESXi 8.0/7.0 U3g</li> </ul> <p>AMD EPYC 4004 CPU:</p> <p>Microsoft® Windows:</p> <ul style="list-style-type: none"> <li>- Windows® Server2022 (64bit)</li> </ul> <p><i>* Bios setting: Advanced &gt; Chipset Configuration &gt; Server WHQL Support setting Enable</i></p> <p>Linux:</p> <ul style="list-style-type: none"> <li>- RedHat Enterprise Linux Server 8.9 (64 bit)/9.3 (64bit)*/9.4 (64bit)</li> <li>- SUSE SLES 15.5(64bit)</li> <li>- Ubuntu 20.04.6 (64bit)/22.04.4 (64bit)</li> </ul> <p><i>* RedHat Enterprise Linux Server 9.3 (64bit) can support Raid Mode.</i></p> <p>AMD EPYC 4005 CPU:</p> <p>Microsoft® Windows:</p> <ul style="list-style-type: none"> <li>- Windows® Server2022 (64bit)</li> <li>- Windows® Server2025 (64bit)</li> </ul> <p><i>* Bios setting: Advanced &gt; Chipset Configuration &gt; Server WHQL Support setting Enable</i></p> <p>Linux:</p> <ul style="list-style-type: none"> <li>- RedHat Enterprise Linux Server 9.4/10.0 (64bit)</li> <li>- SUSE SLES 15.6(64bit)</li> <li>- Ubuntu 22.04.5 (64 bit)/24.04 (64bit)</li> </ul> <p><i>* Please refer to the website for the latest OS support list.</i></p> |
| Enviroment                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Operating Temperature     | 10 - 35°C (50 - 95 degF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Non-operating Temperature | -40 - 70°C (-40 - 158degF)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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.*



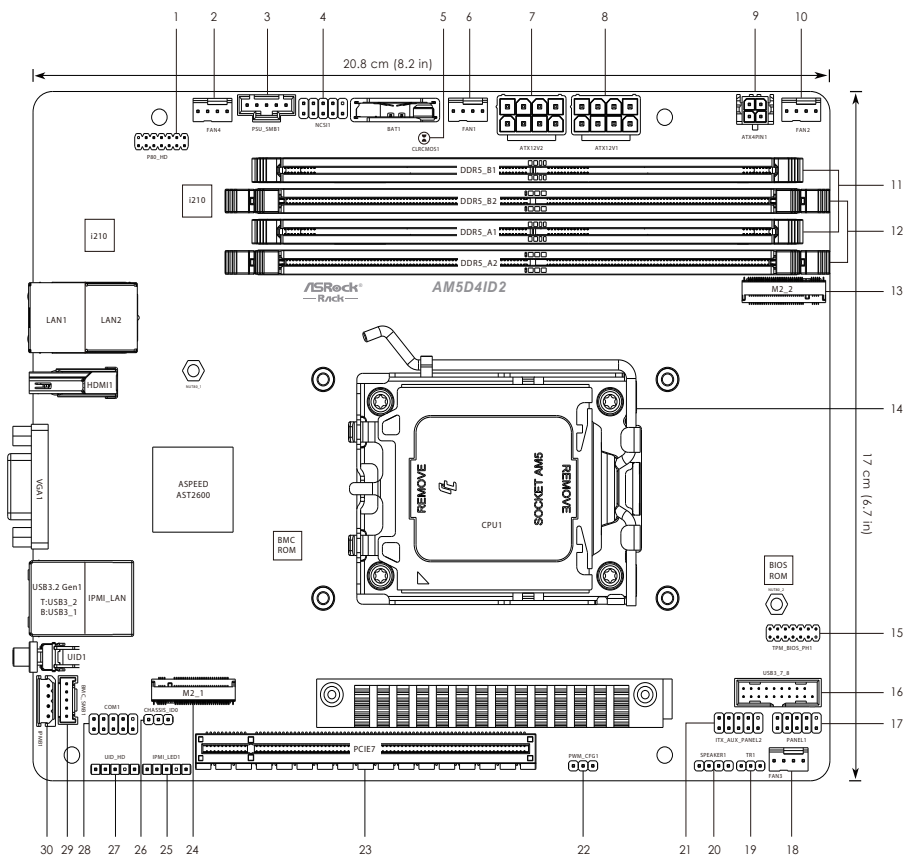
*If installing Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If installing the drivers only, it will pass the WHQL tests.*

### 1.3 Unique Features

ASRock Rack Instant Flash is a BIOS flash utility embedded in Flash ROM. This convenient BIOS update tool allows updating 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.

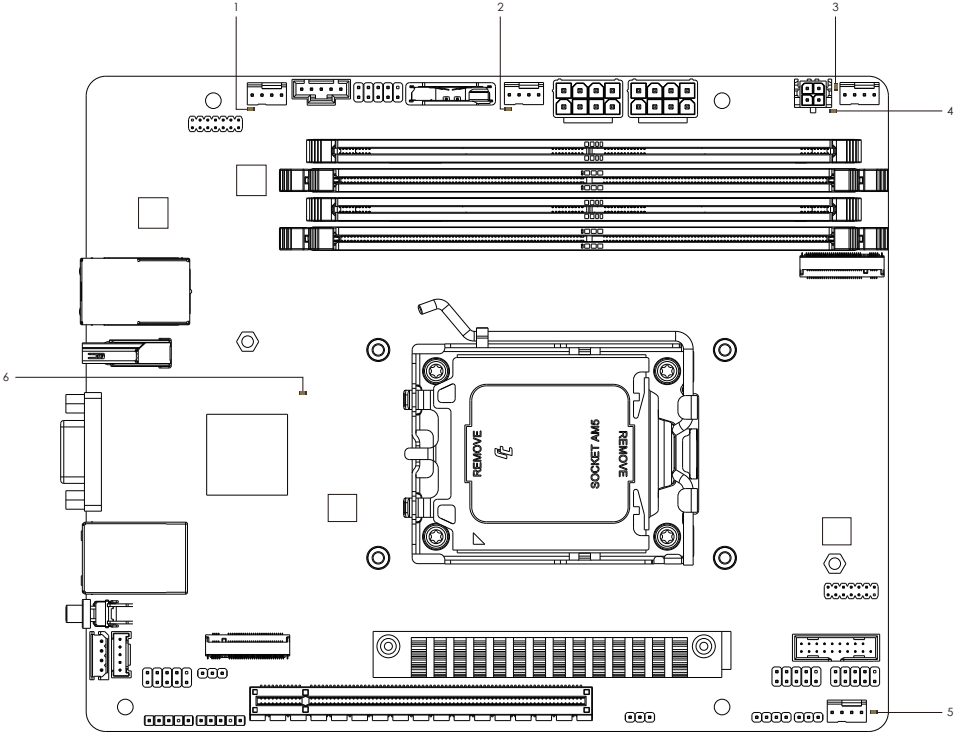
## 1.4 Motherboard Layout



| No. | Description                                             |
|-----|---------------------------------------------------------|
| 1   | 80 Debug Header (P80_HD)                                |
| 2   | System Fan Connector (FAN4)                             |
| 3   | PSU SMBus Header (PSU_SMB1)                             |
| 4   | NSCI Header (NSCI1)                                     |
| 5   | Clear CMOS Pad (CLRCMOS1)                               |
| 6   | System Fan Connector (FAN1)                             |
| 7   | ATX 12V Power Connector (ATX12V2)                       |
| 8   | ATX 12V Power Connector (ATX12V1)                       |
| 9   | ATX 4-PIN Power Connector (ATX4PIN1)                    |
| 10  | System Fan Connector (FAN2)                             |
| 11  | 2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_B1)*         |
| 12  | 2 x 288-pin DDR5 DIMM Slots (DDR5_A2, DDR5_B2)*         |
| 13  | M.2 Socket (M2_2) (Type 2280)                           |
| 14  | AMD Socket AM5 (LGA 1718) (CPU1)                        |
| 15  | SPI TPM Header (TPM_BIOS_PH1)                           |
| 16  | USB 3.2 Gen1 Header (USB3_7_8)                          |
| 17  | System Panel Header (PANEL1)                            |
| 18  | System Fan Connector (FAN3)                             |
| 19  | Thermal Sensor Header (TR1)                             |
| 20  | Speaker Header (SPEAKER1)                               |
| 21  | Auxiliary Panel Header (ITX_AUX_PANEL1)                 |
| 22  | PWM Configuration Header (PWM_CFG1)                     |
| 23  | PCI Express 5.0 x16 Card Slot (PCIE7)                   |
| 24  | M.2 Socket (M2_1) (Type 2280)                           |
| 25  | IPMI LAN LED Header (IPMI_LED1)                         |
| 26  | Chassis ID Jumper (CHASSIS_ID0)                         |
| 27  | UID Button Header (UID_HD)                              |
| 28  | Serial Port Header (COM1)                               |
| 29  | Baseboard Management Controller SMBus Header (BMC_SMB1) |
| 30  | Intelligent Platform Management Bus Header (IPMB1)      |

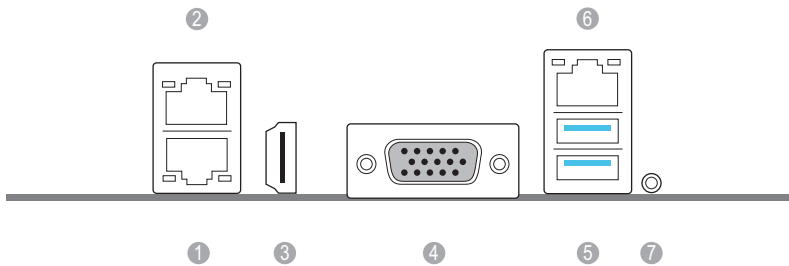
\* For DIMM installation and configuration instructions, please see p.18 (Installation of Memory Modules (DIMM)) for more details.

# 1.5 Onboard LED Indicators



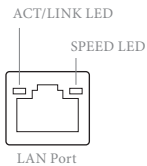
| No. | Item     | Status | Description       |
|-----|----------|--------|-------------------|
| 1   | FAN_LED4 | Red    | FAN4 failed       |
| 2   | FAN_LED1 | Red    | FAN1 failed       |
| 3   | FAN_LED2 | Red    | FAN2 failed       |
| 4   | SB_PWR1  | Green  | STB PWR ready     |
| 5   | FAN_LED3 | Red    | FAN3 failed       |
| 6   | BMC_LED1 | Green  | BMC heartbeat LED |

1.6 I/O Panel



| No. | Description                            | No. | Description                   |
|-----|----------------------------------------|-----|-------------------------------|
| 1   | 1G LAN RJ-45 Port (LAN1, shared NIC)** | 5   | USB 3.2 Gen1 Ports (USB3_1_2) |
| 2   | 1G LAN RJ-45 Port (LAN2)**             | 6   | LAN RJ-45 Port (IPMI_LAN1)*   |
| 3   | HDMI Port (HDMI1)                      | 7   | UID Switch (UID1)             |
| 4   | VGA Port (VGA1)                        |     |                               |

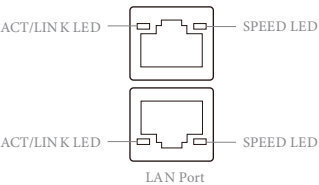
\*There is an LED on each side of IPMI LAN port. Please refer to the table below for the LAN port LED indications..



