HORUS560

4U 19” Military High-Performance U.2 NVMe RAID Storage Server

User’s Manual

Revision Date: Jul.23.2026

Safety Information

Electrical safety

- To prevent electrical shock hazard, disconnect the power cable from the electrical outlet before relocating the system.
- When adding or removing devices to or from the system, ensure that the power cables for the devices are unplugged before the signal cables are connected. If possible, disconnect all power cables from the existing system before you add a device.
- Before connecting or removing signal cables from the motherboard, ensure that all power cables are unplugged.
- Seek professional assistance before using an adapter or extension cord. These devices could interrupt the grounding circuit.
- Make sure that your power supply is set to the correct voltage in your area.
- If you are not sure about the voltage of the electrical outlet you are using, contact your local power company.
- If the power supply is broken, do not try to fix it by yourself. Contact a qualified service technician or your local distributor.

Operation safety

- Before installing the motherboard and adding devices on it, carefully read all the manuals that came with the package.
- Before using the product, make sure all cables are correctly connected and the power cables are not damaged. If you detect any damage, contact your dealer immediately.
- To avoid short circuits, keep paper clips, screws, and staples away from connectors, slots, sockets and circuitry.
- Avoid dust, humidity, and temperature extremes. Do not place the product in any area where it may become wet.
- Place the product on a stable surface.
- If you encounter any technical problems with the product, contact your local distributor

Statement

Revision History

Revision	Date (yyyy/mm/dd)	Changes
Verision 1.0	2026/6/9	Initial release at HORUS560-PS
Verision 1.1	2026/7/23	Modify System Picture

Packing list

■	HORUS560-PS Rugged 4U 19" Server
■	CD (Driver)
■	Hinge & Screw

Ordering information

Model Number	Description
HOURS560	4U 19" Military High-Performance Server powered by Intel Xeon 6505P with 128GB DDR5 RDIMM. Featuring 8x swappable 2.5" NVMe U.2 RAID bays, 1x SATAIII swappable tray, and dual 10GbE ports. Operation temp. 0 ~ 40°C, AC 100~240V power input, RoHS

If any of the above items is damaged or missing, please contact your local distributor.

Table Contents

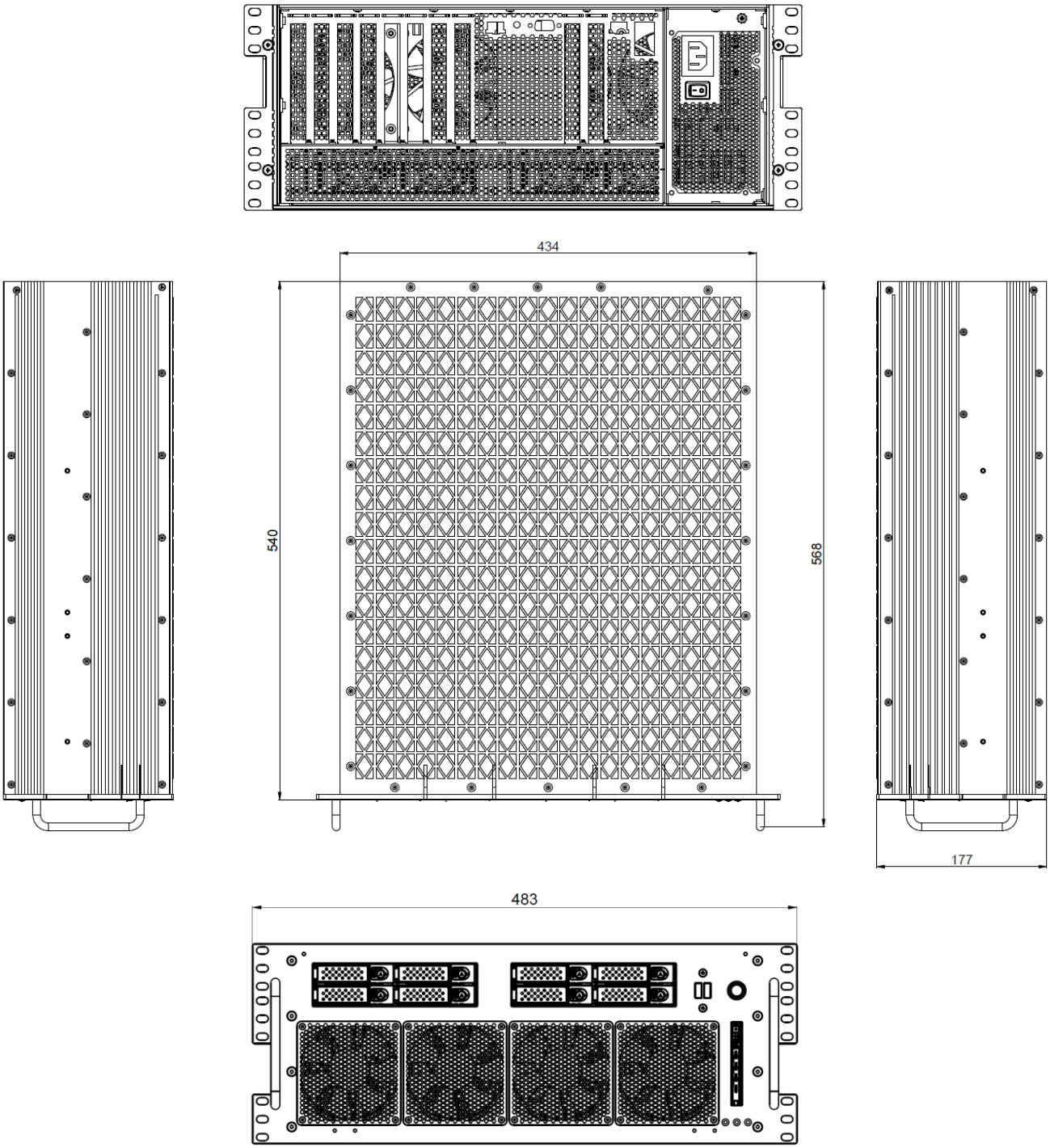
Chapter 1: Product Introduction

1.1 Key Features

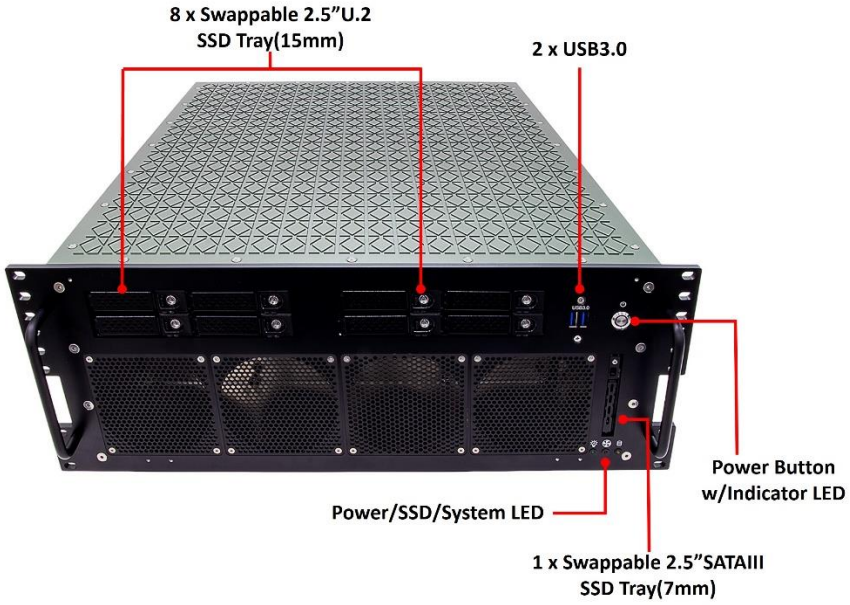
System	
High Performance Processor	Intel® Xeon® 6505P Processor i (Frequency 2.2GHz, Turbo Boost Frequency up to 4.1GHz), 12-Core, 24-Thread Support, 48MB Smart Cache
Chipset	System on chip
Memory type	128GB DDR5 RDIMM 5600 MHz
BIOS	AMI UEFI BIOS 512Mb SPI Flash ROM
TPM	1 x TPM 2.0
Display	
VGA	Resolution up to1920 x 1200 @60Hz
Storage	
NVMe U.2	8 x 2.5" NVMe U.2 Swappable (RAID 0/1/5/10)
SATAIII	1 x 2.5" SATA Swappable
Ethernet	
Ethernet	2 x Intel®X710-AT2 LAN
Server Management	
BMC Controller	ASPEED AST2600
IPMI Dedicated GLAN	1 x Realtek RTL8211F for dedicated management GLAN
Front I/O	
NVMe U.2 Tray	8 x NVMe U.2 Hot Swappable Tray (2.5" 15mm)
SATAIII Tray	1 x SATAIII Swappable Tray (2.5" 7mm)
USB	2 x USB3.0
Indicator LED	3 x SSD LED
Button	1 x Power Switch with Dedicated LED
FAN	4 x FAN Cooler w/Fan Filter
Rear I/O	
Ethernet	2 x 10GbE
IPMI	1 x IPMI w/GLAN

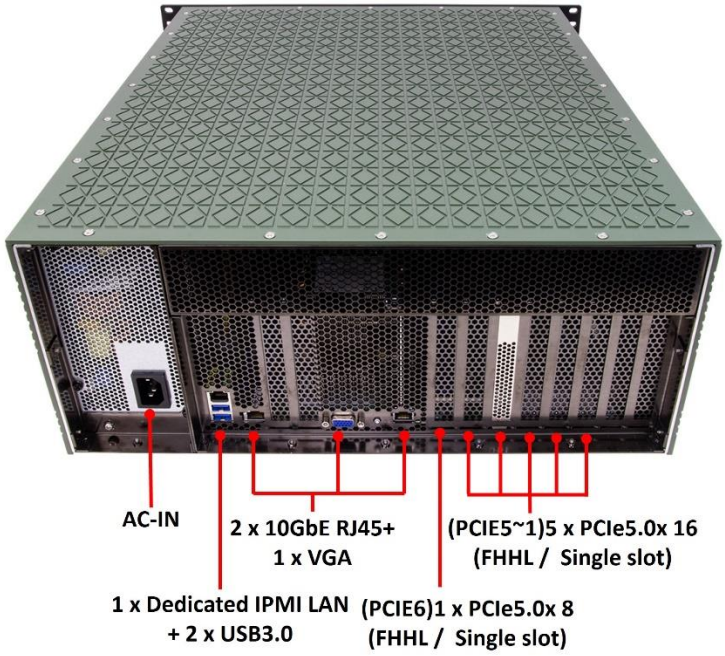
VGA	1 x VGA
USB	2 x USB3.0
Power Requirement	
Power Input	100V~240V AC-IN 1200W ATX PSU
Operating System	
Operating System	Microsoft® Windows - Server 2022/2025 (64 bit) Linux - Red Hat Enterprise Linux Server 9.4 (64 bit) - SUSE Enterprise Linux Server 15 SP6 (64 bit) - Ubuntu 24.04 (64 bit)
Physical & Environment	
Dimension (W x D x H)	430 x 540 x 176mm
Chassis	Aluminum
Thermal	Air Cooled
Operating Temperature	0 to 40°C
Storage Temperature	-40 to 70°C
Relative Humidity	10% to 95%, non-condensing
MIL-STD-810 Design to meet	Method 507.5, Procedure II (Temperature & Humidity) Method 516.6 Shock-Procedure V Non-Operating (Mechanical Shock) Method 516.6 Shock-Procedure I Operating (Mechanical Shock) Method 514.6 Vibration Category 24/Non-Operating (Category 20 & 24, Vibration) Method 514.6 Vibration Category 20/Operating (Category 20 & 24, Vibration)
CE/FCC Design to meet	EN55032 & 35 IEC 61000-3-2 / IEC 61000-3-3 IEC 61000-4-2 / IEC 61000-4-3 / IEC 61000-4-4 / IEC 61000-4-5 IEC 61000-4-6 / IEC 61000-4-8 / IEC 61000-4-11 FCC 47 CFR Part 15 Subpart B
Safety Design to meet	IEC 62368-1:2018

1.2 Dimensions



1.3 Appearance





Chapter 2: Installation

1. Installing the CPU and Heatsink

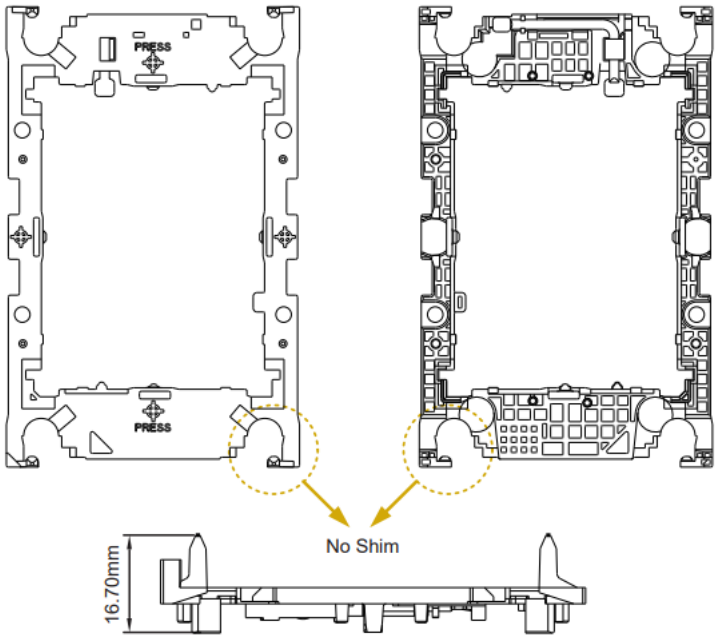
Notes :

