OPEN Industry Standard, Flexible Architecture

GREEN Less Heat, Less Power Consumption

STABLE Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation

Motherboard

SPC741D8-2T/BCM
SPC741D8-2L2T/BCM

User Manual

English

Version 1.30
Published Jun. 2025

WARNING

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

ASRock Rack's Website: www.ASRockRack.com

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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 reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following

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

CE

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

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

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

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

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 *SPC741D8-2T/BCM, SPC741D8-2L2T/BCM* motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

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

> *Because the motherboard specifications and the BIOS software might be updated, the content of this manual will be subject to change without notice. In case any modifications of this manual occur, the updated version will be available on ASRock Rack website without further notice. Find the latest memory and CPU support lists on ASRock Rack website as well. ASRock Rack's Website: www.ASRockRack.com*
>
> *About technical supporting for this motherboard, please refer to the website for future information. http://www.asrockrack.com/support/*

1.1 Package Contents

- ASRock Rack SPC741D8-2T/BCM, SPC741D8-2L2T/BCM motherboard
  (CEB form factor: 12-in x 10.5-in)
- Quick installation guide
- 1 ATX 4P to 24P power cable (8cm)
- 1 MCIO X4 to 4 SATA cable (6.3cm)
- 1 SATA3 cable (60cm) *(SPC741D8-2T/BCM only)*
- 2 Screws for M.2 sockets
- 1 I/O shield
- 2 CPU Non-Fabric carriers (1xE1A, 1xE1B)

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

English

1

1.2 Specifications

SPC741D8-2L2T/BCM, SPC741D8-2T/BCM	
Physical Status	
Form Factor	CEB
Dimension	12" x 10.5" (304.8 x 266.7mm)
Processor System	
CPU	Supports 5th and 4th Gen Intel® Xeon® Scalable Processors
Socket	Single Socket E (LGA4677)
Thermal Design Power (TDP)	350W
Chipset	Intel® C741
System Memory	
Supported DIMM Quantity	8 DIMM slots (1DPC)
Supported Type	288-pin DDR5 RDIMM/RDIMM-3DS
Max. Capacity per DIMM	RDIMM: 96GB RDIMM-3DS: 2H- 128GB/4H- 256GB
Max. Frequency	5600MT/s on 5th Gen Intel® Xeon® Scalable Processors 4800MT/s on 4th Gen Intel® Xeon® Scalable Processors
Voltage	1.1V
Note: Memory support is to be validated.	
PCIe Expansion Slots (SLOT7 close to CPU)	
PCIe x16	SLOT7: PCIe5.0/CXL1.1 x16 [CPU]
	SLOT5: PCIe5.0/CXL1.1 x16 [CPU]
	SLOT3: PCIe5.0/CXL1.1 x16 [CPU]
	SLOT1: PCIe5.0/CXL1.1 x16 [CPU]
Other PCIe Expansion Connectors	
M.2	1 M-key M2_1 (PCIe3.0 x4 or SATA 6Gb/s), supports 22110/2280/2242 form factor [PCH]
	1 M-key M2_2 (PCIe3.0 x4 or SATA 6Gb/s), supports 22110/2280 form factor [PCH]
MCIO	2 MCIO (PCIe5.0 x8)
	1 MCIO (PCIe3.0 x4 or SATA 6Gb/s) [PCH]
SATA/SAS Storage	
PCH Built-in Storage	**SPC741D8-2L2T/BCM:** Intel® C741 (Up to 12 SATA 6Gb/s, support RAID 0/1/5/10): 1 MCIO 4i, 2 SATA (M2_1/M2_2) **SPC741D8-2T/BCM:** Intel® C741 (Up to 14 SATA 6Gb/s, support RAID 0/1/5/10): 1 MCIO 4i, 4 SATA (M2_1/M2_2, SATA 7-Pin x2)
Note: 4 SATA via optional M2U2-HD-4G daughter card for each M.2 device.	