IPMI LAN Port LED Indications

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

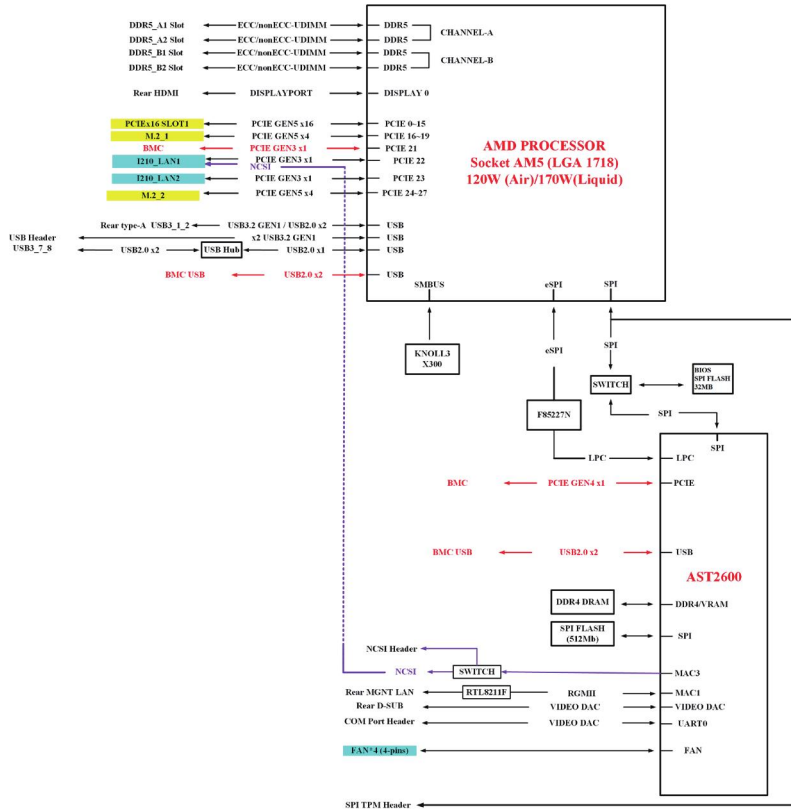
\*\*There is an LED on each side of 1G LAN port. Please refer to the table below for the LAN port LED indications.



1G LAN Port (LAN1, LAN2) 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             |

## 1.7 Block Diagram



# Chapter 2 Installation

This is a deep mini-ITX form factor (6.7" x 8.2", 17.0 cm x 20.8 cm) motherboard. Before installing the motherboard, study the configuration of the chassis to ensure that the motherboard fits into it.



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

## 2.1 Screw Holes

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



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



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

## 2.2 Pre-installation Precautions

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

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

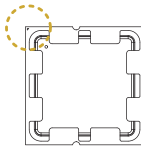
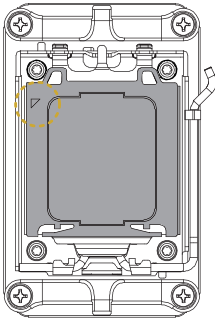


*Before installing or removing any component, ensure that the power is switched off or the power cord is detached from the power supply. Failure to do so may cause severe damage to the motherboard, peripherals, and/or components.*

## 2.3 Installing the CPU

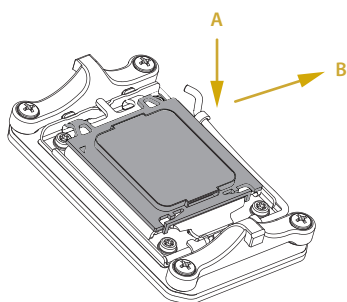


1. Before inserting the CPU into the socket, please check if the **PnP cap** is on the socket, if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.
2. Unplug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

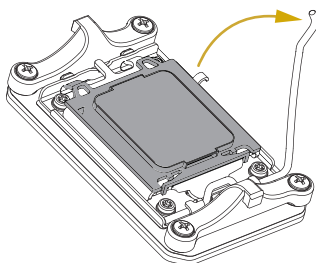


Turn the CPU to the correct orientation before opening the CPU socket cover.

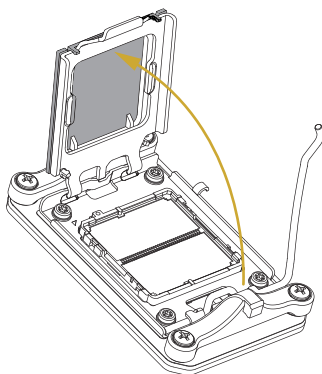
1



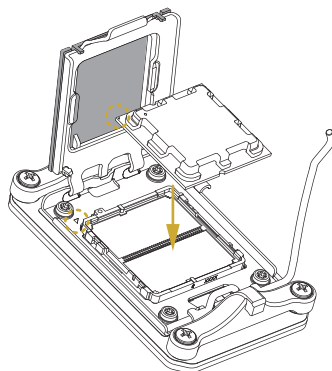
2



3

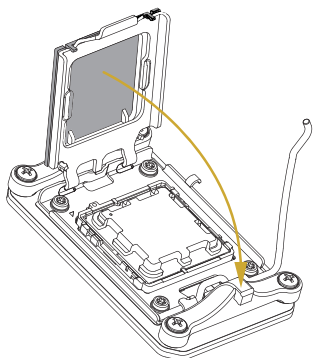


4

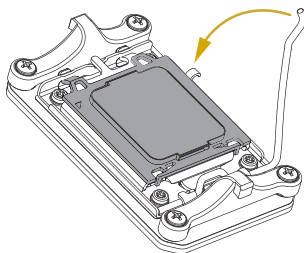


Carefully place the CPU in as flat as possible.  
Do not drop it.

5



6

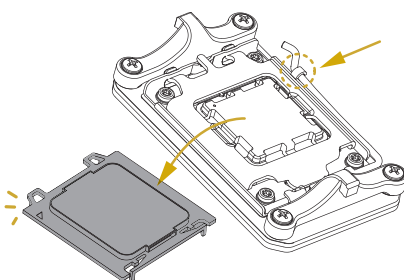


Make sure the CPU is aligned with the socket before locking it into place.

7



Make sure the black cover plate is always in place until it pops off when closing the socket lever.



Please save the cover if the processor is removed. The cover must be placed if wishing to return the motherboard for after service.

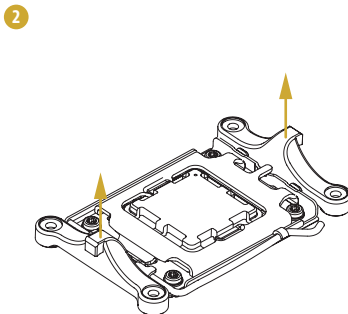
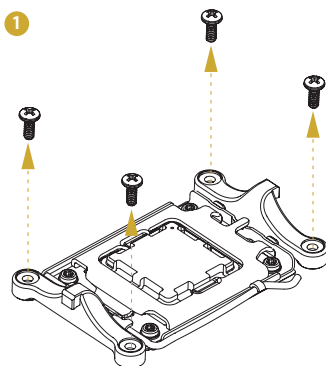
## 2.4 Installing the CPU Fan and Heatsink

After installing the CPU into this motherboard, it is necessary to install a larger heatsink and cooling fan to dissipate heat. It also needs to spray thermal grease between the CPU and the heatsink to improve heat dissipation. Make sure that the CPU and the heatsink are securely fastened and in good contact with each other.

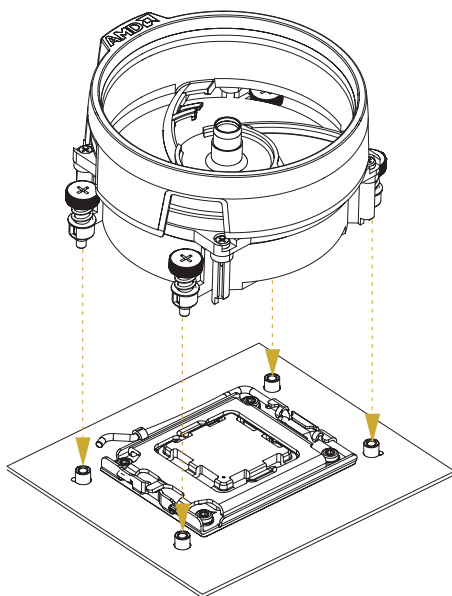


*Please turn off the power or remove the power cord before changing a CPU or heatsink.*

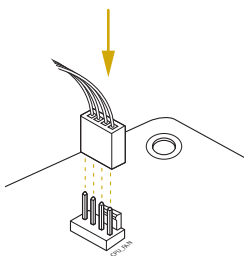
### Installing the CPU Cooler



3



4



## 2.5 Installing Memory Modules (DIMM)

This motherboard provides four 288-pin DDR5 (Double Data Rate 5) DIMM slots, and supports Dual Channel Memory Technology.

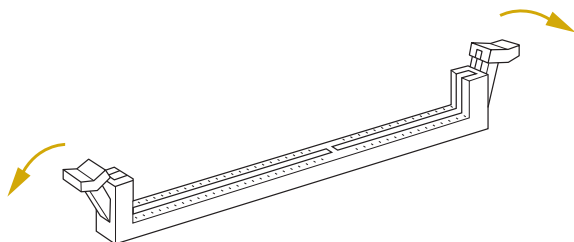


1. For dual channel configuration, install identical (the same brand, speed, size and chip-type) DDR5 DIMM pairs.
2. It is unable to activate Dual Channel Memory Technology with only one or three memory module installed.
3. It is not allowed to install a DDR, DDR2, DDR3 or DDR4 memory module into a DDR5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

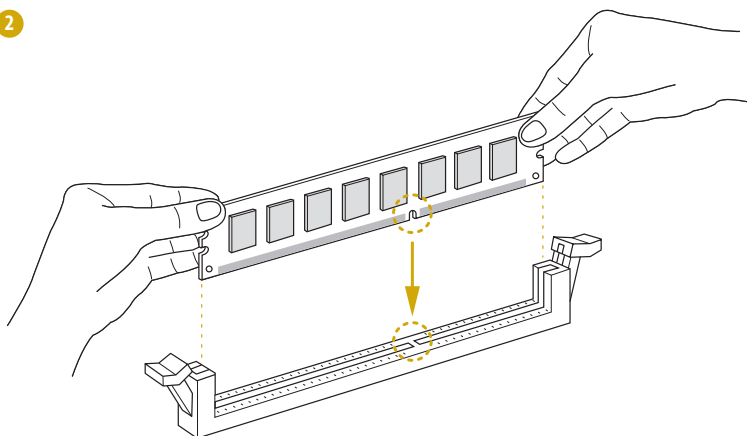
### Recommended Memory Configuration

|         | Priority | A1        | A2        | B1        | B2        |
|---------|----------|-----------|-----------|-----------|-----------|
| 1 DIMM  | 1        | Populated |           |           |           |
|         | 2        |           |           | Populated |           |
| 2 DIMMS | 1        | Populated |           | Populated |           |
|         | 2        | Populated | Populated |           |           |
|         | 3        |           |           | Populated | Populated |
| 4 DIMMS | 1        | Populated | Populated | Populated | Populated |

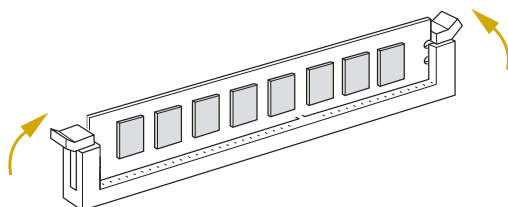
1



2



3



*The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if forcing the DIMM into the slot at incorrect orientation.*

## 2.6 Expansion Slot (PCI Express Slot)

There is 1 PCI Express slot on this motherboard.

