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Industry Standard, Flexible Architecture

GREEN
Less Heat, Less Power Consumption

STABLE
Robust Design, Quality Parts

Stable and
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Server/Workstation
Motherboard

EC262D4-4L
EC266D4-4L

User Manual

English

Version 2.30
Published Nov. 2026

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WARNING

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

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CALIFORNIA, USA ONLY

The Lithium battery adopted on this motherboard contains Perchlorate, a toxic substance controlled in Perchlorate Best Management Practices (BMP) regulations passed by the California Legislature. When you discard the Lithium battery in California, USA, please follow the related regulations in advance.

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

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Our goods come with guarantees that cannot be excluded under the Australian Consumer Law. You are entitled to a replacement or refund for a major failure and compensation for any other reasonably foreseeable loss or damage caused by our goods. You are also entitled to have the goods repaired or replaced if the goods fail to be of acceptable quality and the failure does not amount to a major failure. If you require assistance please call ASRock Rack Tel : +886-2-55599600 ext.123 (Standard International call charges apply)

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

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reason able protection against harmful interference in a residential installation. This equipment-generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

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

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

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

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

Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack ***EC262D4-4L/EC266D4-4L*** 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.

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

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

1.1 Package Contents

- ASRock Rack EC262D4-4L/EC266D4-4L motherboard (ATX form factor: 12 in x 9.6 in, 305 nm x244 mm)
- Quick installation guide
- 1 SATA3 cable (60 cm)
- 1 I/O shield
- 1 Screw for M.2 socket *(for EC262D4-4L only)*
- 2 Screws for M.2 sockets *(for EC266D4-4L only)*

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

English

1.2 Specifications

EC262D4-4L/EC266D4-4L	
Physical Status	
Form Factor	ATX
Dimension	12 in x 9.6 in (305 mm x244 mm)
Processor System	
CPU	Supports Intel® Xeon® 6300-series, Xeon® E-2400 series, and Pentium® Gold G7400/G7400T processors
Socket	Single Socket (LGA 1700)
Thermal Design Power (TDP)	95W
Chipset	Intel® C262/Intel® C266
System Memory	
DIMM Quantity	4 DIMM slots (2DPC)
DIMM Type	Supports DDR5 288-pin ECC/non-ECC UDIMM
Max. Capacity per DIMM	32GB
Max. Frequency	4400 MT/s (2DPC - 1DIMM) / 4000 MT/s (2DPC - 2DIMM 1R) / 3600 MT/s (2DPC - 2DIMM 2R)
Voltage	1.1V
Note: Memory support is to be validated.	
PCIe Expansion Slots (SLOT7 close to CPU)	
PCIe x16	SLOT6: PCIe5.0 x16* [CPU]
PCIe x8	SLOT4: PCIe5.0 x8* [CPU]
**SLOT6 share lanes with SLOT4. SLOT6 will switch to x8 when SLOT4 is populated.*	
PCIe x4	SLOT7: PCIe4.0 x4 [CPU] SLOT2: PCIe4.0 x4 [PCH] *(for EC266D4-4L only)*
Other PCIe Expansion Connectors	
M.2	1 M-key M2_2 (PCIe4.0 x4); support 2280/2260/2242/2230 form factor [PCH] 1 M-key M2_3 (PCIe4.0 x4); support 2280/2260/2242/2230 form factor [PCH] *(for EC266D4-4L only)*
SATA/SAS Storage	
PCH Built-in Storage	Intel® C262/C266 (8 SATA 6 Gb/s; RAID 0/1/5/10): 8 SATA 7-pin
Additional SATA Controller	ASM1061 (6 SATA 6 Gb/s): 6 SATA 7-pin
Ethernet	
Additional GbE Controller	4 RJ45 (1GbE) by Intel® i210

Server Management	
BMC Controller	ASPEED AST2600: iKVM, vMedia support
Dedicated IPMI LAN	1 RJ45 Dedicated IPMI LAN port by Realtek RTL8211F
Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA)
Rear I/O	
UID	1 UID button w/ LED
Video Port	1 DB15 (VGA)
Serial Port	1 DB9 (COM)
USB Port	2 Type A (USB 3.2 Gen1)
LAN Port	4 RJ45 (1 GbE), 1 dedicated IPMI
Internal Connectors/Headers	
Power Connector	1 (24-pin, ATX main power), 3 (8-pin, ATX 12V)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN activity LEDs, locate, SMBus
System Panel Header	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
VGA Header	1
Speaker Header	1 (4-pin)
Fan Header	7 (4-pin)
Thermal Sensor Header	1
TPM Header	1 (13-pin, SPI)
NMI Header	1
SGPIO Header	1
SMBus Header	1
PMBus Header	1
IPMB Header	1
Clear CMOS	1 (contact pads)
Front Lan LED Connector	1
USB Header	2 (19-pin, 4 USB 3.2 Gen1) 1 (9-pin, 2 USB 2.0)
Others	1 Buzzer
LED Indicators	
Standby PWR LED	1 (5VSB)
80 Debug Port LED	1
Fan Fail LED	7
BMC Heartbeat LED	1
BIOS	
Type	AMI 256Mb SPI Flash ROM
Features	Plug and Play, ACPI 6.4 (and above) compliance wake-up events, SMBIOS 2.8 and above, ASRock Rack Instant Flash

Hardware Monitor	
Temperature	CPU, MB1~MB4, M.2, TR temperature sensing
Fan	Fan tachometer CPU quiet fan (Allow chassis fan speed auto-adjust by CPU temperature.) Fan multi-speed control
Voltage	3VSB, 5VSB, CPU_VCORE, VCCIN_AUX,VDD2, 1.05V_PCH, 0V82SB_PCH, 1V8SB, VCCSA, BAT, 3V, 5V, 12V
Support OS	
OS	Microsoft® Windows® - Server 2022 (64 bit) - Server 2025 (64 bit) Linux® - Red Hat Enterprise Linux Server 8.5 (64 bit) / 9.2 (64 bit) - SUSE Enterprise Linux Server 15 SP3 (64 bit) / 15 SP5 (64 bit) - Ubuntu 21.04 (64 bit) / 22.04.2 (64 bit) ** Please refer to the website for the latest OS support list.*
Environment	
Temperature	Operating temperature: 10°C ~ 35°C Non operating temperature: -40°C ~ 70°C
Humidity	Non operating humidity: 20% ~ 90% (non-condensing)

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

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.

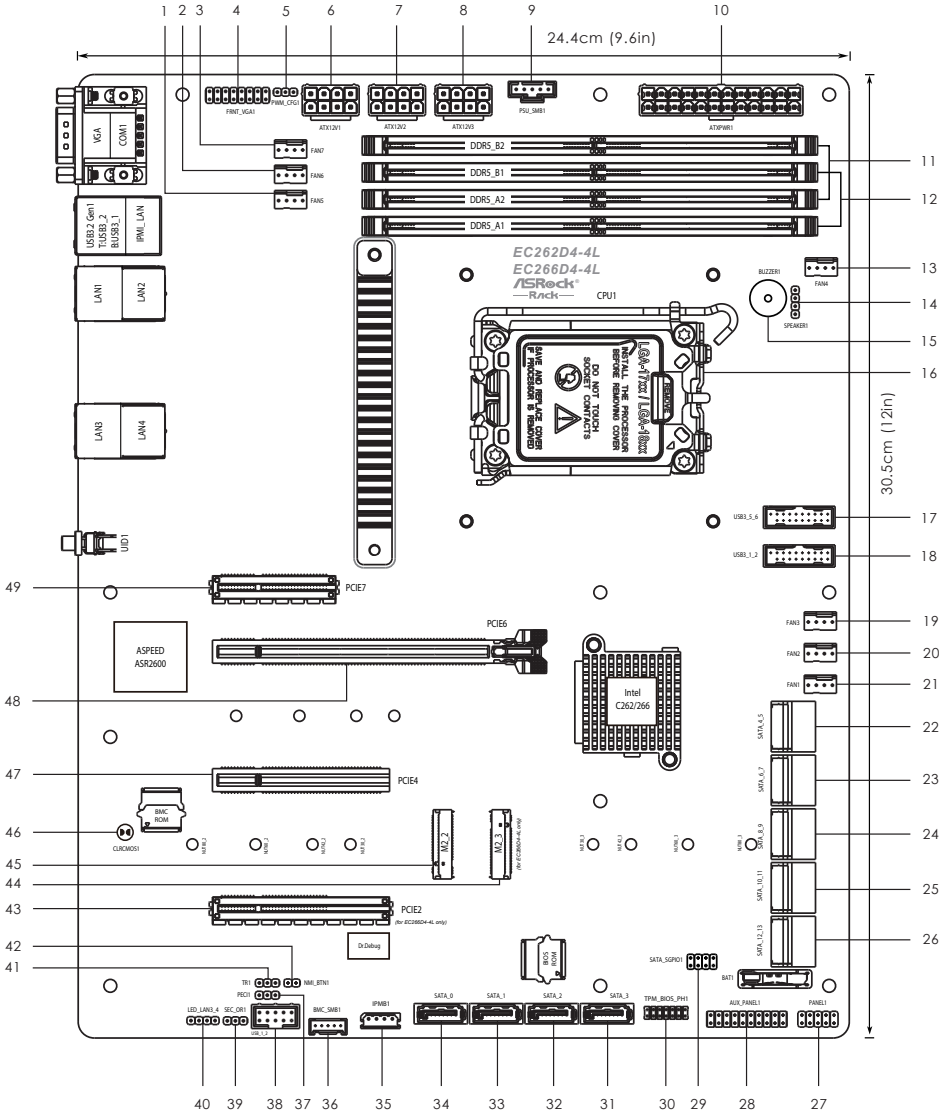
If installing Intel® LAN utility or Marvell SATA utility, this motherboard may fail Windows® Hardware Quality Lab (WHQL) certification tests. If installing the drivers only, it will pass the WHQL tests.