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

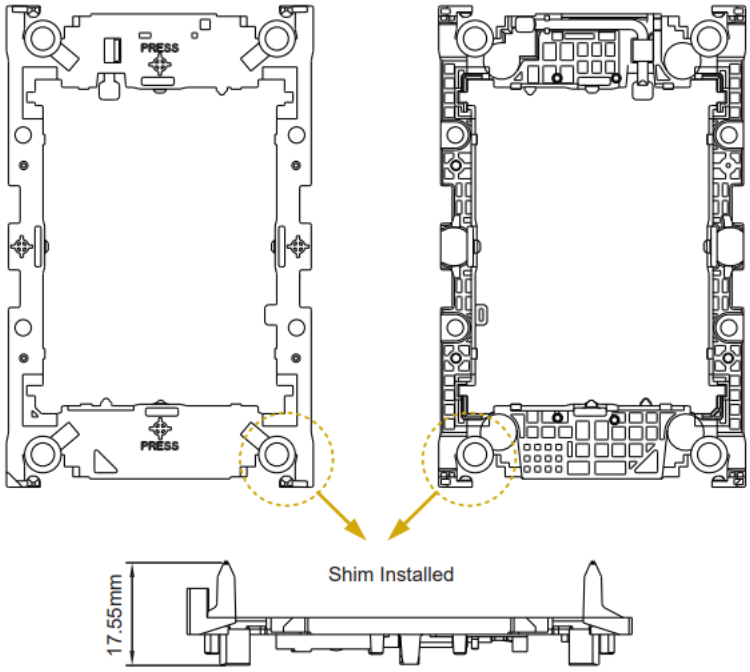
Carrier Used

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

XCC Carrier



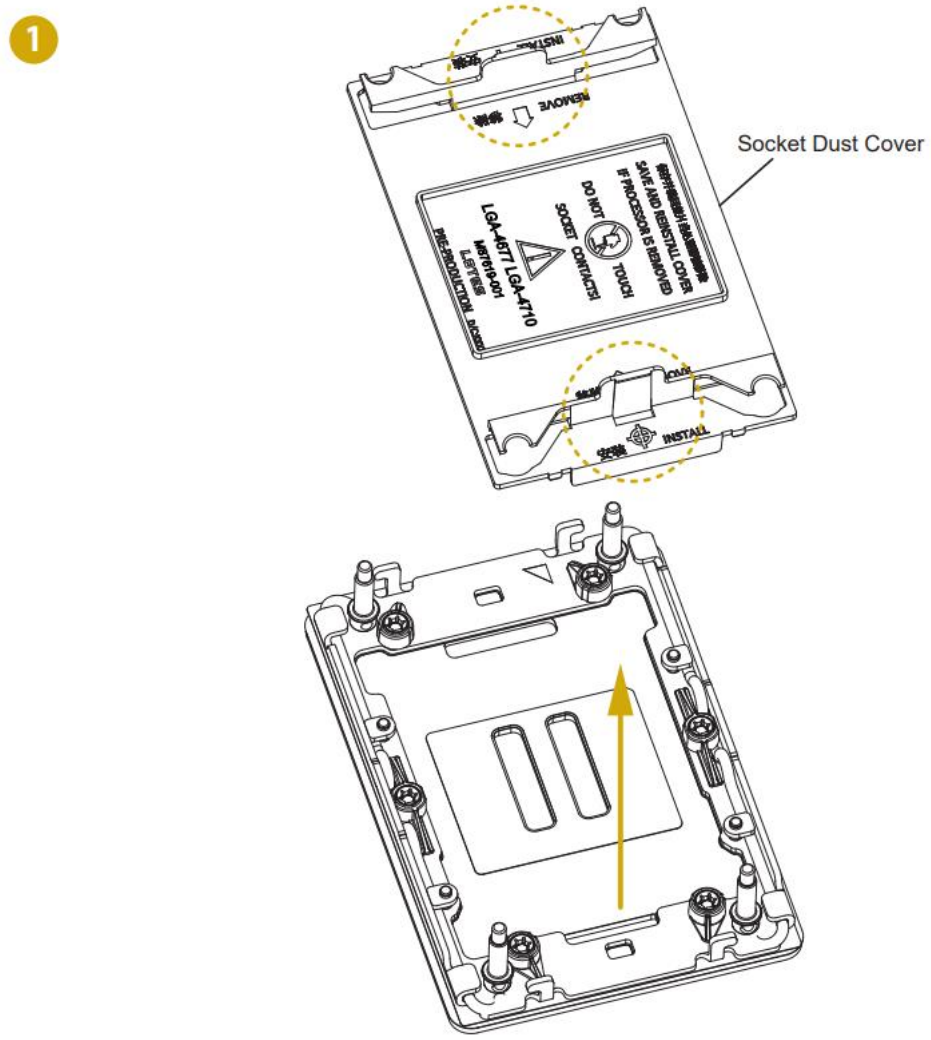
HCC/LCC/HDCC Carrier

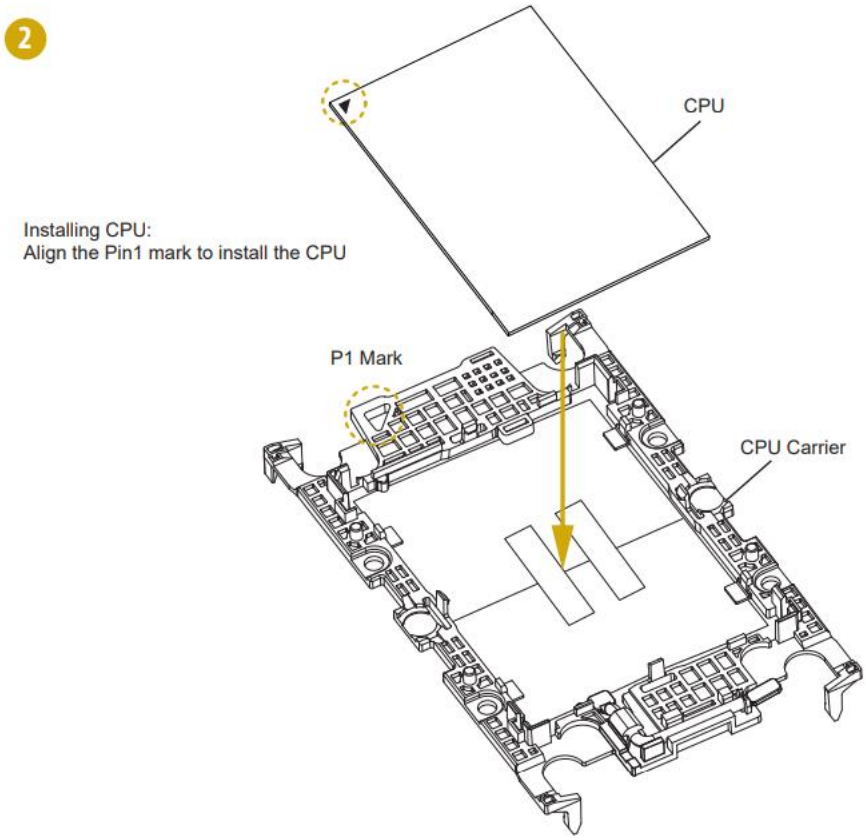


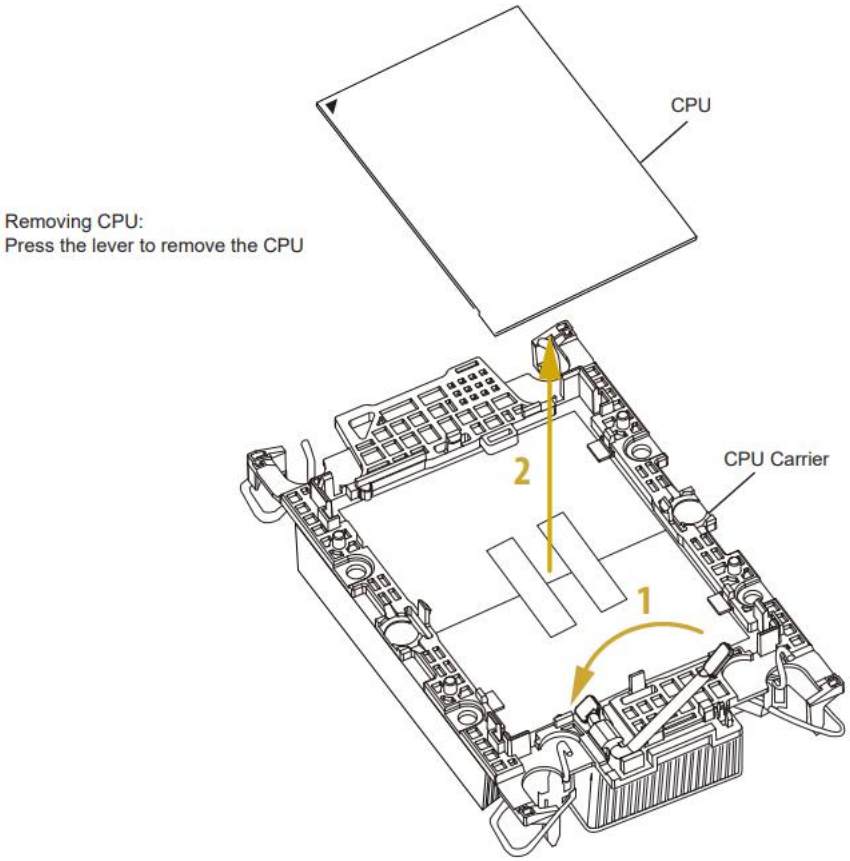
Notes :

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.

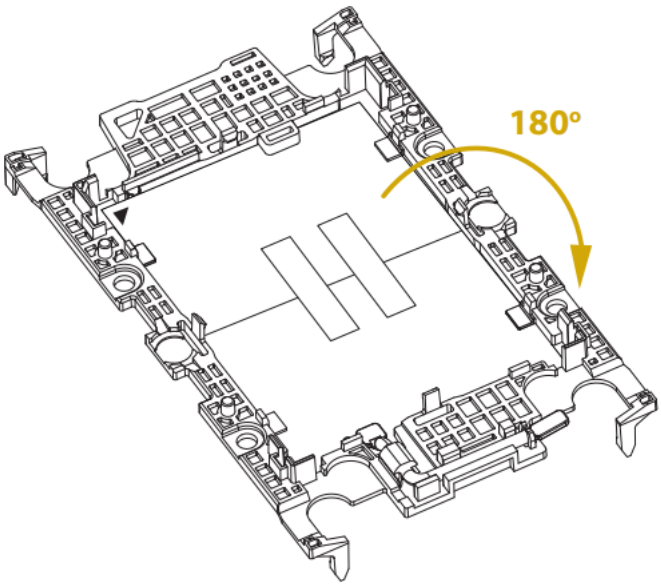
Step 1 :




2
CPU
Installing CPU:
Align the Pin1 mark to install the CPU
P1 Mark
CPU Carrier


CPU
Removing CPU:
Press the lever to remove the CPU
2
CPU Carrier
1

3



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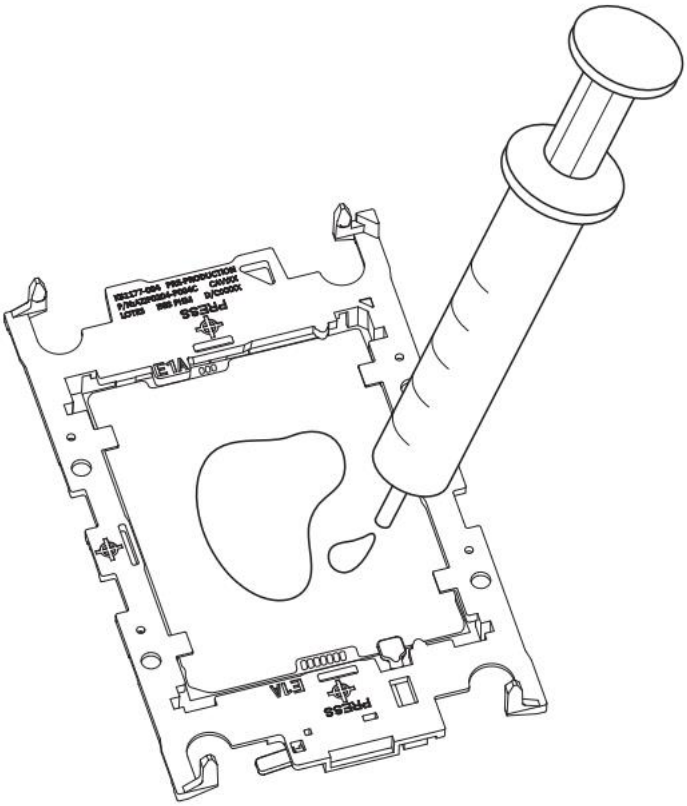

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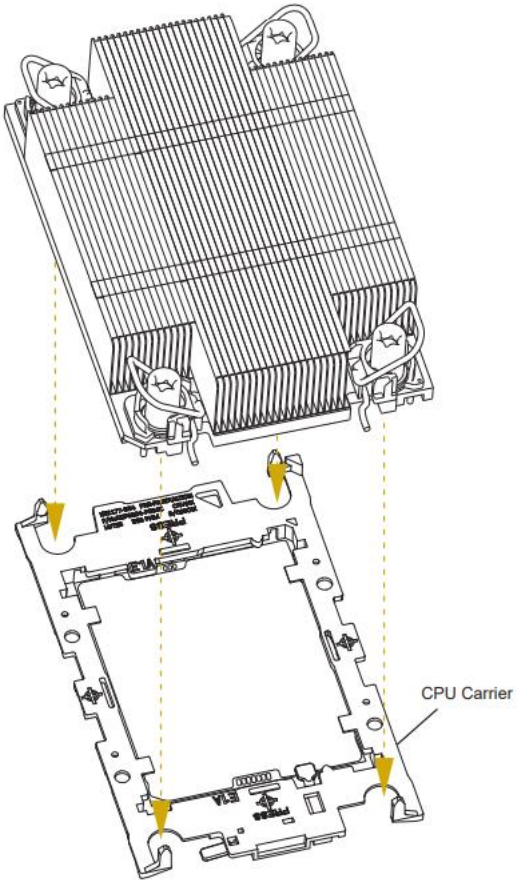

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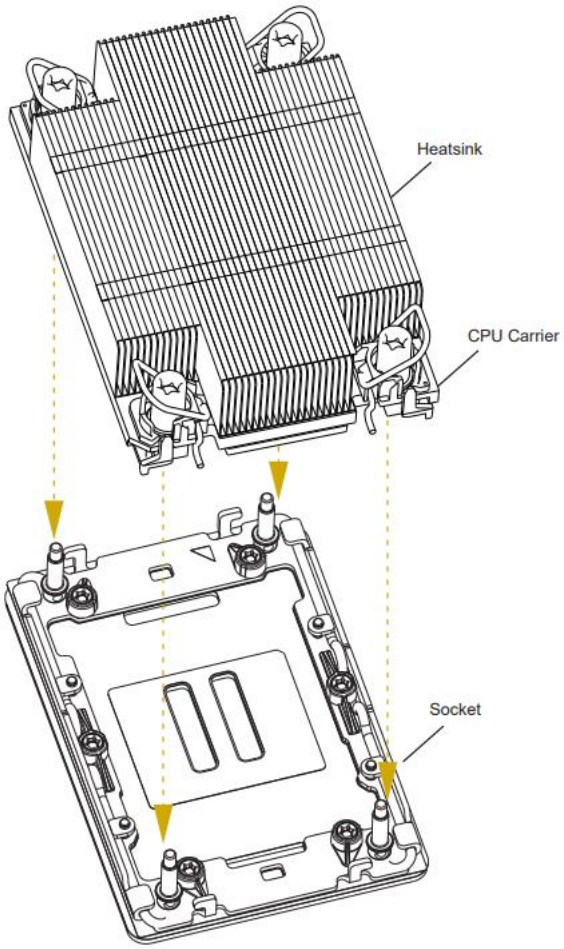

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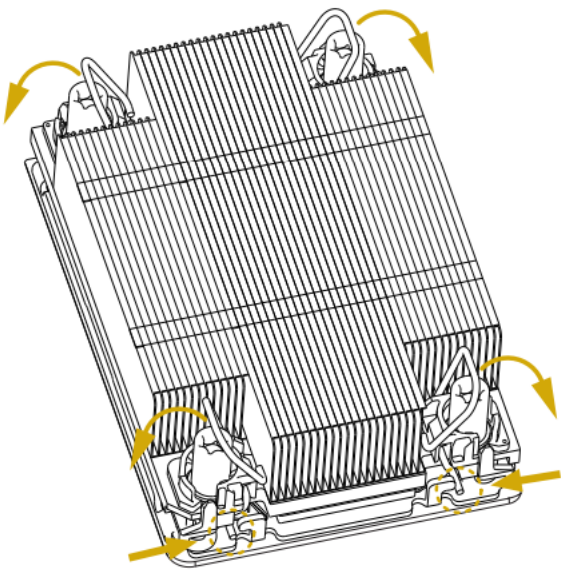
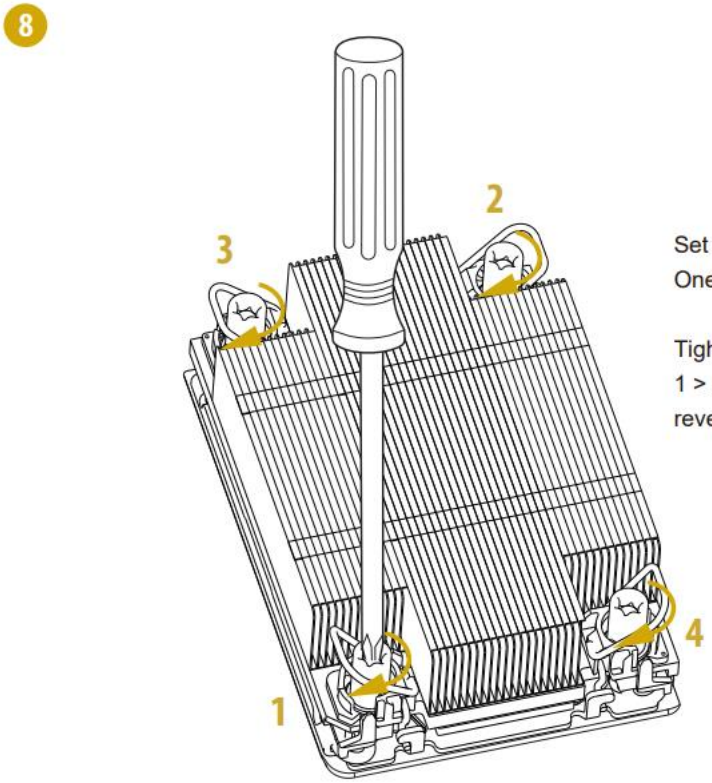




2. Installation of Memory Modules (DIMM)

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

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

Notes :

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

Recommended Memory Configurations

1. CPU Configurations (Single P)

	CPU0							
DDR5	A1	B1	C1	D1	E1	F1	G1	H1
1 DIMM	V							
4 DIMMS	V		V		V		V	
4 DIMMS		V		V		V		V
8 DIMMS	V	V	V	V	V	V	V	V

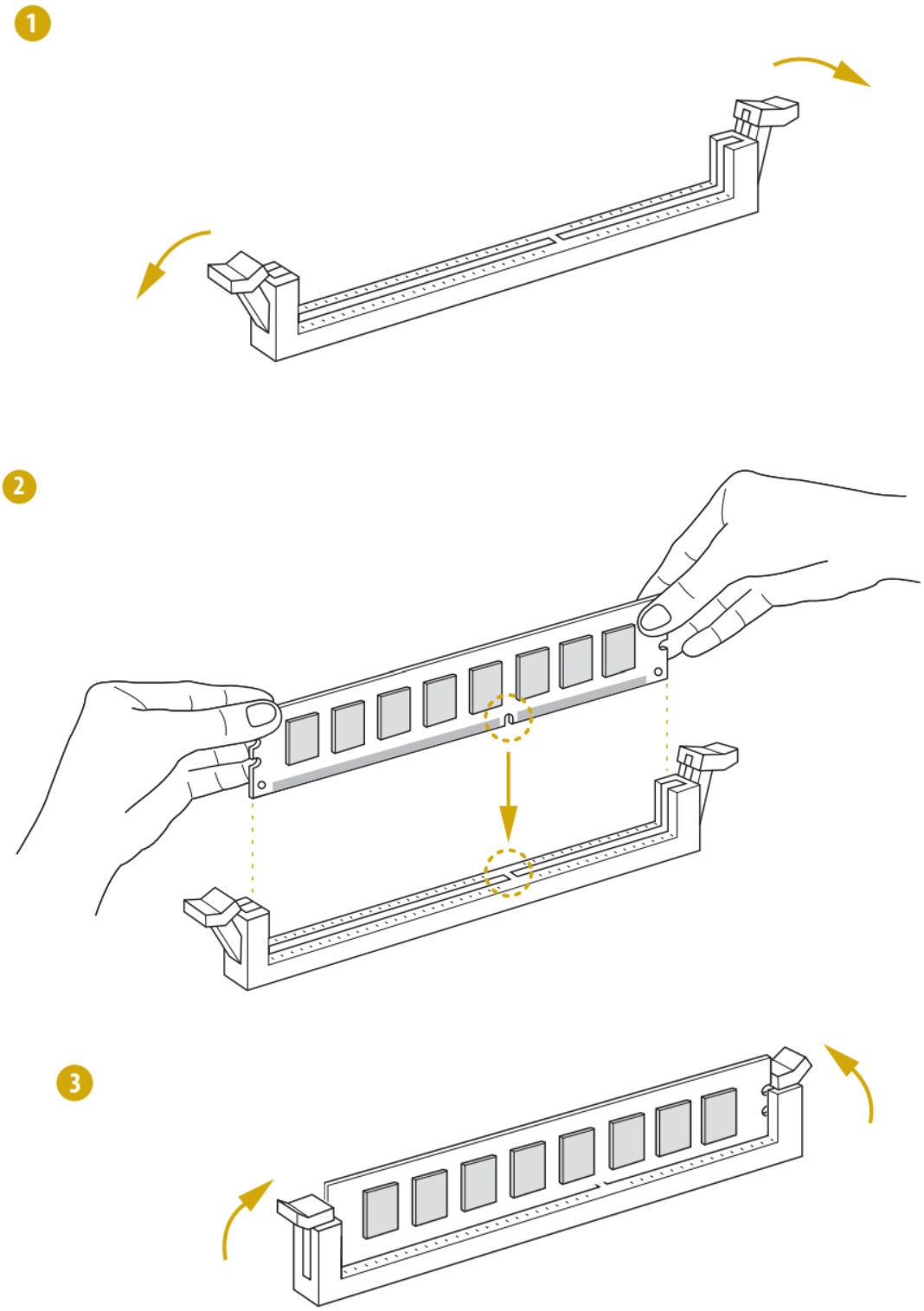
The symbol V indicates the slot is populated.

2. CPU Configurations (Dual P)

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

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

The symbol V indicates the slot is populated.


