Stable and
Reliable Solution

Server/Workstation

Motherboard

EC262D4-4L
EC266D4-4L

User Manual

English

Version 2.00
Published Feb. 2025

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WARNING
THIS PRODUCT CONTAINS A BUTTON BATTERY
If swallowed, a button battery can cause serious injury or death.
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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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FC

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.

UKCA

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

CE

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

1.1 Package Contents

- ASRock Rack EC262D4-4L/EC266D4-4L motherboard
  (ATX form factor: 12" x 9.6", 30.5cm x24.4cm)
- Quick installation guide
- 1 SATA3 cable (60cm)
- 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" x 9.6" (30.5cm x24.4cm)
Processor System	
CPU	Supports Intel Xeon E-2400 series and Intel® Pentium® Gold G7400/G7400T processors
Socket	Single Socket V1 (LGA1700)
Thermal Design Power (TDP)	95W
Chipset	Intel® C262/Intel® C266
System Memory	
DIMM Quantity	4 DIMM slots (2DPC)
Type	Supports DDR5 288-pin ECC UDIMM
Max. Capacity per DIMM	32GB
Max. Frequency	4400MT/s (2DPC - 1DIMM) / 4000MT/s (2DPC - 2DIMM 1R) / 3600MT/s (2DPC - 2DIMM 2R)
Voltage	1.1V
Note	*Memory support is to be validated*
PCIe Expansion Slots (SLOT7 close to CPU)	
SLOT7	PCIe4.0 x4 [CPU]
SLOT6	PCIe5.0 x16* [CPU]
SLOT4	PCIe5.0 x8* [CPU]
SLOT2	PCIe4.0 x4 [PCH] *(for EC266D4-4L only)*
Note	**SLOT6 share lanes with SLOT4. SLOT6 will switch to x8 when SLOT4 is populated.*
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 6Gb/s; RAID 0/1/5/10):** 8 SATA 7-pin
Additional SATA Controller	**ASM1061 (6 SATA 6Gb/s):** 6 SATA 7-pin
Ethernet	
Additional GbE Controller	Intel® i210: 4 RJ45 (1GbE)

Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA)
Hardware Monitor	
Temperature	CPU, MB1~MB4, M.2, TR1 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
Server Management	
BMC Controller	ASPEED AST2600: iKVM, vMedia support
IPMI Dedicated GLAN	1 RJ45 Dedicated IPMI LAN port by Realtek RTL8211F
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
Rear I/O	
UID	1 button w/ LED
VGA Port	1 DB15 (VGA)
Serial Port	1 DB9 (COM)
USB	2 Type A (USB3.2 Gen1)
RJ45	4 RJ45(1GbE), 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, LAN1/LAN2 activity LED, 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)
Buzzer	1
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

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USB 3.2 (Gen1) Header	2 headers (19-pin, 4 USB3.2 Gen1)
USB 2.0 Header	1 header (9-pin, 2 USB2.0)
LED Indicators	
Standby PWR LED	1 (5VSB)
80 Debug Port LED	1
Fan Fail LED	7
BMC Heartbeat LED	1
Support OS	
OS	Microsoft® Windows®
	- Server 2022 (64bit)
	- Server 2025 (64bit)
	Linux®
	- Red Hat Enterprise Linux Server 8.5 (64bit) / 9.2 (64bit)
	- SUSE Enterprise Linux Server 15 SP3 (64bit) / 15 SP5 (64bit)
	- Ubuntu 21.04 (64bit) / 22.04.2 (64bit)
	* Please refer to the website for the latest OS support list.
Environment	
Operation temperature	10°C - 35°C (50°F - 95°F)
Non operation temperature	-40°C - 70°C (-40°F - 158°F)

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

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

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

1.3 Unique Features

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

1.4 Motherboard Layout
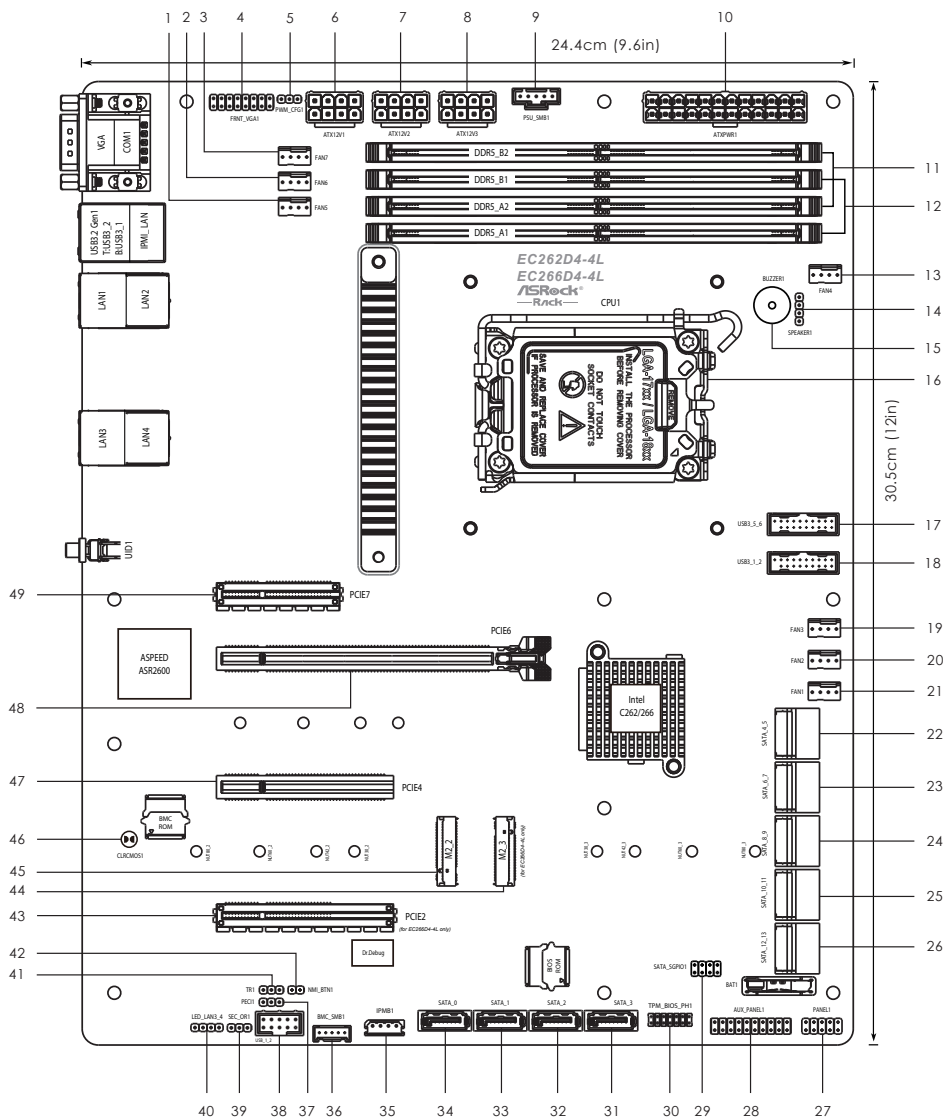
No.	Description
1	Chassis Fan Connector (FAN5)
2	Chassis Fan Connector (FAN6)
3	Chassis Fan Connector (FAN7)
4	Front VGA Header (FRNT_VGA1)
5	PWM Configuration Header (PWM_CFG1)
6	ATX 12V Power Connector (ATX12V1)
7	ATX 12V Power Connector (ATX12V2)
8	ATX 12V Power Connector (ATX12V3)
9	PSU SMBus Header (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 Connector (FAN4)
14	Chassis Speaker Header (SPEAKER1)
15	BUZZER1
16	LGA1700 CPU Socket (CPU1)
17	USB 3.2 Gen1 Header (USB3_5_6)
18	USB 3.2 Gen1 Header (USB3_1_2)
19	Chassis Fan Connector (FAN3)
20	Chassis Fan Connector (FAN2)
21	Chassis Fan Connector (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)