Ethernet	
Additional GbE Controller	**SPC741D8-2L2T/BCM:** 2 RJ45 (10GbE) by Broadcom BCM57416 2 RJ45 (1GbE) by Intel® i210 **SPC741D8-2T/BCM:** 2 RJ45 (10GbE) by Broadcom BCM57416
Server Management	
BMC Controller	ASPEED AST2600: IPMI2.0 with iKVM and vMedia support
IPMI Dedicated GLAN	1 RJ45 Dedicated IPMI LAN port by Realtek RTL8211FD
Graphics	
Controller	ASPEED AST2600: 1 DB15 (VGA)
Rear I/O	
UID Button/LED	1 UID button w/ LED
VGA	1 DB15 (VGA)
USB	2 Type A (USB3.2 Gen1)
RJ45	**SPC741D8-2L2T/BCM:** 2 RJ45 (10GbE), 2 RJ45 (1GbE), 1 dedicated IPMI **SPC741D8-2T/BCM:** 2 RJ45 (10GbE), 1 dedicated IPMI
Internal Connectors/Headers	
Power Connector	1 Micro-Fit (4-pin, ATX PSU signal), 3 (8-pin, ATX 12V)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN1/LAN2 activity LED, locate, SMBus
System Panel Header	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
NMI Header	1
COM Header	1 (9-pin)
Speaker Header	1 (4-pin)
Fan Header	6 (6-pin)
Thermal Sensor Header	1
TPM Header	1 (13-pin, SPI)
VROC Header	1
SGPIO Header	2
HSBP	1
SMbus Header	1
PMbus Header	1
IPMB Header	1
Clear CMOS	1 (contact pads)
Front Lan LED Connector	1

USB Header	1 (19-pin, 2 USB3.2 Gen1)
	1 (9-pin, 2 USB2.0)
LED Indicators	
Standby Power LED	1
80 Debug Port LED	1
Fan Fail LED	6
BMC Heartbeat LED	1
System BIOS	
Type	AMI 256Mb SPI Flash ROM
Features	Plug and Play (PnP), ACPI 4.0 and above compliance wake up events, SMBIOS 3.4 and above , ASRock Rack Instant Flash
Hardware Monitor	
Temperature	CPU, MB, Card Side, TR1 Temperature Sensing
Fan	Fan Tachometer
	CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU Temperature)
	Fan Multi-Speed Control
Voltage	CPU1_PVCCIN, 1.05V_PCH, 1.8V_PCH, +BAT, PVNN_PCH, 3.3V, 5V, 12V, 3.3VSB, 5VSB, +12V, +12VSB
Supported OS	
OS	Microsoft® Windows®:
	- Server 2022 (64bit)
	Linux®:
	- Red Hat Enterprise Linux Server 8.4(64bit) / 8.5(64bit) / 8.6(64bit) / 8.7(64bit) / 9.0(64bit) / 9.1(64bit)
	- SUSE Enterprise Linux Server 15 SP3(64bit) / 15 SP4(64bit)
	- Ubuntu 21.10(64bit) / 22.04(64bit) / 22.10(64bit)
	Hypervisor:
	- VMWare® ESXi 7.0 U3g/8.0
	Please refer to the website for the latest OS support list.
Enviroment	
Operating Temperature	10°C - 35°C
Non-operating Temperature	-40°C - 70°C

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.

English

1.4 Motherboard Layout

26.7 cm (10.5 in)

30.5 cm (12 in)