English

1.3 Unique Features

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

1.4 Motherboard Layout



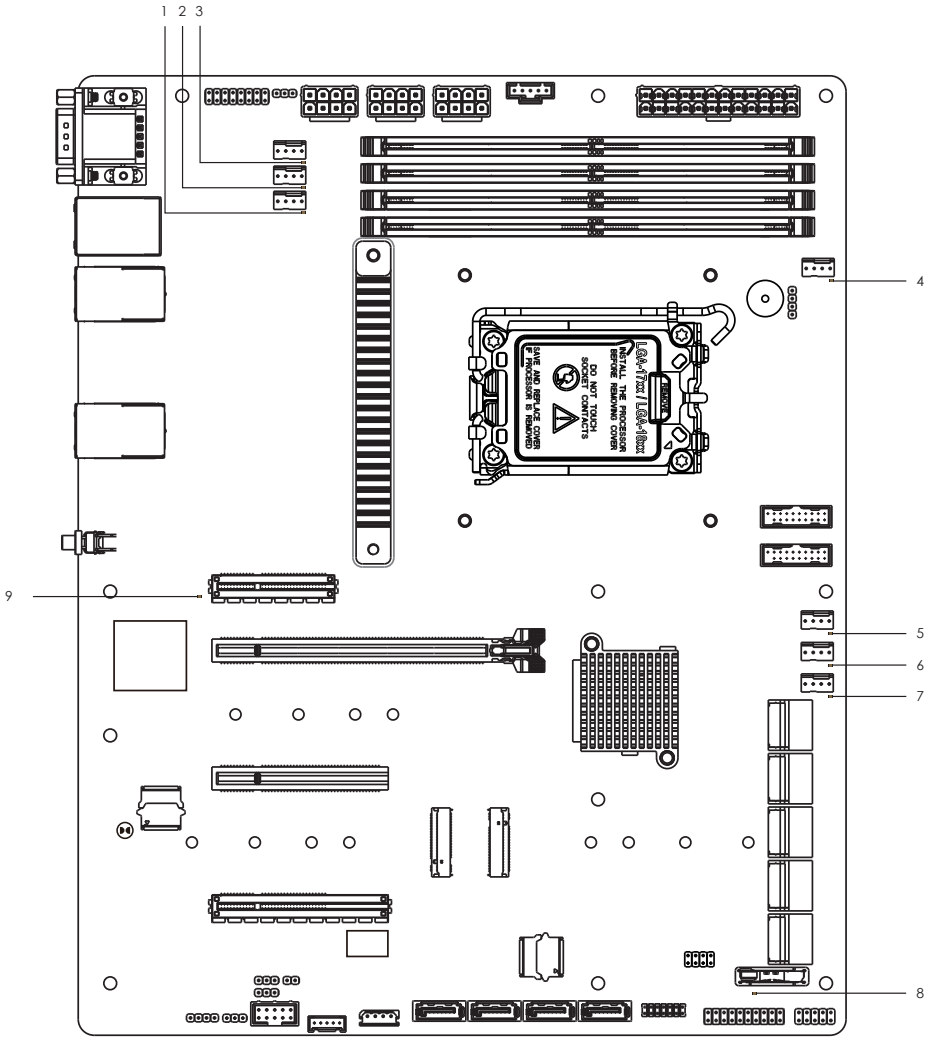
No.	Description
1	Chassis Fan Header (FAN5)
2	Chassis Fan Header (FAN6)
3	Chassis Fan Header (FAN7)
4	Front VGA Header (FRNT_VGA1)
5	PWM Configuration Header (PWM_CFG1)
6	ATX 12V Power Connector (ATX12V1)
7	ATX 12V Power Connector (ATX12V2)
8	ATX 12V Power Connector (ATX12V3)
9	PSU SMBus Header (PSU_SMB1)
10	ATX Power Connector (ATXPWR1)
11	2 x 288-pin DDR5 DIMM Slots (DDR5_A2, DDR5_B2)*
12	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_B1)*
13	Chassis Fan Header (FAN4)
14	Chassis Speaker Header (SPEAKER1)
15	BUZZER1
16	LGA 1700 CPU Socket (CPU1)
17	USB 3.2 Gen1 Header (USB3_5_6)
18	USB 3.2 Gen1 Header (USB3_1_2)
19	Chassis Fan Header (FAN3)
20	Chassis Fan Header (FAN2)
21	Chassis Fan Header (FAN1)
22	SATA3 Connectors (SATA_4)(Lower), (SATA_5)(Upper)
23	SATA3 Connectors (SATA_6)(Lower), (SATA_7)(Upper)
24	SATA3 Connectors (SATA_8)(Lower), (SATA_9)(Upper)
25	SATA3 Connectors (SATA_10)(Lower), (SATA_11)(Upper)
26	SATA3 Connectors (SATA_12)(Lower), (SATA_13)(Upper)
27	System Panel Header (PANEL1)
28	Auxiliary Panel Header (AUX_PANEL1)
29	SATA SGPIO Connector (SATA_SGPIO1)
30	SPI TPM Header (TPM_BIOS_PH1)
31	SATA3 Connector (SATA_3)
32	SATA3 Connector (SATA_2)
33	SATA3 Connector (SATA_1)
34	SATA3 Connector (SATA_0)

No.	Description
35	Intelligent Platform Management Bus Header (IPMB1)
36	BMC SMBus Header (BMC_SMB1)
37	CPU PECI Mode Jumper (PECI1)
38	USB 2.0 Header (USB_1_2)
39	Security Override Jumper (SEC_OR1)
40	Front LAN LED Connector (LED_LAN3_4)
41	Thermal Sensor Header (TR1)
42	Non Maskable Interrupt Button (NMI_BTN1)
43	PCI Express 4.0 x4 Slot (PCIE2) *(for EC266D4-4L only)*
44	M.2 Socket (M2_3) (Type 2230/2242/2260/2280) *(for EC266D4-4L only)*
45	M.2 Socket (M2_2) (Type 2230/2242/2260/2280)
46	Clear CMOS Pad (CLRCMOS1)
47	PCI Express 5.0 x8 Slot (PCIE4)
48	PCI Express 5.0 x16/x8 Slot (PCIE6)
49	PCI Express 4.0 x4 Slot (PCIE7)

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

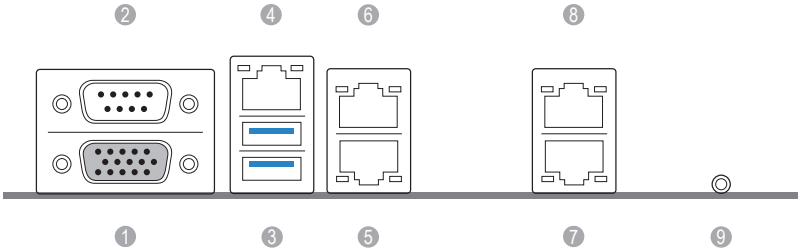
1.5 Onboard LED Indicators

The layout below is only for reference, both C262 and C266 LED locations are the same.



No.	Item	Status	Description
1	LED_FAN5	Red	FAN5 failed
2	LED_FAN6	Red	FAN6 failed
3	LED_FAN7	Red	FAN7 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN3	Red	FAN3 failed
6	LED_FAN2	Red	FAN2 failed
7	LED_FAN1	Red	FAN1 failed
8	SB_PWR1	Green	STB PWR ready
9	BMC_LED1	Green	BMC heartbeat LED

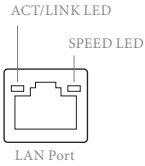
1.6 I/O Panel



No.	Description	No.	Description
1	VGA Port (VGA)	6	1G LAN RJ-45 Port (LAN2)**
2	Serial Port (COM1)	7	1G LAN RJ-45 Port (LAN3)**
3	USB 3.2 Gen1 Ports (USB3_3_4)	8	1G LAN RJ-45 Port (LAN4)**
4	LAN RJ-45 Port (IPMI_LAN)*	9	UID Switch (UID1)
5	1G LAN RJ-45 Port (LAN1, shared NIC)**		

LAN Port LED Indications

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

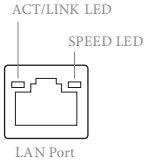


IPMI LAN Port LED Indications

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

English

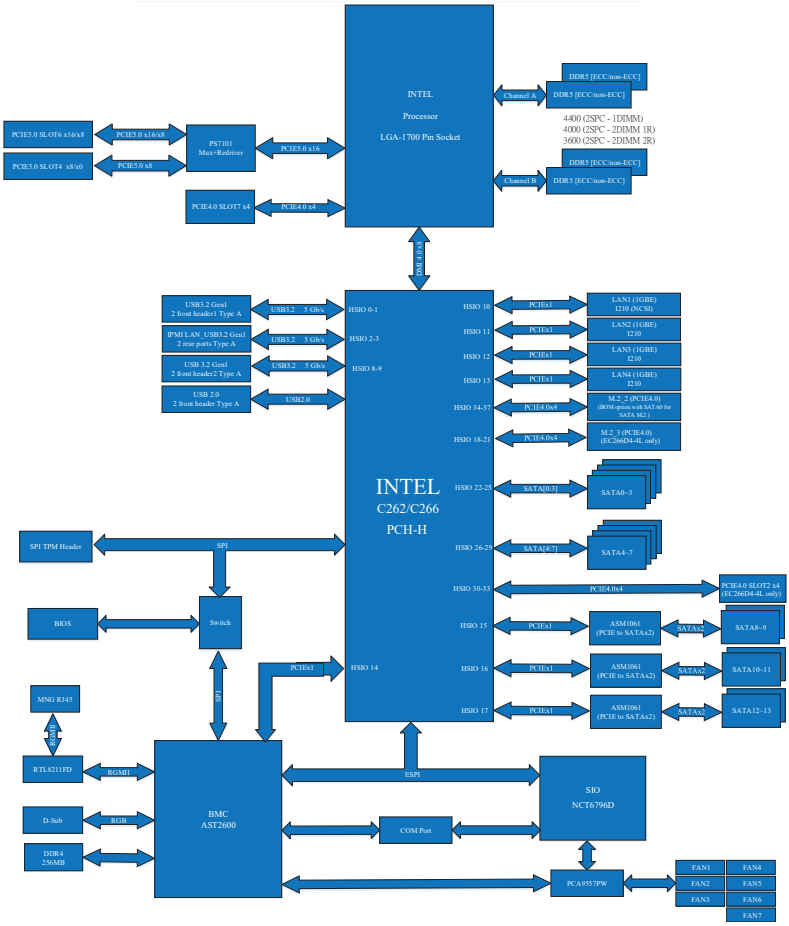
**There is an LED on each side of 1G LAN port. Please refer to the table below for the LAN port LED indications.



1G LAN Port 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



English

Chapter 2 Installation

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

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

2.1 Screw Holes

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

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

2.2 Pre-installation Precautions

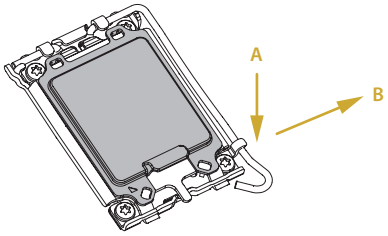
Take note of the following precautions before installing motherboard components or change any motherboard settings.