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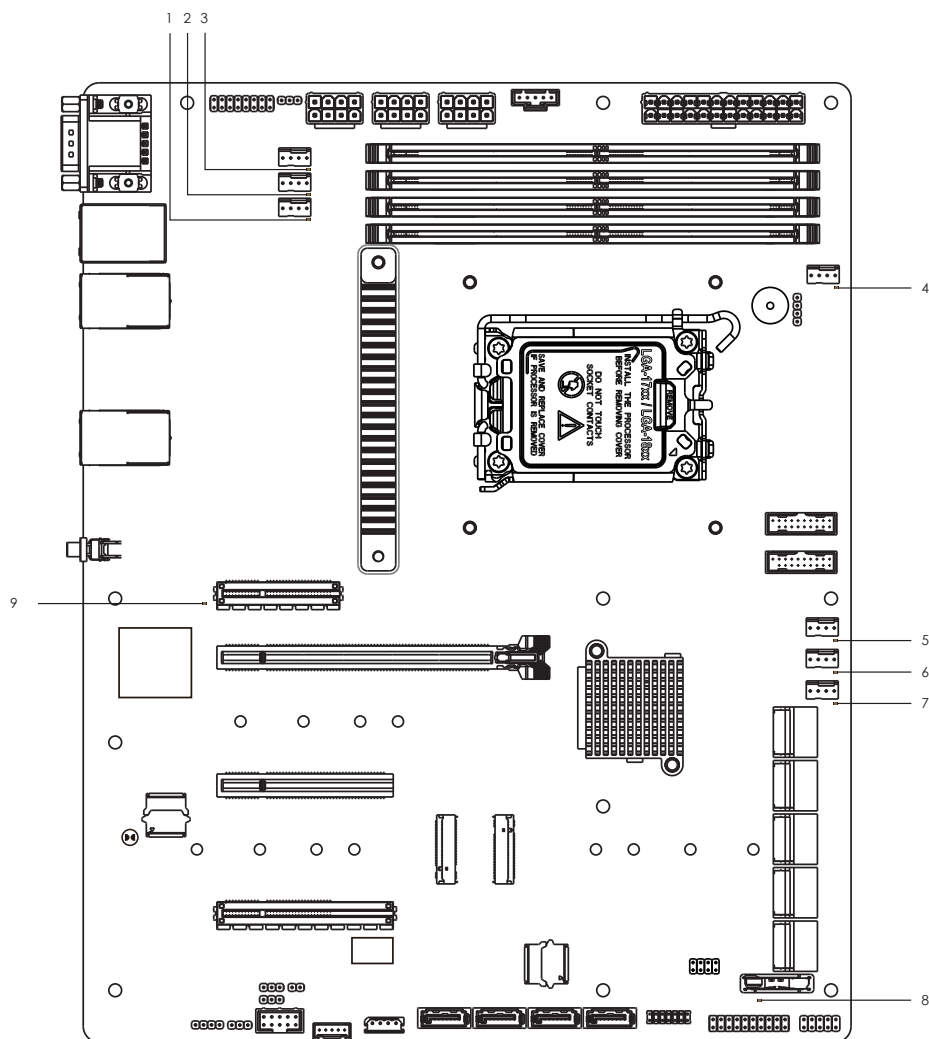
No.	Item	Status	Description
1	LED_FAN5	Red	FAN5 failed
2	LED_FAN6	Red	FAN6 failed
3	LED_FAN7	Red	FAN7 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN3	Red	FAN3 failed
6	LED_FAN2	Red	FAN2 failed
7	LED_FAN1	Red	FAN1 failed
8	SB_PWR1	Green	STB PWR ready
9	BMC_LED1	Green	BMC heartbeat LED

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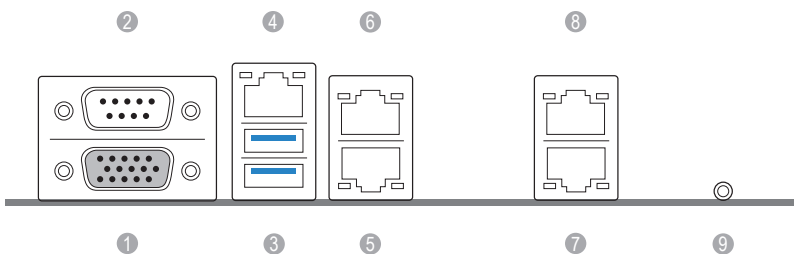
No.	Description	No.	Description
1	VGA Port (VGA)	6	1G LAN RJ-45 Port (LAN2)**
2	Serial Port (COM1)	7	1G LAN RJ-45 Port (LAN3)**
3	USB 3.2 Gen1 Ports (USB3_3_4)	8	1G LAN RJ-45 Port (LAN4)**
4	LAN RJ-45 Port (IPMI_LAN)*	9	UID Switch (UID1)
5	1G LAN RJ-45 Port (LAN1, shared NIC)**		

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.

ACT/LINK LED
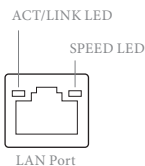
SPEED LED

LAN Port

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

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

ACT/LINK LED
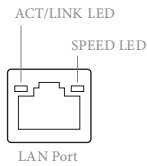
SPEED LED

LAN Port

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
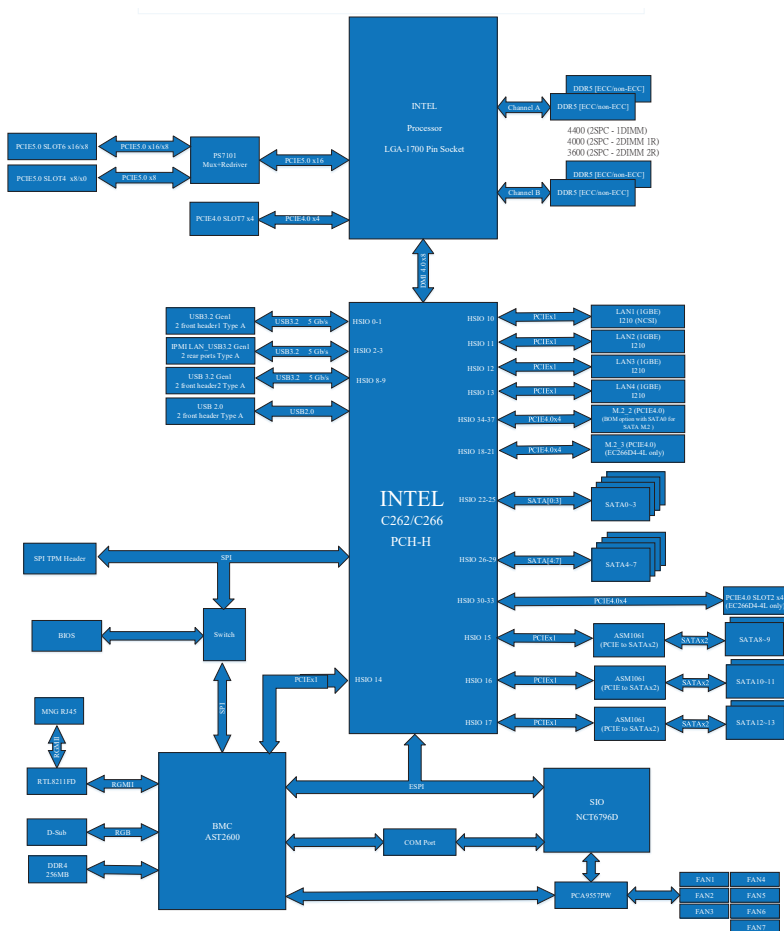
Chapter 2 Installation

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.

> ⚠ *Ensure the motherboard battery is installed before unplugging the power cord or installing/ removing the motherboard. Failure to follow this precaution may result in physical injury or damage to motherboard 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.

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

2.3 Installing the CPU

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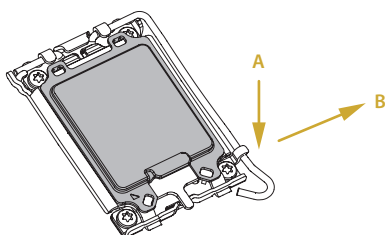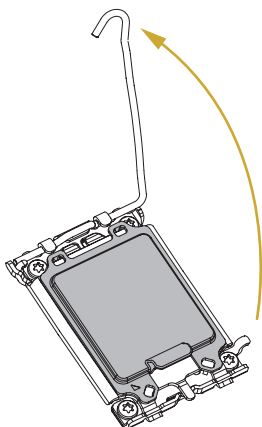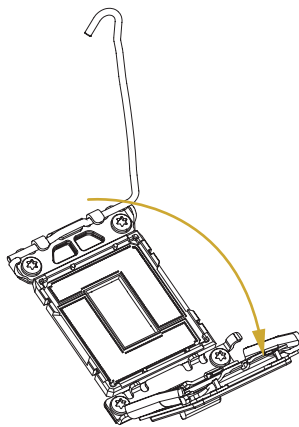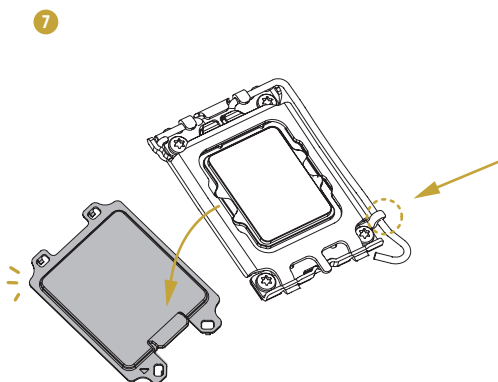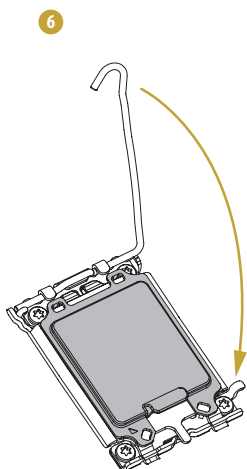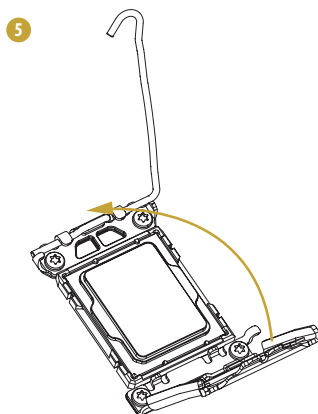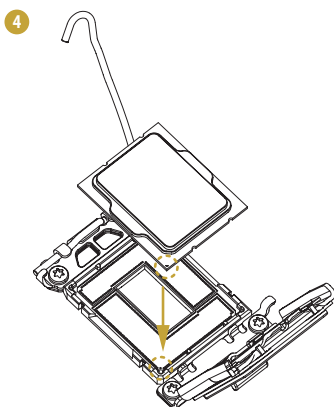
Please save and replace the cover if the processor is removed. The cover must be placed if wishing to return the motherboard for after service.