USB 3.2 Gen1 Ports
T:USB3_2
B:USB3_1

IPMI_LAN

(SPC741D8-2L2T/BCM only)
LAN_3_4

LAN1

LAN2

VGA1

UID1

DDR5_D1
DDR5_C1
DDR5_B1
DDR5_A1

CPU0

LGA4677-1

REMOVE INSTALL REMOVE INSTALL

PRE-PRODUCTION D/C XXXXX

DDR5_E1
DDR5_F1
DDR5_G1
DDR5_H1

PCIE7

Broadcom
57416

ASRock
Rack
SPC741D8-2L2T/BCM
SPC741D8-2T/BCM

PCIE5

ASPEED
AST2600

PCIE3

Intel C741

BAT1

PCIE1

BMC
ROM

Dr. Debug

M2_2

M2_1

No.	Description
1	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_C1)*
2	2 x 288-pin DDR5 DIMM Slots (DDR5_B1, DDR5_D1)*
3	PSU SMBus Header (PSU_SMB1)
4	System Fan Connector (FAN1)
5	Mini Cool Edge IO x8 Connector (MCIO1)
6	Mini Cool Edge IO x8 Connector (MCIO2)
7	System Fan Connector (FAN2)
8	PWM Configuration Header (PWM_CFG1)
9	Micro-Fit ATX 4Pin Power Connector (ATX4PIN1)
10	2 x 288-pin DDR5 DIMM Slots (DDR5_E1, DDR5_G1)*
11	ATX 12V Power Connector (ATX12V1)
12	ATX 12V Power Connector (ATX12V2)
13	2 x 288-pin DDR5 DIMM Slots (DDR5_F1, DDR5_H1)*
14	System Fan Connector (FAN3)
15	System Fan Connector (FAN4)
16	ATX 12V Power Connector (ATX12V3)
17	SATA3 Connectors (SATA3_1)(Upper), (SATA3_0)(Lower) *(SPC741D8-2T/BCM only)*
18	M-key M.2 Socket (M2_2) (Type 22110/2280)
19	Mini Cool Edge IO x4 Connector (MCIO3)
20	SATA SGPIO Connector (SATA0_SGPIO)
21	MiniSAS HD SATA/PCIE Selection Jumper (MINISAS_1)
22	Clear CMOS Pad (CLRMOS1)
23	USB 3.2 Gen1 Header (USB3_3_4)
24	SATA SGPIO Connector (SATA1_SGPIO)
25	System Fan Connector (FAN5)
26	M-key M.2 Socket (M2_1) (Type 22110/2280/2242)
27	System Fan Connector (FAN6)
28	Virtual RAID On CPU Header (RAID_1)
29	USB 2.0 Header (USB_2_3)
30	System Panel Header (PANEL1)
31	Auxiliary Panel Header (AUX_PANEL1)
32	SPI TPM Header (TPM_BIOS_PH1)
33	Front LAN LED Connector (FRONT_LED_LAN34)

No.	Description
34	Serial Port Header (COM1)
35	Backplane PCI Express Hot-Plug Connector (CPU1_HSBP1)
36	Thermal Sensor Header (TR1)
37	Speaker Header (SPEAK1)
38	CPU PECI Mode Jumper (PECI1)
39	Non Maskable Interrupt Button (NMI_BTN1)
40	ME Recovery Jumper (ME_RECOVERY1)
41	Password Reset Jumper (PASSWORD_CLEAR1)
42	BIOS Swap Override Jumper (BIOS_SWAP_OVERRIDE1)
43	Flash Override Jumper (FLASH_SEC_OVERRIDE1)
44	Intelligent Platform Management Bus Header (IPMB_1)
45	BMC SMBus Header (BMC_SMB_1)
46	PCI Express 5.0 x16 Slot (PCIE1)
47	PCI Express 5.0 x16 Slot (PCIE3)
48	PCI Express 5.0 x16 Slot (PCIE5)
49	PCI Express 5.0 x16 Slot (PCIE7)
50	LGA4677 CPU Socket (CPU0)

For DIMM installation and configuration instructions, please see p.23 (Installation of Memory Modules (DIMM)) for more details.