1
2
3

3. Expansion Slots (PCI Express Slots)

PCIE slots:

PCIE6 (PCIE 5.0 x8 slot, from CPU0) is used for PCI Express x8 lane width cards.
PCIE5 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE4 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.
PCIE3 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.
PCIE2 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.
PCIE1 (PCIE 5.0 x16 slot, from CPU1) is used for PCI Express x16 lane width cards.

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

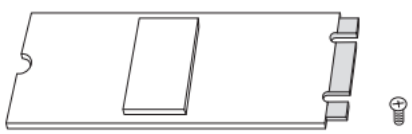
Installing an expansion card

Step 1. Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before starting the installation.
Step 2. Remove the system unit cover (if the motherboard is already installed in a chassis).
Step 3. Remove the bracket facing the slot that intending to use on the chassis. Keep the screw for later use.
Step 4. Install the PCIE card to the riser card.
Step 5. Align the riser-card assembly connector with the slot on the system board. Press firmly until the riser-card assembly is completely seated on the slot.
Step 6. Fasten the card to the chassis with the screw.
Step 7. Replace the system cover.

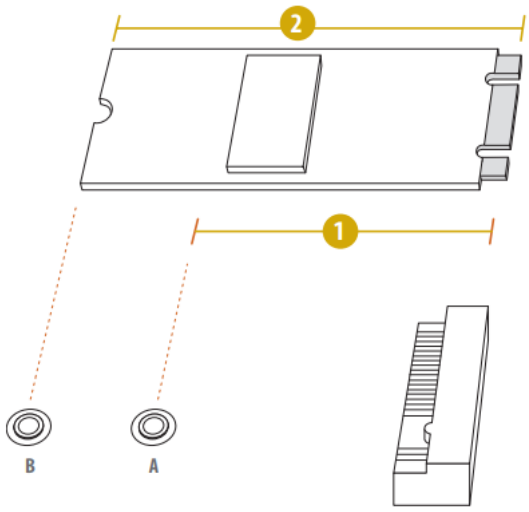
6. M.2 SSD Module Installation Guide

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

Step 1 Prepare a M.2 SSD module and the screw.



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

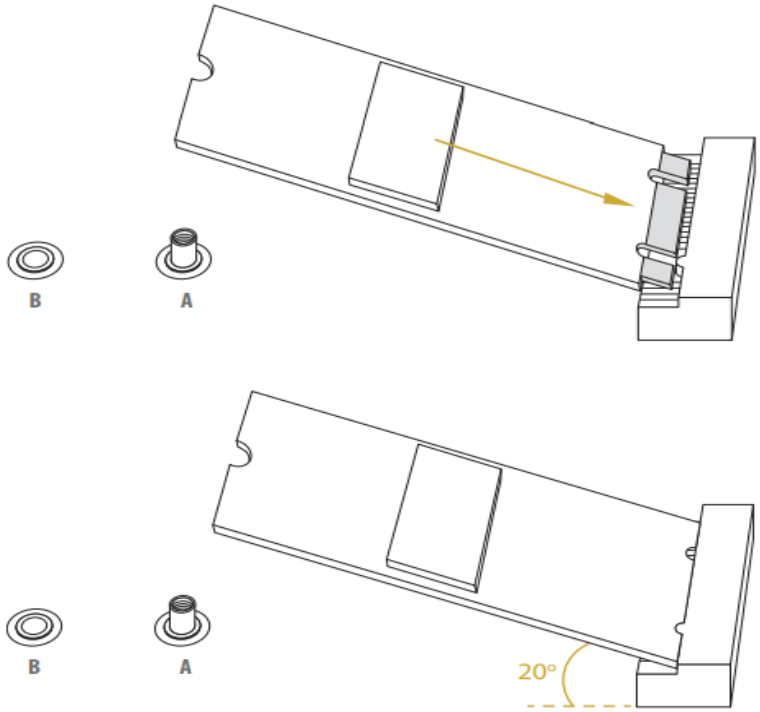


No.	1	2
Nut Location	A (NUT2280_1/NUT2280_2)	B (NUT22110_1/NUT22110_2)
PCB Length	8cm	11cm
Module Type	Type 2280	Type 22110

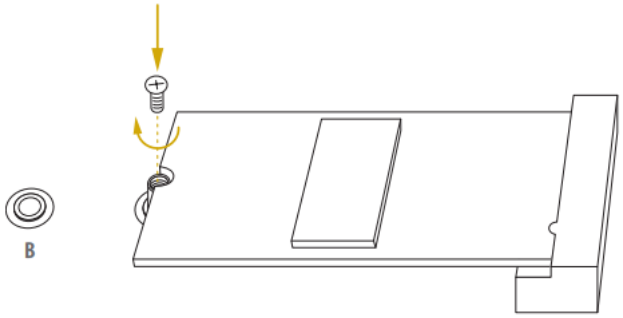
Step 3 Move the standoff based on the module type and length. Skip Step 3 and 4 and go straight to Step 5 if using the default nut. Otherwise, release the standoff by hand.

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 4: AMI BIOS UTILITY

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 or <F2> or <Del> during the Power On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue
with its test routines.

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

Notes : 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

4.1 UEFI Menu Bar

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	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 to get into the sub screen.

4.2 Navigation Keys

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

Left/Right	Moves cursor left or right to select Screens
Up/Down	Moves cursor up or down to select items
+− Plus/Minus	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

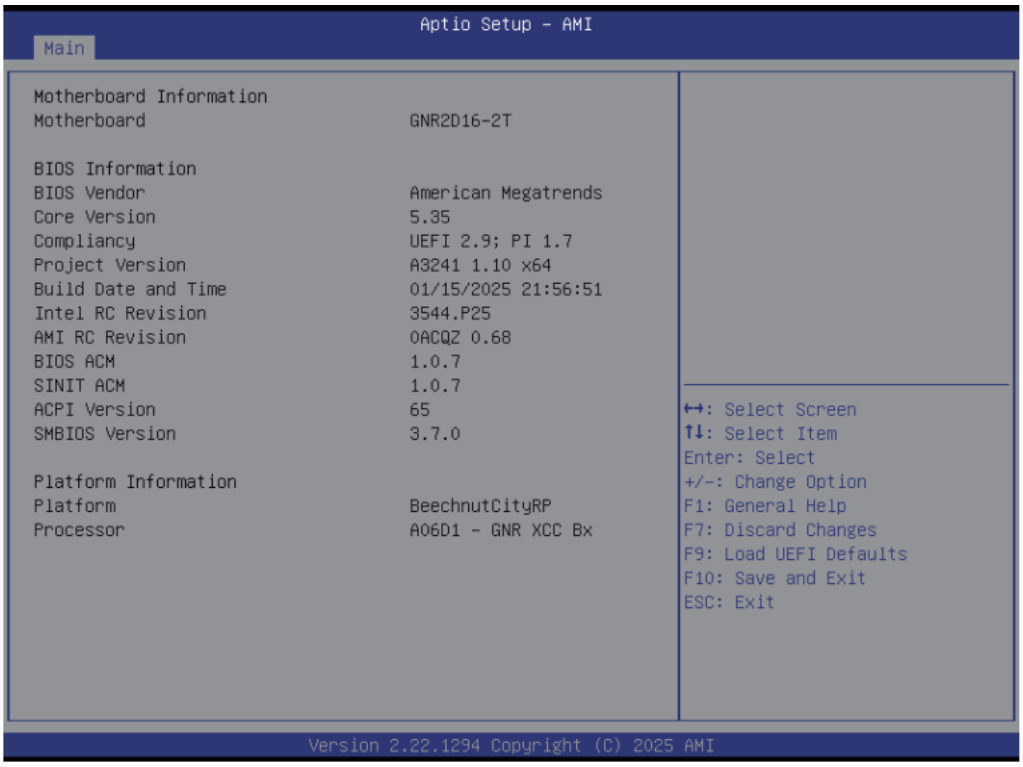
4.3 Main Screen

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 userto set the system time and date

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

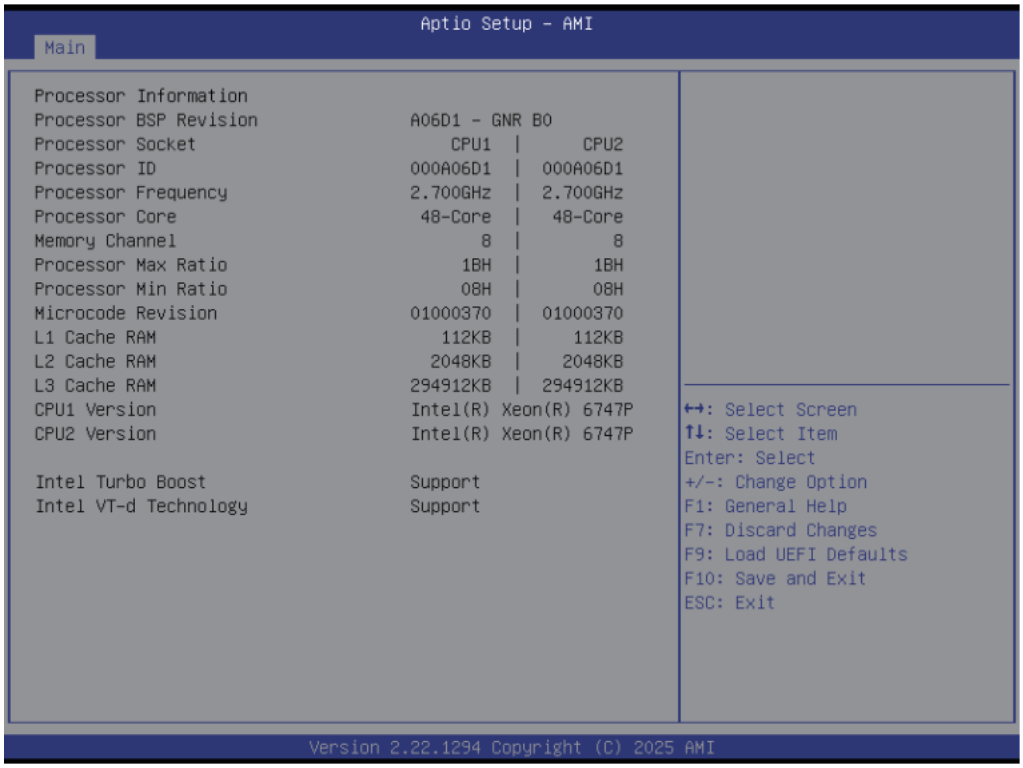
- 4.3.1 CPU Mother Board Information

Press to view the information of the motheboard.



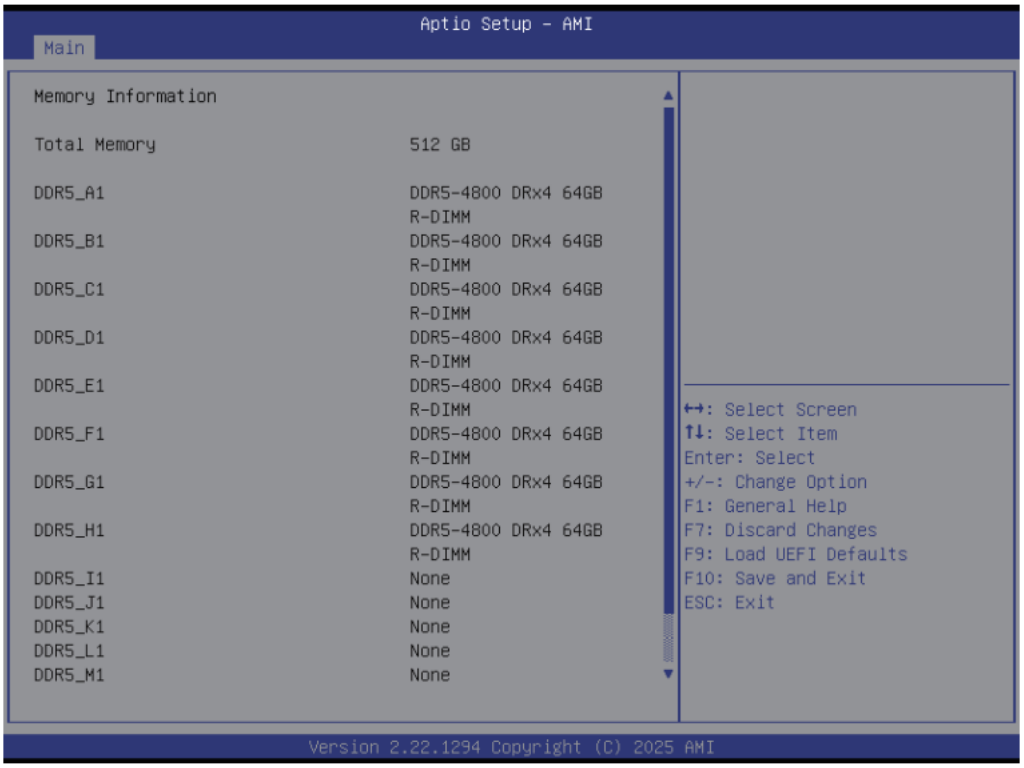
- 4.3.2 Processor Information

Press to view the information of the processor.



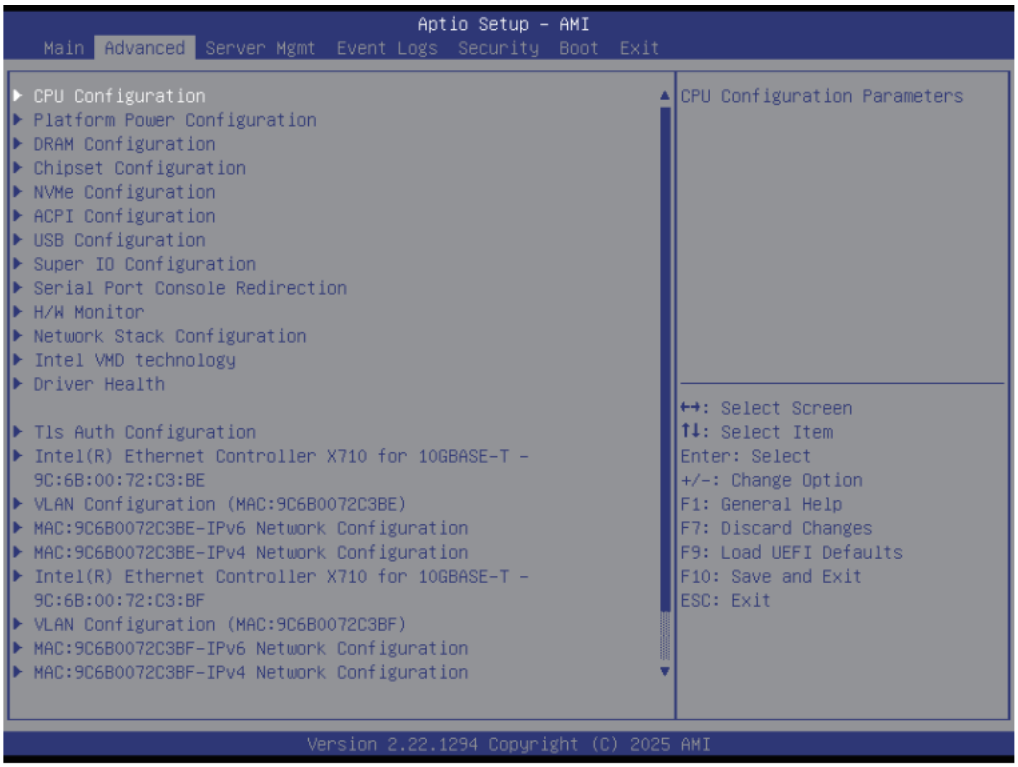
- 4.3.3 Memory Information

Press to view the information of the memory.

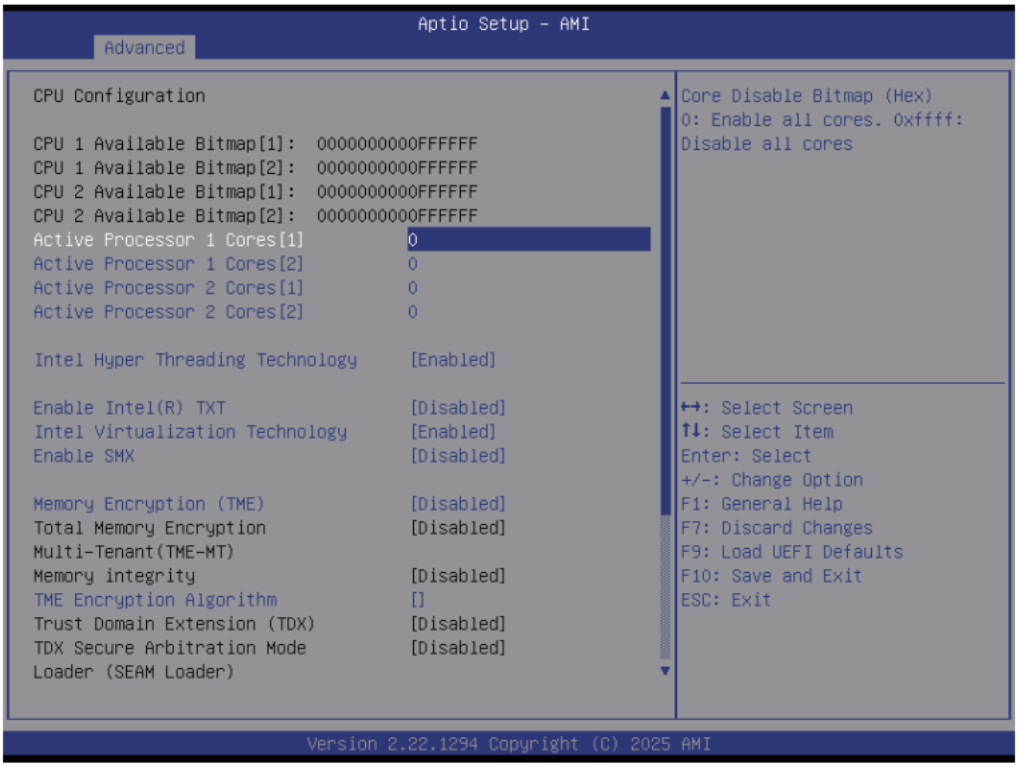


4.4 Advanced Screen

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



- 4.4.1 CPU Configuration



Active Processor 1 Cores [1]/[2]

Core Disable Bitmap (Hex)

0: Enable all cores.