2.4 Installing the CPU Fan and Heatsink
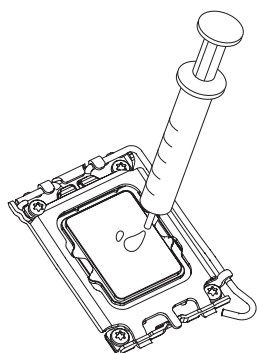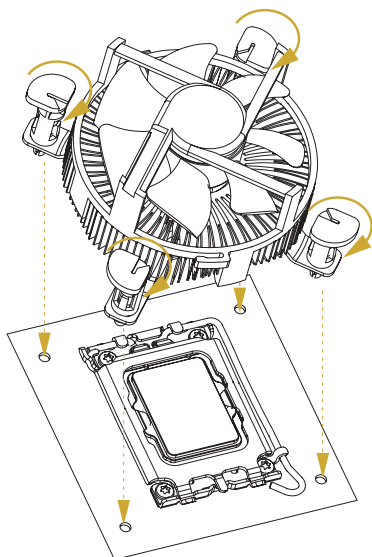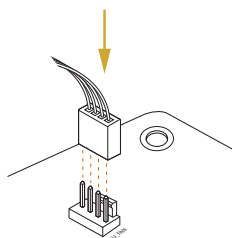
2.5 Installing Memory Modules (DIMM)

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
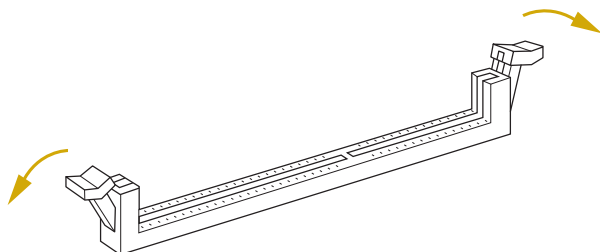
2
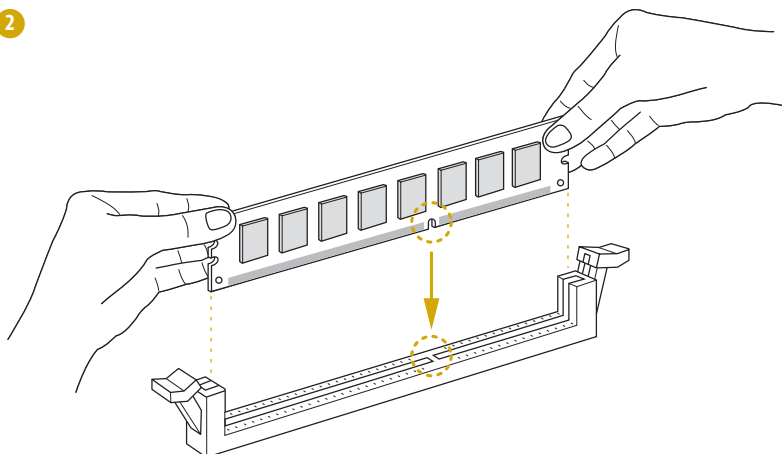
3
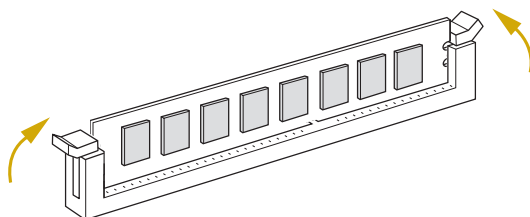
⚠ *The DIMM only fits in one correct orientation. It will cause permanent damage to the motherboard and the DIMM if forcing the DIMM into the slot at incorrect orientation.*

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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.

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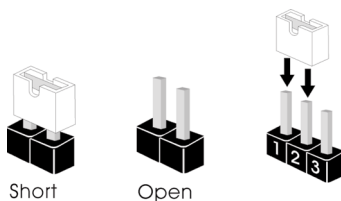
Security Override Jumper (3-pin SEC_OR1) (see p.6, No. 39)	**1_2** Descriptor Security Override	**2_3** Not override (Default)
CPU PECI Mode Jumper (3-pin PECI1) (see p.6, No. 37)	**1_2** CPU PECI connected to PCH	**2_3** CPU PECI connected to BMC (Default)

English

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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)

PLED+
PLED-
PWRBTN#
GND

1

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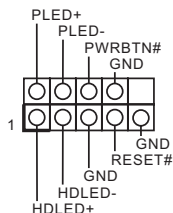
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

⊕ *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)

A — SMB_Alert, SMB_CLK, GND, SMB_DATA, +3VSB

B — LAN1_LINK, LED_PWR, LED_PWR, LAN2_LINK

1

+5VSB

C — CASEOPEN, GND

LOCATORLED1+, LOCATORLED1-, LOCATORBTN#

D — GND

E — System Fault LED-, System Fault LED+
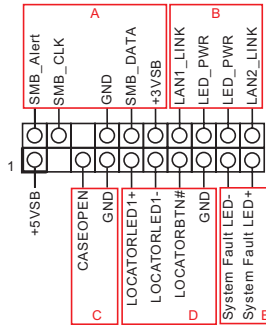
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

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 LOCATOR)
This header is for the Fault LED on the system.

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

USB_PWR
-B
+B
GND
DUMMY

1

GND
+A
-A
USB_PWR
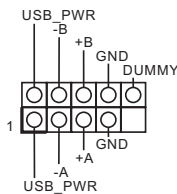
There is one USB 2.0 header on this motherboard. Each USB 2.0 header can support two ports.

English

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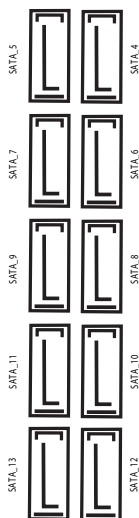
Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 14)

SPEAKER
DUMMY
DUMMY
+5V
1
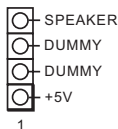
Please connect the chassis speaker to this header.

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

TR1   TR1
1
GND

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.

System Fan
Connectors
(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)

4 3 2 1

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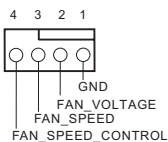
Please connect fan cables to
the fan connectors and match
the black wire to the ground
pin. All fans support Fan
Control.

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

3V
3V
GND
5V
GND
5V
GND
PWROK_PS
5VSB
12V
12V
3V

1   12

13   24

3V
-12V
GND
PSON#
GND
GND
GND
N/A
5V
5V
5V
GND
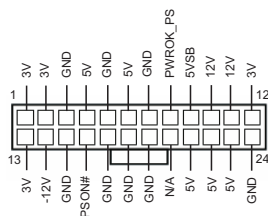
This motherboard provides a
24-pin ATX power connector.
To use a 20-pin ATX power
supply, please plug it along
Pin 1 and Pin 13.

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)

GND

1   4

5   8

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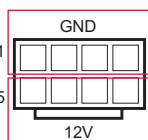
This motherboard provides
three 8-pin ATX 12V power
connectors.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 30)

TPM_CS#
GND
RSMRST#
MISO
SPI_CS
SPI_WP

SPI PIRQ
SPI_RST
MOSI
SPI_CLK
X
+3.3V
SPI_HOLD
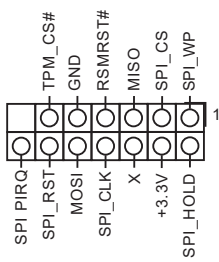
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Serial General Purpose Input/Output Header
(7-pin SATA_SGPIO1)
(see p.6, No. 29)

SCLOCK
SLOAD
GND

SDATAOUT
GND
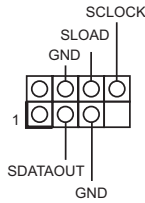
The header supports Serial Link interface for onboard SATA connections.