PCIe slot:

PCIe7 (PCIe5.0 x16 slot, from CPU) is used for PCI Express x16 lane width cards.

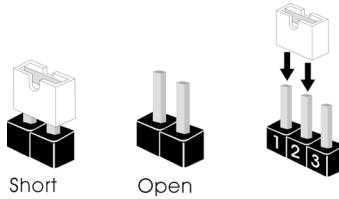
| Slot  | Generation | Mechanical | Electrical | Source |
|-------|------------|------------|------------|--------|
| PCIe7 | 5.0        | x16        | x16        | CPU    |

### Installing an expansion card

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

## 2.7 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.



Chassis ID Jumper  
(3-pin CHASSIS\_ID0)  
(see p.6, No. 26)



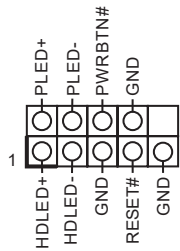
Descriptor Security Over- Not Override  
ride (Default)

# 2.8 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. 17)



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.

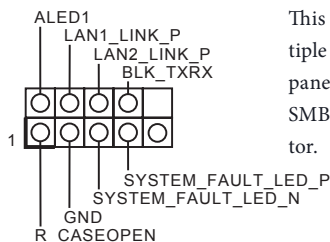
**RESET (Reset Switch):**  
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

**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.

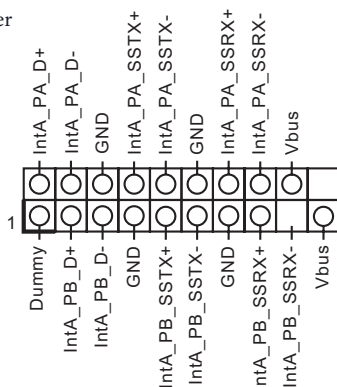
The front panel design may differ by chassis. A front panel module mainly consists of power switch, reset switch, power LED, hard drive activity LED, speaker and etc. When connecting the chassis front panel module to this header, make sure the wire assignments and the pin assignments are matched correctly.

Auxiliary Panel Header  
(9-pin ITX\_AUX PANEL2)  
(see p.6, No. 21)



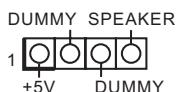
This header supports multiple functions on the front panel, including front panel SMB, internet status indicator.

USB 3.2 Gen1 Header  
(19-pin USB3\_7\_8)  
(see p.6, No. 16)



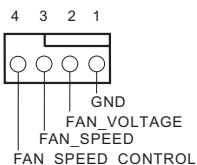
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

Speaker Header  
(4-pin SPEAKER1)  
(see p.6, No. 20)



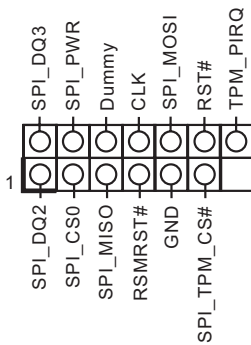
Please connect the chassis speaker to this header.

System Fan Connectors  
(4-pin FAN1)  
(see p.6, No. 6)  
(4-pin FAN2)  
(see p.6, No. 10)  
(4-pin FAN3)  
(see p.6, No. 18)  
(4-pin FAN4)  
(see p.6, No. 2)



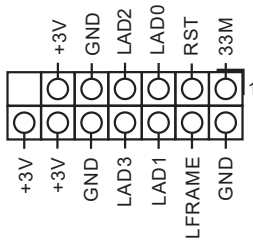
Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

SPI TPM Header  
(13-pin TPM\_BIOS\_PH1)  
(see p.6, No. 15)



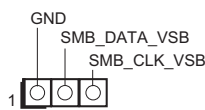
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

80 Debug Port Header  
(13-pin P80\_HD)  
(see p.6, No. 1)



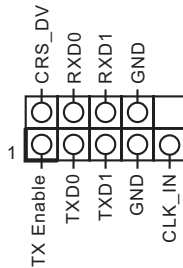
This header is used to connect to a debug display for showing the motherboard debug information.

PWM Configuration Header  
(3-pin PWM\_CFG1)  
(see p.6, No. 22)



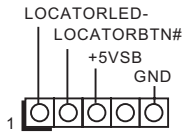
This header is used for PWM configurations.

NCSI Header  
(9-pin NCSI1)  
(see p.6, No.4)



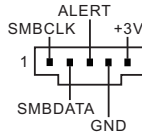
The onboard NCSI header is used for external connections.

UID Button Header  
(4-pin UID\_HD)  
(see p.6, No.27)



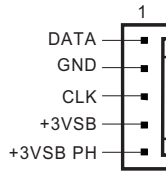
This header is used for UID button feature.

PSU SMBus Header  
(5-pin PSU\_SMB1)  
(see p.6, No.3)



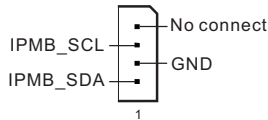
PSU SMBus header monitors the status of the power supply, fan and system temperature.

Baseboard Management  
Controller SMBus Header  
(5-pin BMC\_SMB1)  
(see p.6, No.29)



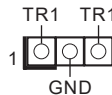
The header is used for the SMBUS device.

Intelligent Platform  
Management Bus Header  
(4-pin IPMB1)  
(see p.6, No.30)



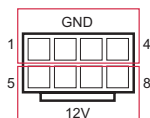
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Thermal Sensor Header  
(3-pin TR1)  
(see p.6, No. 19)



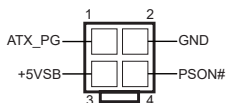
Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which can to monitor its temperature.

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



This motherboard provides two 8-pin and one 4-pin ATX 12V power connectors.

ATX 4-PIN Power Connector  
(4-pin ATX4PIN1)  
(see p.6, No. 9)

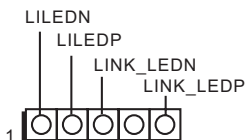


The motherboard provides one 4-pin power/signal connector which is a required input for ATX power source.

When using ATX power, it is necessary to use a 24pin-to-4pin cable to connect between the 24pin power connector of PSU and the ATX4PIN1 connector on the motherboard for power supply and signal communication.

For DC-IN 12V application, it is not necessary to use this ATX 4-PIN power connector.

IPMI LAN LED Header  
(4-pin IPMI\_LED1)  
(see p.6, No. 25)



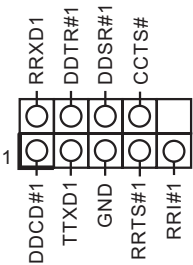
This header is used to connect to the LED indicators on the chassis.

Clear CMOS Pad  
(CLRMOS1)  
(see p.6, No. 5)



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

Serial Port Header  
(9-pin COM1)  
(see p.6, No. 28)



This COM1 header supports  
a serial port module.

## 2.9 Unit Identification purpose LED/Switch

User can use the UID button to locate the server working on from behind a rack of servers.

Unit Identification  
purpose LED/Switch  
(UID1)



When the UID button on the front or rear panel is pressed, the front/rear UID blue LED indicator will be turned on. Press the UID button again to turn off the indicator.

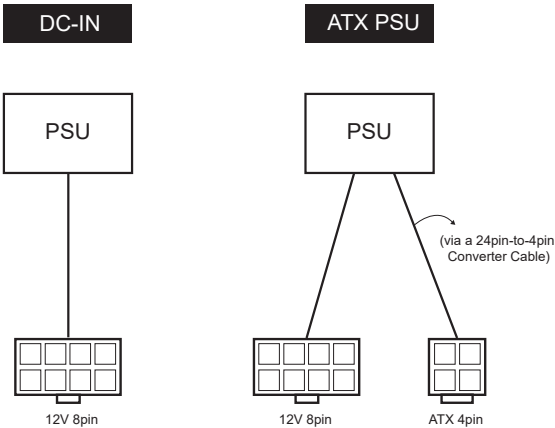


1. Press and hold the UID button for 4 seconds, BMC will trigger an external reset.
2. Press and hold the UID button for 10 seconds, BMC will reset and load default values.

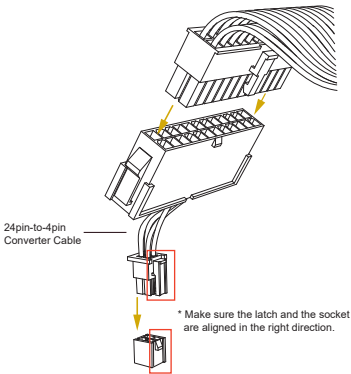
## 2.10 ATX PSU / DC-IN Power Connections

This motherboard supports both +12V DC and ATX power input. Please refer to the table below for the required connections between the motherboard and the power supply.

| Connector | DC-IN | ATX PSU                                                          |
|-----------|-------|------------------------------------------------------------------|
| 12V 8pin  | O     | O                                                                |
| ATX 4pin  | X     | O<br><i>(with the bundled ATX 24pin-to-4pin converter cable)</i> |



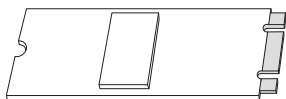
The following diagram illustrates how to connect the bundled ATX 24pin-to-4pin converter cable.



## 2.11 M.2 SSD Module Installation Guide

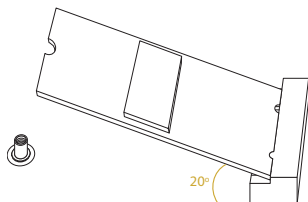
The M.2 Socket (M2\_1/M2\_2, Key M) supports type 2280 M.2 PCI Express module up to Gen4 x4 (16GT/s x4).

### Installing the M.2 SSD Module



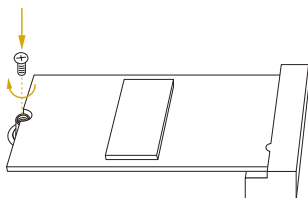
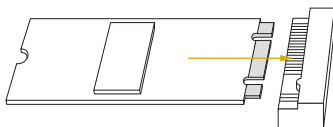
#### Step 1

Prepare a M.2 SSD module and the screw.