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

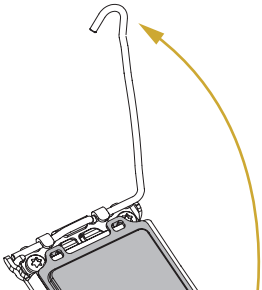
2.3 Installing the CPU

1. *Before inserting the 1700-Pin 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.*

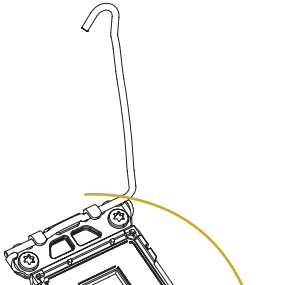
1

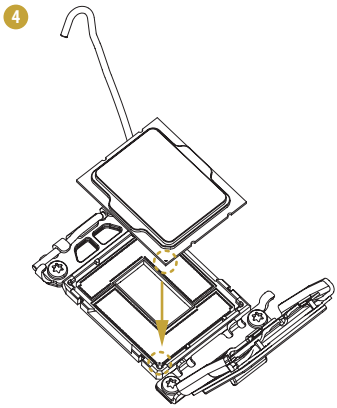


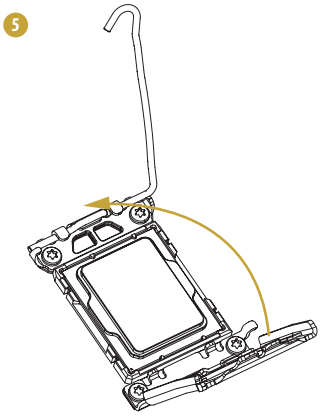
2

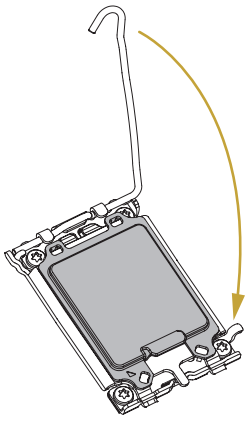


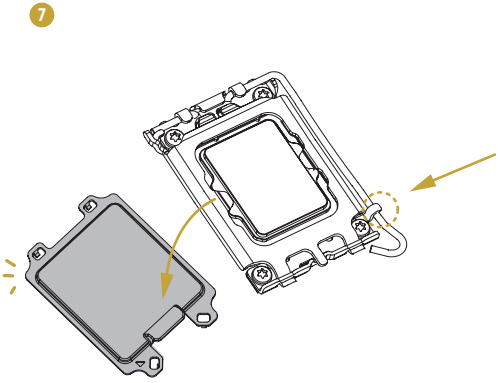
3





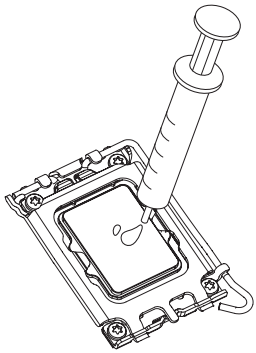


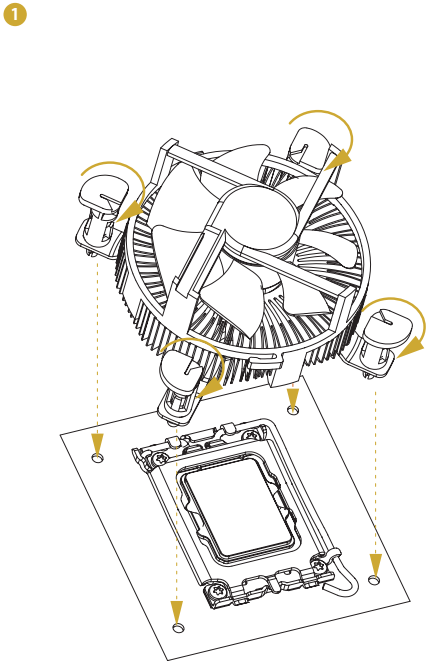




Please save and replace the cover if the processor is removed. The cover must be placed if wishing to return the motherboard for after service.

2.4 Installing the CPU Fan and Heatsink





2.5 Installing the 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, it always needs to 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.*

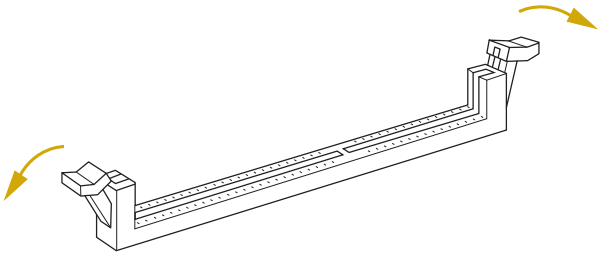
Dual Channel Memory Configuration

Priority	DDR5_A1	DDR5_A2	DDR5_B1	DDR5_B2
1		V		V
2	V	V	V	V

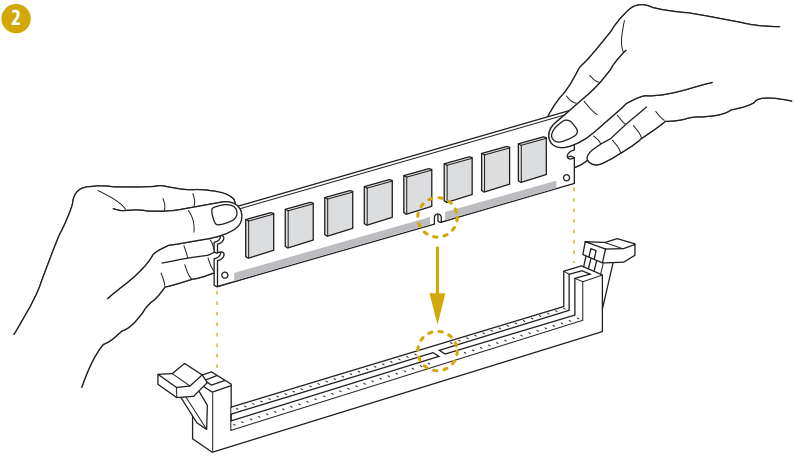
The symbol V indicates the slot is populated.

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.

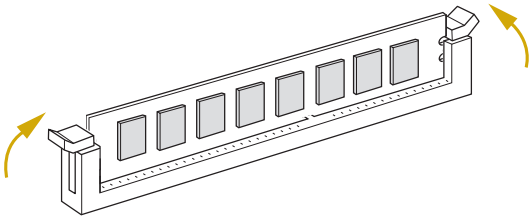
1



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 Slots (PCI Express Slots)

There are 4 PCI Express slots on this motherboard.

PCIE slots:

PCIE7 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.
PCIE6 (PCIe 5.0 x16/x8 slot) is used for PCI Express x8/x16 lane width cards.
PCIE4 (PCIe 5.0 x8 slot) is used for PCI Express x8 lane width cards.
PCIE2 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards. *(for EC266D4-4L only)*

Slot	Generation	Mechanical	Electrical	Source
PCIE 7	4.0	x4	x4	CPU
PCIE 6	5.0	x16	x16/x8	CPU
PCIE 4	5.0	x8	x8	CPU
PCIE 2	4.0	x8	x4	PCH

** SLOT6 share lanes with SLOT4. SLOT6 will switch to x8 when SLOT4 is populated.*

PCI Express Slot Configuration

	PCIE 4	PCIE6
Single PCIE Card	x0	x16
Two PCIE Cards	x8	x8

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.

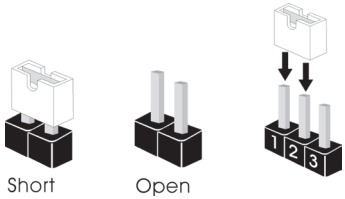
Step 4. Align the card connector with the slot and press firmly until the card is completely seated on the slot.

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.



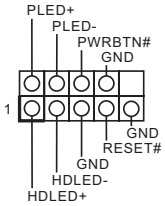
Security Override Jumper (3-pin SEC_OR1) (see p.6, No. 39)	1_2  Descriptor Security Override	2_3  Not override (Default)
CPU PECI Mode Jumper (3-pin PECI1) (see p.6, No. 37)	1_2  CPU PECI connected to PCH	2_3  CPU PECI connected to BMC (Default)

English

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. 27)



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

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

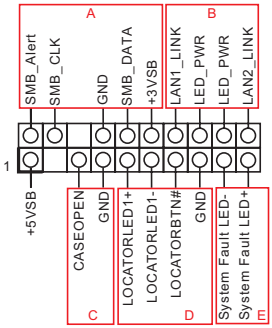
RESET (Reset Switch):
Connect to the reset switch on the chassis front panel. Press the reset switch to restart the computer if the computer freezes and fails to perform a normal restart.

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

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

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

Auxiliary Panel Header
(18-pin AUX_PANEL1)
(see p.6, No. 28)



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

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

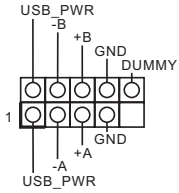
B. Internet status indicator (2-pin LAN1_LED, LAN2_LED)
These two 2-pin headers allow user to use the Gigabit internet indicator cable to connect to the LAN status indicator. When this indicator flickers, it means that the internet is properly connected.

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

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

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

USB 2.0 Header
(9-pin USB_1_2)
(see p.6, No. 38)



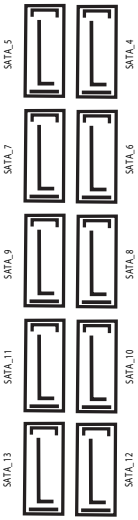
There is one USB 2.0 header on this motherboard. Each USB 2.0 header can support two ports.

English

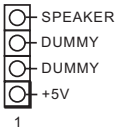
Serial ATA3 Connectors
(SATA_0)
(see p.6, No. 34)
(SATA_1)
(see p.6, No. 33)
(SATA_2)
(see p.6, No. 32)
(SATA_3)
(see p.6, No. 31)

These SATA3 connectors support SATA data cables for internal storage devices with up to 6.0 Gb/s data transfer rate.

Right Angle:
(SATA_4) (Lower)
(SATA_5) (Upper)
(see p.6, No. 22)
(SATA_6) (Lower)
(SATA_7) (Upper)
(see p.6, No. 23)
(SATA_8) (Lower)
(SATA_9) (Upper)
(see p.6, No. 24)
(SATA_10) (Lower)
(SATA_11) (Upper)
(see p.6, No. 25)
(SATA_12) (Lower)
(SATA_13) (Upper)
(see p.6, No. 26)



Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 14)



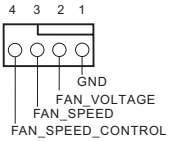
Please connect the chassis speaker to this header.

Thermal Sensor Header
(3-pin TR1)
(see p.6, No. 41)

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

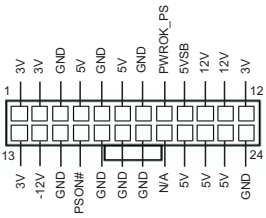
English

System Fan Headers
(4-pin FAN1)
(see p.6, No. 21)
(4-pin FAN2)
(see p.6, No. 20)
(4-pin FAN3)
(see p.6, No. 19)
(4-pin FAN4)
(see p.6, No. 13)
(4-pin FAN5)
(see p.6, No. 1)
(4-pin FAN6)
(see p.6, No. 2)
(4-pin FAN7)
(see p.6, No. 3)



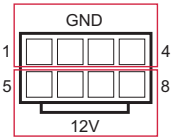
Please connect fan cables to the fan headers and match the black wire to the ground pin. All fans support Fan Control. The fan max. current is 4A and the max. power is 48Watts.

ATX Power Connector
(24-pin ATXPWR1)
(see p.6, No. 10)



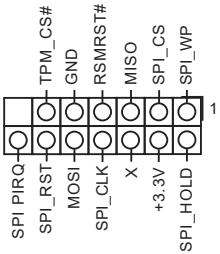
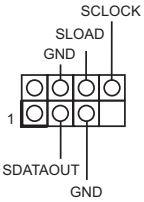
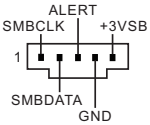
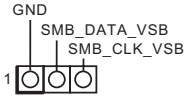
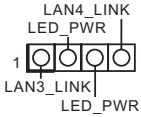
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

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



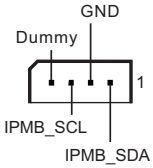
This motherboard provides three 8-pin ATX 12V power connectors.