PSU SMBus
(PSU_SMB1)
(see p.6, No. 9)

ALERT
SMBCLK   +3V

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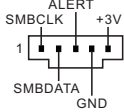
PSU SMBus monitors the status of the power supply, fan and system temperature.

Non Maskable Interrupt Button Header
(NMI_BTN1)
(see p.6, No. 42)

GND

CONTROL

Please connect a NMI device to this header.

PWM Configuration Header
(3-pin PWM_CFG1)
(see p.6, No. 5)

GND
SMB_DATA_VSB
SMB_CLK_VSB
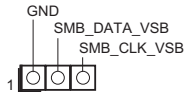
This header is used for PWM configurations.

Front LAN LED Connector
(LED_LAN3_4)
(see p.6, No. 40)

LAN4_LINK
LED_PWR

LAN3_LINK
LED_PWR
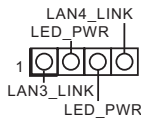
This 4-pin connector is used for the front LAN status indicator.

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

GND
No connect
IPMB_SCL
IPMB_SDA
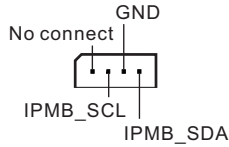
This 4-pin connector is used to provide a cabled base-board or front panel connection for value added features and 3rd-party add-in cards, such as Emergency Management cards, that provide management features using the IPMB.

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

BMC_SMB_PRESENT_1_N
Power
BMC_SMBCLK
GND
BMC_SMBDATA
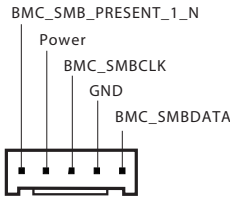
The header is used for the SM BUS devices.

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

DDC_CLK
H_SYNC
+5V
GND
GND
Blue
Red
V_SYNC
DDC_DATA
GND
VGA SELECT
GND
Green
1
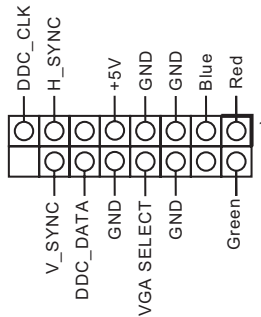
Please connect either end of VGA_2X8 cable to VGA header.

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)

Vbus
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PB_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy
Vbus
IntA_PA_SSRX-
IntA_PA_SSRX+
GND
IntA_PA_SSTX-
IntA_PA_SSTX+
GND
IntA_PA_D-
IntA_PA_D+
1
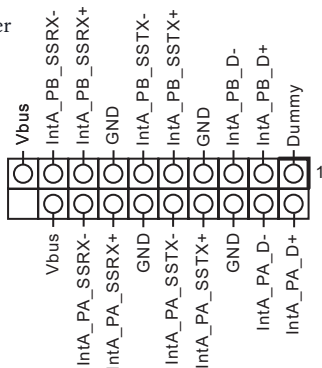
Besides two default USB 3.2 Gen1 ports on the I/O panel, there is one USB 3.2 Gen1 header on this motherboard. This USB 3.2 Gen1 header can support two USB 3.2 Gen1 ports.

English

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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

English

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

English

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 from behind a rack of servers.

Unit Identification
purpose LED/Switch
(UID1)

When the UID button on the front or rear panel is pressed, the front/rear UID blue LED indicator will be 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
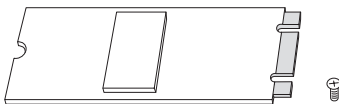
Step 1

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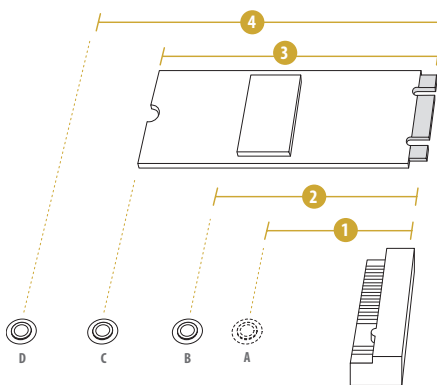
Step 2

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	3cm	4.2cm	6cm	8cm
Module Type	Type2230	Type2242	Type2260	Type2280

English

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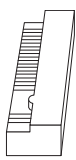
Step 3

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.

D   C   B   A
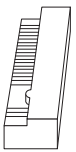
Step 4

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

D   C   B   A
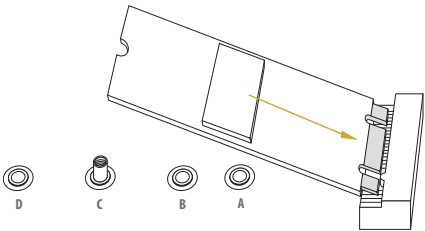
Step 5

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.

D   C   B   A

D   C   B   A   20°
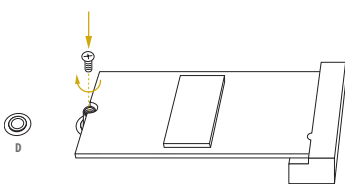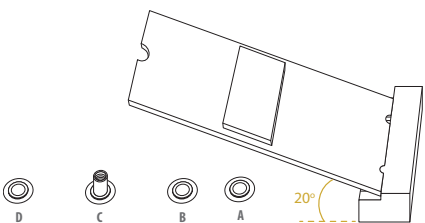
Step 6

Tighten the screw with a screwdriver to secure the module into place. Please do not overtighten the screw as this might damage the module.

D

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 UTIL-ITY after POST, or by pressing the reset button on the system chassis. This allows user to restart by turning the system off and then back on.

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

3.1.1 UEFI Menu Bar

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

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Server Mgmt	To manage the server
Event Logs	For event log configuration
Security	To set up the security features
Boot	To set up the default system device to locate and load the Operating System
Exit	To exit the current screen or the UEFI SETUP UTILITY

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

English

3.1.2 Navigation Keys

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

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

3.2 Main Screen

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

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.

```
                              Aptio Setup - AMI
    Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

    Board Product              EC266D4-4L              Mother Board Information
    UEFI Version               1.09
    BMC Version                1.04.00

  ▶ Mother Board Information
  ▶ Processor Information
  ▶ Memory Information

    System Date                [Wed 03/20/2024]
    System Time                [11:11:54]

                                                       ↔: Select Screen
                                                       ↑↓: Select Item
                                                       Enter: Select
                                                       +/-: Change Option
                                                       F1: General Help
                                                       F7: Discard Changes
                                                       F9: Load UEFI Defaults
                                                       F10: Save and Exit
                                                       ESC: Exit

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```

3.2.1 Motherboard Information

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

```
                          Aptio Setup – AMI
  Main

  Mother Board Information
  MotherBoard                   EC266D4-4L

  BIOS Information
  BIOS Vendor                   American Megatrends
  Core Version                  5.27
  Compliancy                    UEFI 2.8; PI 1.7
  Project Version               A3123 1.09.001 x64
  Build Date and Time           03/15/2024 17:47:03
  Intel RC Revision             0C.00.6B.41
  AMI CRB Revision              1AZIQ 0.08
  ACPI Version                  64
  SMBIOS Version                3.6.0
                                                    ↔: Select Screen
                                                    ↑↓: Select Item
  Platform Information                              Enter: Select
  Platform                      Catlow              +/−: Change Option
  PCH                           PCH-S C266 – B1     F1: General Help
                                                    F7: Discard Changes
                                                    F9: Load UEFI Defaults
                                                    F10: Save and Exit
                                                    ESC: Exit




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```

3.2.2 Processor Information

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

```
                          Aptio Setup – AMI
  Main

  Processor Information

  Processor Socket              CPU1
  Processor Type                Intel(R) Xeon(R) E
                                E-2488
  Processor ID                  0xB0671
  Processor Stepping            B0
  Processor Frequency           3200 MHz
  Processor P-Cores             8Core(s) / 16Thread(s)
  Processor E-Cores             0Core(s) / 0Thread(s)
  Processor TDP                 95.0
  Memory Channel                2
  Processor Max Speed           5600 MHz
  Processor Min Speed           800 MHz             ↔: Select Screen
  Microcode Revision            0x0000011F          ↑↓: Select Item
  L1 Data Cache                 48 KB x 8           Enter: Select
  L1 Instuction Cache           32 KB x 8           +/−: Change Option
  L2 Cache                      2048 KB x 8         F1: General Help
  L3 Cache                      24 MB               F7: Discard Changes
                                                    F9: Load UEFI Defaults
  Intel Turbo Boost             Supported           F10: Save and Exit
  Intel Hyper-Threading Technology  Supported       ESC: Exit
  Intel VT-d Technology         Supported
  VMX                           Supported
  SMX/TXT                       Supported

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```

3.2.3 Memory Information

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