1.5 Onboard LED Indicators
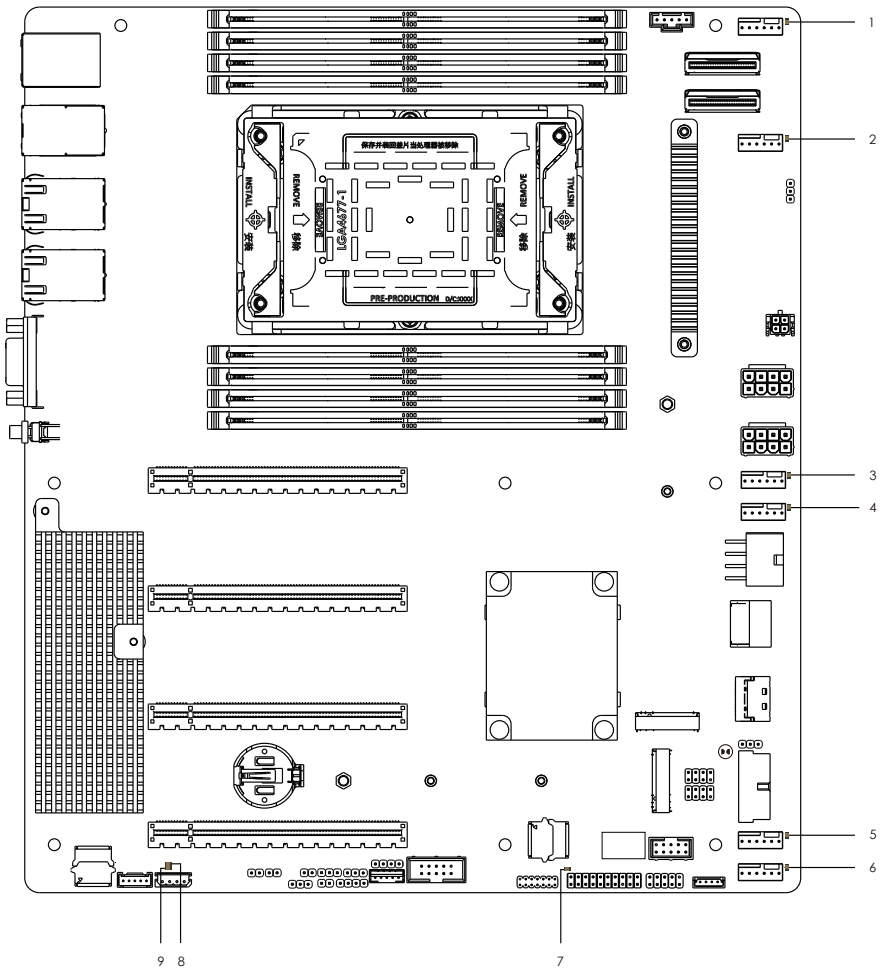
No.	Item	Status	Description
1	LED_FAN1	Red	FAN1 failed
2	LED_FAN2	Red	FAN2 failed
3	LED_FAN3	Red	FAN3 failed
4	LED_FAN4	Red	FAN4 failed
5	LED_FAN5	Red	FAN5 failed
6	LED_FAN6	Red	FAN6 failed
7	SB_PWR1	Green	STB PWR ready
8	BMC_LED	Green	BMC heartbeat LED
9	LED_CATERR1	Red	CPU CATERR error

1.6 I/O Panel
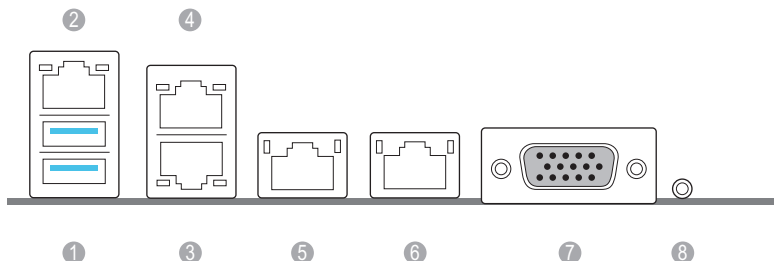
No.	Description	No.	Description
1	USB 3.2 Gen1 Ports (USB3_1_2)	5	10G LAN RJ-45 Port (LAN1)***
2	LAN RJ-45 Port (IPMI_LAN)*	6	10G LAN RJ-45 Port (LAN2)***
3	1G LAN RJ-45 Port (LAN3, shared NIC)** *(SPC741D8-2L2T/BCM only)*	7	VGA Port (VGA1)
4	1G LAN RJ-45 Port (LAN4)** *(SPC741D8-2L2T/BCM only)*	8	UID Switch (UID1)