English

SPI TPM Header (13-pin TPM_BIOS_PH1) (see p.6, No. 30)		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.
Serial General Purpose Input/Output Header (7-pin SATA_SGPIO1) (see p.6, No. 29)		The header supports Serial Link interface for onboard SATA connections.
PSU SMBus (PSU_SMB1) (see p.6, No. 9)		PSU SMBus monitors the status of the power supply, fan and system temperature.
Non Maskable Interrupt Button Header (NMI_BTN1) (see p.6, No. 42)		Please connect a NMI device to this header.
PWM Configuration Header (3-pin PWM_CFG1) (see p.6, No. 5)		This header is used for PWM configurations.
Front LAN LED Connector (LED_LAN3_4) (see p.6, No. 40)		This 4-pin connector is used for the front LAN status indicator.

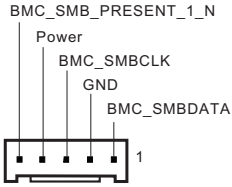
English

Intelligent Platform Management Bus Header (4-pin IPMB1) (see p.6, No. 35)



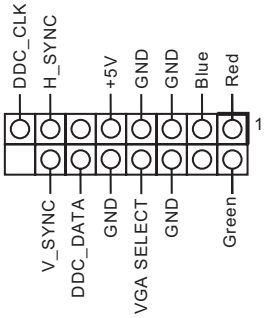
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

Baseboard Management Controller SMBus Header (5-pin BMC_SMB1) (see p.6, No. 36)



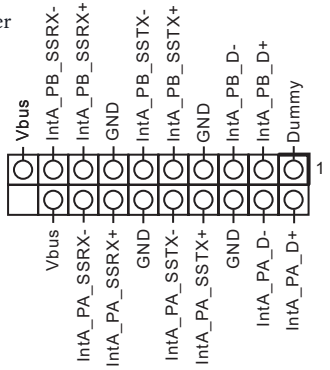
The header is used for the SM BUS devices.

Front VGA Header (15-pin FRNT_VGA1) (see p.6, No. 4)



Please connect either end of VGA_2X8 cable to VGA header.

USB 3.2 Gen1 Header (19-pin USB3_1_2) (see p.6, No. 18)
(19-pin USB3_5_6) (see p.6, No. 17)



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.

English

Clear CMOS Pad (CLRCMOS1) (see p.6, No. 46)		CLRMOS1 allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.

2.9 Dr. Debug

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

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

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

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

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

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

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

2.10 Unit Identification purpose LED/Switch

Use the UID button to locate the server working on behind a rack of servers.

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

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

2.11 Dual LAN and Teaming Operation Guide

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

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

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

Step 1

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

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

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

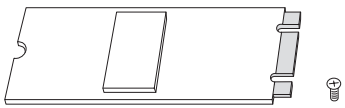
If do not specify a preferred primary adapter, the software will choose an adapter of the highest capability (model and speed) to act as the default primary. If a failover occurs, another adapter becomes the primary. The adapter will, however, rejoin the team as a non-primary.

2.12 M.2 SSD Module Installation Guide

The motherboard supports two M.2 Sockets:

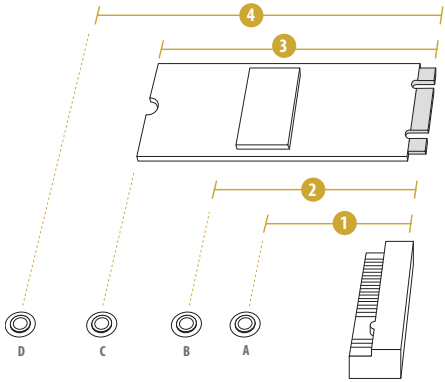
- The M.2 Socket (M2_2, Key M) supports a M.2 PCI Express moduel up to Gen4x4 (16Gb/s x4). [PCH]
- The M.2 Socket (M2_3, Key M) supports a M.2 PCI Express moduel up to Gen4x4 (16Gb/s x4). [PCH] *(for EC266D4-4L only)*

Installing the M.2 SSD Module



Step 1

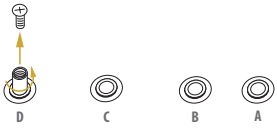
Prepare a M.2 SSD module and the screw.

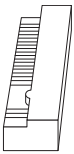


Step 2

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

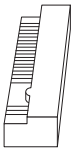
No.	1	2	3	4
Nut Location	A (NUT30_2/3)	B (NUT42_2/3)	C (NUT60_2/3)	D (NUT80_2/3)
PCB Length	3 cm	4.2 cm	6 cm	8 cm
Module Type	Type2230	Type2242	Type2260	Type2280





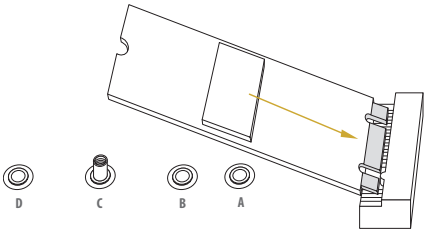
Step 3

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



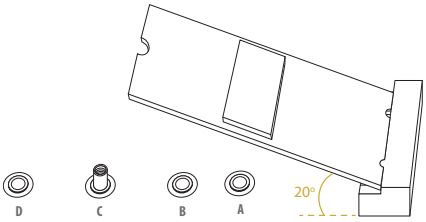
Step 4

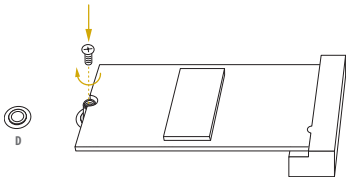
Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.



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

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

English

3.1.2 Navigation Keys

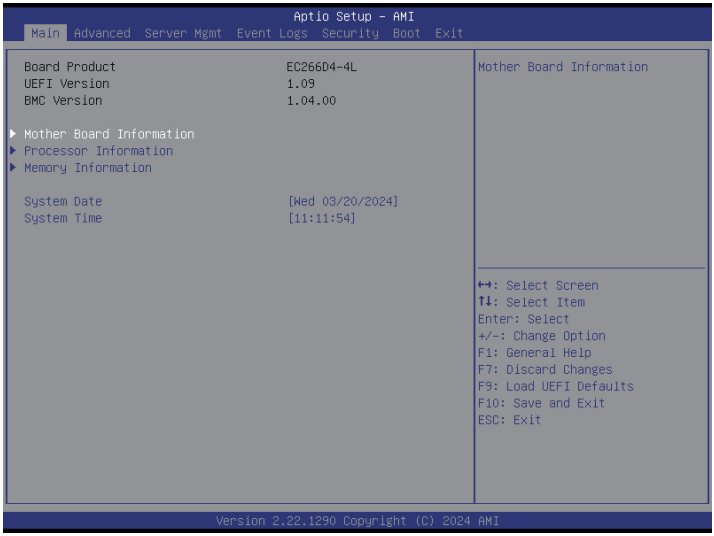
Please check the following table for the function description of each navigation key.

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

3.2 Main Screen

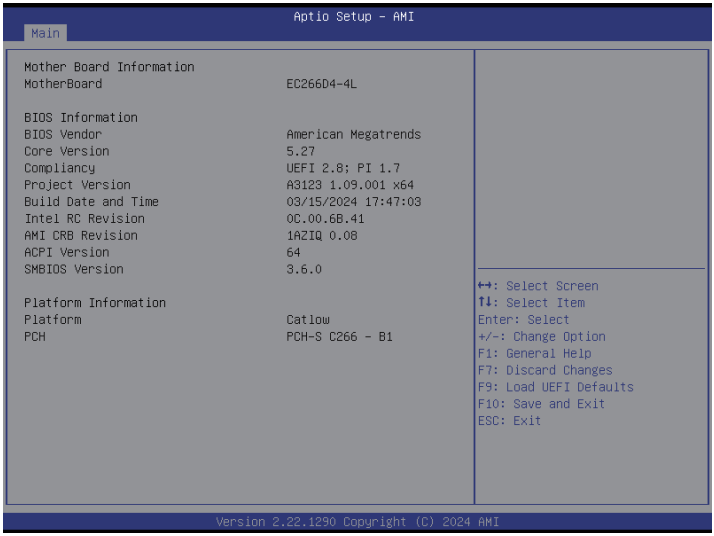
Once entering the UEFI SETUP UTILITY, the Main screen will appear and display the system overview. The Main screen provides system overview information and allows user to set the system time and date.

Note: 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.