#### Step 2

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 3

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

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



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

#### 3.1.1 UEFI Menu Bar

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

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

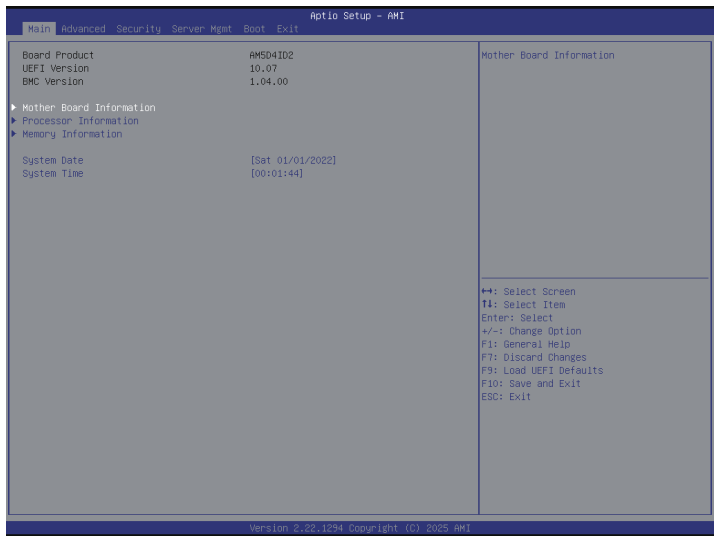
### 3.1.2 Navigation Keys

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

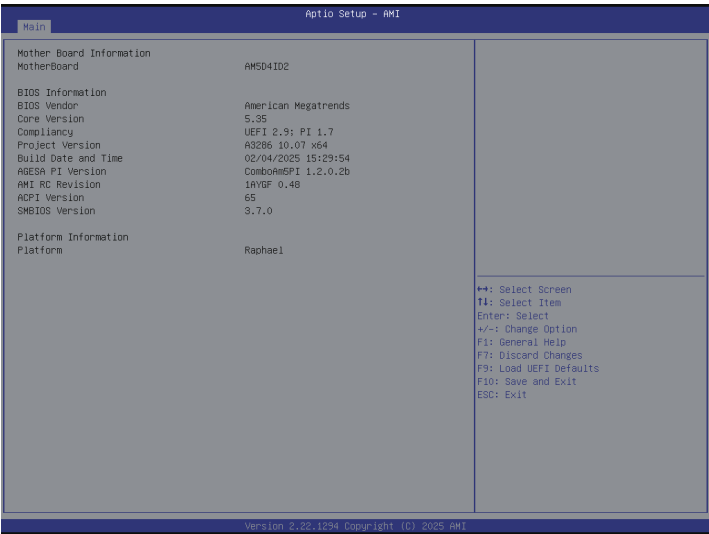
Once entering the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows user to set the system time and date.



*Because the UEFI software is constantly being updated, the following UEFI setup screens and descriptions for reference purpose only, and may vary from the latest BIOS and do not exactly match what seeing on the screen.*

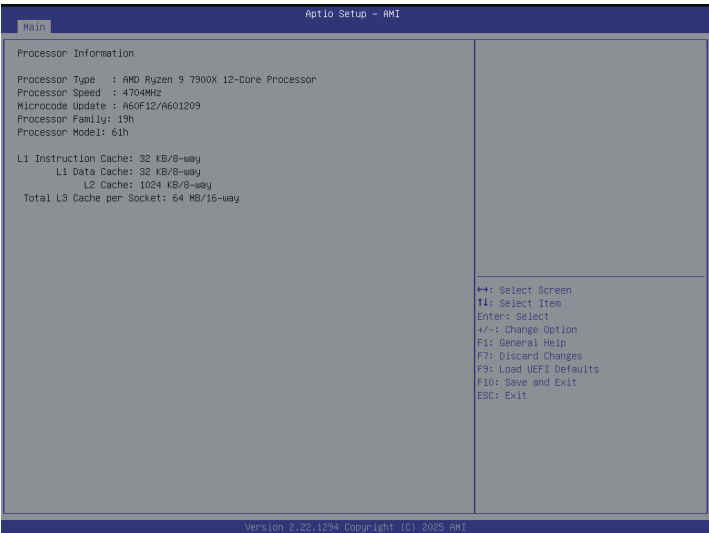
### 3.2.1 Motherboard Information

Press [Enter] to view the information of the motherboard.



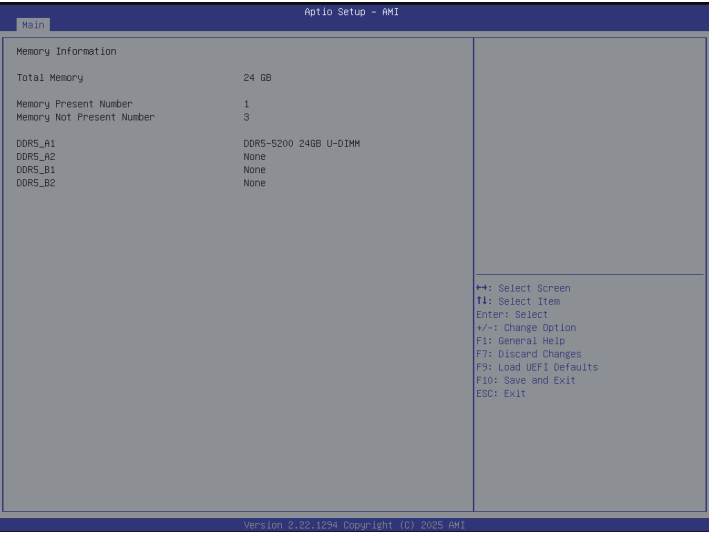
### 3.2.2 Processor Information

Press [Enter] to view the information of the processor.



### 3.2.3 Memory Information

Press [Enter] to view the information of the memory.

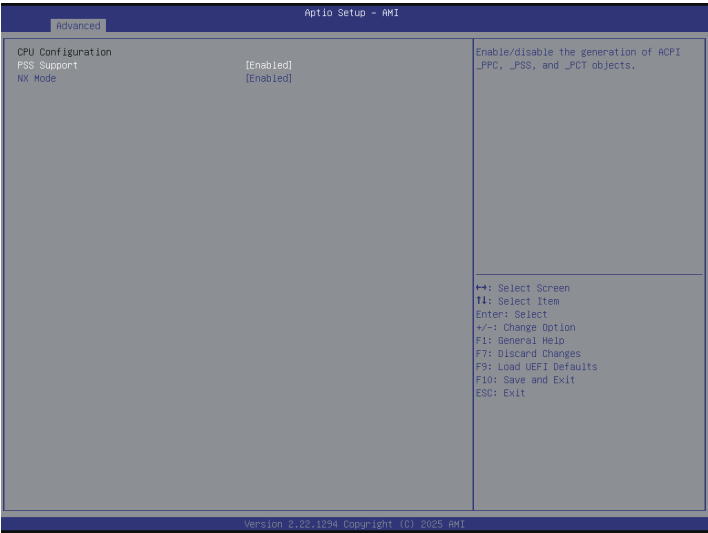


In this section, set the configurations for the following items: CPU Configuration, Chipset Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, PCI Subsystem Settings, AMD CBS, Trusted Computing, Network Stack Configuration, Driver Health, Tls Auth Configuration, AMD PBS, AMD Overclocking, Intel(R) Network Connection, VLAN Configuration and Instant Flash.



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

### 3.3.1 CPU Configuration



#### PSS Support

Use this item to enable or disable the generation of ACPI \_PPC, \_PSS, and \_PCT objects.

#### NX Mode

Use this item to enable or disable No-execute page protection Function.

### 3.3.2 Chipset Configuration



#### I210 Lan1/Lan2

Use this to enable or disable the Onboard LAN1/LAN2 function.

#### Onboard VGA

Use this to enable or disable the Onboard VGA function.

#### AMD PCIE Link Width

Displays PCIE Link Width information.

#### PCIE7 Link Width

Select PCIE7 Link Width, the default value is [x16].

#### AMD PCIE Link Speed PCI-E ASPM Support

Use this item to configure PCIE Link Speed. The default value is [Auto].

#### PCIE7 Link Speed

Select PCIE7 Link Speed.

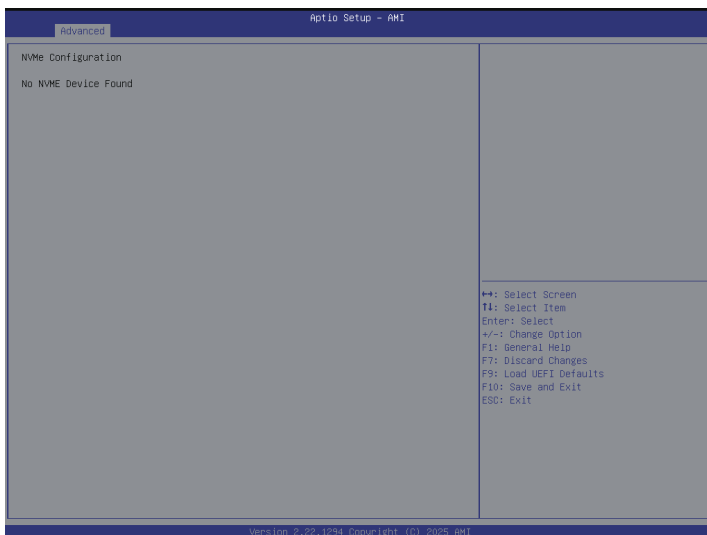
#### M2\_1 Link Speed

Select M2\_1 Link Speed.

#### M2\_2 Link Speed

Select M2\_2 Link Speed.

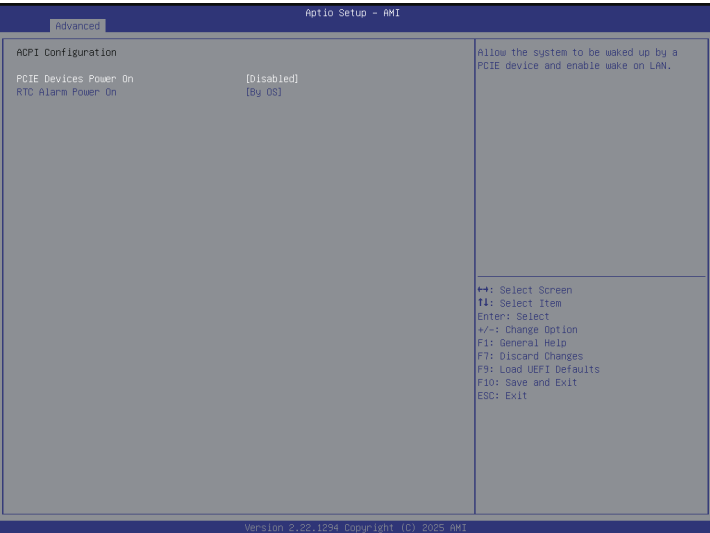
### 3.3.3 NVMe Configuration



#### NVMe Configuration

The NVMe Configuration displays the NVMe controller and Drive information.