```
                             Aptio Setup - AMI
   Main

   Memory Information

   Total Memory                  32 GB

   Memory Present Number         1
   Memory Not Present Number     3
   Memory Channel Mode           Single-Channel Memory
                                 Mode

   DDR5_A1                       None
   DDR5_A2                       DDR5-4400 2Rx8 32GB
                                 ECC-DIMM
   DDR5_B1                       None
   DDR5_B2                       None                    →←: Select Screen
                                                         ↑↓: Select Item
                                                         Enter: Select
                                                         +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit




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```

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.

```
                          Aptio Setup - AMI
      Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

  ▶ CPU Configuration                              ▲  CPU Configuration Parameters
  ▶ 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                                     ↔: Select Screen
                                                      ↑↓: Select Item
  ▶ Tls Auth Configuration                            Enter: Select
  ▶ Intel(R) I210 Gigabit  Network Connection -       +/-: Change Option
    9C:6B:00:45:FB:06                                 F1: General Help
  ▶ VLAN Configuration (MAC:9C6B0045FB06)             F7: Discard Changes
  ▶ MAC:9C6B0045FB06-IPv4 Network Configuration       F9: Load UEFI Defaults
  ▶ MAC:9C6B0045FB06-IPv6 Network Configuration       F10: Save and Exit
  ▶ Intel(R) I210 Gigabit  Network Connection -       ESC: Exit
    9C:6B:00:45:FB:07
  ▶ VLAN Configuration (MAC:9C6B0045FB07)
  ▶ MAC:9C6B0045FB07-IPv4 Network Configuration
  ▶ MAC:9C6B0045FB07-IPv6 Network Configuration    ▼

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```

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

3.3.1 CPU Configuration

```
                              Aptio Setup – AMI
    Advanced

 CPU Configuration                                    Enable or Disable
                                                      Hyper-Threading Technology.
 Intel(R) Hyper-Threading          [Enabled]
 Technology
 Active Performance-cores          [All]
 CPU C States Support              [Enabled]
  Enhanced Halt State(C1E)         [Enabled]
  CPU C6 State Support             [Auto]
  CPU C7 State Support             [Auto]
  Package C State Support          [Auto]
 Intel (VMX) Virtualization        [Enabled]
 Technology
 Hardware Prefetcher               [Enabled]          ←→: Select Screen
 Adjacent Cache Line Prefetch      [Enabled]          ↑↓: Select Item
 AES                               [Enabled]          Enter: Select
 Intel SpeedStep Technology        [Enabled]          +/-: Change Option
 Intel Turbo Boost Technology      [Enabled]          F1: General Help
 Intel Trusted Execution Technology [Disabled]        F7: Discard Changes
 CPU Thermal Throttling            [Enabled]          F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit



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```

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

```
                              Aptio Setup - AMI
      Advanced

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




                                                      ↔: Select Screen
                                                      ↑↓: Select Item
                                                      Enter: Select
                                                      +/-: Change Option
                                                      F1: General Help
                                                      F7: Discard Changes
                                                      F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit


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```

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
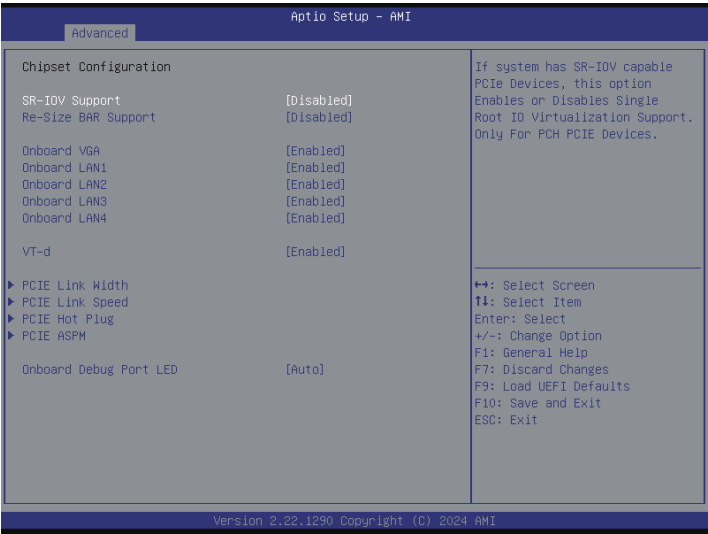
SR-IOV Support

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
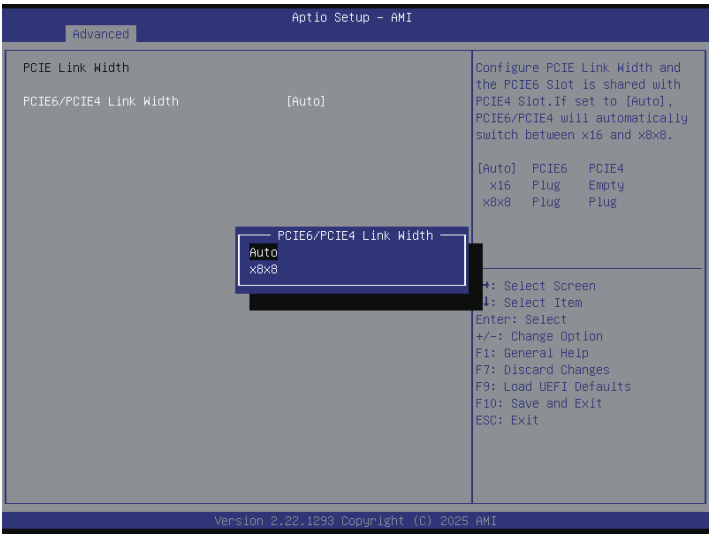
PCIE Link Speed

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

49

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

```
                              Aptio Setup - AMI
       Advanced

   Storage Configuration                             ▲  S.M.A.R.T stands for
                                                        Self-Monitoring, Analysis, and
   Hard Disk S.M.A.R.T            [Disabled]            Reporting Technology. It is a
                                                        monitoring system for computer
   SATA Controller               [Enabled]             hard disk drives to detect and
   SATA Controller Mode Selection [AHCI]                report on various indicators
   SATA Controller ALPM          [Enabled]             of reliability.

 ▶ SATA_0/M2_2 : Not Detected
 ▶ SATA_1 : Not Detected
 ▶ SATA_2 : Not Detected
 ▶ SATA_3 : Not Detected
 ▶ SATA_4 : Not Detected
 ▶ SATA_5 : Not Detected                             ↔: Select Screen
 ▶ SATA_6 : Not Detected                             ↑↓: Select Item
 ▶ SATA_7 : Not Detected                             Enter: Select
                                                     +/-: Change Option
   ASM1061 SATA Controller 0     [Enabled]           F1: General Help
 ▶ SATA_8 : Not Detected                             F7: Discard Changes
 ▶ SATA_9 : Not Detected                             F9: Load UEFI Defaults
                                                     F10: Save and Exit
   ASM1061 SATA Controller 1     [Enabled]           ESC: Exit
 ▶ SATA_10 : Not Detected
 ▶ SATA_11 : Not Detected                            ▼

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```

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.

English

51

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

```
                                    Aptio Setup - AMI
         Advanced

         NVMe Configuration                                  Launch NVMe driver

         Launch NVMe driver              [Enabled]

         No NVME Device Found



                                                             ↔: Select Screen
                                                             ↑↓: Select Item
                                                             Enter: Select
                                                             +/-: Change Option
                                                             F1: General Help
                                                             F7: Discard Changes
                                                             F9: Load UEFI Defaults
                                                             F10: Save and Exit
                                                             ESC: Exit


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```

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

```
                                    Aptio Setup – AMI
       Advanced

   ACPI Settings                                            Allow the system to be waked
                                                            up by a PCIE device and enable
   PCIE Devices Power On               [Disabled]           wake on LAN.
   Ring-In Power On                    [Disabled]
   RTC Alarm Power On                  [By OS]




                                                            ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit




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```

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

```
                            Aptio Setup - AMI
        Advanced

 USB Configuration                                  |
                                                    |
 USB Controllers:                                   |
       1 XHCI                                        |
 USB Devices:                                        |
       1 Drive, 2 Keyboards, 3 Mice, 2 Hubs         |
                                                    |
                                                    |
                                                    |_____
                                                    |
                                                    | ↔: 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 2.22.1290 Copyright (C) 2024 AMI
```
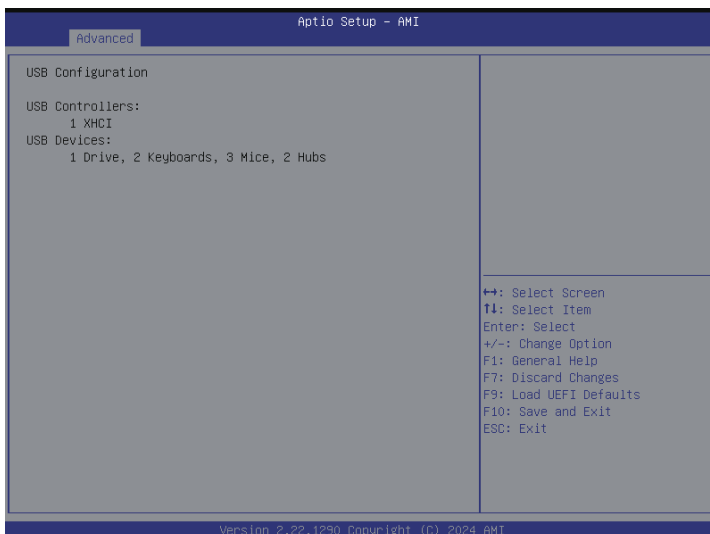
This page displays the information of the USB controllers and USB devices.