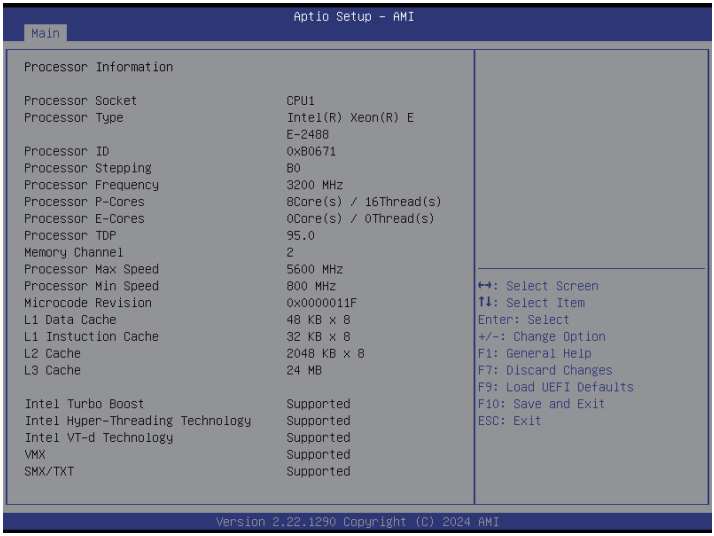
3.2.1 Motherboard Information

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



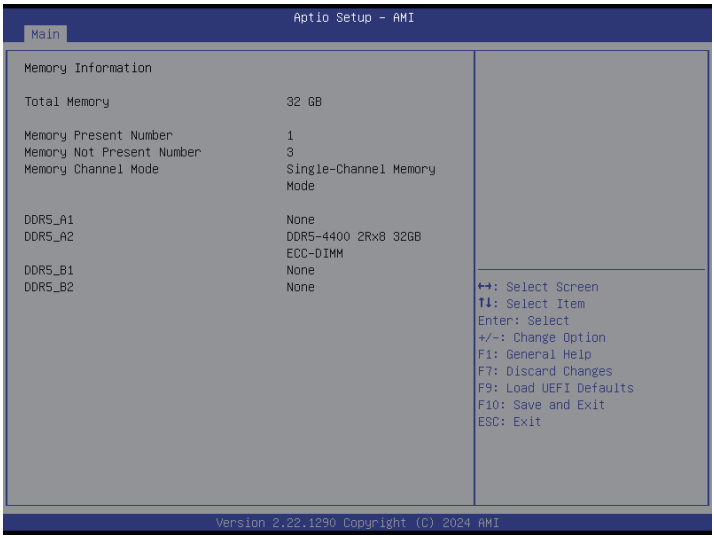
3.2.2 Processor Information

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



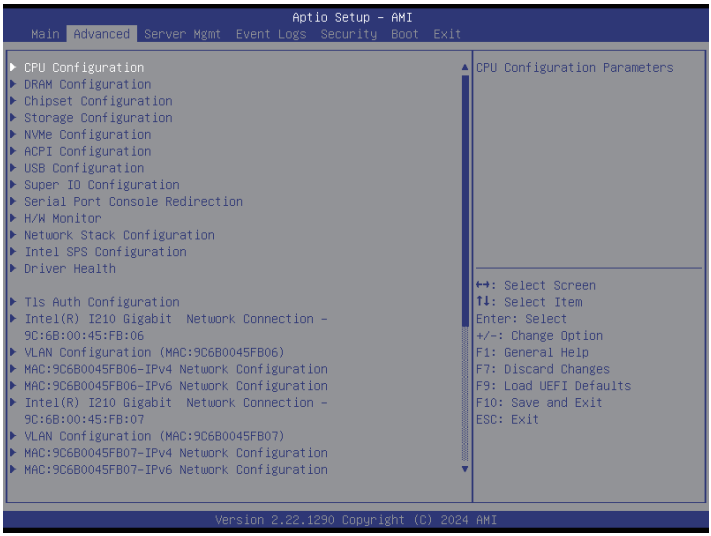
3.2.3 Memory Information

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



3.3 Advanced Screen

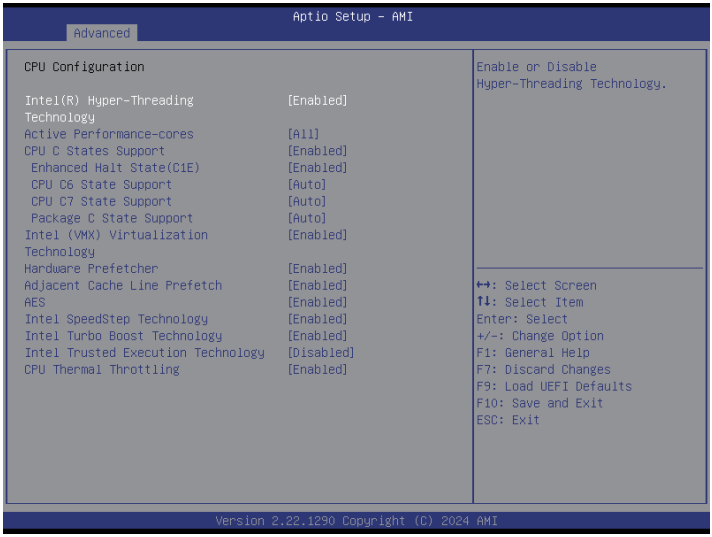
This section allows user to set the configurations for the following items: CPU Configuration, DRAM Configuration, Chipset Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Network Stack Configuration, Intel SPS Configuration, Driver Health, Tls Auth Configuration, Intel(R) I210 Gigabit Network Connection, VLAN Configuration and Insant Flash.



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

English

3.3.1 CPU Configuration



Intel(R) 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.

Active Performance-Cores

Select the number of cores to enable in each processor package.

CPU C States Support

Enable CPU C States Support for power saving. It is recommended to keep C6 and C7 enabled for better power saving.

Enhanced Halt State (C1E)

Enable Enhanced Halt State (C1E) for lower power consumption.

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

Package C State Support

Enable CPU, PCIe, Memory, Graphics C State Support for power saving.

Intel (VMX) 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.

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

Use this item to enable or disable AES (Advanced Encryption Standard).

Intel SpeedStep Technology

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

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

Intel Turbo Boost Technology

Intel Turbo Boost Technology enables the processor to run above its base operating frequency when the operating system requests the highest performance state.

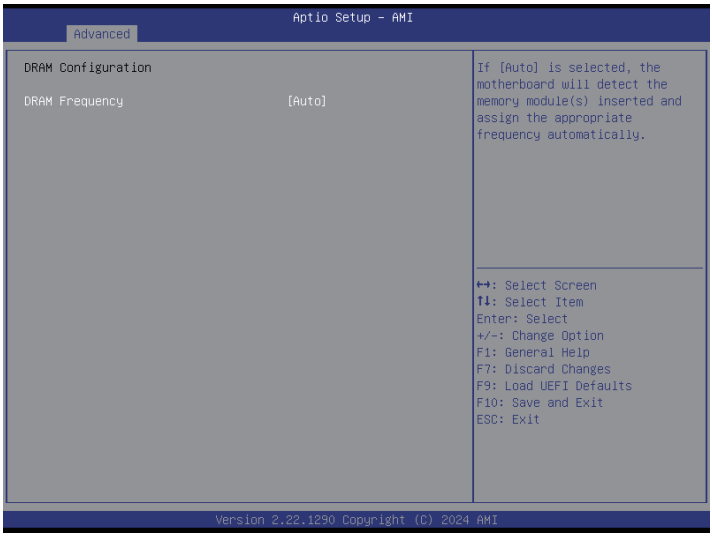
Intel Trusted Execution Technology

Enable or disable Intel Trusted Execution Technology Configuration.

CPU Thermal Throttling

Use this item enable or disable Thermal Monitor.

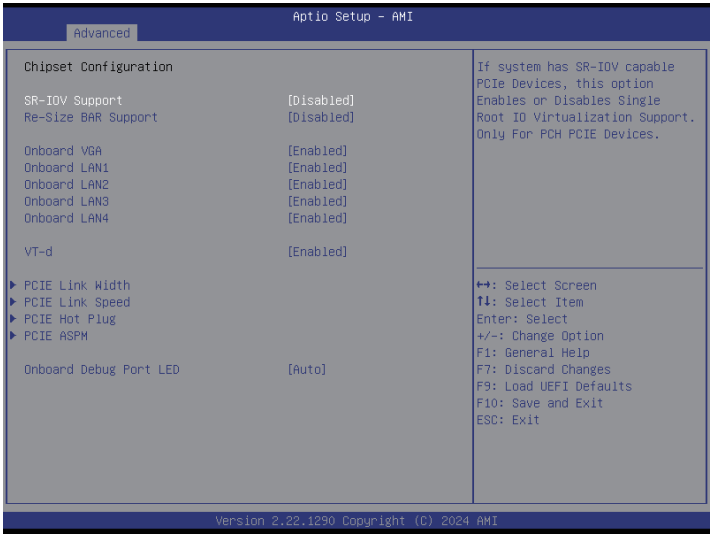
3.3.2 DRAM Configuration



DRAM Frequency

If [Auto] is selected, the motherboard will detect the memory module(s) inserted and assign the appropriate frequency automatically.

3.3.3 Chipset Configuration



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 (Only if System Supports 64 bit PCI Decoding).

Onboard VGA

Use this to enable or disable the Onboard VGA function.

Onboard LAN1/2/3/4

Use this to enable or disable the Onboard LAN function.

VT-d

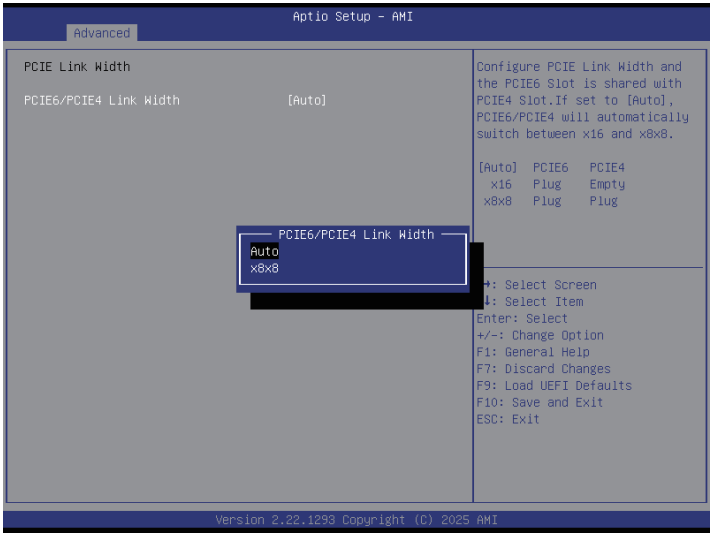
Intel® Virtualization Technology for Directed I/O helps the virtual machine monitor better utilize hardware by improving application compatibility and reliability, and providing additional levels of manageability, security, isolation, and I/O performance.

PCIE Link Width

Select this item to configure PCIE Link Width.

PCIE6/PCIE4 Link Width
Configure PCIE Link Width. The PCIE6 Slot is shared with PCIE4 Slot. If set it to [Auto], PCIE6/PCIE4 will automatically switch between x16 and x8x8.

[Auto]	PCIE6	PCIE4
x16	Plug	Empty
x8x8	Plug	Plug



PCIE Link Speed

Select this item to configure PCIE Link Speed.

PCIE7 Link Speed
Configure PCIE7 Slot Link Speed. Auto mode is up to Gen4.

PCIE6/PCIE4 Link Speed
Configure PCIE6/PCIE4 Slot Link Speed. Auto mode is up to Gen5.

PCIE2 Link Speed *(for EC266D4-4L only)*

Configure PCIE2 Slot Link Speed. Auto mode is up to Gen4.

M2_2/M2_3 Link Speed *(M2_3 for EC266D4-4L only)*
Configure M2_2/M2_3 Slot Link Speed. Auto mode is up to Gen4.

PCIE Hot Plug

Select this item to configure PCIE Hot Plug globally.

English

PCIE7/PCIE2 Hot Plug *(PCIE2 for EC266D4-4L only)*
Enalbe or disable PCIE7/PCIE2 Hot Plug.

PCIE ASPM

Selec this item to configure the PCIE ASPM.

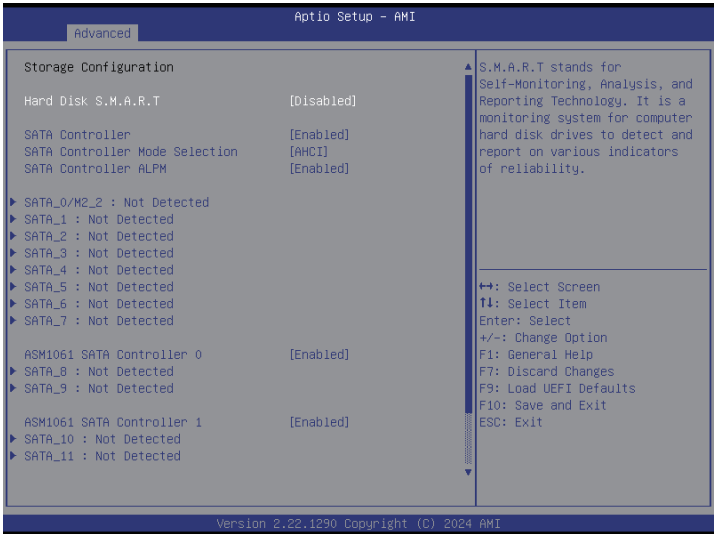
PCI-E ASPM Support (Global)
Select this item to enable or disable the ASPM support to all PCIe root ports.

PCIE7/PCIE6/PCIE4/PCIE2 ASPM Support *(PCIE2 for EC266D4-4L only)*
This option can enable or disable the ASPM support for the PCIE downstream devices.

Onboard Debug Port LED

Enable or disable the onboard Dr. Debug LED.

3.3.4 Storage Configuration



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

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

SATA Controller

Enable or disable the SATA controllers.

SATA Controller Mode Selection

This item specifies how SATA controller(s) operate.
AHCI: Supports new features that improve performance.
RAID: Combine same SATA Controller multiple disk drives into a logical unit.

SATA Controller ALPM

SATA Aggressive Link Power Management allows SATA devices to enter a low power state during periods of inactivity to save power. It is only supported by AHCI mode.

SATA_0/M2_2/SATA_1~7

Select this item to configure the External SATA, Hot Plug, Spin Up Device, Spin Up Time and SATA Device Type.

External
Enable or disable external SATA safe removal notifications.