### 3.3.4 ACPI Configuration



#### PCIE Devices Power On

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

#### RTC Alarm Power On

This Allows the system to be waked up by the 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.

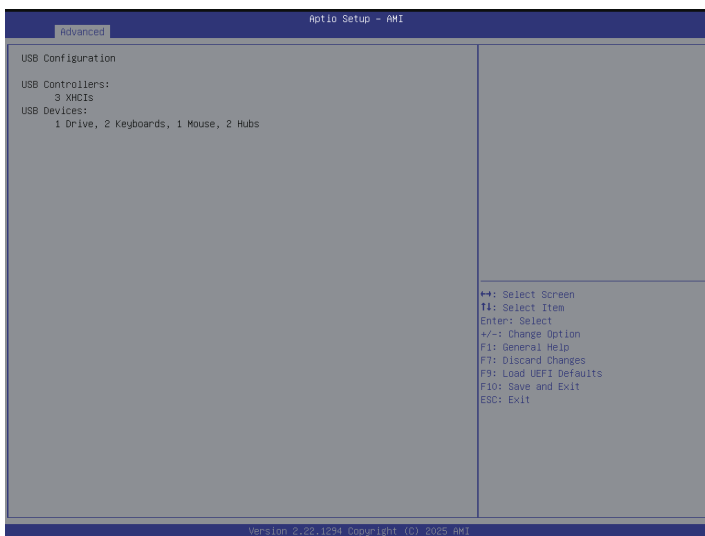
#### RTC Alarm Minute

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.

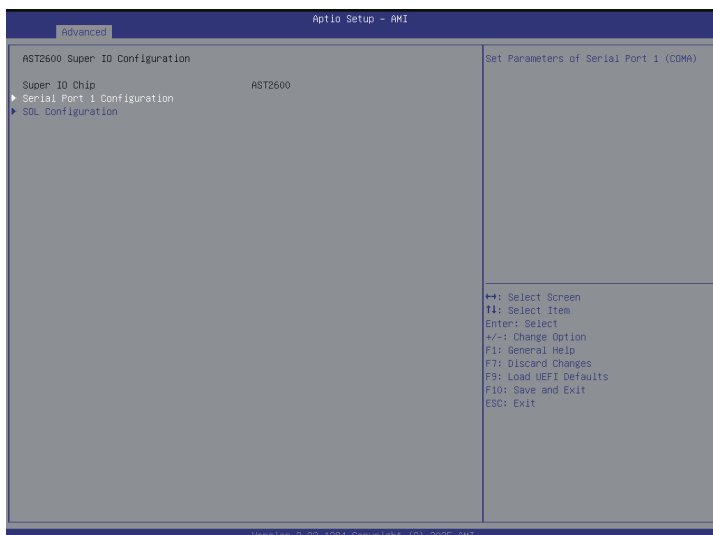
### 3.3.5 USB Configuration



#### USB Configuration

The USB Configuration displays the USB Controllers and USB Device informations.

## 3.3.6 Super IO Configuration



### Serial Port 1 Configuration

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

#### Serial Port

Use this item to enable or disable the serial port.

#### Serial Port Address

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

### SOL Configuration

Use this item to set parameters of SOL.

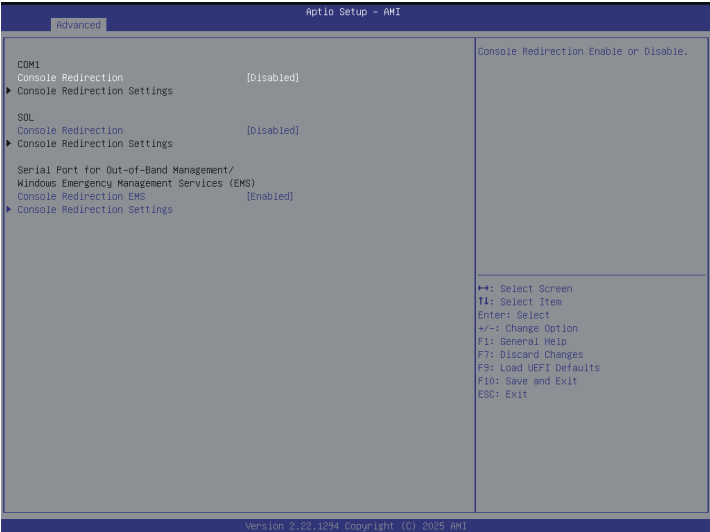
#### Serial Port

Use this item to enable or disable the serial port (COM).

#### Serial Port Address

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

### 3.3.7 Serial Port Console Redirection



#### COM1 / SOL

#### Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, it allows user to 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. If this item is set to Enabled, it allows user to 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].

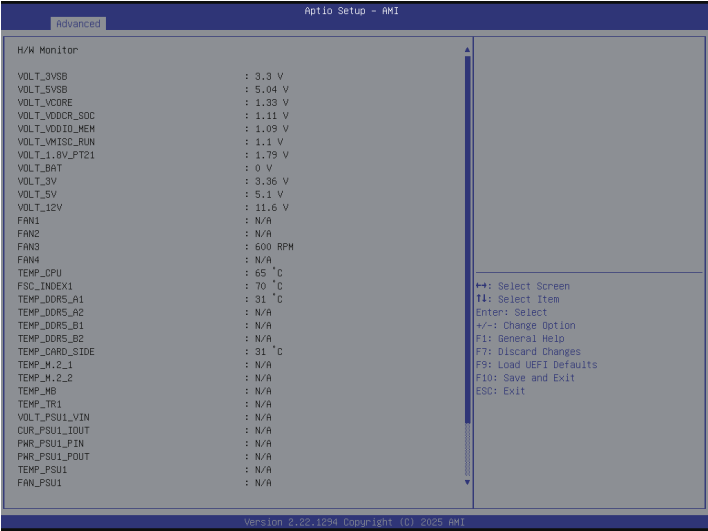
### Data Bits EMS

### Parity EMS

### Stop Bits EMS

### 3.3.8 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.



### 3.3.9 PCI Subsystem Settings



#### Above 4G Decoding

Use this item to enable or disable 64bit capable Devices to be decoded in Above 4G Address Space (only if the system supports 64 bit PCI decoding).

#### Re-Size BAR Support

If system has Resizable BAR capable PCIe Devices, this option Enables/Disables Resizable BAR support.

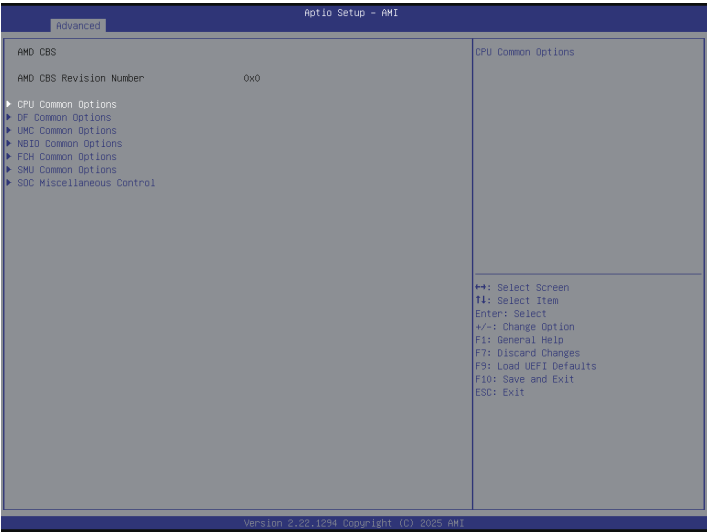
#### SR-IOV Support

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

#### BME DMA Mitigation

Re-enable Bus Master Attribute disabled during Pci enumeration for PCI Bridges after SMM Locked.

### 3.3.10 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.

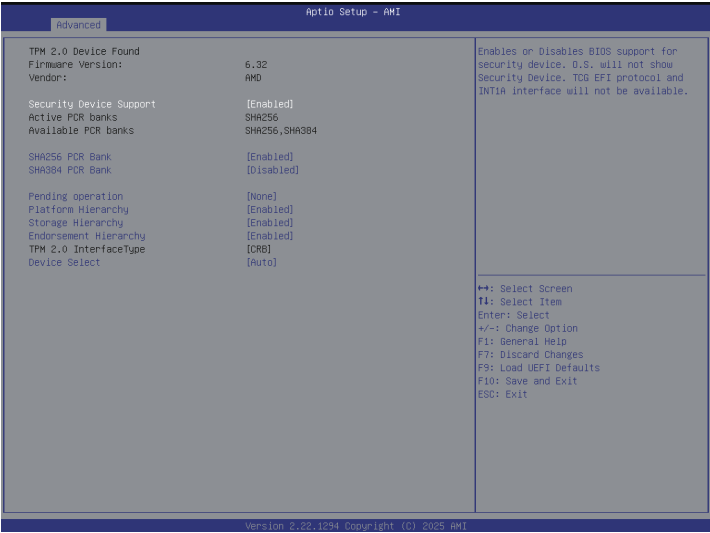
#### SMU Common Options

Use this item to configure SMU common options.

#### SOC Miscellaneous Control

Use this item to configure Soc Miscellaneous control options.

3.3.11 Trusted Computing



NOTE: Options vary depending on the version of the connected TPM module.

Security Device Support

Enable to activate Trusted Platform Module (TPM) security for the hard diskdrives.

Active PCR banks

This item displays active PCR Banks.

Available PCR Banks

This item displays available PCR Banks.

SHA256 PCR Bank

Use this item to enable or disable SHA256 PCR Bank

SHA384 PCR Bank

Use this item to enable or disable SHA384 PCR Bank.

Pending Operation

Schedule an Operation for the Security Device.

NOTE: The computer will reboot during restart in order to change State of the Device.

Platform Hierarchy

Use this item to enable or disable Platform Hierarchy.

## Storage Hierarchy

Use this item to enable or disable Storage Hierarchy.

## Endorsement Hierarchy

Use this item to enable or disable Endorsement Hierarchy.

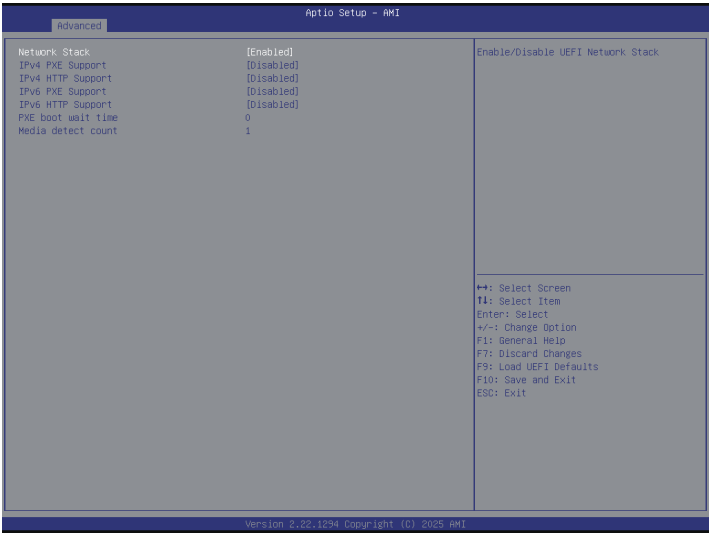
## TPM 2.0 InterfaceType

Select the Communication Interface to TPM 2.0 Device

## Device Select

Use this item to select the TPM device to be supported. TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices. If TPM 2.0 devices are not found, TPM 1.2 devices will be enumerated.