0xffff: Didable all cores.

Active Processor 2 Cores [1]/[2]

Core Disable Bitmap (Hex)

0: Enable all cores.

0xffff: Didable all cores.

Intel Hyper Threading Technology

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

Enable Intel(R) TXT

Enables Intel Trusted Execution Technology Configuration.

Intel Virtualization Technology

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

Enable SMX

Use this item to enable Safer Mode Extensions.

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

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

Memory Integrity
Use this item to enable or disable memory Integrity

TME Encryption Algorithm
Use this item to select TME Encryption Algorithm.

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

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

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

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

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

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

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

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

Hardware Prefetcher

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

Adjacent Cache Line Prefetch

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

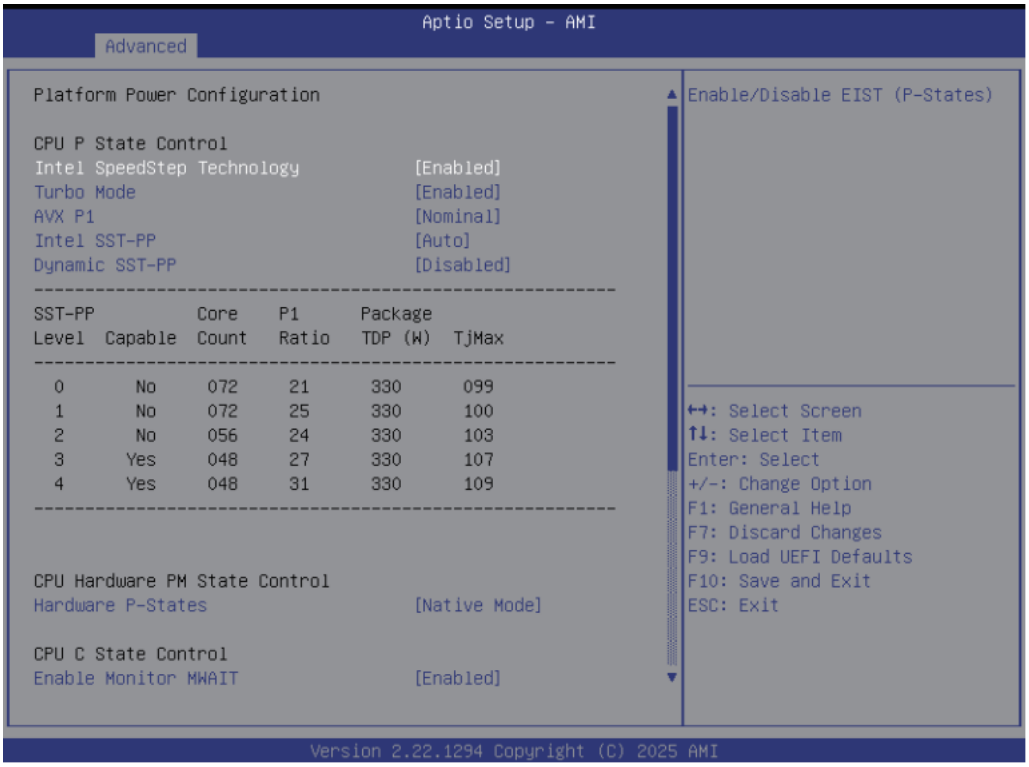
AES-NI

Use this item to enable or disable AES-NI support

SNC

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

- 4.4.2 Platform Power Configuration



Intel SpeedStep Technology

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

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

Turbo Mode

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

AVX P1

Use this item to select AVX P1 level.

Intel SST-PP

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

Notes : HWP Native Mode is a pre-requisite for enabling Dynamic SST-PP.

Dynamic SST-PP

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

Hardware P-States

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

Enable Monitor MWAIT

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

ACPI C6x Enumeration

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

C1 to Cle Promotion

CPU will promote C1 request to Cle state.

Package C State

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

Power Performance Tuning

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

ENERGY_PERF_BIAS_CFG mode

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

PL1 Power Limit

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

PL1 Time Window

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

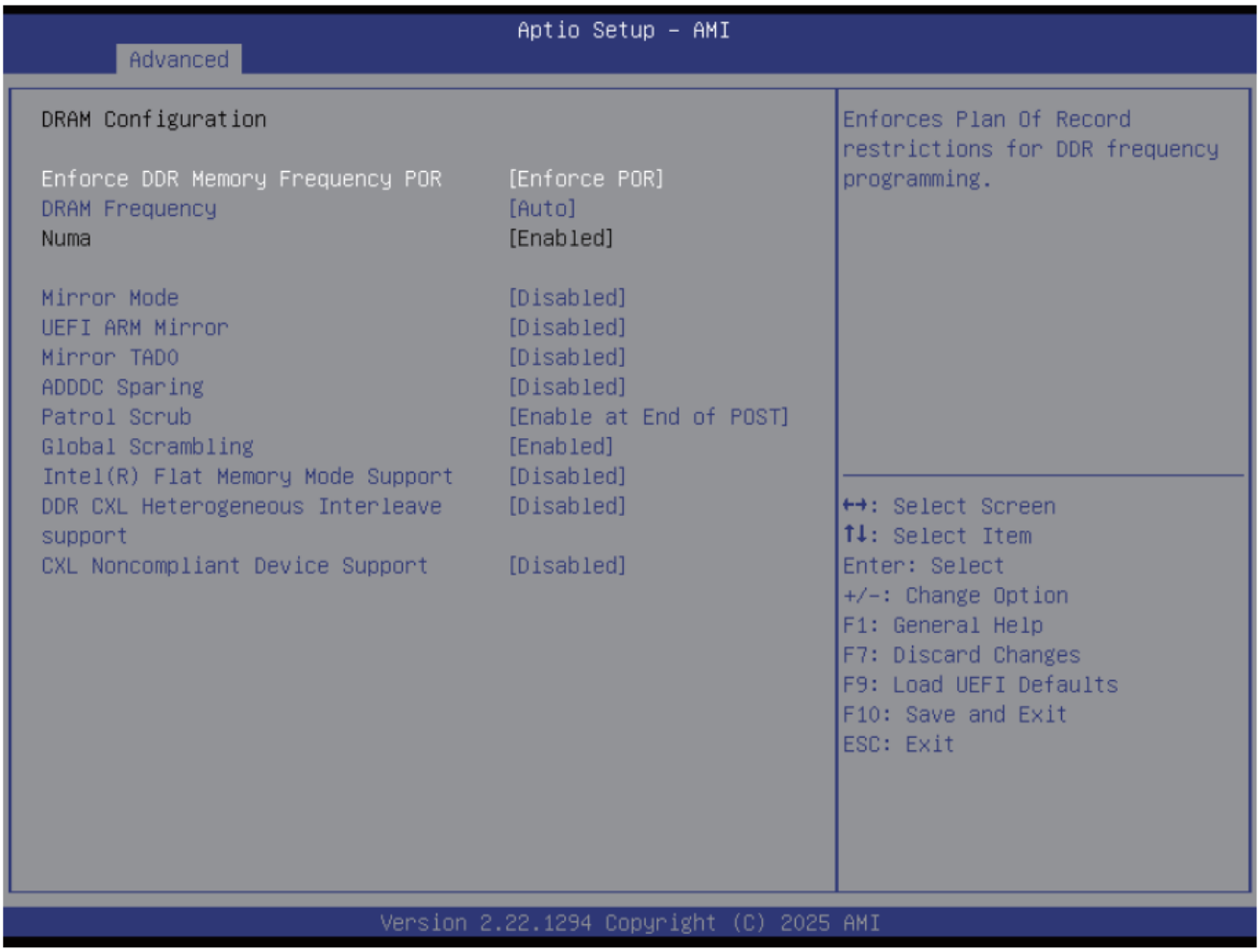
PL2 Power Limit

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

PL2 Time Window

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

4.4.3 DRAM Configuration



Enforce DDR Memory Frequency POR

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

DRAM Frequency

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

Numa

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

Mirror Mode

Full Mirror Mode will set entire 1LM memory in system to be mirrored, consequently

reducing the memory capacity by half. Partial Mirror Mode will enable the required size of memory to be mirrored. If rank sparing is enabled partial mirroring will not take effect. Enabling any type of Mirror Mode will disable XPT Prefetch.

UEFI ARM Mirror

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

Mirror TAD0

Enable Mirror on entire memory for TAD0.

ARM Mirror Percentage

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

ADDDC Sparing

Enable or disable Memory Rank Sparing.

Global Scrambling

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

Intel(R) Flat Memory Mode Support

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

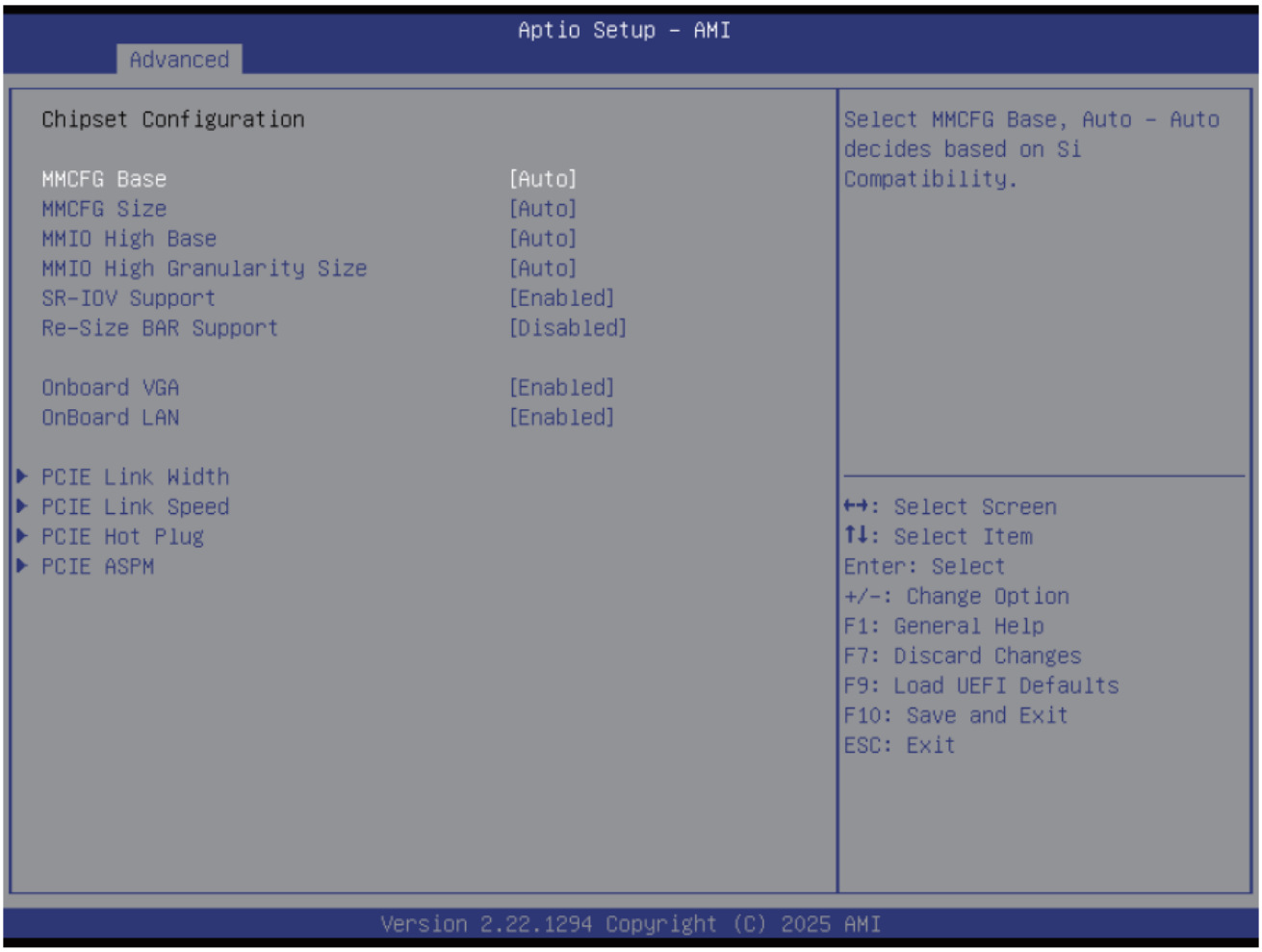
DDR CXL Heterogeneous Interleave support

Use this item to enable DDR CXL Heterogeneous Interleave support.

CXL Noncompliant Device Support

Enables DDR CXL Heterogeneous Interleave support.

4.4.4 Chipset Configuration



MMCFG Base

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

MMCFG Size

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

MMIO High Base

Use this item to select MMIO High Base.

MMIO High Granularity Size

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

SR-IOV Support

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

Virtualization Support.

Re-Sized BAR Support

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

Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN

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

PCIE Link Width

This displays the PCIE Link Width.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE5/PCIE5, MCIO1 Link Width

The default value is [Auto] - x16.

PCIE Link Speed

This displays the PCIE Link Speed.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 Link Speed

The default value is [Auto] - up to Gen5 (32GT/s).

MCIO1_1/MCIO1_2/M2_1/M2_2 Link Speed

The default value is [Auto] - up to Gen5 (32GT/s).

PCIE Hot Plug

Select this item to configure PCIE Hot Plug.

PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 Surprise Hot Plug

This option specifies if the link is considered Surprise Hot Plug capable.

MCIO1_1/MCIO1_2/M2_1/M2_2 Surprise Hot Plug

This option specifies if the link is considered Surprise Hot Plug capable.

PCIE ASPM

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

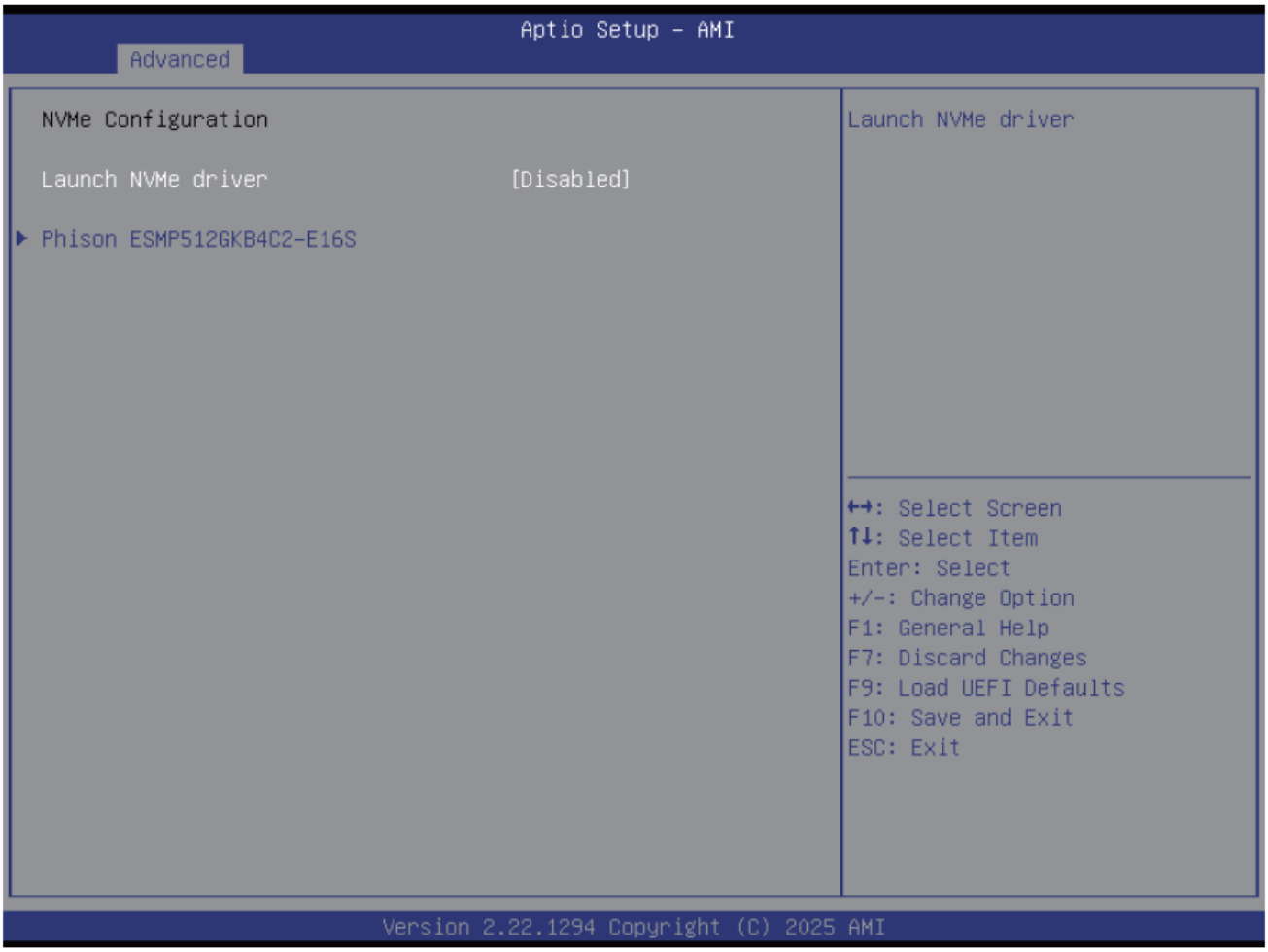
PCIE1/PCIE2/PCIE3/PCIE4/PCIE6 ASPM Support

Use this item to disable ASPM support in PCIe root port. The default value is [Auto].

MCIO1_1/MCIO1_2/M2_1/M2_2 ASPM Support

Use this item to disable ASPM support in PCIe root port. The default value is [Auto].

4.4.5 NVMe Configuration



Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

Self Test Option

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

Self Test Action

Select either to test Controller alone or Controller and Name Space. Selecting Controller and Namespace option will take lot longer to complete the test.

Run Device Self Test

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

4.4.6 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 Singals.