Hot Plug
Enable or disable Hot Plug for specified port.

Spin Up Device
If enabled for any of ports Staggerred Spin Up will be performed and only the drives which have this option enabled will spin up at boot. Otherwise all drives spin up at boot.

Spin Up Time
Select this item to configure Spin Up Time.

SATA Device Type
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.

ASM1061 SATA Controller 0

Select this item to enable or disable the SATA controller.

ASM1061 SATA Controller 1

Select this item to enable or disable the SATA controller.

ASM1061 SATA Controller 2

Select this item to enable or disable the SATA controller.

3.3.5 NVME Configuration

The NVMe Configuration displays the NVMe controller and Drive information.

Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

3.3.6 ACPI Configuration

PCIE Devices Power On

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

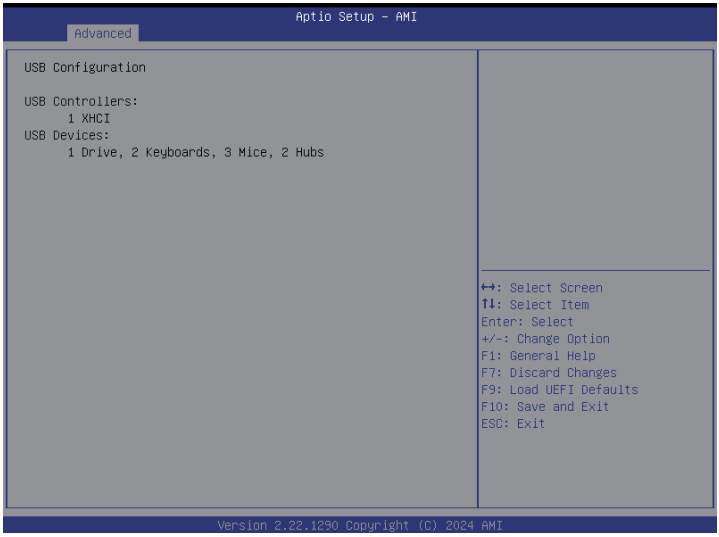
Ring-In Power On

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

RTC Alarm Power On

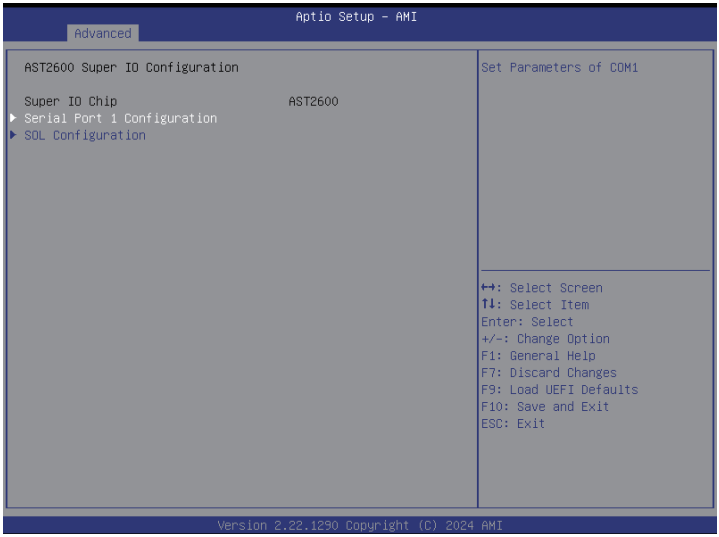
Allow the system to be waked up by the real time clock alarm. Set it to By OS to let it be handled by the operating system.

3.3.7 USB Configuration



This page displays the information of the USB controllers and USB devices.

3.3.8 Super IO Configuration



Serial Port 1 Configuration

Use this item to set parameters of COM.

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.

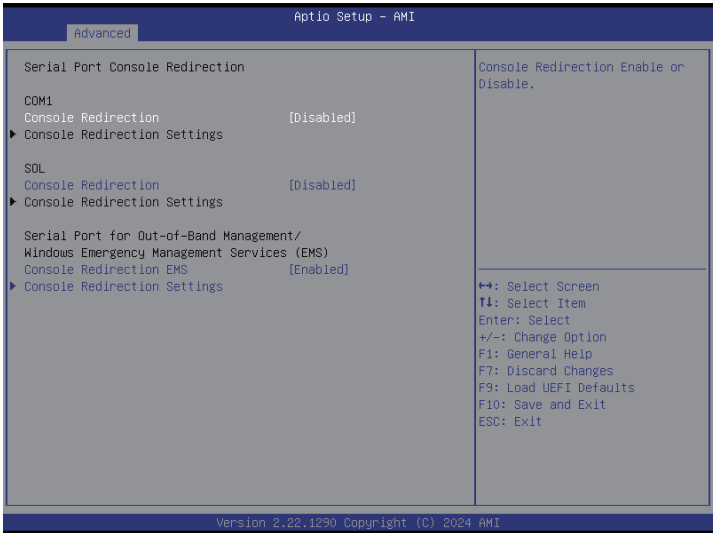
SOL Configuration

Use this item to set parameters of SOL.

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

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

3.3.9 Serial Port Console Redirection



COM1 / SOL

Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, 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 connected computer and host computer to exchange information.

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]. A parity bit can be sent with the data bits to detect some transmission errors.Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.
Even: parity bit is 0 if the num of 1's in the data bits is even.
Odd: parity bit is 0 if num of 1's in the data bits is odd.
Mark: parity bit is always 1.
Space: Parity bit is always 0.

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, 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 connected computer and host computer to 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].

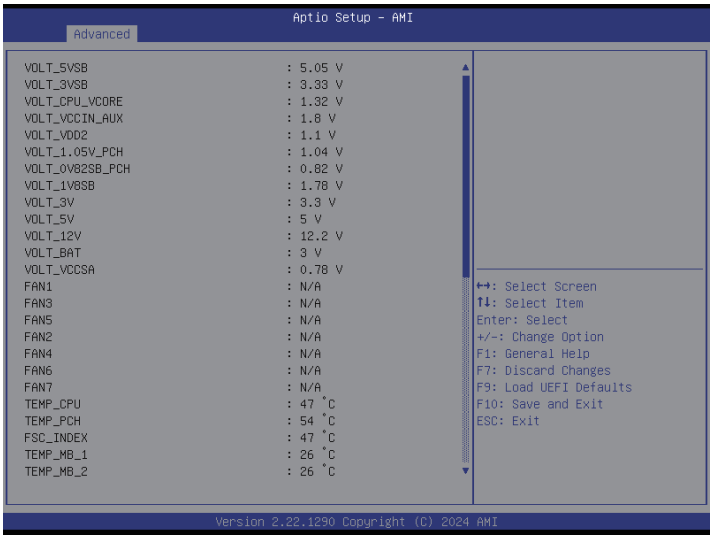
Data Bits EMS

Parity EMS

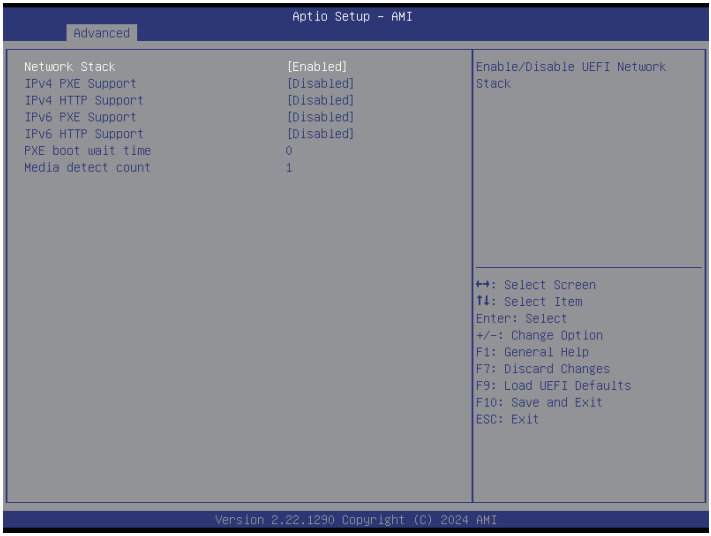
Stop Bits EMS

3.3.10 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, critical voltage and so on.



3.3.11 Network Stack Configuration



Network Stack

Use this item to enable or disable UEFI Network Stack.

Ipv4 PXE Support

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

Ipv4 HTTP Support

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

Ipv6 PXE Support

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

Ipv6 HTTP Support

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

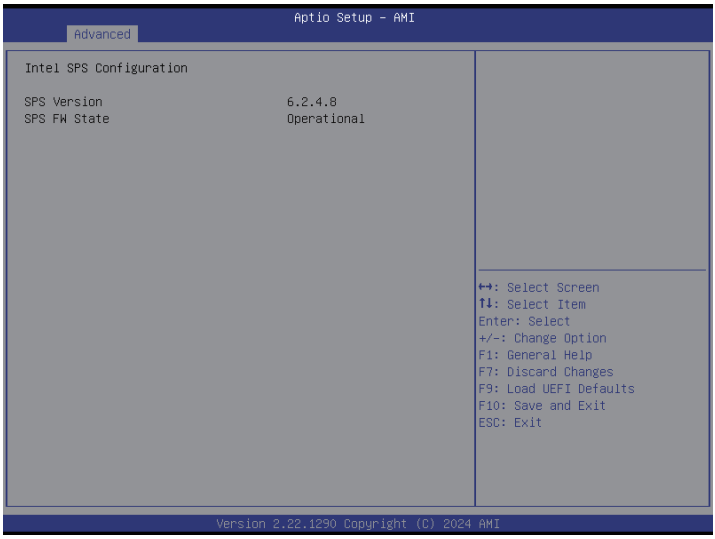
PXE Boot Wait Time

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

Media Detect Count

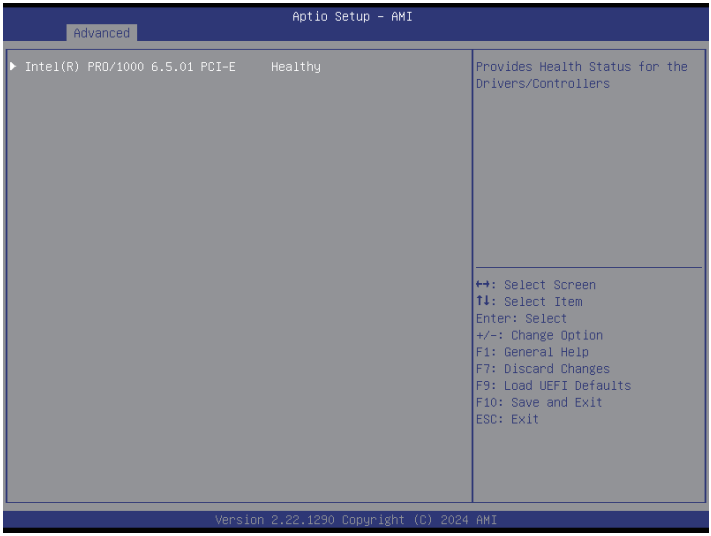
Specifies the number of times the presence of physical storage device are verified on a system reset or power cycle.

3.3.12 Intel SPS Configuration



SPS screen displays the Intel SPS Configuration information, such as Operational Firmware Version and Firmware State.