### 3.3.12 Network Stack Configuration



#### Network Stack

Enable UEFI network stack can prevents user from performing single-user network boots and network installation. If disabled, the host does not use the network interface.

#### IPv4 PXE Support

Enable IPv4 PXE Boot support. If disabled, IPv4 PXE Boot Option is not supported.

#### IPv4 HTTP Support

Enable IPv4 HTTP Boot support. If disabled, IPv4 HTTP Boot Option is not supported.

#### IPv6 PXE Support

Enable IPv6 PXE Boot support. If disabled, IPv6 PXE Boot Option is not supported.

#### IPv6 HTTP Support

Enable IPv6 HTTP Boot support. If disabled, IPv6 HTTP Boot Option is not supported.

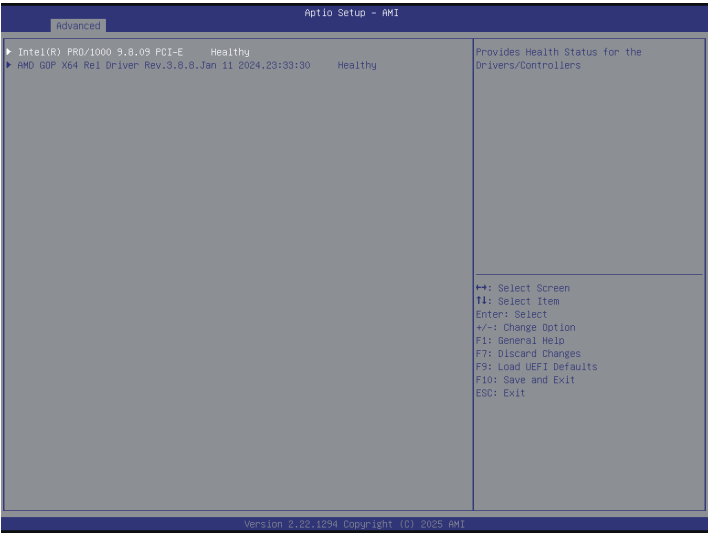
#### PXE Boot Wait Time

Specifies the wait time and press the ESC key to abort the PXE boot.

#### Media Detect Count

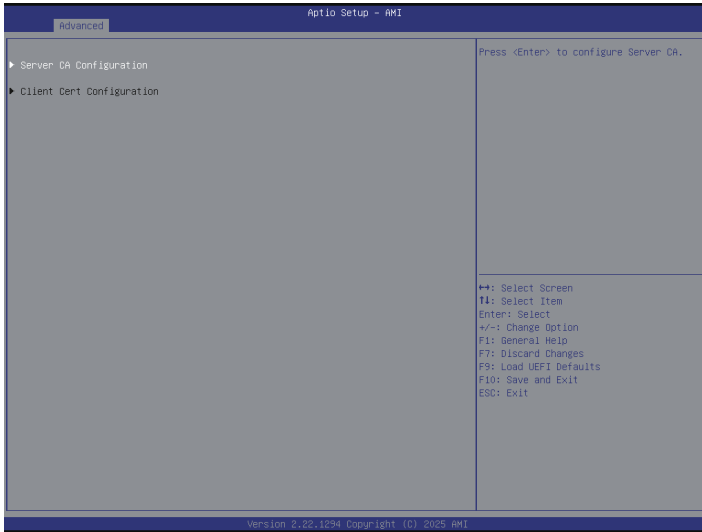
Specifies the number of times the presence of physical storage device are verified on a system reset or power cycle.

### 3.3.13 Driver Health



|                                                       |         |
|-------------------------------------------------------|---------|
| Intel (R) PRO/1000 9.8.09 PCI-E                       | Healthy |
| Provides Health Status for the Drivers/Controllers.   |         |
| AMD GOP X64 Rel Driver Rev.3.8.8.Jan 11 2024.23:33:30 | Healthy |
| Provides Health Status for the Drivers/Controllers.   |         |

### 3.3.14 Tls Auth Configuration



#### Server CA Configuration

Press <Enter> to configure Server CA.

#### Enroll Cert

Press <Enter> to enroll cert.

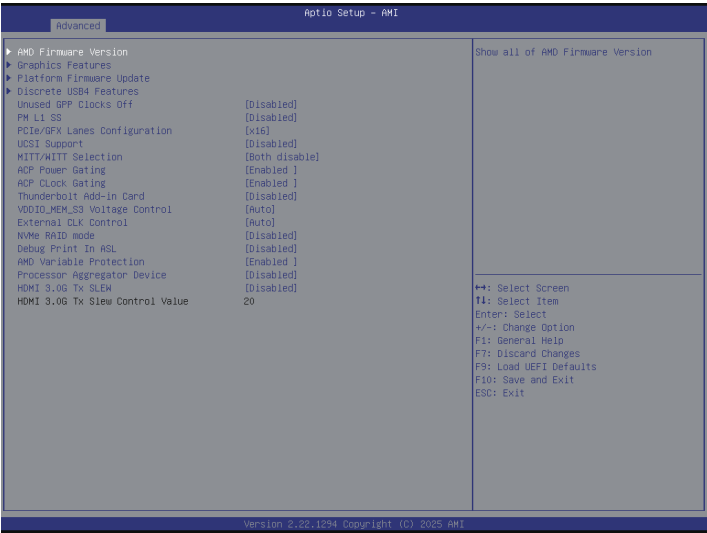
#### Delete Cert

Press <Enter> to delete cert.

#### Client Cert Configuration

Press <Enter> to configure Client Cert.

### 3.3.15 AMD PBS



#### AMD Firmware Version

Show all of AMD Firmware Version.

#### Graphics Features

Graphics Features - HG, DGPU Features, BOMAC0.

#### Platform Firmware Update

Use this item to process Platform Firmware Update

#### Discrete USB4 Features

Discrete USB4 Features - PCIe resource, D3 support, Native USB4 suport and so on.

#### Unused GPP Clocks Off

Turn Unused GPP Clocks Off.

#### Clock Power Management (CLKREQ#)

Enable or disable CLKREQ#.

#### PM L1 SS

Enable for PM L1 SS and ASPM L1 SS.

## PCIe/GFX Lanes Configuration

Use this item to configure J10 Slot PCIe Lanes.

## UCSI Support

Enable for UCSI (USB Type-C Connector System Software Interface).

## MITT/WITT Selection

Use this item to configure MITT/WITT Selection

## ACP Power Gating

Use this item to enable or disable ACP Power Gating.

## ACP CLock Gating

Use this item to enable or disable ACP CLOCK Gating.

## Thunderbolt Add-in Card

Enable Thunderbolt AR/TR Add-in Card Support.

## Thunderbolt Host Chipset

Use this item to select Thunderbolt Host Card Chipset Name.

## TR HR FPB Capability

Use this item to enable or disable Titan Ridge Host Card PCIe FPB Capability.

## Thunderbolt Security Level

Use this item to select Thunderbolt Security Level.

## Thunderbolt Force PWR

Enable Thunderbolt Force PWR.

## Thunderbolt Boot From TB

Do Thunderbolt (Boot On) Command Before or After PCI Enumeration.

## Thunderbolt Boot From USB

Do Thunderbolt (USB On) Command Before or After PCI Enumeration.

## Thunderbolt Assign Resource

Assign Thunderbolt Resource Before or After PCI Enumeration.

## Thunderbolt MMIO Resource

Use this item to select Thunderbolt PCIe MMIO Resource.

## Thunderbolt in SLOT

Use this item to select Thunderbolt Slot.

## Legacy/Native RTD3

Use this item to select Thunderbolt Legacy/Native/RTD3 Mode.

## Thunderbolt L1SS Support

Use this item to select Thunderbolt PCIE L1SS Support.

## Thunderbolt Wake Up Command

Use this item to select Thunderbolt Wake Up Command.

## VDDIO\_MEM\_S3 Voltage Control

Use this item to configure voltage control for VDDIO\_MEM\_S3 with Auto or Manual selections.

## External CLK Control

Use the item to configure External CLK Control with Auto (100Mhz CGPLL generated by default) / eCLK0 (EXT\_GPP0\_SRC) or GPP1 (External input thru GPP1).



*Switch APU clocks source mapping will get stuck immediately (post code: B0005A5A), manual press cold reset button to bypass the stuck.*

## NVMe RAID mode

Use this item to enable or disable NVMe RAID mode. Please setting the 'PCIe/GFX Lanes Configuration' item according to the RAID configuration.

## Debug Print In ASL

Enable Debug Print In ASL.

## AMD Variable Protection

Enable to protect some AMD specific variables for CBS, PBS and ADD. If locked, some utilities like RU that modify variable at runtime do not work.

## Processor Aggregator Device

Enable or disable the Processor Aggregator Device.

## Core Count Control

Enable or disable the Core Count Control.

### Core Count SW\_SCI\_GFE\_ID

Use this item to select Core Count SW\_SCI\_GFE\_ID range:0~31, default:25.

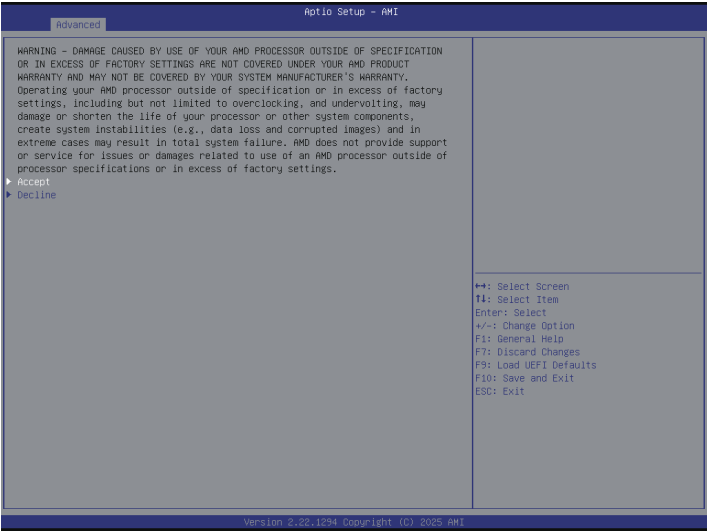
### HDMI 3.0G Tx SLEW

Enable or disable the HDMI 3.0G Tx SLEM.