RTC Alarm Power On

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

RTC Alarm Date

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

RTC Alarm Hour

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

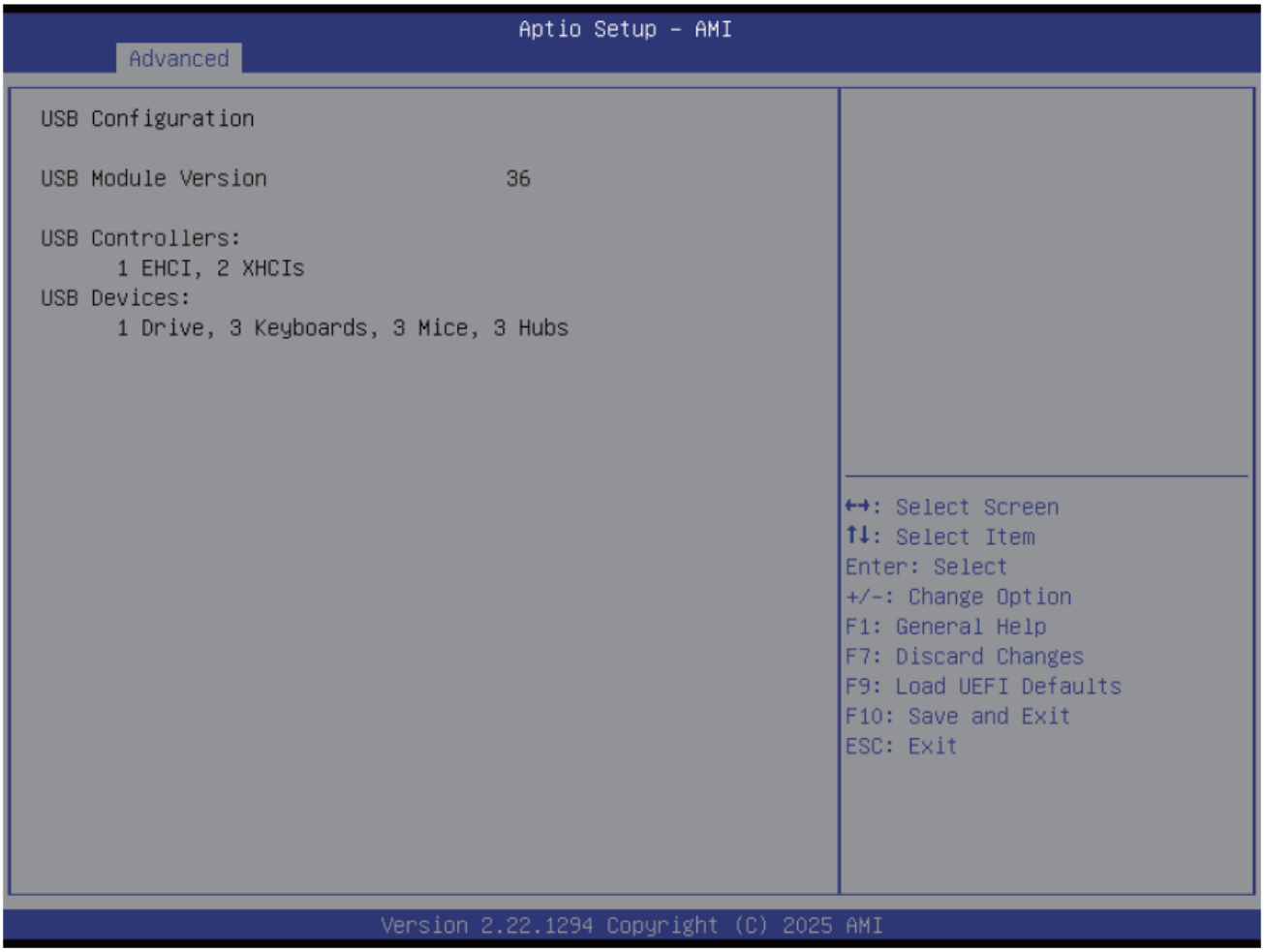
RTC Alarm Minute

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

RTC Alarm Second

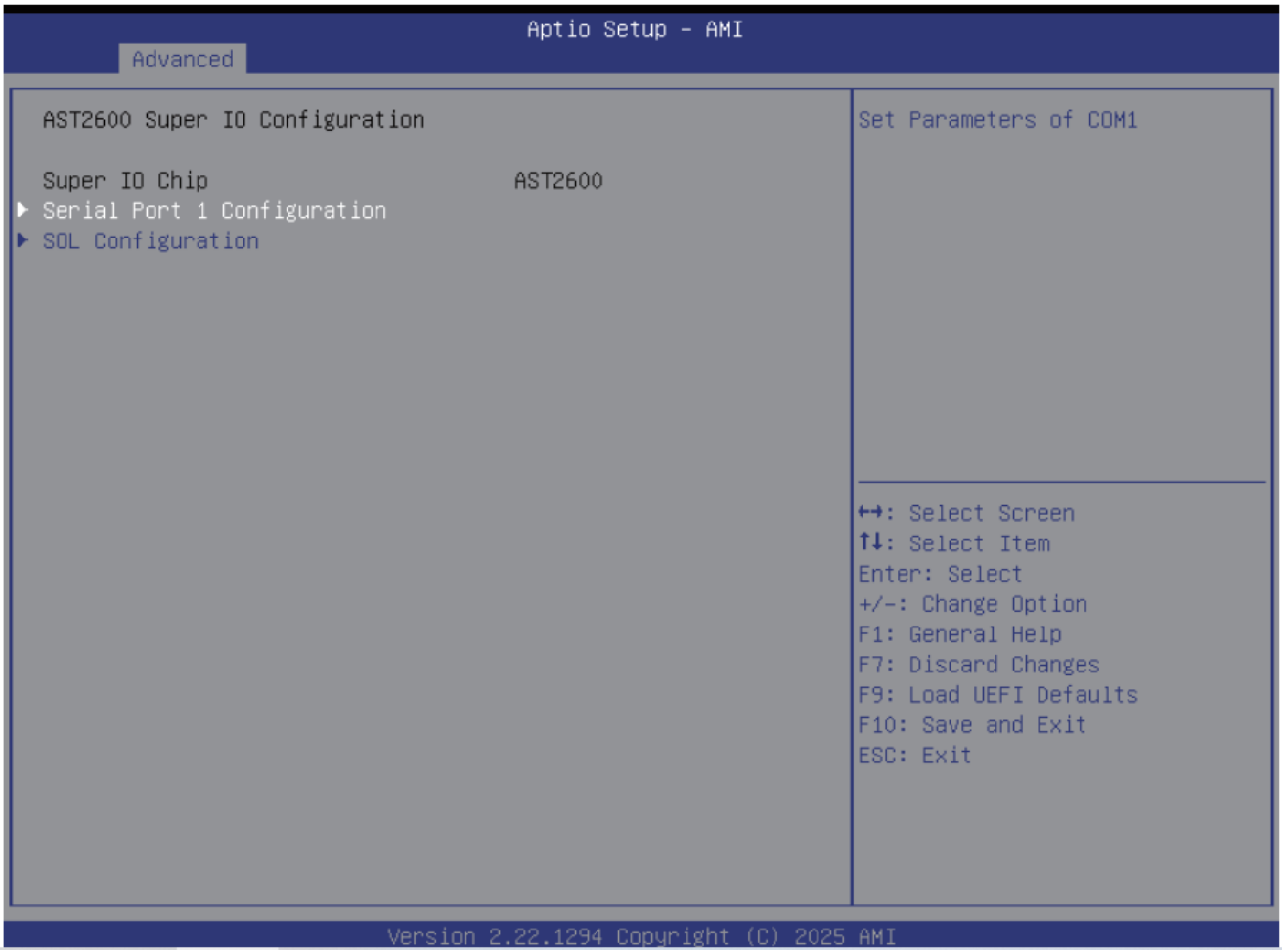
Use this item to set Second of RTC power on feature.

4.4.7 USB Configuration



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

4.4.8 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).

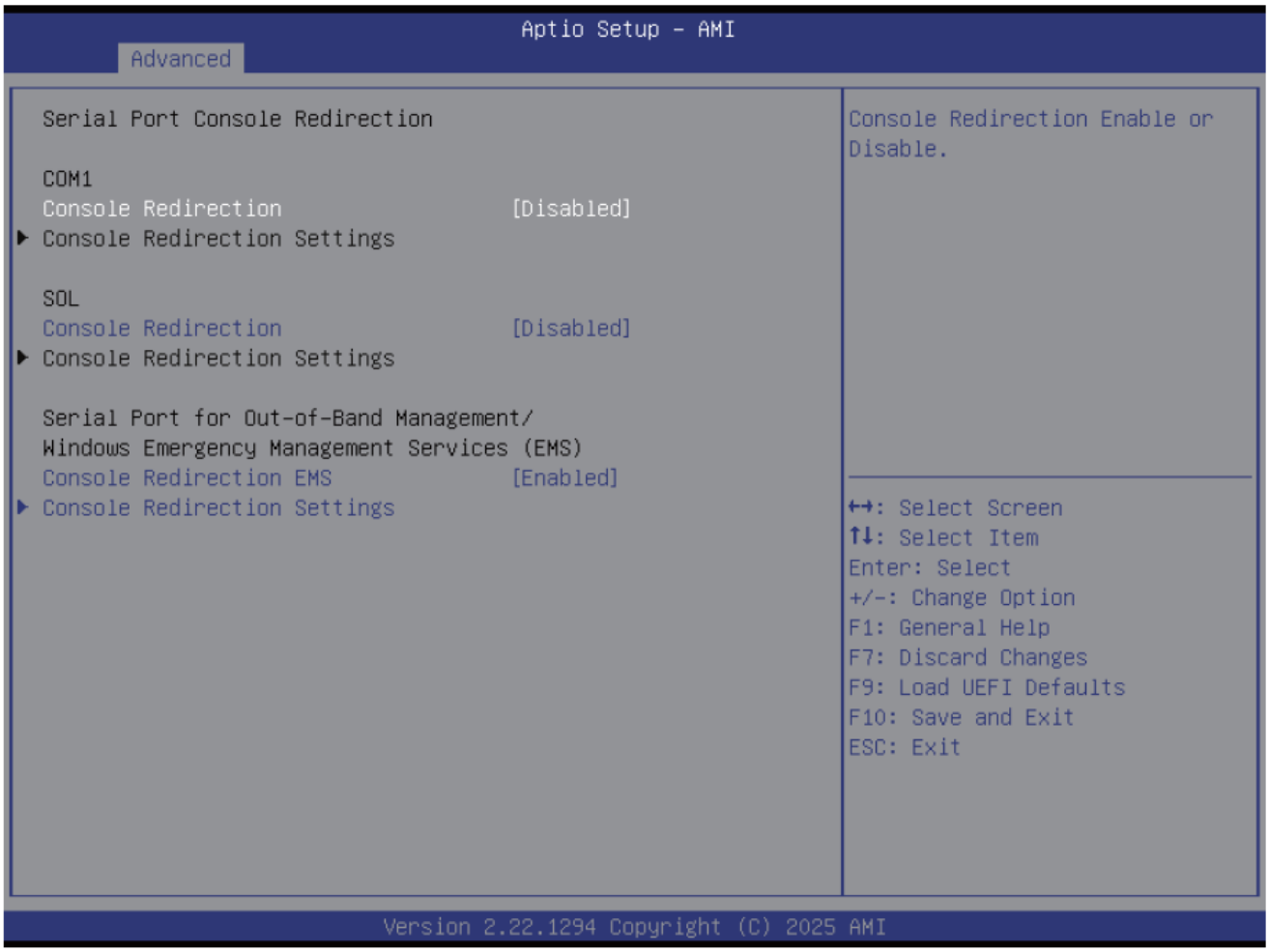
SOL Port

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.

4.4.9 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

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

Terminal Type EMS

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

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

Bits Per Second EMS

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

Flow Control EMS

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

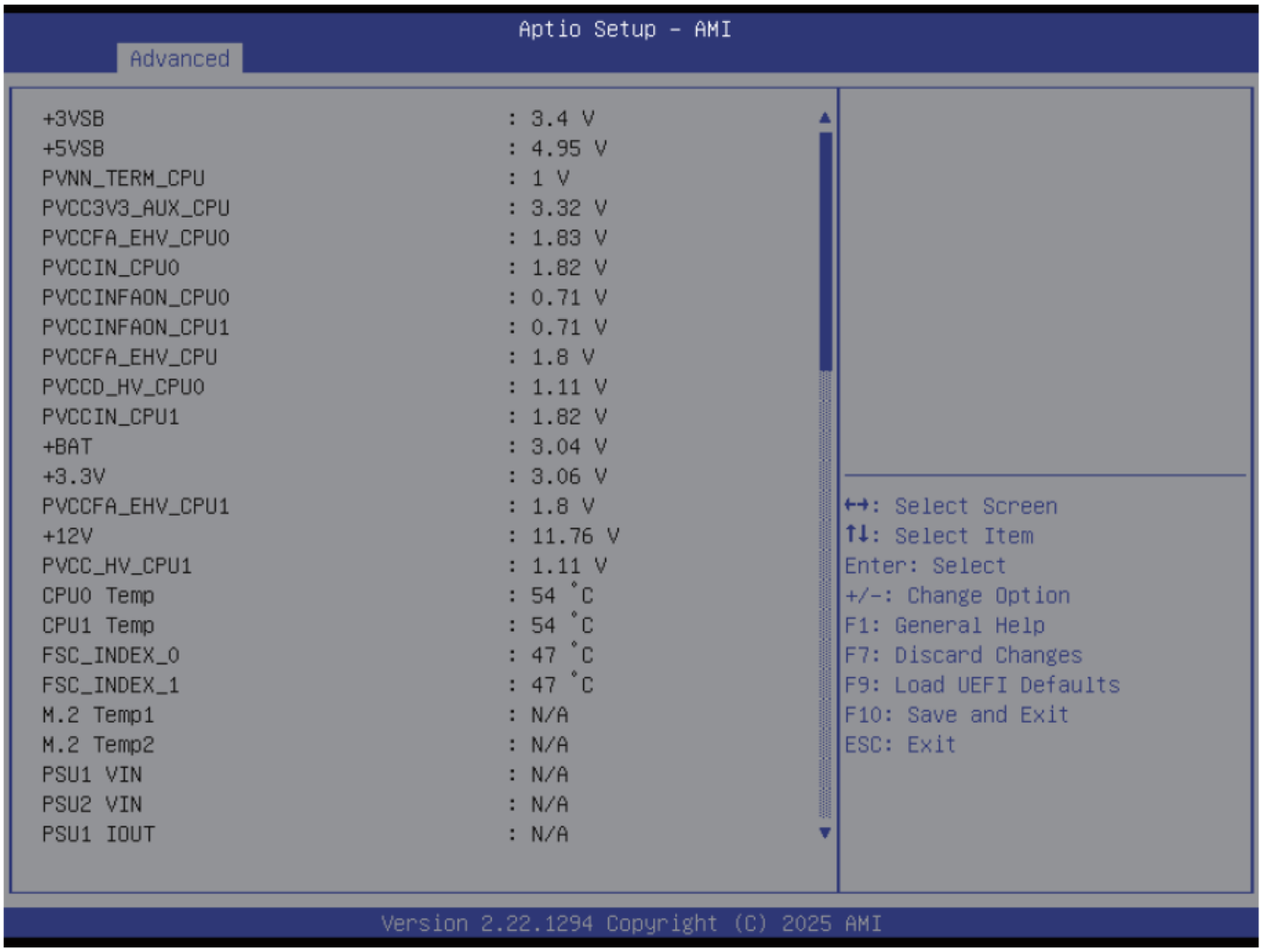
Data Bits EMS

Parity EMS

Stop Bits EMS

4.4.10 H/W Monitor

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


Aptio Setup – AMI
Advanced
+3VSB : 3.4 V
+5VSB : 4.95 V
PVNN_TERM_CPU : 1 V
PVCC3V3_AUX_CPU : 3.32 V
PVCCFA_EHV_CPU0 : 1.83 V
PVCCIN_CPU0 : 1.82 V
PVCCINFAON_CPU0 : 0.71 V
PVCCINFAON_CPU1 : 0.71 V
PVCCFA_EHV_CPU : 1.8 V
PVCCD_HV_CPU0 : 1.11 V
PVCCIN_CPU1 : 1.82 V
+BAT : 3.04 V
+3.3V : 3.06 V
PVCCFA_EHV_CPU1 : 1.8 V
+12V : 11.76 V
PVCC_HV_CPU1 : 1.11 V
CPU0 Temp : 54 °C
CPU1 Temp : 54 °C
FSC_INDEX_0 : 47 °C
FSC_INDEX_1 : 47 °C
M.2 Temp1 : N/A
M.2 Temp2 : N/A
PSU1 VIN : N/A
PSU2 VIN : N/A
PSU1 IOUT : N/A
↔: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Option
F1: General Help
F7: Discard Changes
F9: Load UEFI Defaults
F10: Save and Exit
ESC: Exit
Version 2.22.1294 Copyright (C) 2025 AMI

4.4.11 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.