3.3.13 Driver Health

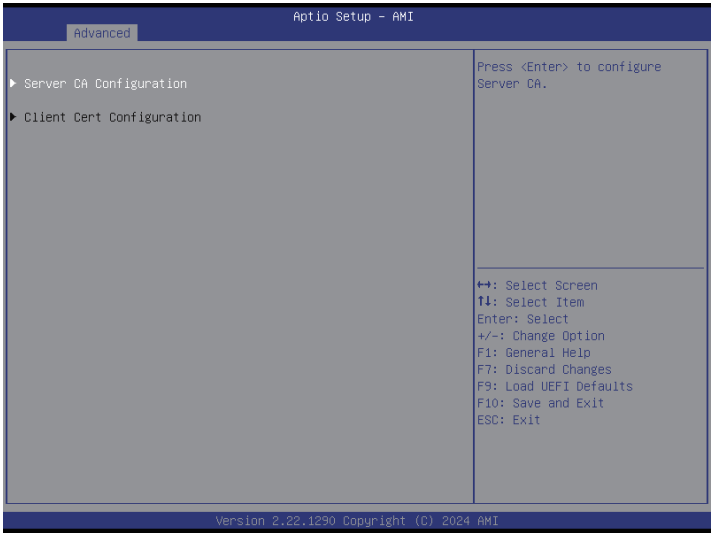


Intel(R) PRO/1000 6.5.01 PCI-E Healthy

Provides Health Status for the Drivers/Controllers.

Note: The screenshot here is for references only. The items on this page vary depending on models and devices used.

3.3.14 Tls Auth Configuration



Server CA Configuration

Press <Enter> to configure Server CA.

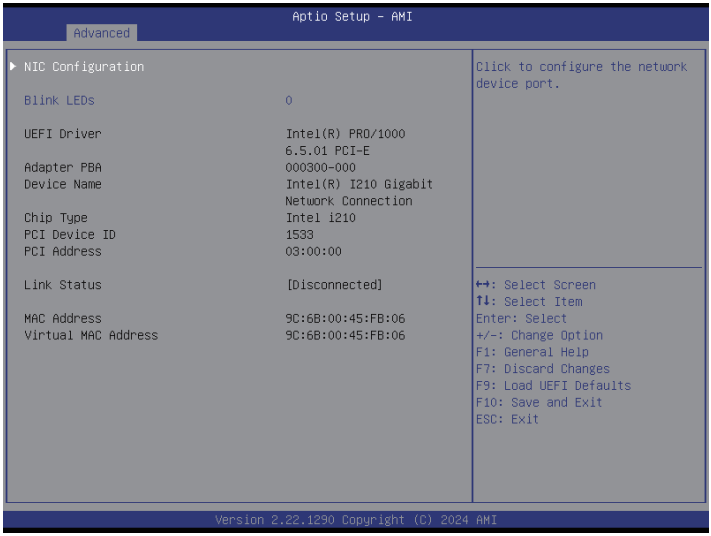
Client Cert Configuration

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.15 Inter (R) I210 Gigabit Network Connection

Configure Gigabit Ethernet device parameters.



NIC Configuration

Click this item to configure the network device port.

Link Speed

Specifies the port speed used for the selected boot protocol.

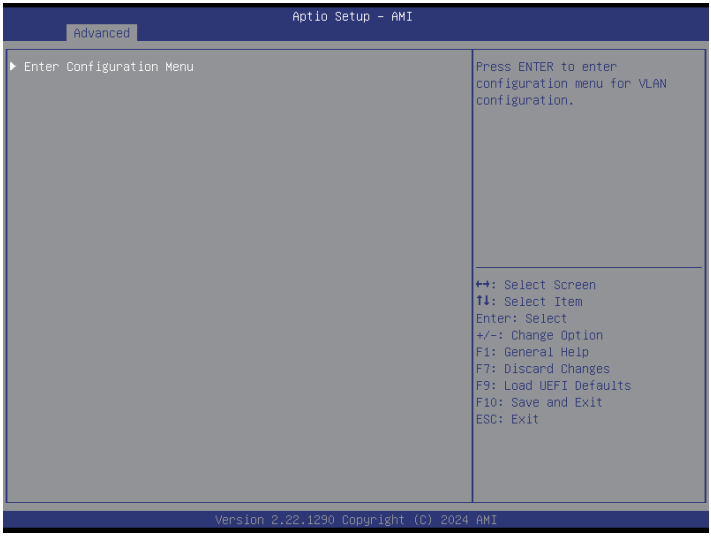
Wake On LAN

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

Identify the physical network port by blinking the associated LED.

3.3.16 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.

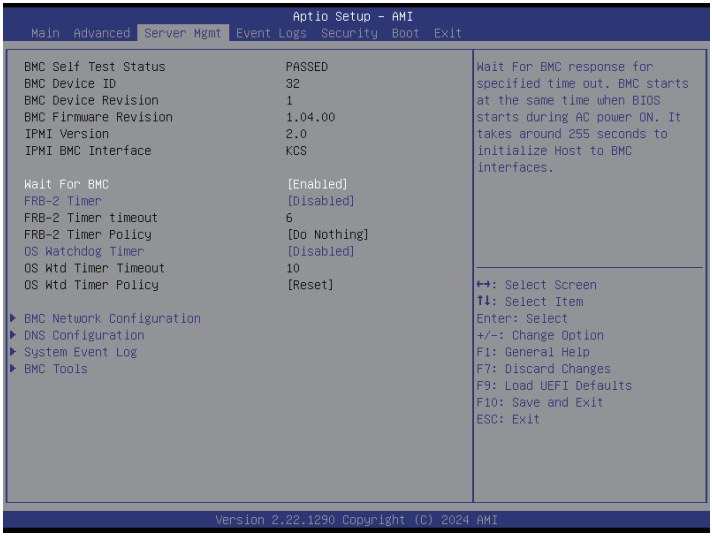
Add VLAN
Use this item to create a new VLAN or update existing VLAN.

Remove VLAN
Use this item to remove selected VLANS.

3.3.17 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. If executing Instant Flash utility, the utility will show the UEFI files and their respective information. Select the proper UEFI file to update the UEFI, and reboot the system after the UEFI update process is completed.

3.4 Server Mgmt



Wait For BMC

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

FRB-2 Timer

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

FRB-2 Timer Timeout

Enter value between 1 to 30 min for FRB-2 Timer Expiration.

FRB-2 Timer Policy

Use this item to configure how the system should respond if the FRB-2 Timer expires. Not available if FRB-2 Timer is disabled.

OS Watchdog Timer

If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads. Helps determine that the OS successfully loaded or follows the OS Boot Watchdog Timer policy.

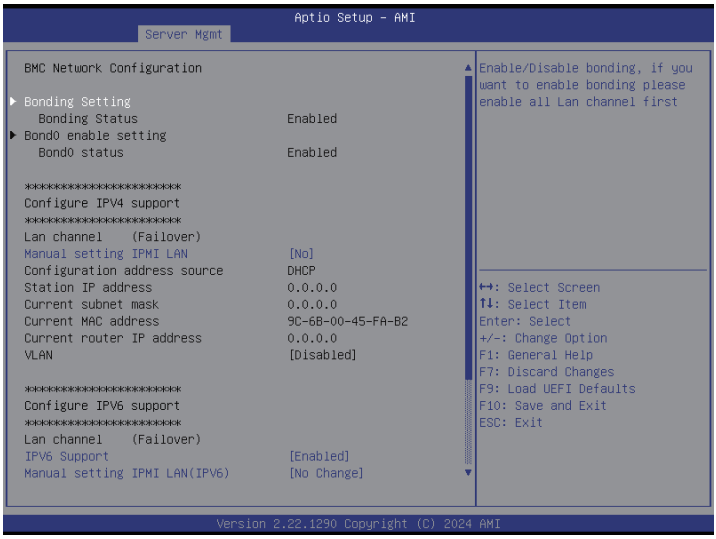
OS Wtd Timer Timeout

Enter the value between 1 to 30 min for OS Boot Watchdog Timer Expiration. This item is not available if OS Boot Watchdog Timer is disabled.

OS Wtd Timer Policy

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

3.4.1 BMC Network Configuration



Bonding Setting

Use this item to enable or disable bonding. Please enable all Lan channel first before enabling bonding.

Bond0 Enable Setting

Show the Bond0 status is enabled or disabled.

Lan Channel (Failover)

Manual Setting IPMI LAN

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

Configuration Address Source

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

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

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/faq.asp

VLAN

Select this item to 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.

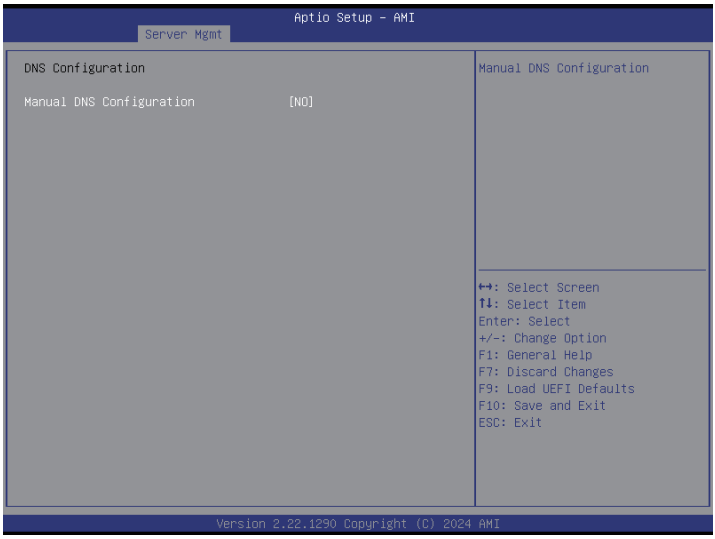
IPV6 Support

Enabled/Disable LAN1 IPV6 Support.

Manual Setting IPMI LAN(IPV6)

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

3.4.2 DNS Configuration



Manual DNS Configuration

Select this item to manual configure DNS.

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

DNS Service

Use this item to enable or disable DNS Service Configuration.

Host Name Settings

Use this item to automatic or manual Host Name Settings.

Bond Register BMC

Use this item to enable or disable Bond Register BMC.

Bond Register Method

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

Domain Setting

This item supports Manual, Bond0_v4 and Bond0_v6 Domain Settings.

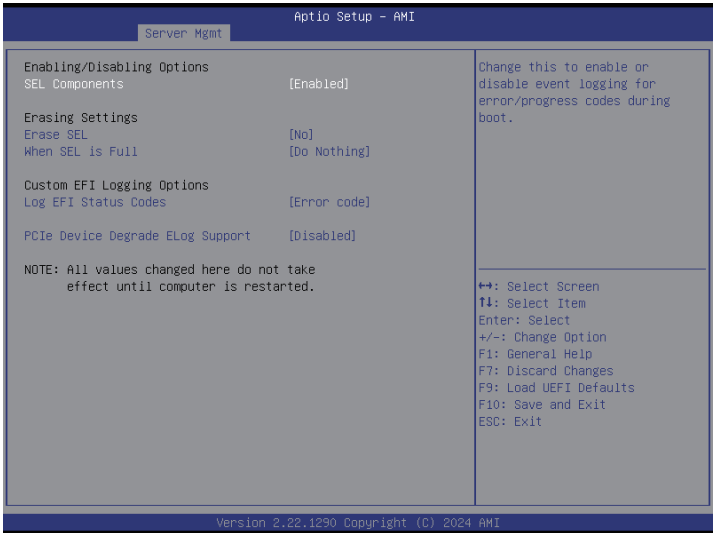
Domain Name Server Setting

Use this item to configure DNS Server Settings.