3.3.8 Super IO Configuration

```
                              Aptio Setup - AMI
        Advanced

    AST2600 Super IO Configuration                      Set Parameters of COM1

    Super IO Chip                    AST2600
  ▶ Serial Port 1 Configuration
  ▶ SOL Configuration




                                                     ↔: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Option
                                                     F1: General Help
                                                     F7: Discard Changes
                                                     F9: Load UEFI Defaults
                                                     F10: Save and Exit
                                                     ESC: Exit

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```
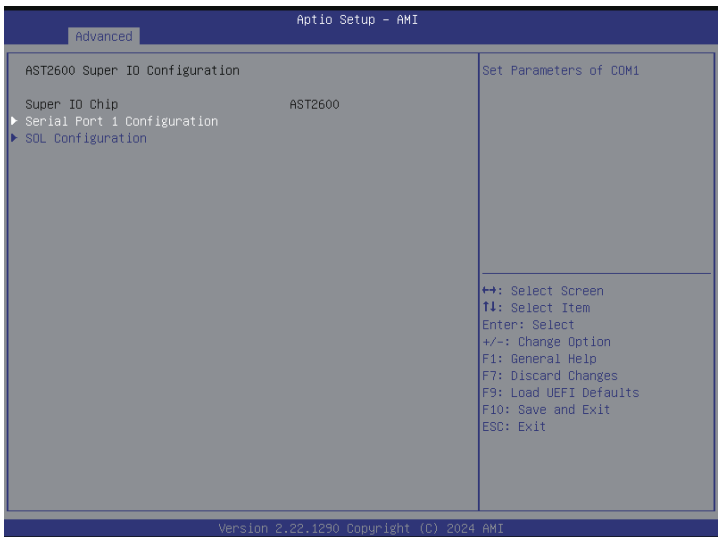
Serial Port 1 Configuration

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


```
                              Aptio Setup - AMI
        Advanced

   Serial Port Console Redirection                      Console Redirection Enable or
                                                        Disable.
   COM1
   Console Redirection              [Disabled]
 ▶ Console Redirection Settings

   SOL
   Console Redirection              [Disabled]
 ▶ Console Redirection Settings

   Serial Port for Out-of-Band Management/
   Windows Emergency Management Services (EMS)
   Console Redirection EMS          [Enabled]            ↔: Select Screen
 ▶ Console Redirection Settings                          ↑↓: Select Item
                                                        Enter: Select
                                                        +/-: Change Option
                                                        F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit



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```

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

English

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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.

```
                              Aptio Setup – AMI
        Advanced

    VOLT_5VSB                  : 5.05 V            ▲
    VOLT_3VSB                  : 3.33 V
    VOLT_CPU_VCORE             : 1.32 V
    VOLT_VCCIN_AUX             : 1.8 V
    VOLT_VDD2                  : 1.1 V
    VOLT_1.05V_PCH             : 1.04 V
    VOLT_0V82SB_PCH            : 0.82 V
    VOLT_1V8SB                 : 1.78 V
    VOLT_3V                    : 3.3 V
    VOLT_5V                    : 5 V
    VOLT_12V                   : 12.2 V
    VOLT_BAT                   : 3 V
    VOLT_VCCSA                 : 0.78 V
    FAN1                       : N/A          →←: Select Screen
    FAN3                       : N/A          ↑↓: Select Item
    FAN5                       : N/A          Enter: Select
    FAN2                       : N/A          +/-: Change Option
    FAN4                       : N/A          F1: General Help
    FAN6                       : N/A          F7: Discard Changes
    FAN7                       : N/A          F9: Load UEFI Defaults
    TEMP_CPU                   : 47 ˚C        F10: Save and Exit
    TEMP_PCH                   : 54 ˚C        ESC: Exit
    FSC_INDEX                  : 47 ˚C
    TEMP_MB_1                  : 26 ˚C
    TEMP_MB_2                  : 26 ˚C            ▼

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```

3.3.11 Network Stack Configuration

```
                              Aptio Setup - AMI
     Advanced

 Network Stack                  [Enabled]            Enable/Disable UEFI Network
 IPv4 PXE Support               [Disabled]           Stack
 IPv4 HTTP Support              [Disabled]
 IPv6 PXE Support               [Disabled]
 IPv6 HTTP Support              [Disabled]
 PXE boot wait time             0
 Media detect count             1




                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Option
                                                    F1: General Help
                                                    F7: Discard Changes
                                                    F9: Load UEFI Defaults
                                                    F10: Save and Exit
                                                    ESC: Exit



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```

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

```
                              Aptio Setup - AMI
        Advanced

   Intel SPS Configuration

   SPS Version                    6.2.4.8
   SPS FW State                   Operational




                                                     ←→: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Option
                                                     F1: General Help
                                                     F7: Discard Changes
                                                     F9: Load UEFI Defaults
                                                     F10: Save and Exit
                                                     ESC: Exit



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```

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

English

3.3.13 Driver Health
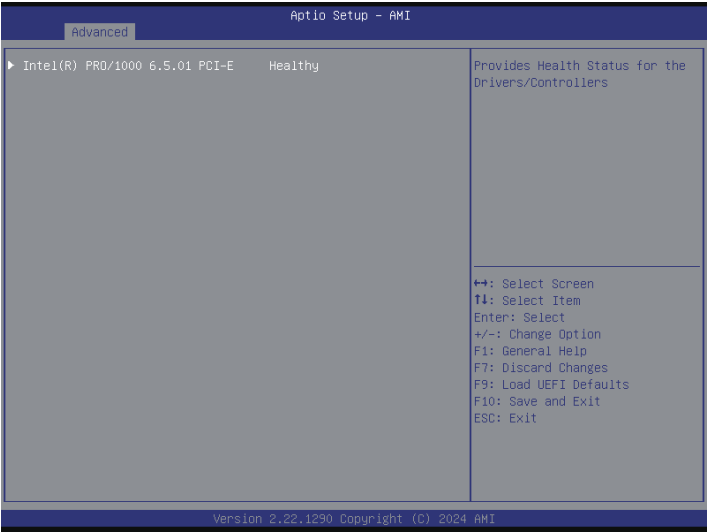
Intel(R) PR0/1000 6.5.01 PCI-E   Healthy

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
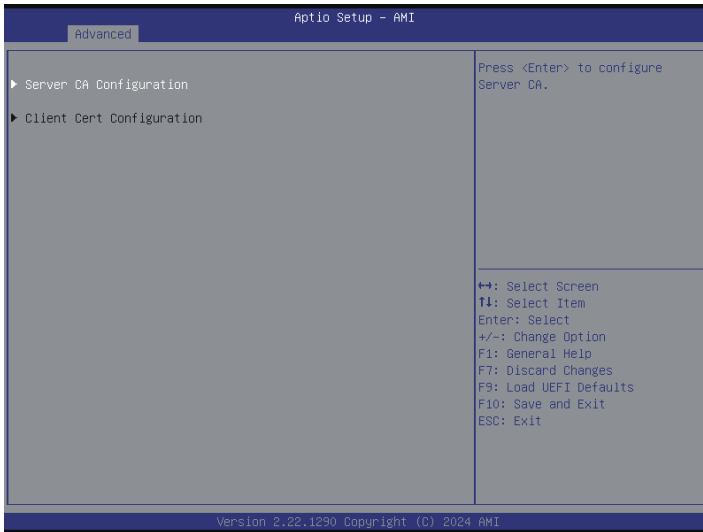
Server CA Configuration

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.