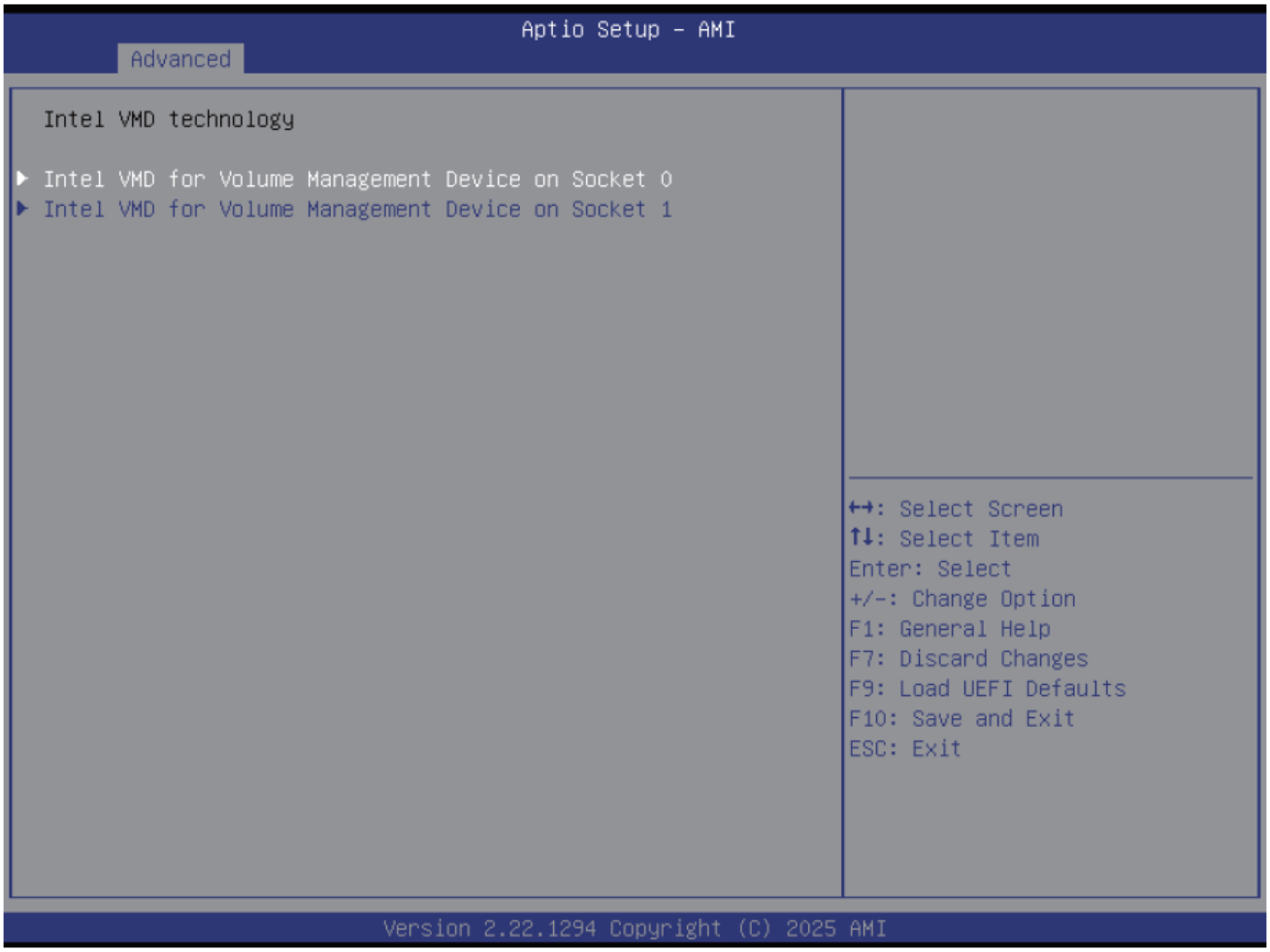
PXE boot wait time

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.

4.4.12 Intel VMD Technology



Press <Enter> to bring up the Intel VMD for Volume Management Device Configuration menu.

Intel VMD for Volume Management Device on Socket 0/1

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

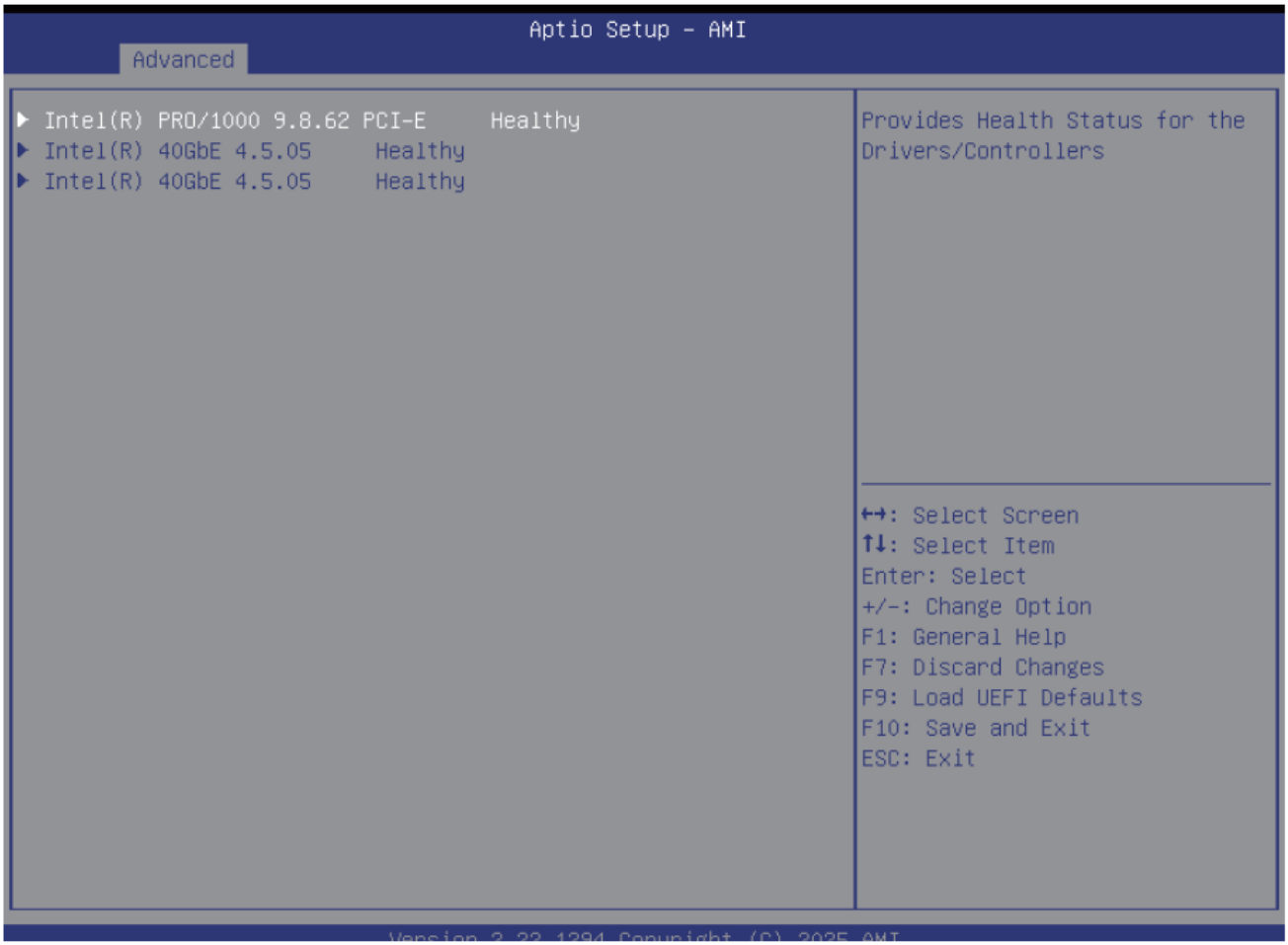
Use this item to enable or disable Intel Volume Management Device Technology in this Stack.

When [Enabled] allowing user to configure the options below.

VMD port A/B/E/G

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

4.4.13 Driver Health



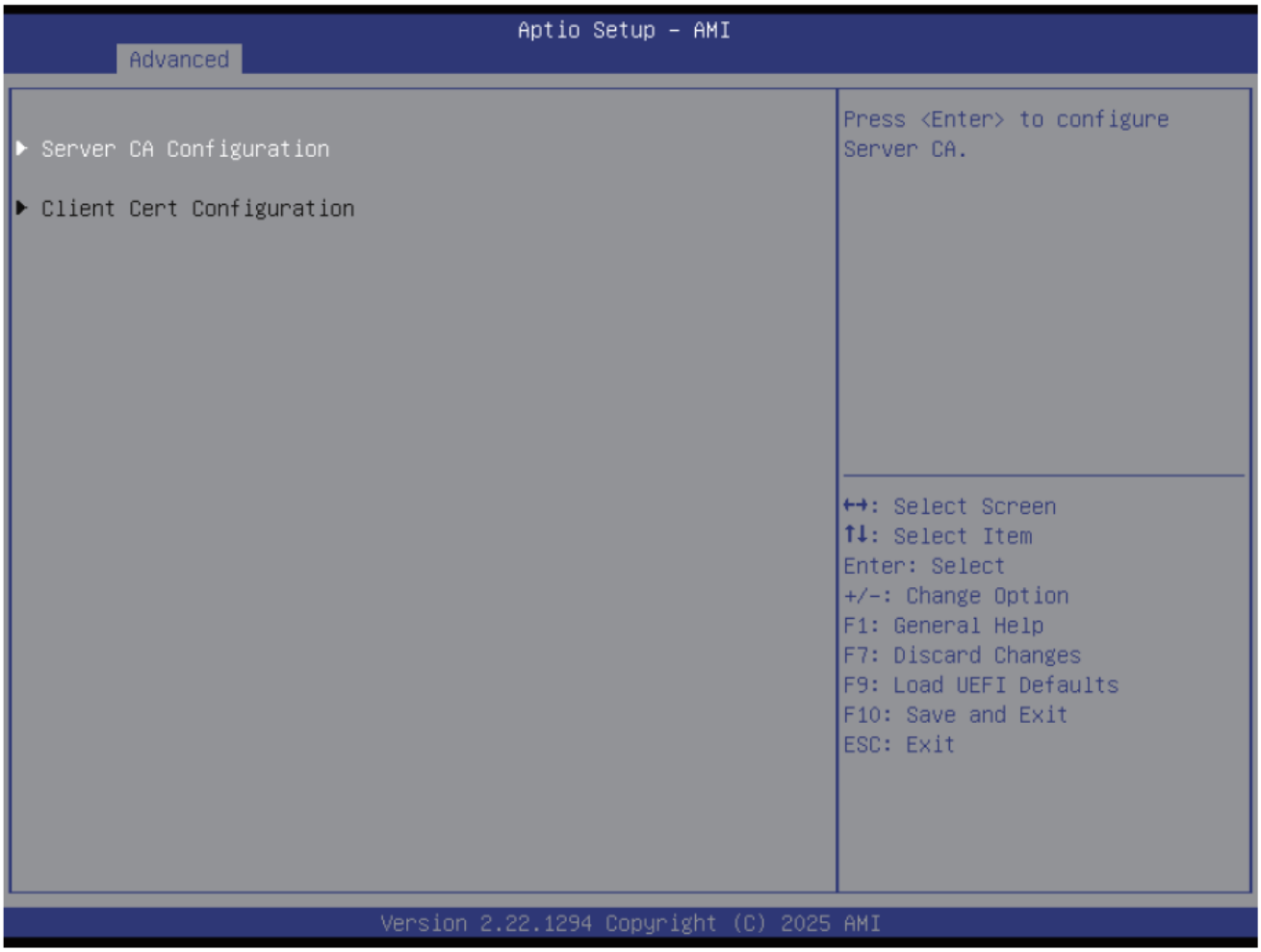
Inter (R) PRO/1000 9.8.62 PCI-E

Provides Health Status for the Drivers/Controllers

Intel(R) 40GbE 4.5.05

Provides Health Status for the Drivers/Controllers

4.4.14 Tls Auth Configuration



Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Enroll Cert

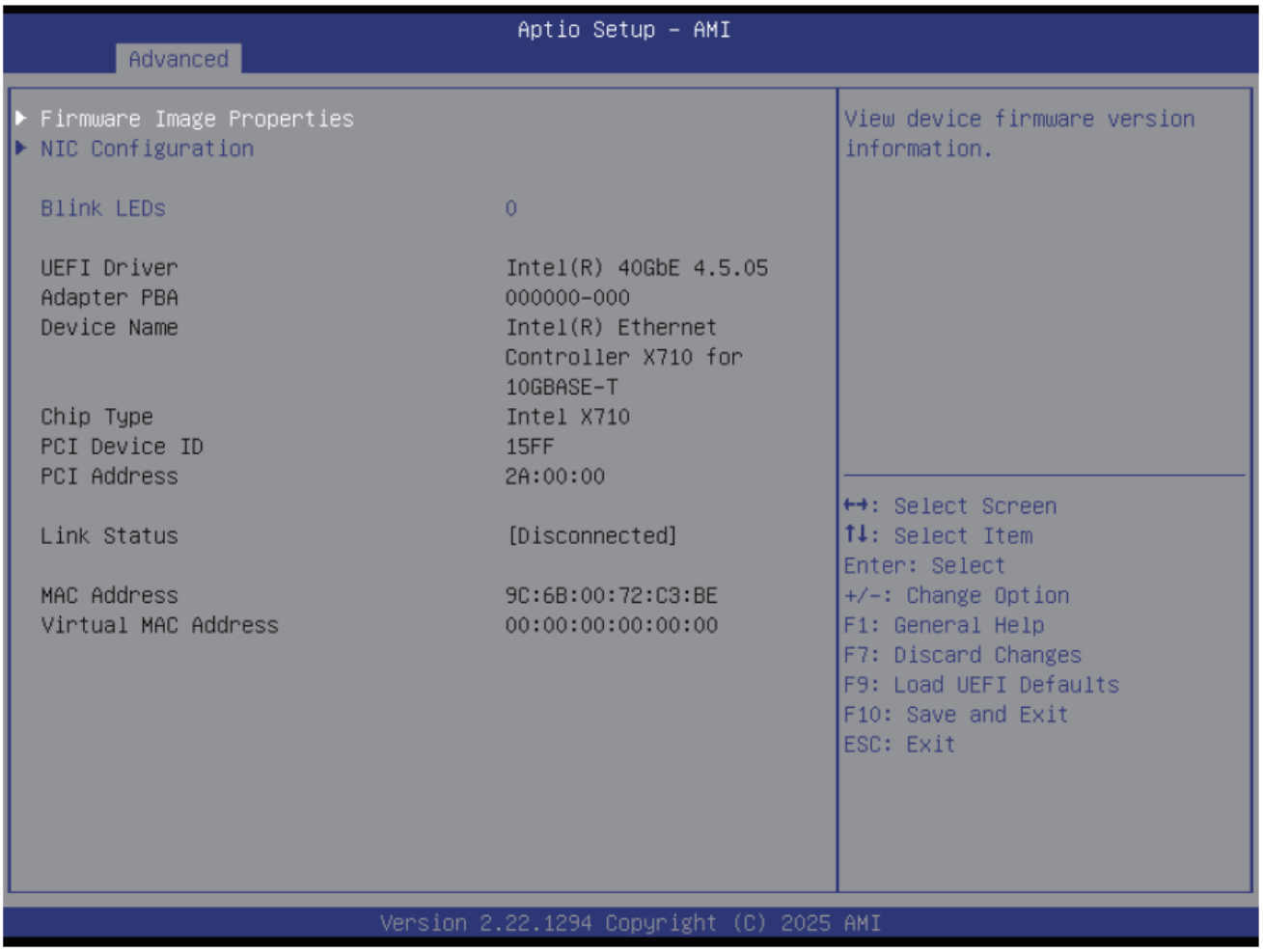
Press <Enter> to enroll cert.

Delete Cert

Press <Enter> to delete cert.

4.4.15 Intel(R) Ethernet Controller

Configure 10 Gigabit Ethernet device parameters.



Firmware Image Properties

Select this item to view the device firmware version information.

NIC Configuration

Click this item to configure the network device port.

Link Speed

Specifies the port speed used for the selected boot protocol.

Wake On LAN

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

LLDP Agent

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

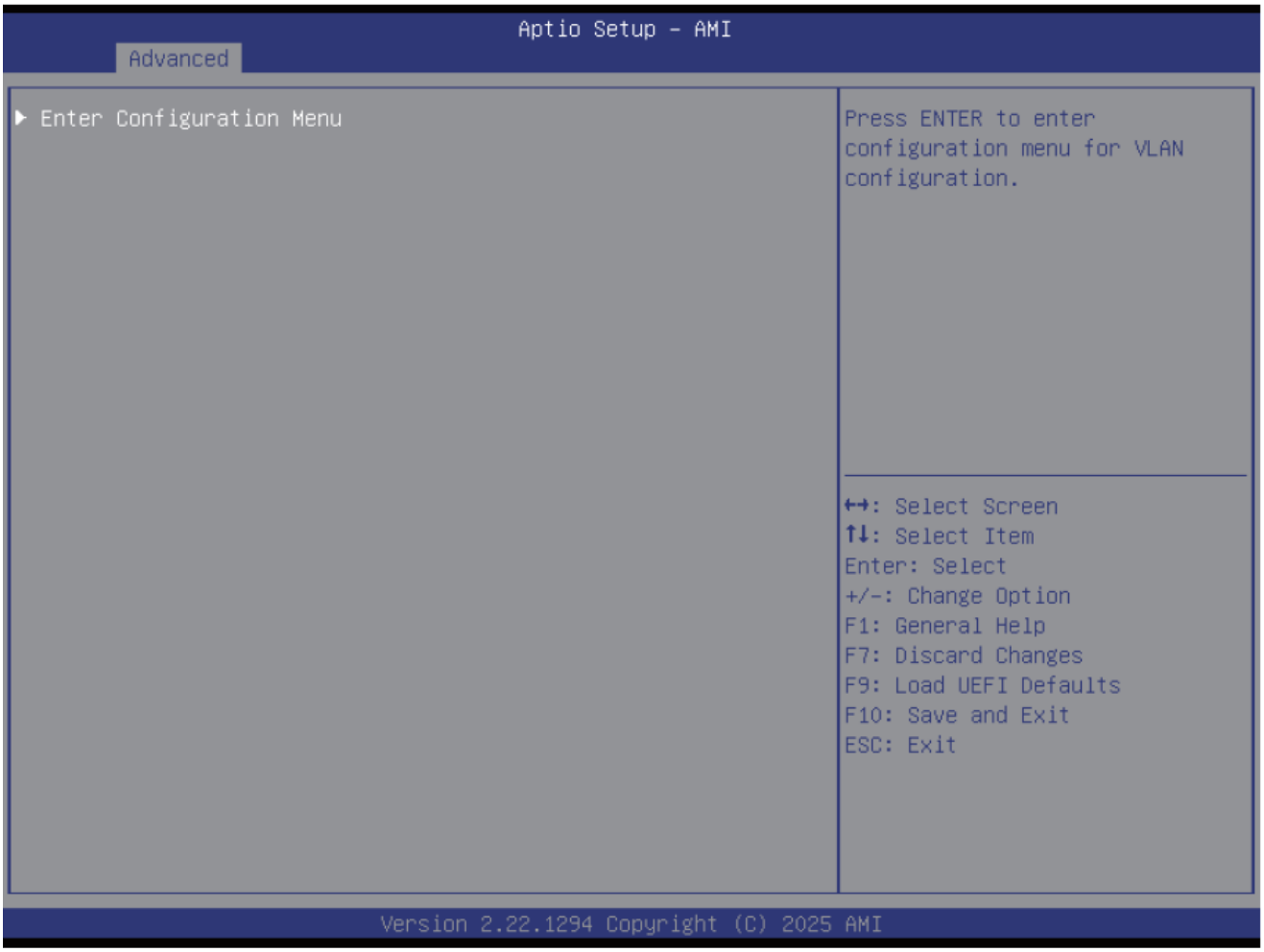
Blink LEDs

Identify the physical network port by blinking the associated LED.