LAN Port LED Indications

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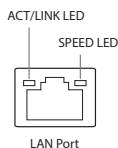
IPMI LAN Port LED Indications

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

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

ACT/LINK LED
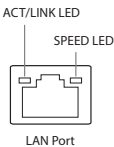
SPEED LED

LAN Port

1G LAN Port LED Indications *(SPC741D8-2L2T/BCM only)*

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

***There is an LED on both sides of the 10G LAN port. Please refer to the table below for the LAN port LED indications.

ACT/LINK LED
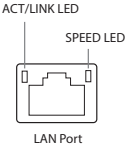
SPEED LED

LAN Port

10G LAN Port LED Indications

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

1.7 Block Diagram

SPC741D8-2T/BCM:
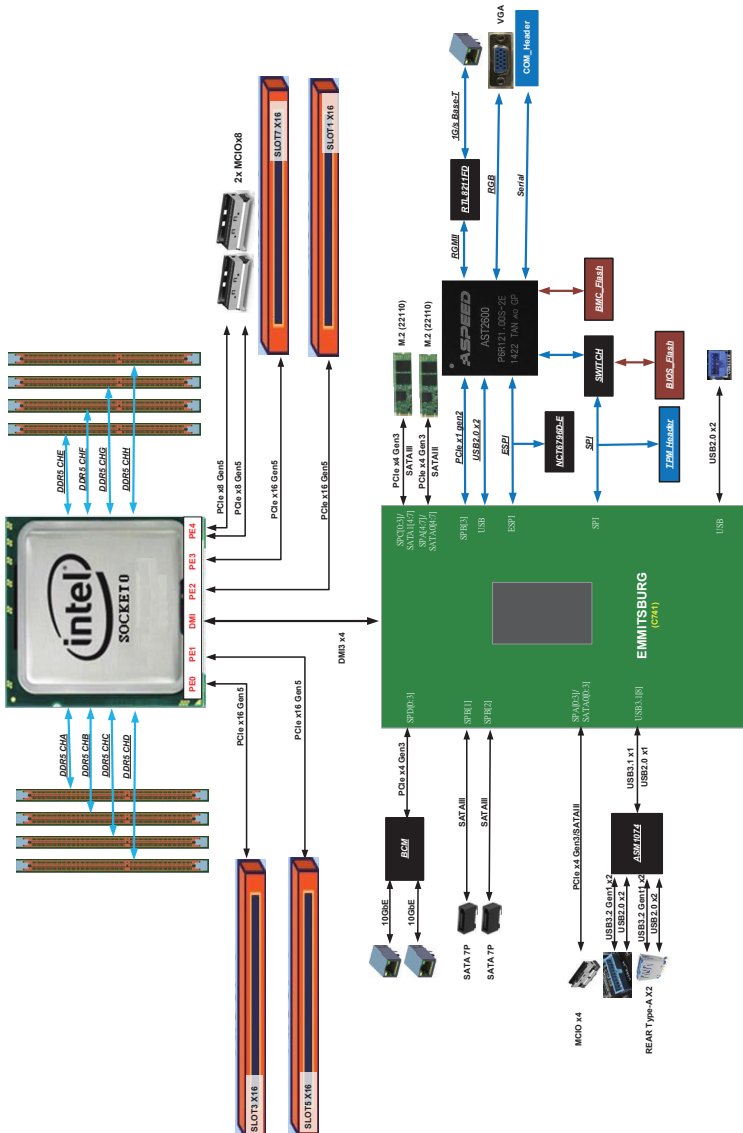
SPC741D8-2L2T/BCM:
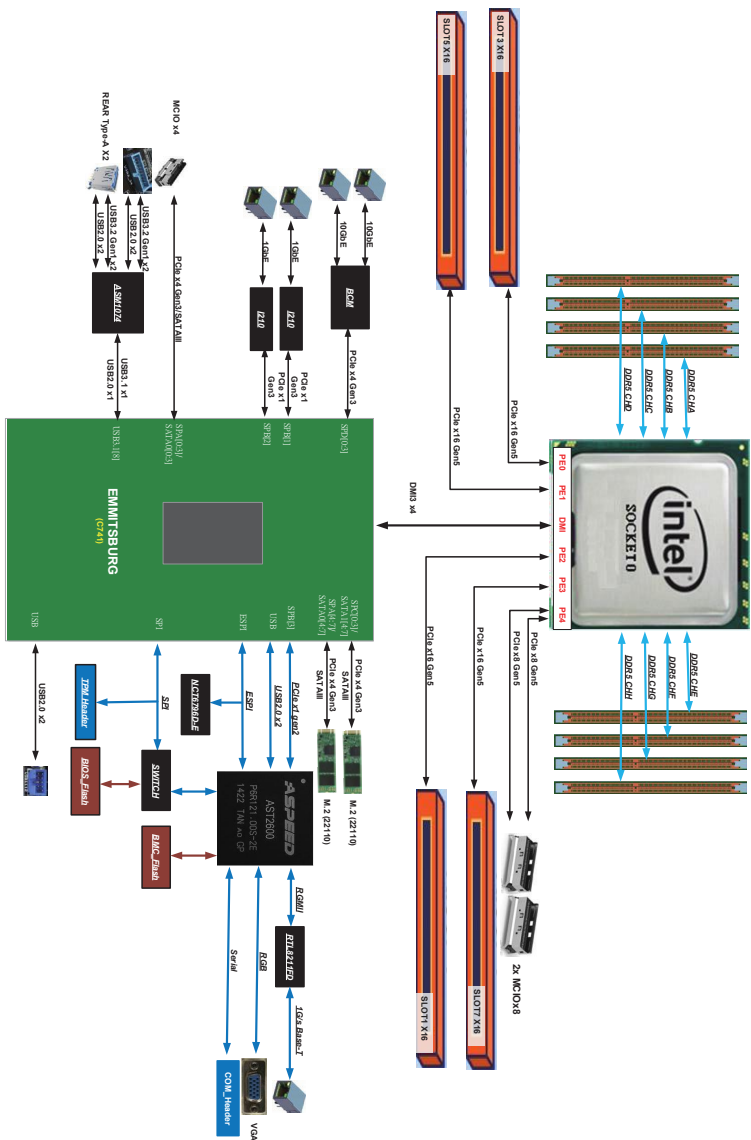
Chapter 2 Installation