```
                           Aptio Setup - AMI
      Advanced

  ▶ NIC Configuration                              Click to configure the network
                                                   device port.
    Blink LEDs                    0

    UEFI Driver                   Intel(R) PRO/1000
                                  6.5.01 PCI-E
    Adapter PBA                   000300-000
    Device Name                   Intel(R) I210 Gigabit
                                  Network Connection
    Chip Type                     Intel i210
    PCI Device ID                 1533
    PCI Address                   03:00:00

    Link Status                   [Disconnected]          →←: Select Screen
                                                          ↑↓: Select Item
    MAC Address                   9C:6B:00:45:FB:06        Enter: Select
    Virtual MAC Address           9C:6B:00:45:FB:06        +/-: Change Option
                                                          F1: General Help
                                                          F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit


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```

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

```
                              Aptio Setup – AMI
        Advanced

▶ Enter Configuration Menu                            Press ENTER to enter
                                                      configuration menu for VLAN
                                                      configuration.




                                                      ←→: 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 2.22.1290 Copyright (C) 2024 AMI
```

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
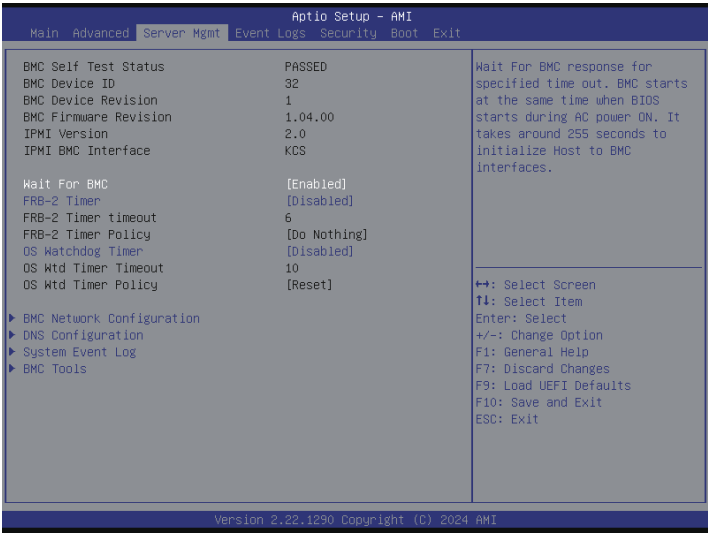
Wait For BMC

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
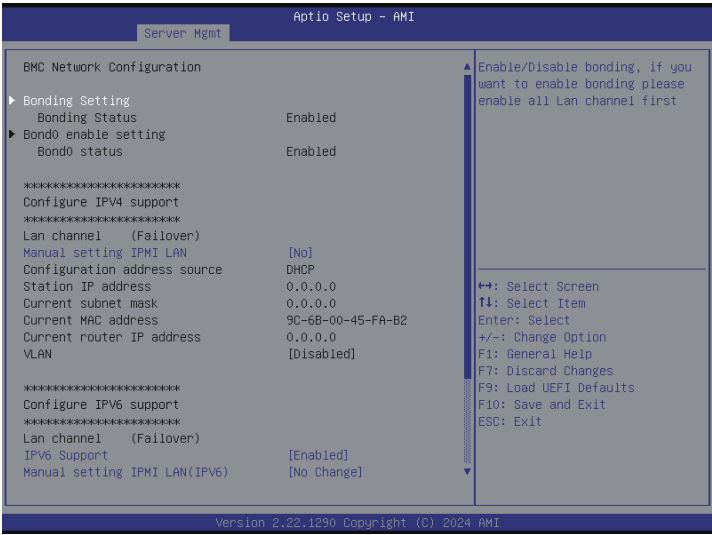
Bonding Setting

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.*

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

```
                              Aptio Setup - AMI
            Server Mgmt

 DNS Configuration                                    Manual DNS Configuration

 Manual DNS Configuration          [NO]




                                                      ↔: 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 2.22.1290 Copyright (C) 2024 AMI
```
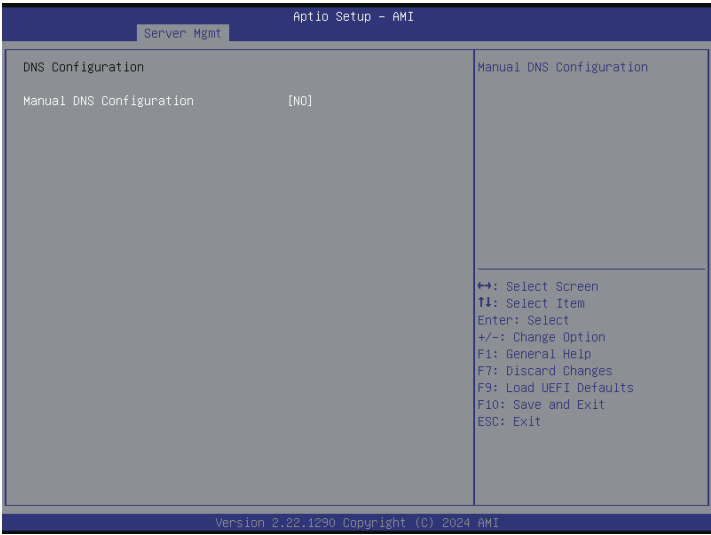
Manual DNS Configuration

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

```
                              Aptio Setup - AMI
          Server Mgmt

 Enabling/Disabling Options                          Change this to enable or
 SEL Components                    [Enabled]         disable event logging for
                                                     error/progress codes during
 Erasing Settings                                    boot.
 Erase SEL                         [No]
 When SEL is Full                  [Do Nothing]

 Custom EFI Logging Options
 Log EFI Status Codes              [Error code]

 PCIe Device Degrade ELog Support  [Disabled]

 NOTE: All values changed here do not take
       effect until computer is restarted.          ↔: Select Screen
                                                     ↑↓: Select Item
                                                     Enter: Select
                                                     +/-: Change Option
                                                     F1: General Help
                                                     F7: Discard Changes
                                                     F9: Load UEFI Defaults
                                                     F10: Save and Exit
                                                     ESC: Exit

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```

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

```
                                Aptio Setup – AMI
                 Server Mgmt

  BMC Tools                                              Select the KSC interface state
                                                         after POST end. If [Enabled]
  KCS control                       [No change]          is selected, the BMC will
   KCS control Current State        Enabled              remain KCS interface after
                                                         POST stage. If [Disabled] is
  Restore AC Power Loss             [No change]          selected, the BMC will disable
   Restore AC Power Current State   Last State           KCS interface after POST stage

▶ Load BMC Default Settings



                                                         ↔: 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 2.22.1290 Copyright (C) 2024 AMI
```
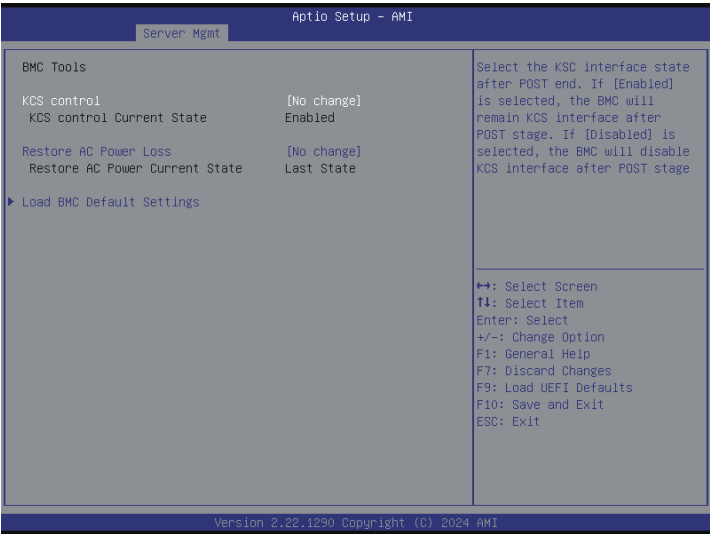
KCS Control

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
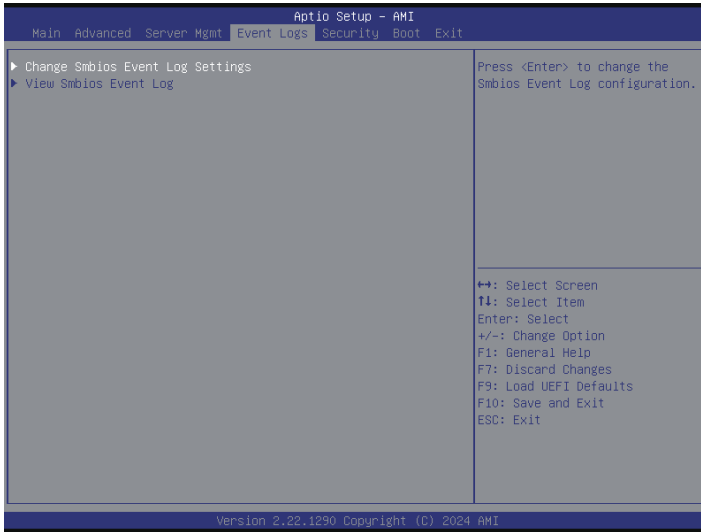
Restore AC Power Loss

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

```
                          Aptio Setup – AMI
     Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

  ▶ Change Smbios Event Log Settings          Press <Enter> to change the
  ▶ View Smbios Event Log                     Smbios Event Log configuration.