Port Configuration Information

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

4.4.16 Intel(R) Ethernet Controller



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.

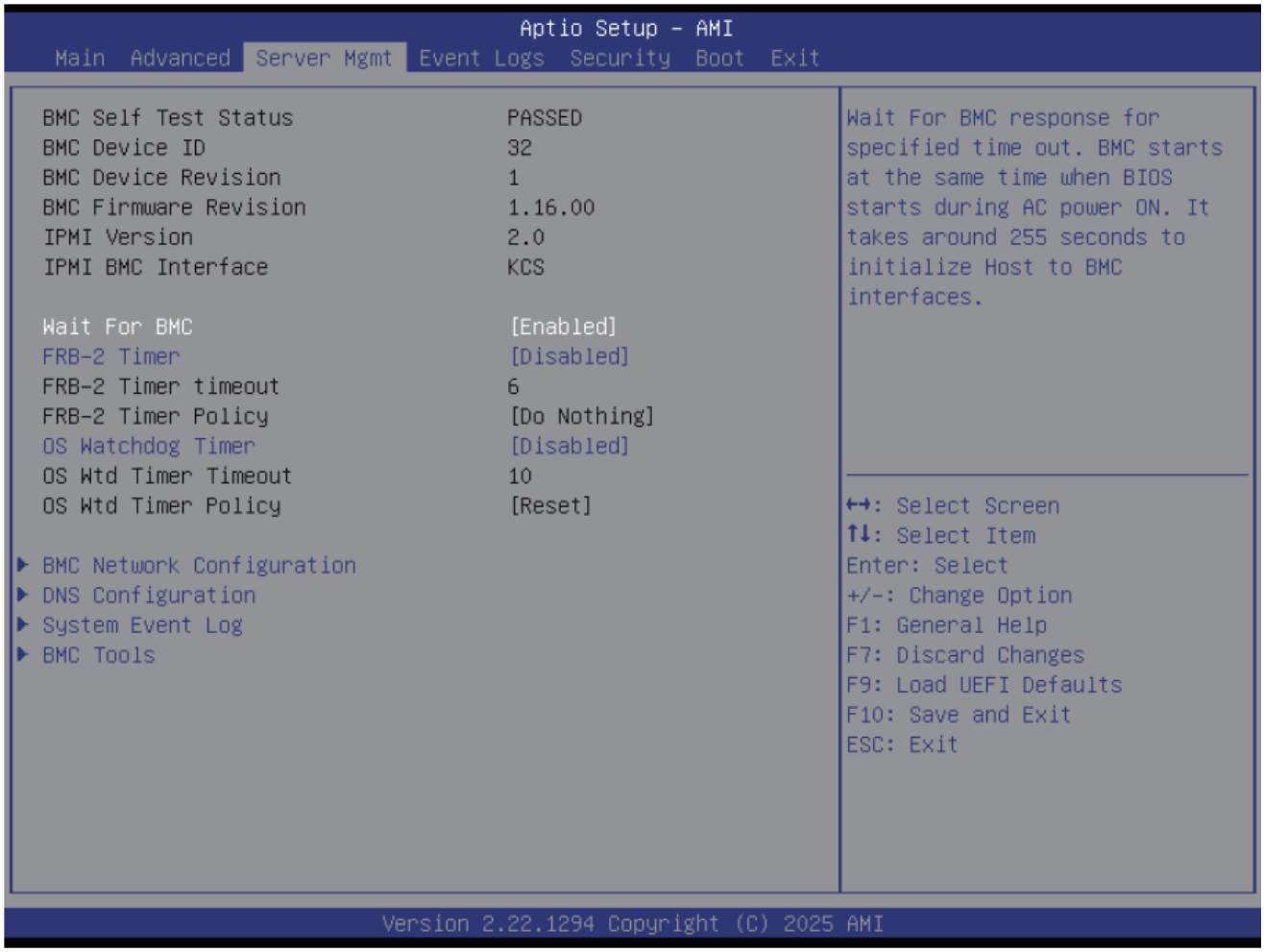
Remove VLAN

Use this item to remove selected VLANS.

4.4.17 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 WindowsR. 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.

4.5 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 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.

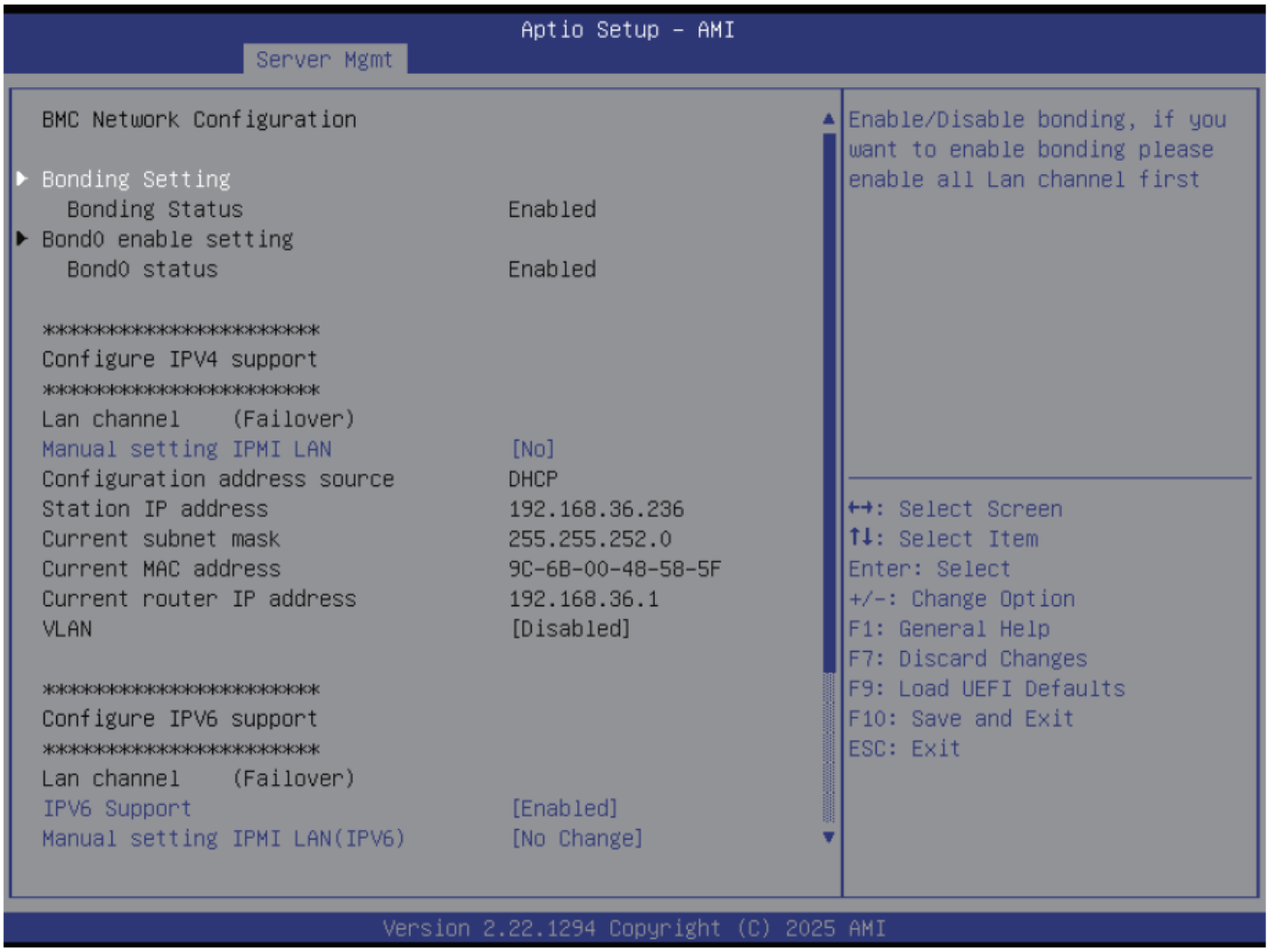
System Event Log

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 setings.

4.5.1 BMC Network Configuration



Bonding Setting

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

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.

Add :

The default login information for the IPMI web interface is:

Username: admin

Password: admin

For more instructions on how to set up remote control environment and use the IPMI management

platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/faq.asp

VLAN

Enable or disable Virtual Local Area Network.

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

VLAN ID

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

VLAN Priority

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

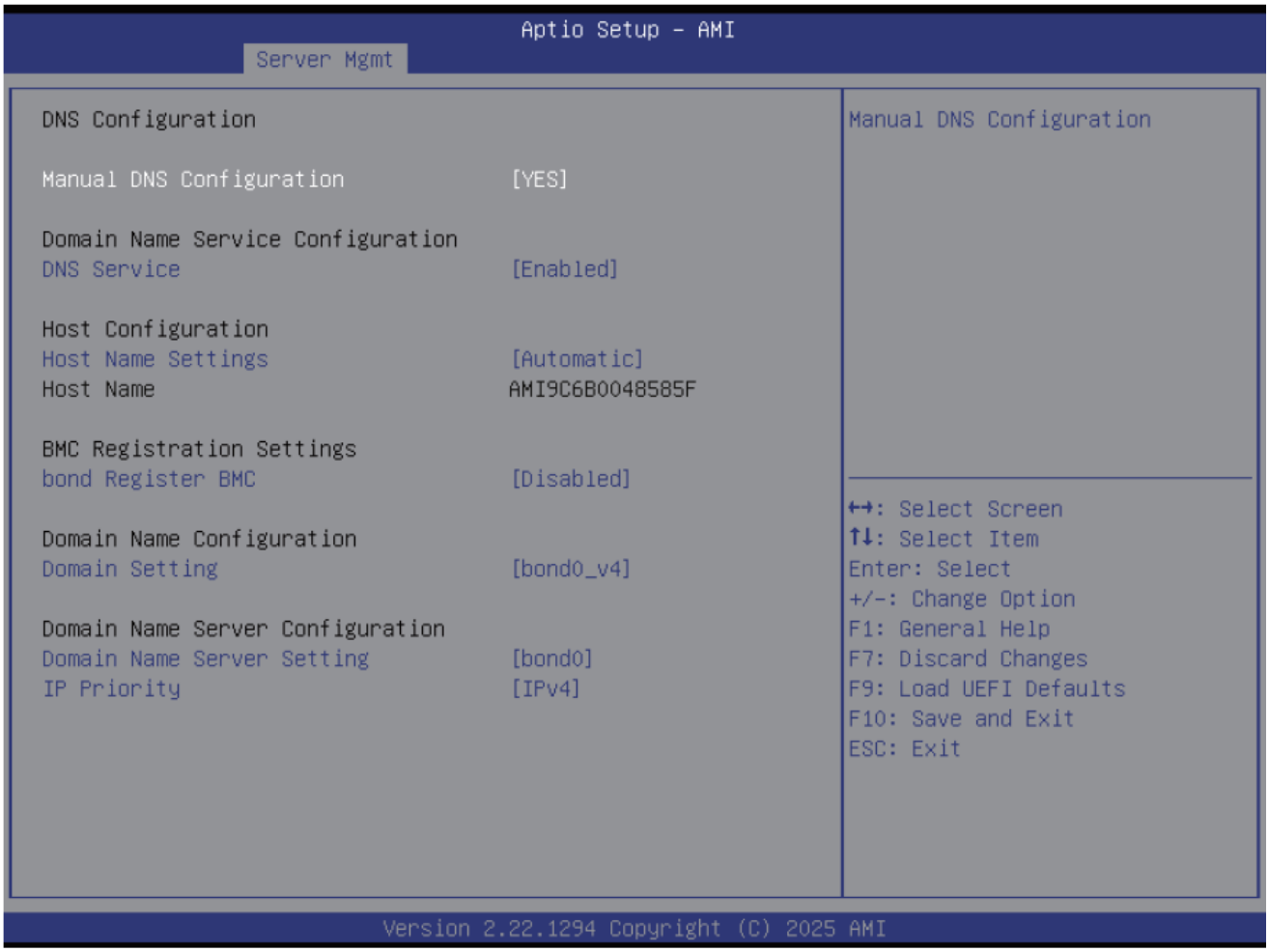
IPV6 Support

Enable or disable LAN IPV6 Support.

Manual Setting IPMI LAN(IPV6)

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

4.5.2 DNS Configuration



Manual DNS Configuration

Select this item to manual configure DNS.

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

DNS Service

Select this item to enable or disable DNS Service Configuration.

Host Name Settings

Select this item to automatic or manual Host Name Settings.

Bond Register BMC

Use this item to enable or disable Bond Register BMC.

Bond Register Method

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

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

Domain Name Server Setting

Select this item to configure DNS Server Settings.

IP Priority

Select this item to configure IP Priority.

4.5.3 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 earsing SEL.

When SEL is Full

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

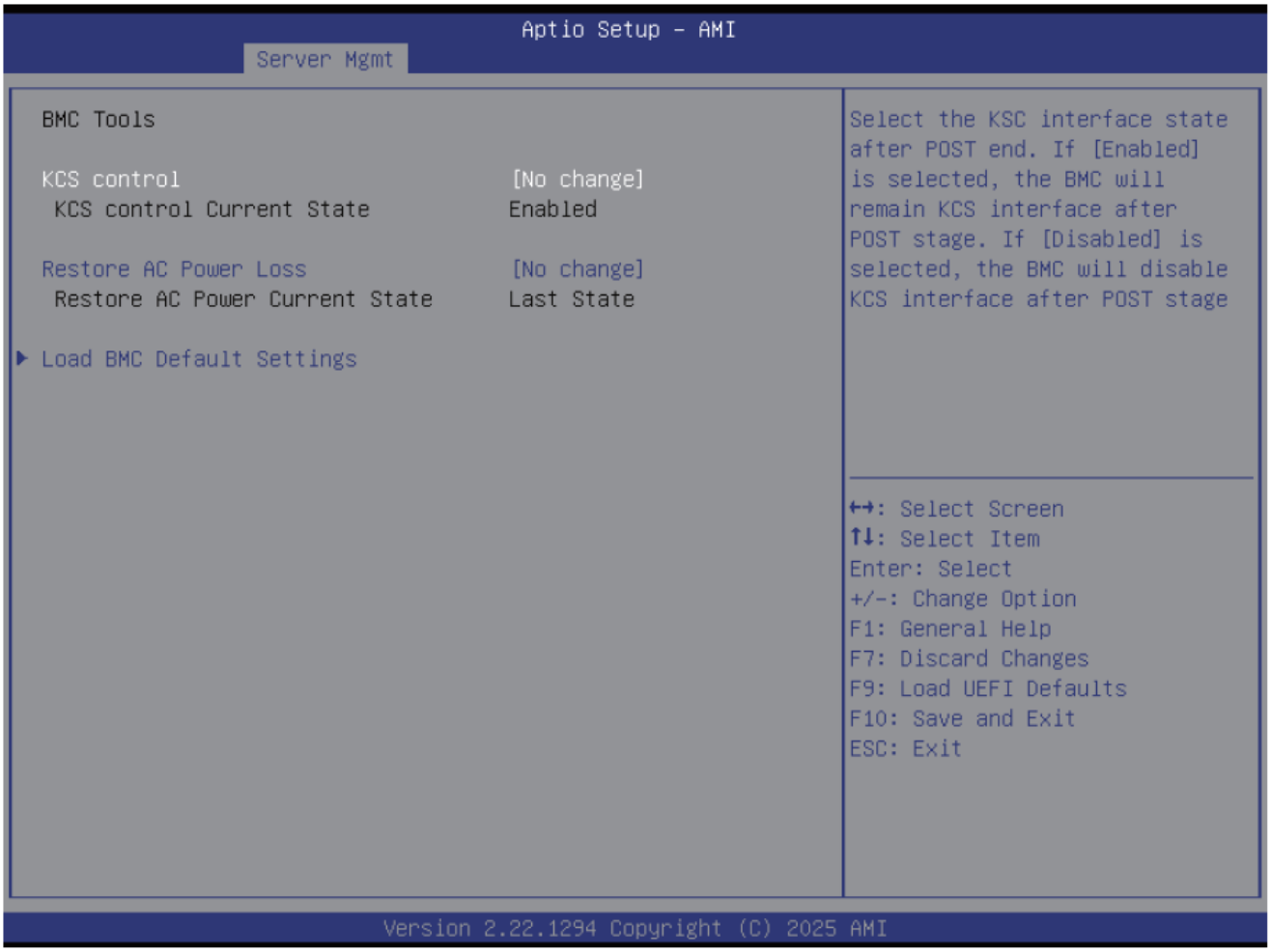
Log EFI Status Codes

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

PCIe Device Degrade ELog Support

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

4.5.4 BMC Tools



KCS Control

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

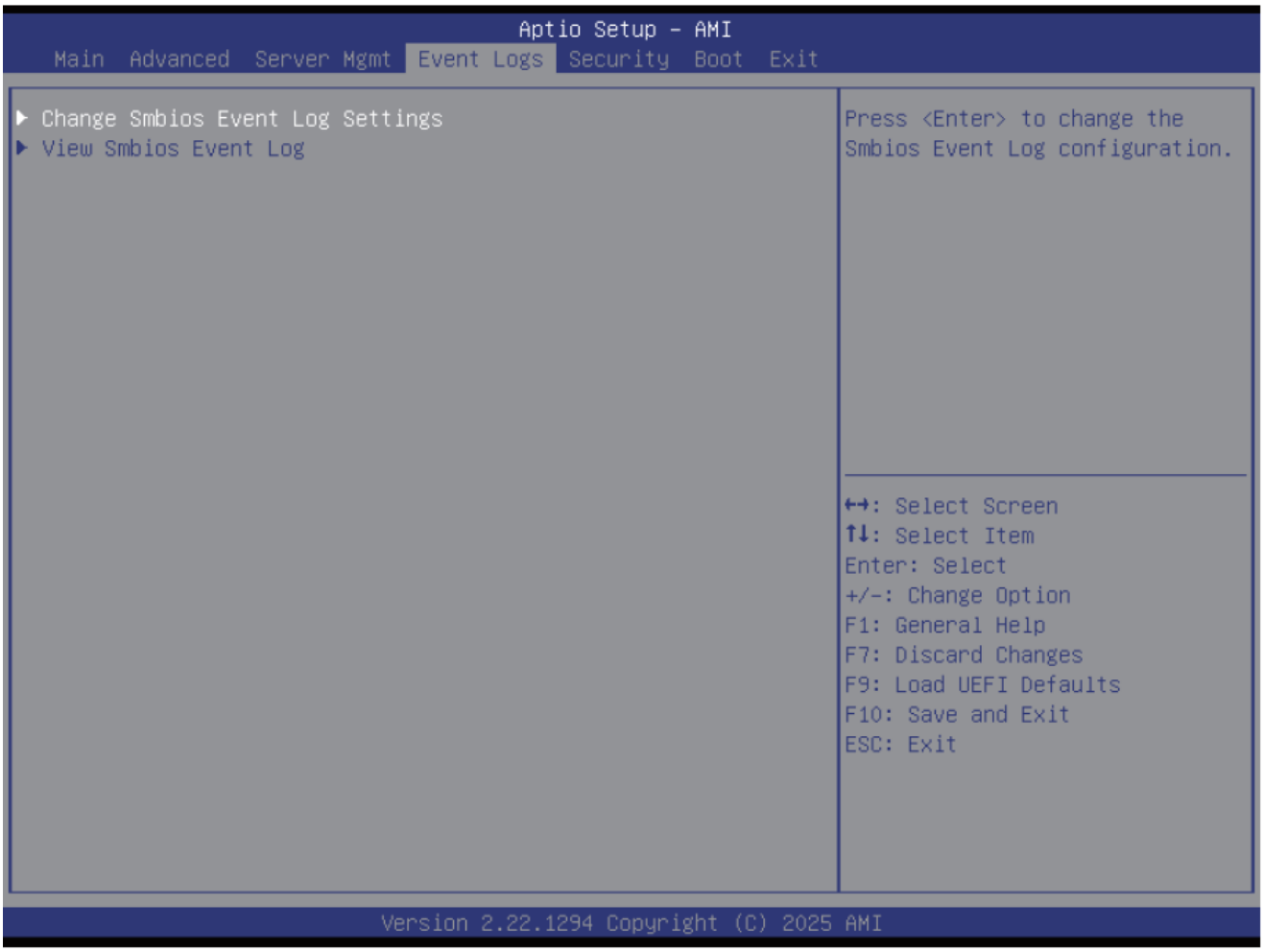
Restore AC Power Loss

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

Load BMC Default Settings

Use this item to Load BMC Default Settings

4.6 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.