IP Priority

This item supports IPV4 and IPV6 IP Priority.

3.4.3 System Event Log



SEL Components

Change this to enable ro disable all features of System Event Logging 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.

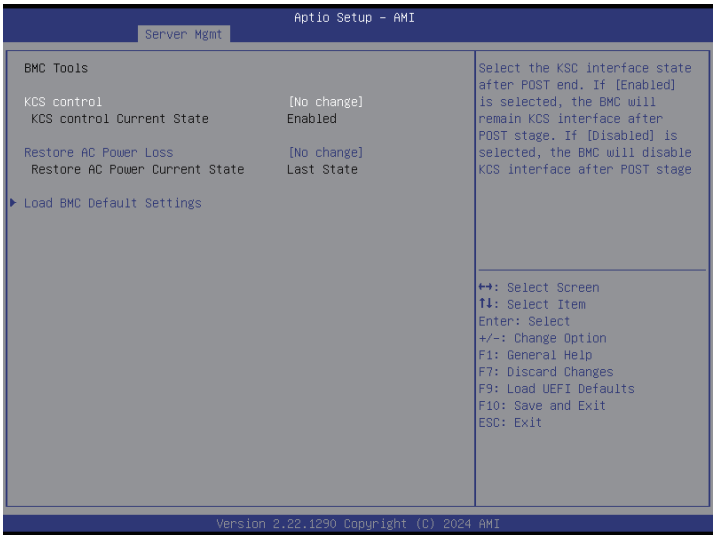
Log EFI Status Codes

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

PCIe Device Degrade ELog Support

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

3.4.4 BMC Tools



KCS Control

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

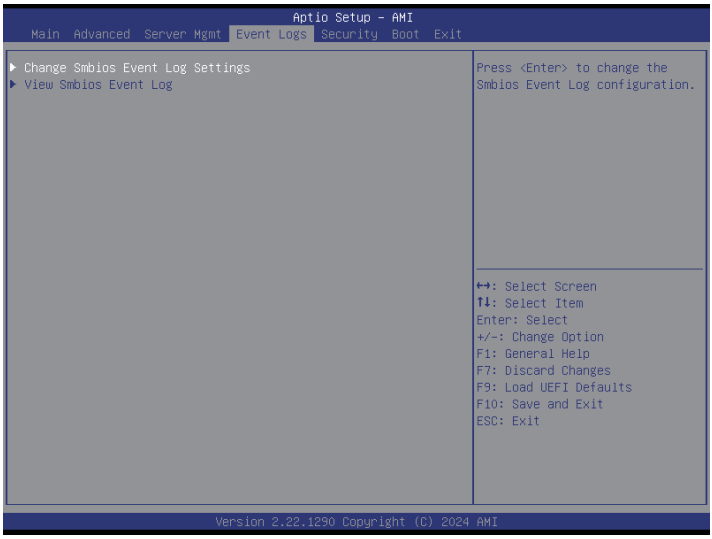
Restore AC Power Loss

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

Load BMC Default Settings

Use this item to Load BMC Default Settings

3.5 Event Logs



Change Smbios Event Log Settings

This allows user to configure the Smbios Event Log Settings.

When entering the item, the sub-items as below are displayed:

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

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

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

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

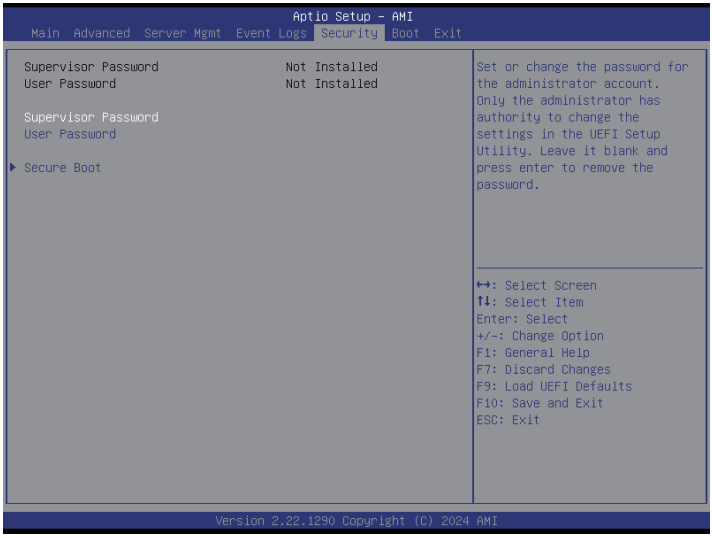
View Smbios Event Log

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

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

3.6 Security Screen

This section allows user to set or change the supervisor/user password for the system. It may also clear the user password.



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

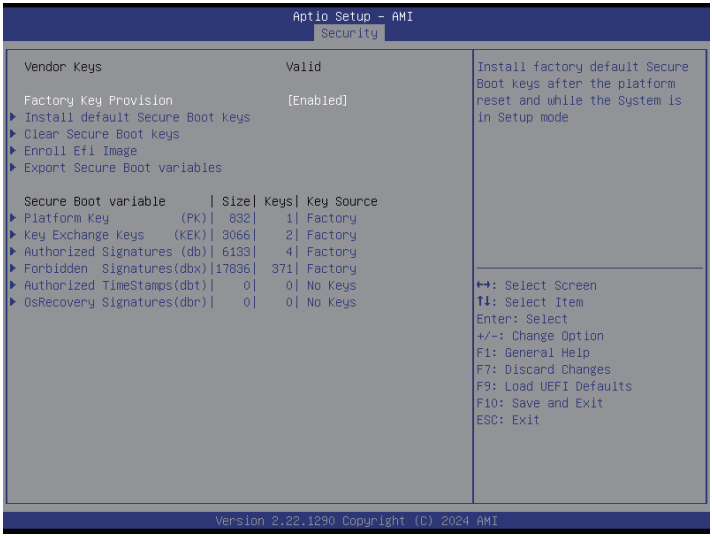
Use this item to enable or disable support for Secure Boot.

Secure Boot Mode

Enable to support Windows 8 or later versions Secure Boot.

3.6.1 Expert 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 reboot.

Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image 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:

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:

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:

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:

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:

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:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

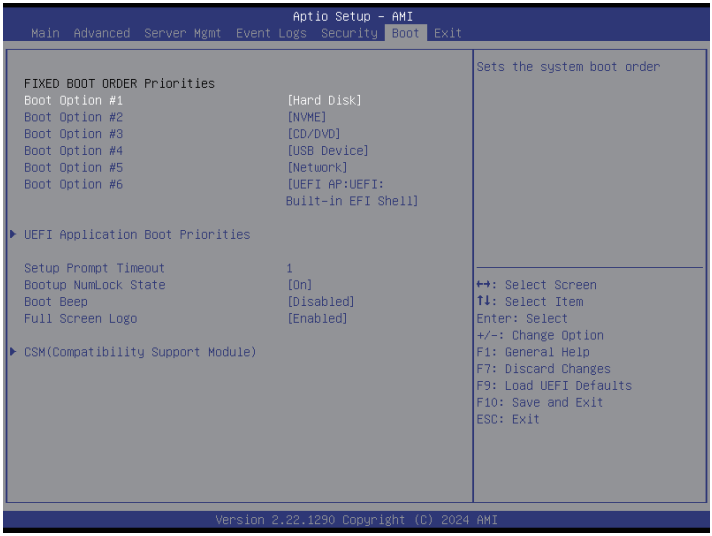
2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

3.7 Boot Screen

In this section, it will display the available devices on the system for user to configure the boot settings and the boot priority.



Boot Option #1~#6

Use this item to set the system boot order.

UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

Setup Prompt Timeout

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

Bootup NumLock State

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

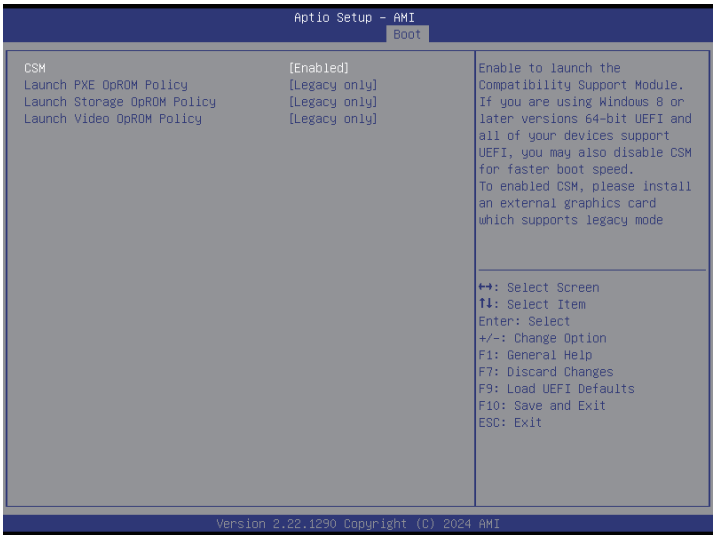
Boot Beep

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

Full Screen Logo

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

3.7.1 CSM Parameters



CSM (Compatibility Support Module)

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

When enabling this item, the sub-items as below are displayed:

Launch PXE OpROM Policy

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

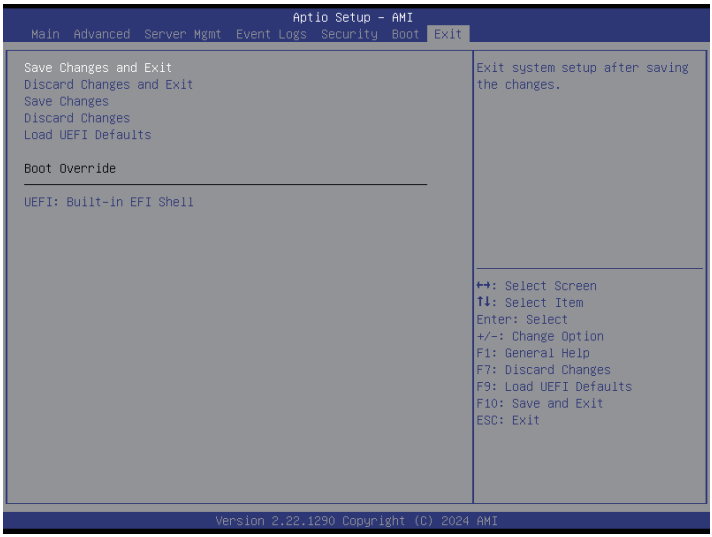
Launch Storage OpROM Policy

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

Launch Video OpROM Policy

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

3.8 Exit Screen



Save Changes and Exit

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

Discard Changes and Exit

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

Save Changes

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

Discard Changes

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

Load UEFI Defaults

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

Chapter 4 Software Support

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

4.1 Download and Install Operating System

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

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

4.2 Download and Install Software Drivers

This motherboard supports various Microsoft® Windows® compliant drivers. Please download the required drivers from 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 used, and select the driver needed to be donwloaded.

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.
3. If installing 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 adaquate 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 it has 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 the 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

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