                                             ←→: 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 2.22.1290 Copyright (C) 2024 AMI
```

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.
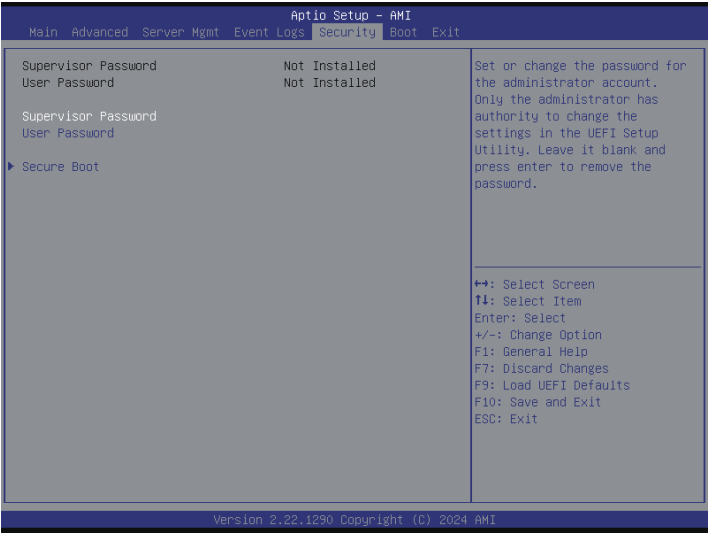
View Smbios Event Log

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.
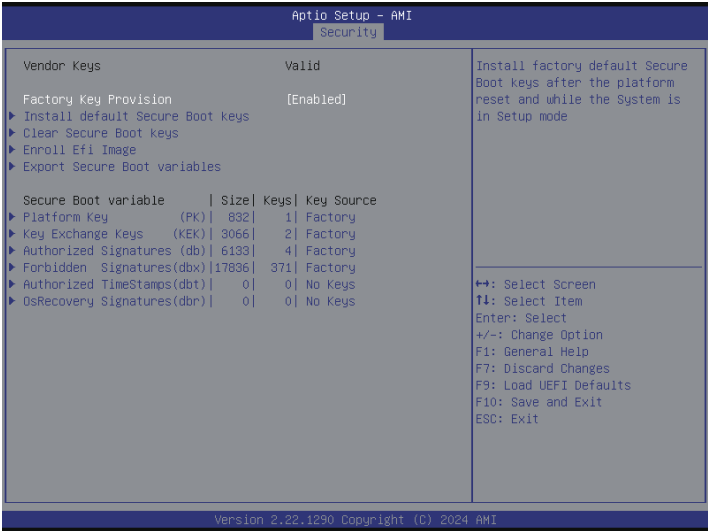
Secure Boot

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)
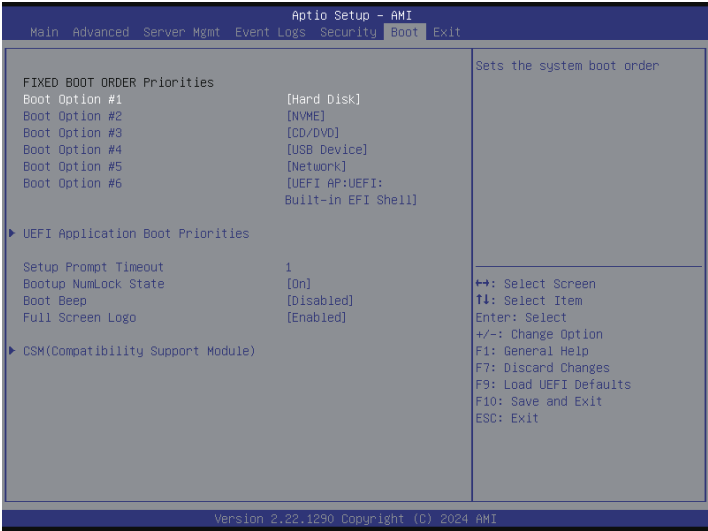
d) EFI_CERT_SHAXXX

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.

```
                              Aptio Setup - AMI
       Main  Advanced  Server Mgmt  Event Logs  Security  Boot  Exit

                                                        Sets the system boot order
       FIXED BOOT ORDER Priorities
       Boot Option #1              [Hard Disk]
       Boot Option #2              [NVME]
       Boot Option #3              [CD/DVD]
       Boot Option #4              [USB Device]
       Boot Option #5              [Network]
       Boot Option #6              [UEFI AP:UEFI:
                                   Built-in EFI Shell]

     ▶ UEFI Application Boot Priorities

       Setup Prompt Timeout             1
       Bootup NumLock State       [On]                  ↔: Select Screen
       Boot Beep                  [Disabled]            ↑↓: Select Item
       Full Screen Logo           [Enabled]             Enter: Select
                                                        +/-: Change Option
     ▶ CSM(Compatibility Support Module)                F1: General Help
                                                        F7: Discard Changes
                                                        F9: Load UEFI Defaults
                                                        F10: Save and Exit
                                                        ESC: Exit



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```

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.
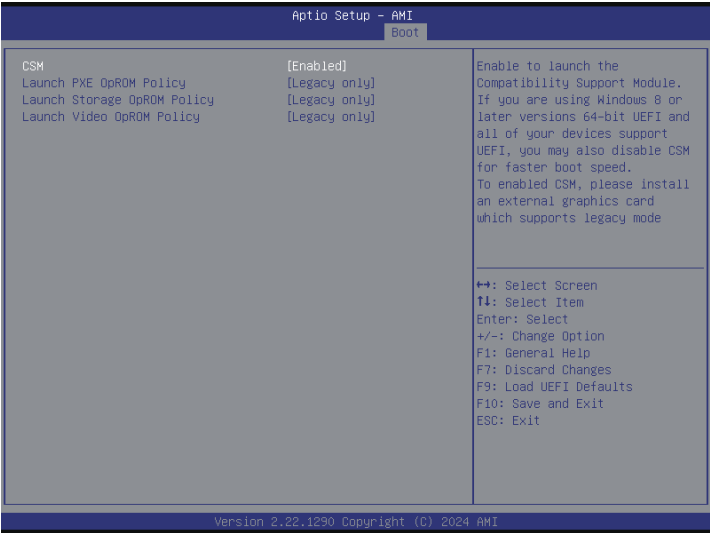
Boot Beep

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

```
                          Aptio Setup — AMI
                                      Boot

 CSM                            [Enabled]           Enable to launch the
 Launch PXE OpROM Policy        [Legacy only]       Compatibility Support Module.
 Launch Storage OpROM Policy    [Legacy only]       If you are using Windows 8 or
 Launch Video OpROM Policy      [Legacy only]       later versions 64-bit UEFI and
                                                    all of your devices support
                                                    UEFI, you may also disable CSM
                                                    for faster boot speed.
                                                    To enabled CSM, please install
                                                    an external graphics card
                                                    which supports legacy mode



                                                    ↔: Select Screen
                                                    ↑↓: Select Item
                                                    Enter: Select
                                                    +/-: Change Option
                                                    F1: General Help
                                                    F7: Discard Changes
                                                    F9: Load UEFI Defaults
                                                    F10: Save and Exit
                                                    ESC: Exit



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```

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.

English

85

3.8 Exit Screen
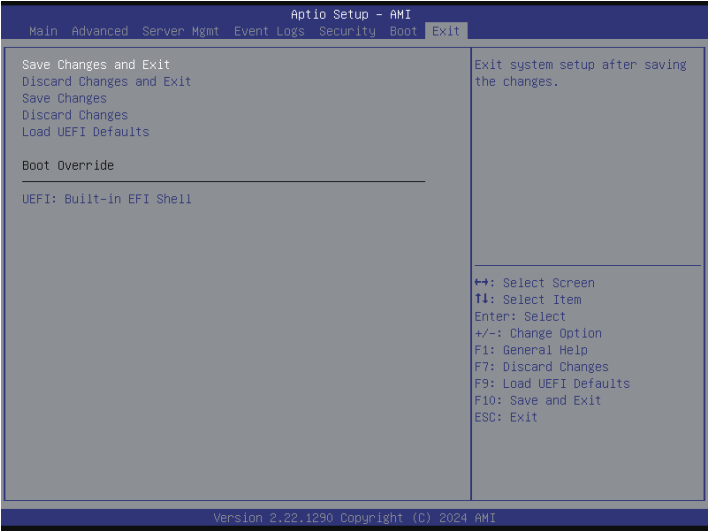
Save Changes and Exit

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.

4.3 Contact Information

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

English

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 compo-
> nents. 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 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

ASRock Rack Incorporation

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