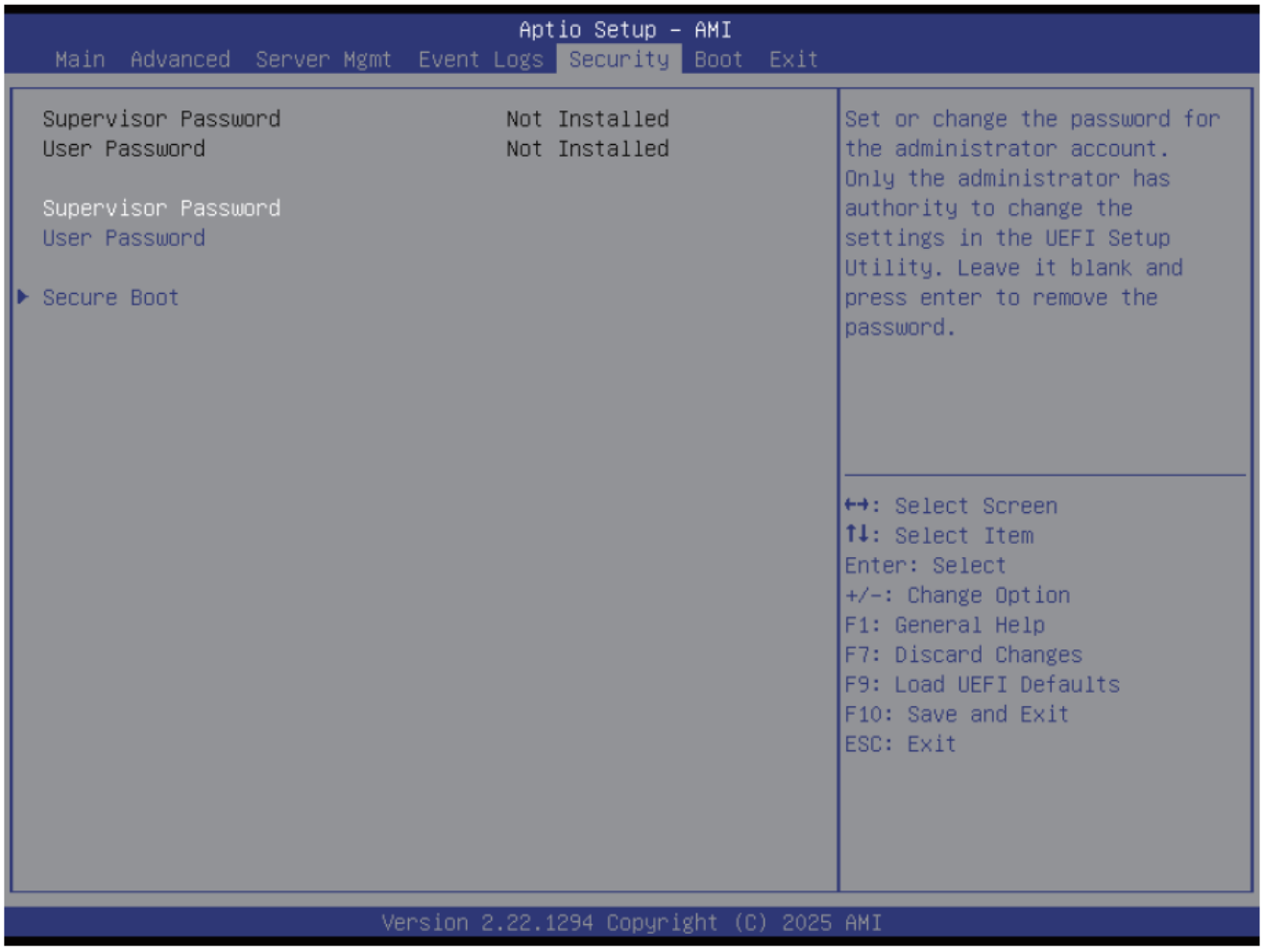
View Smbios Event Log

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

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

4.7 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.

Install Default Secure Boot Keys

Please install default secure boot keys if it' s the first time useing secure boot.

Clear Secure Boot Keys

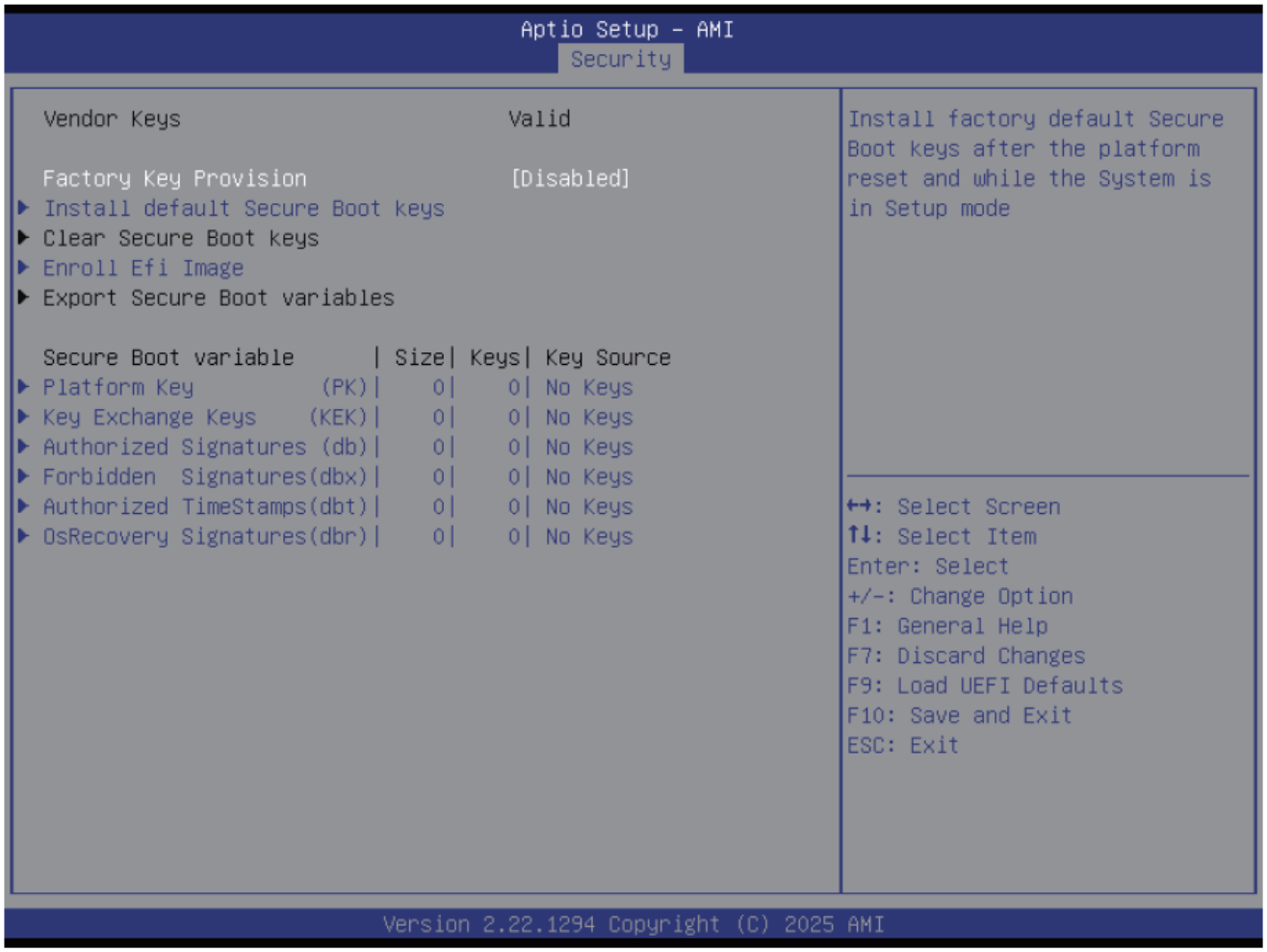
Use this to clear the secure boot keys.

Expert Key Management

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

4.7.1 Expert Key Management

In this section, expert user 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)

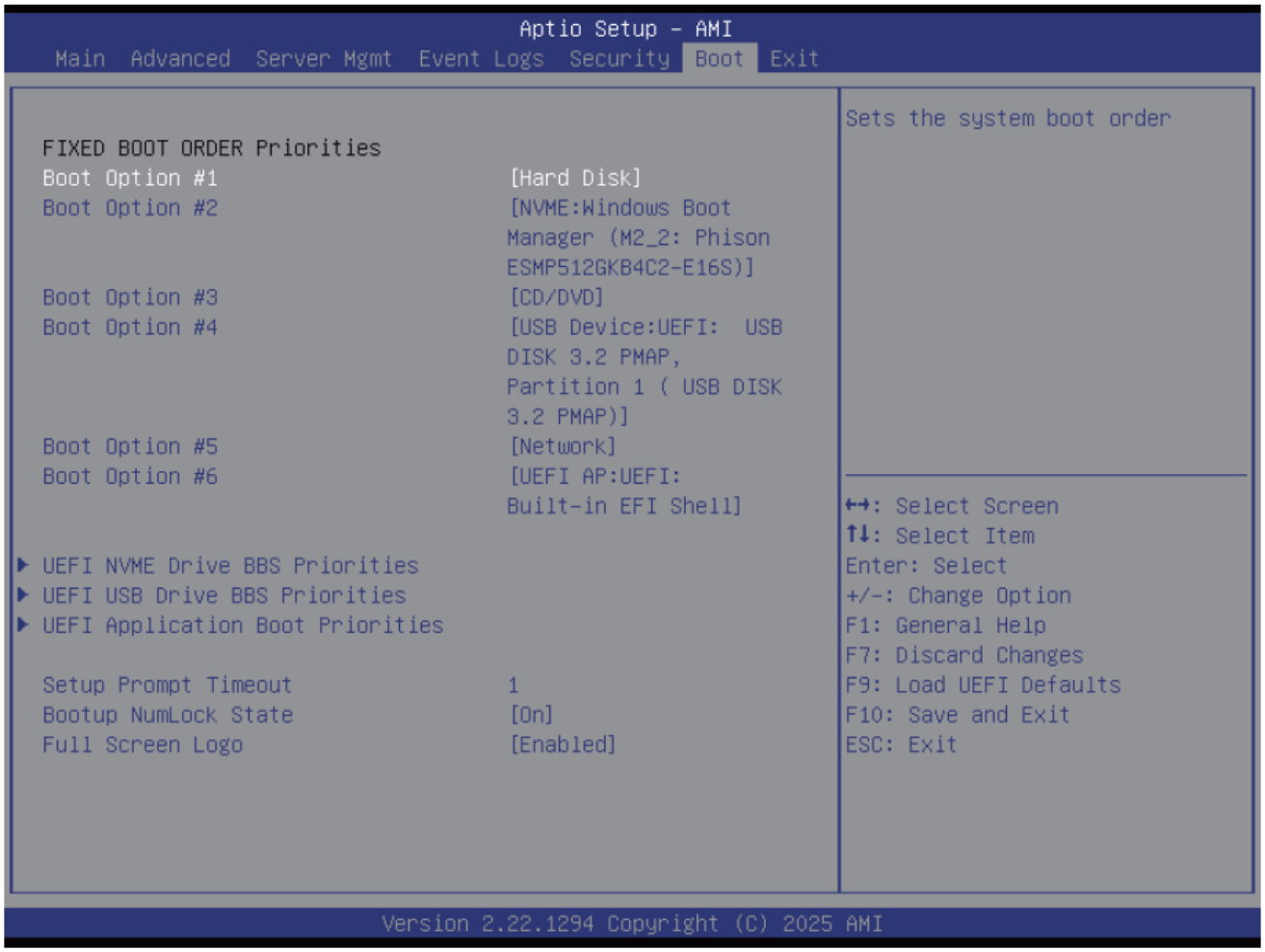
Enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate in:
a) EFI_SIGNATURE_LIST
b) EFI_CERT_X509 (DER)
c) EFI_CERT_RSA2048 (bin)
d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image(SHA256)
Key Source: Factory, Modified, Mixed

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

4.8 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 NVME Drive BBS Priorities

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

UEFI USB Drive BBS Priorities

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

UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

Setup Prompt Timeout

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

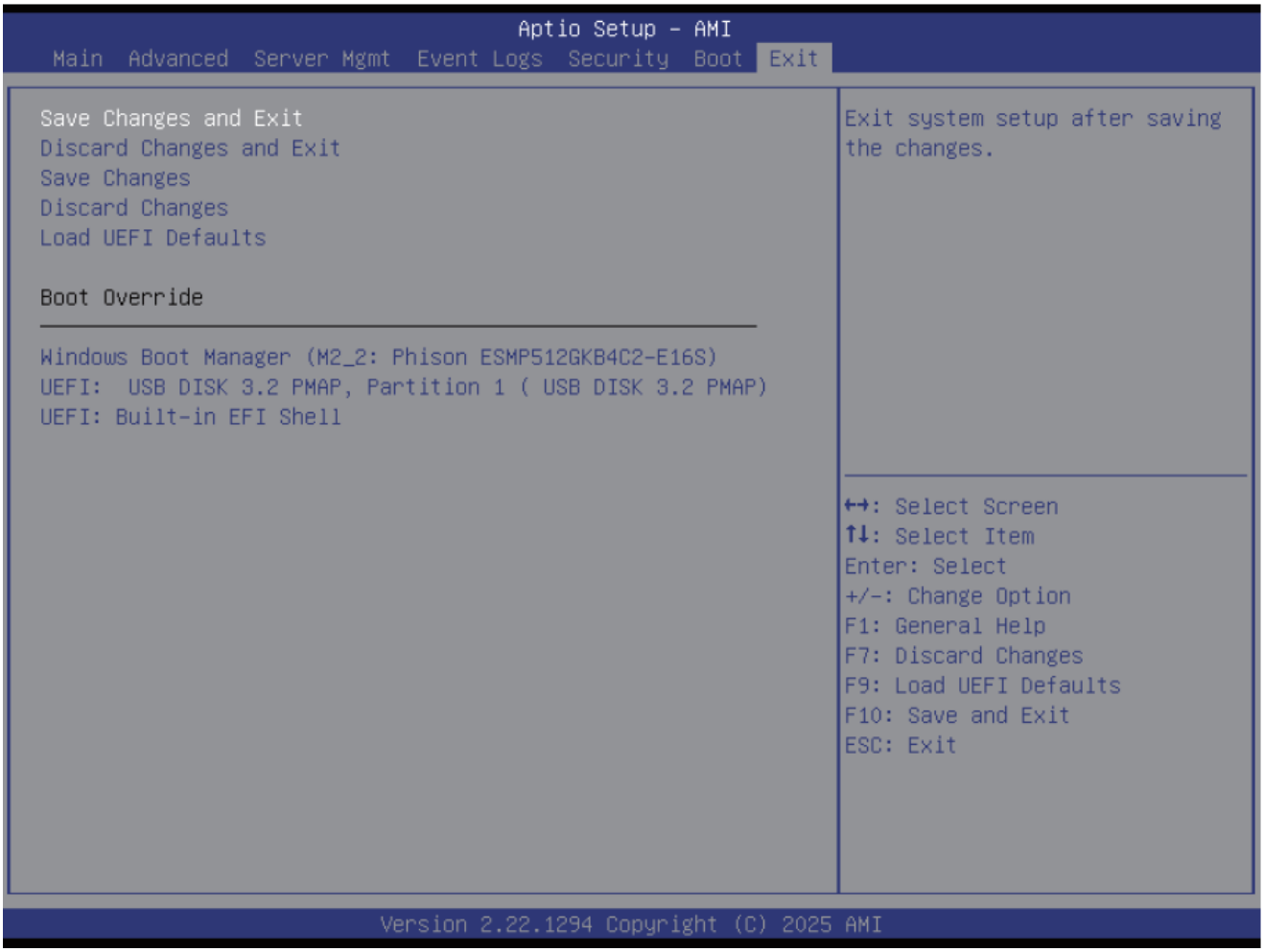
Bootup NumLock State

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

Full Screen Logo

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

4.9 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 or load default values for all the setup options.