### HDMI 3.0G Tx Slew Control Value

Configure the HDMI 3.0G Tx Slew Control Value (0~255).

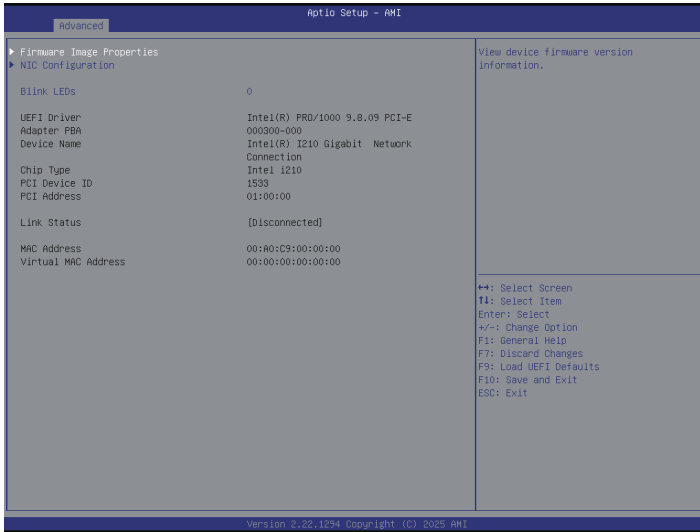
### 3.3.16 AMD Overclocking



The AMD Overclocking menu accesses options for configuring CPU frequency and voltage.

### 3.3.17 Intel (R) Network Connection

Configure Gigabit Ethernet device parameters.



#### Firmware Image Properties

Select this item to view the device firmware version information.

#### NIC Configuration

Click this item to configure the network device port.

#### Link Speed

Specifies the port speed used for the selected boot protocol.

#### Wake On LAN

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

#### Blink LEDs

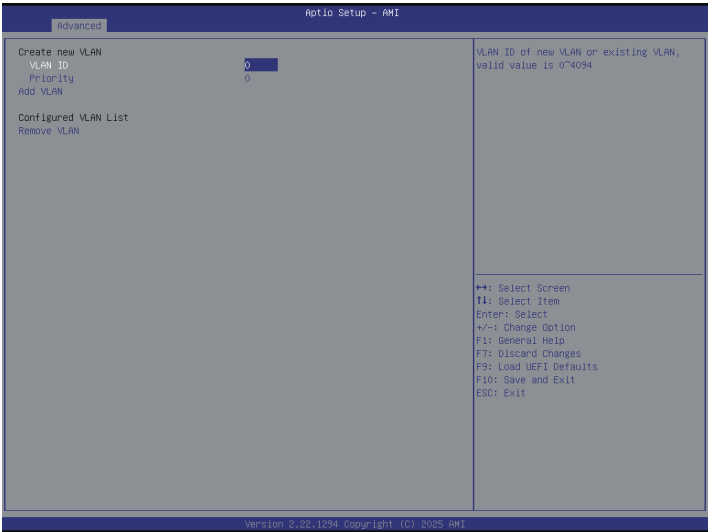
Blink LEDs for the specified duration (up to 15 seconds)

---

## Port Configuration Information

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

### 3.3.18 VLAN Configuration



#### Enter Configuration Menu

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

#### VLAN ID

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

#### Priority

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

#### Add VLAN

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

#### Remove VLAN

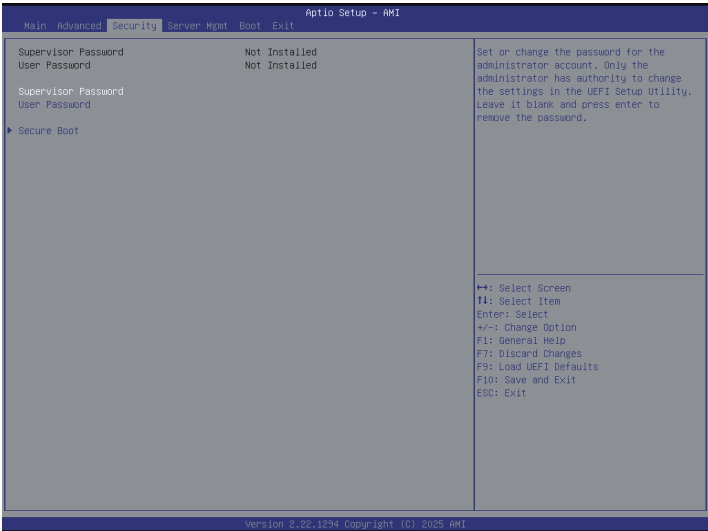
Use this item to remove selected VLANS.

### 3.3.19 Instant Flash

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

### 3.4 Security

In this section, set or change the supervisor/user password for the system. For the user password, it also allows 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

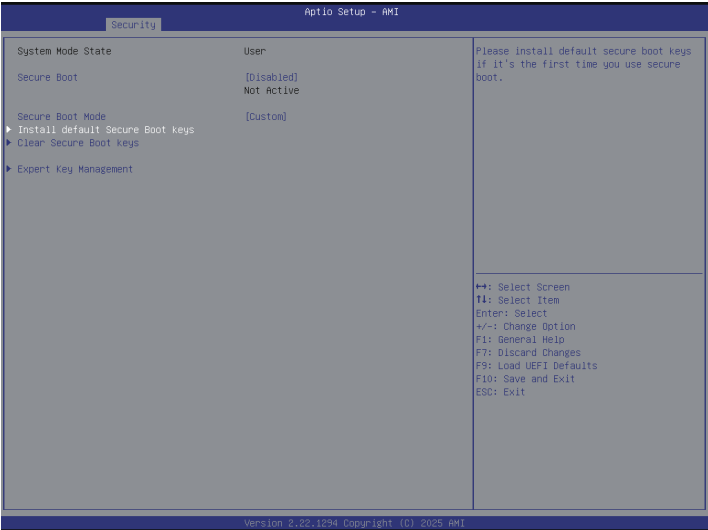
Use this to Enable/Disable Secure Boot Control. The default value is [Enabled]. Enable to support Windows Server 2012 R2 or later versions Secure Boot.

#### Secure Boot Mode

Secure Boot mode options: Standard/Custom. In Custom mode, Secure Boot Policy variables can be configured without authentication.

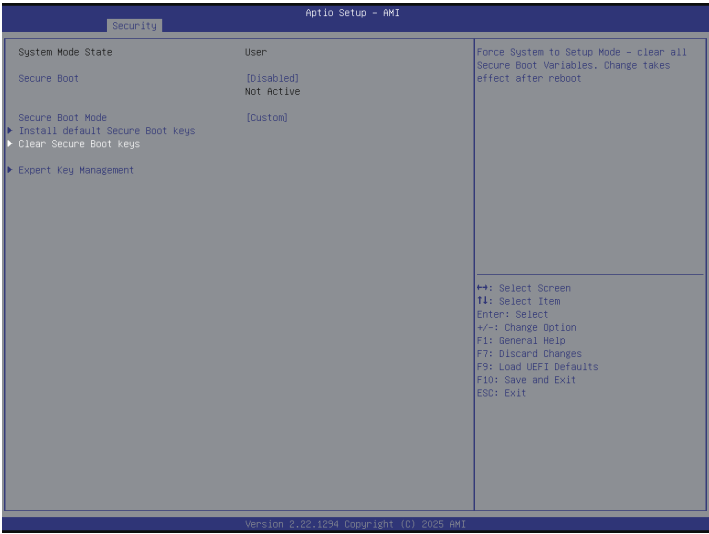
### 3.4.1 Install Default Secure Boot Keys

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



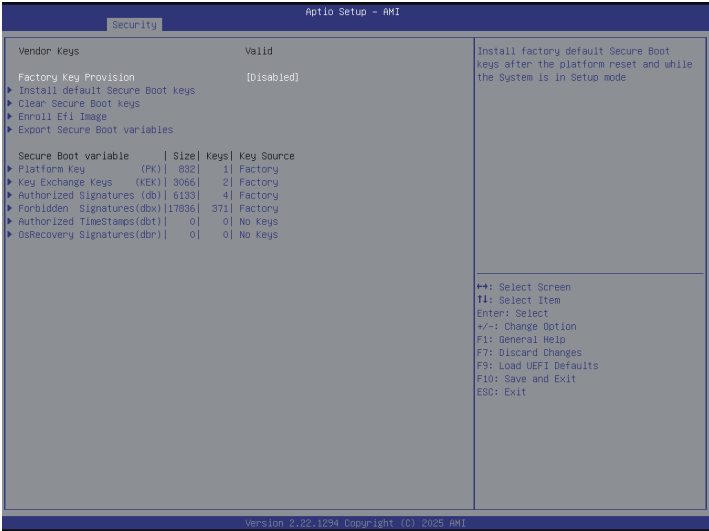
### 3.4.2 Clear Secure Boot Keys

Force System to Setup Mode - clear all Secure Boot Variables. Change takes effect after reboot.



### 3.4.3 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

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

#### 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)

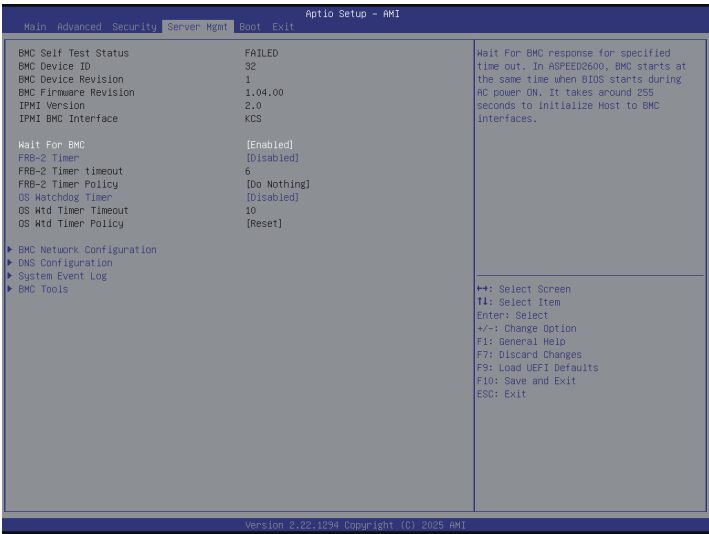
d) EFI\_CERT\_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

### 3.5 Server Mgmt



#### Wait For BMC

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

#### FRB-2 Timer

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

#### FRB-2 Timer Timeout

Select this item 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

Select 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

Select this item to configure BMC network parameters.

## DNS Configuration

Select this item to configure DNS parameters.

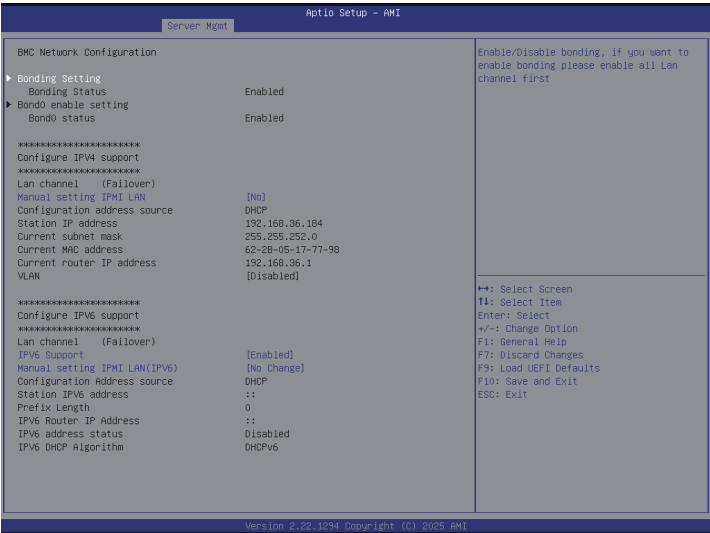
## System Event Log

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

## BMC Tools

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

### 3.5.1 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. 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.



When [DHCP] or [Static] is selected, do NOT modify the BMC network settings on the IPMI web page.



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/ipmi.asp>

## VLAN

Enabled or disabled Virtual Local Area Network. Select [Enabled] to configure VLAN ID and VLAN priority.

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.

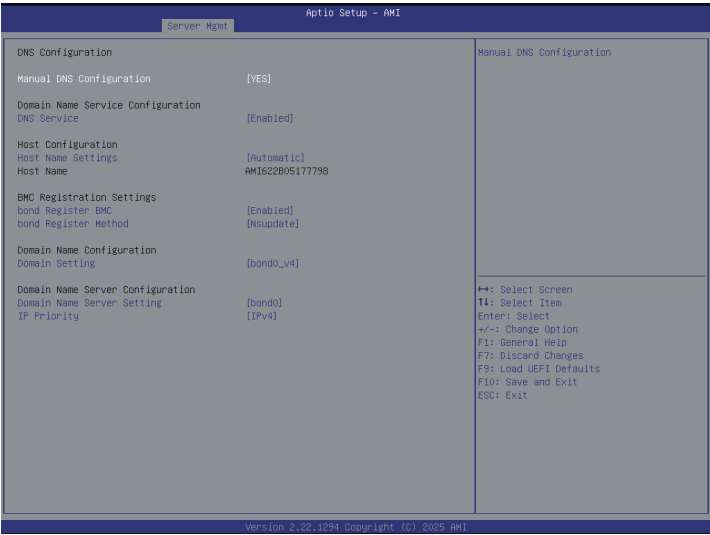
## IPV6 Support

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.

### 3.5.2 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.

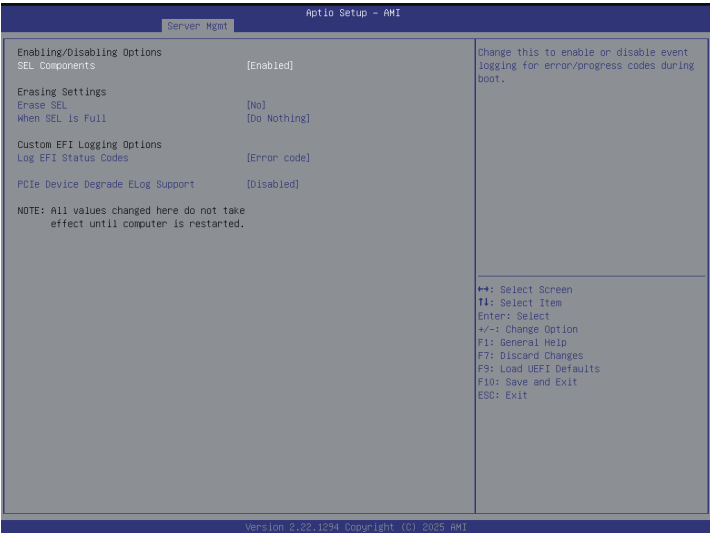
## Domain Name Server Setting

This item supports Manual and Bond0 DNS Server Settings.

## IP Priority

This item supports IPV4 and IPV6 IP Priority.

### 3.5.3 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.

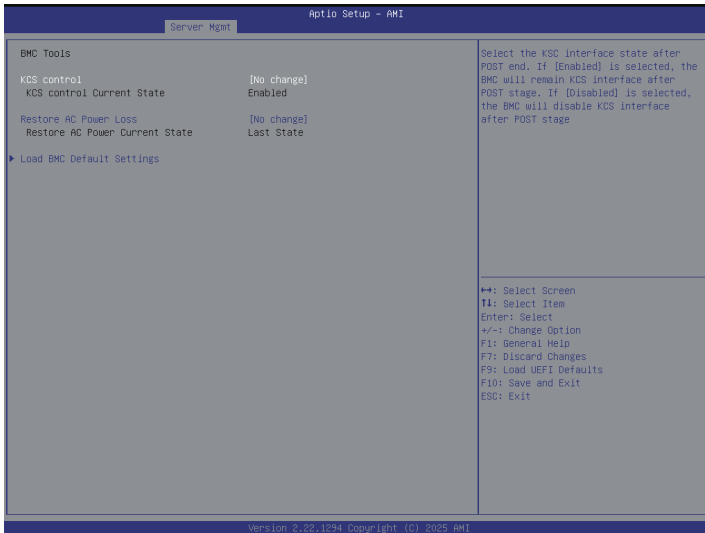
#### Log EFI Status Codes

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.

### 3.5.4 BMC Tools



#### KCS control

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

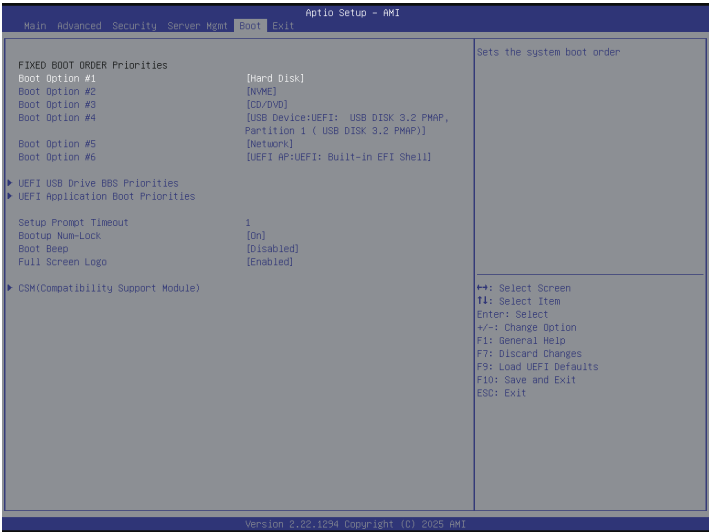
Use this item to load BMC default settings.



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

### 3.6 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 item to set the system boot order.

#### UEFI USB Drive BBS Priorities

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

#### UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

#### Setup Prompt Timeout

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

#### Bootup Num-Lock

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

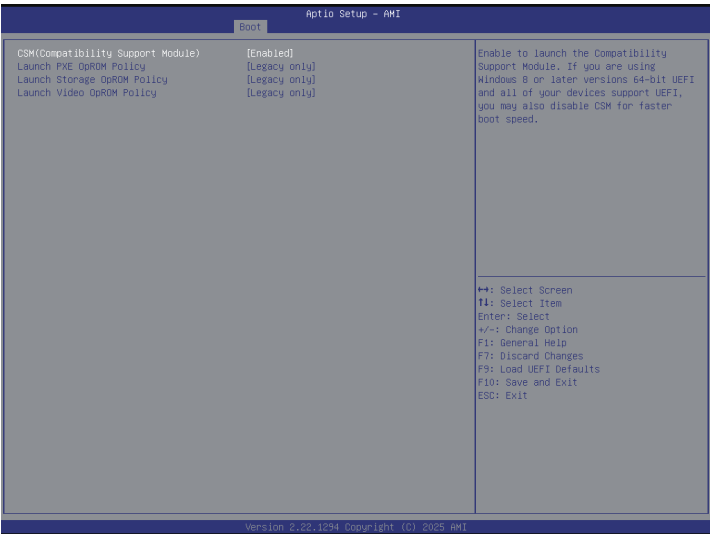
#### Boot Beep

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 messages.

### 3.6.1 CSM Parameters



#### CSM (Compatibility Support Module)

Enable to launch the Compatibility Support Module. If using Windows 8 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.

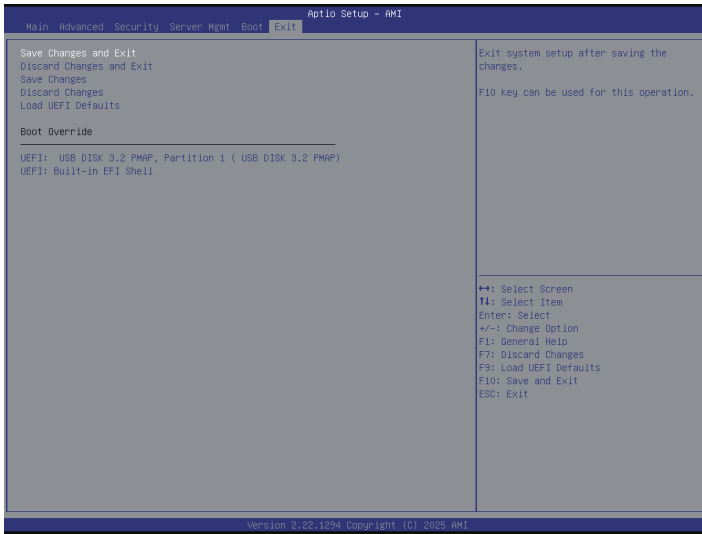
#### Launch Storage OpROM Policy

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.

## 3.7 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.

### Boot Override

This item displays the available devices. Select an item to start booting from the selected device.

## Chapter 4 Software Support

After all the hardware has been installed, it suggests 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.

*\* Please download the Intel® Rapid Storage Technology driver from the ASRock Rack's website ([www.asrockrack.com](http://www.asrockrack.com)) to the USB drive while installing OS in SATA RAID mode.*

### 4.2 Download and Install Software Drivers

This motherboard supports various Microsoft® Windows® compliant drivers. Please download the required drivers from our 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 motherboard damages.*

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 ECC/non-ECC UDIMM modules.
3. If having installed more than one DIMM modules, they 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 problem on ASRock Rack's FAQ page:  
<http://www.asrockrack.com/support>

## 5.2 Technical Support Procedures

If having tried the troubleshooting procedures mentioned above and 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 our 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

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

### **ASRock Rack Incorporation**

e-mail: [ASRockRack\\_sales@asrockrack.com](mailto:ASRockRack_sales@asrockrack.com)

### **ASRock Rack EUROPE B.V.**

Bijsterhuizen 11-11

6546 AR Nijmegen

The Netherlands

Phone: +31-24-345-44-33

### **ASRock Rack America, Inc.**

13848 Magnolia Ave, Chino, CA91710 U.S.A.

Phone: +1-909-590-8308

Fax: +1-909-590-1026