This is a CEB form factor (12" x 10.5") motherboard. Before installing the motherboard, study the configuration of the chassis to ensure that the motherboard fits into it.

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

2.1 Screw Holes

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

⚠️ *Attention! Before installing this motherboard, be sure to unscrew and remove the standoff at the marked location, under the motherboard, from the chassis, in order to avoid electrical short circuit and motherboard damages.*
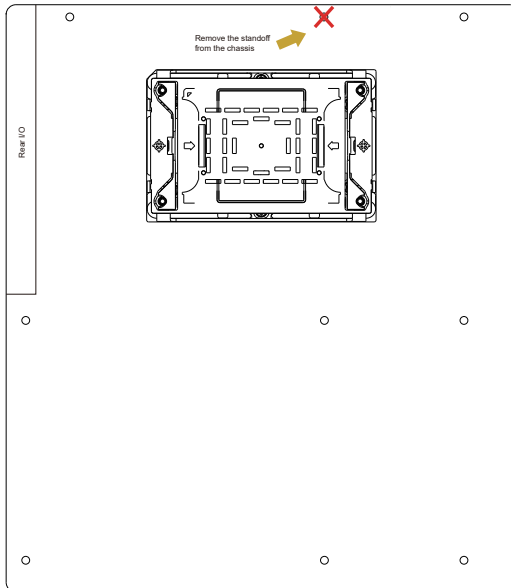
⚠️ *Do not over-tighten the screws! Doing so may damage the motherboard.*

2.2 Pre-installation Precautions

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

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

> *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 and Heatsink

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

Carrier Used

Carrier Type	Xeon® SP XCC	Xeon® SP MCC/LCC
Carrier Code	E1A	E1B
Shim	No	Yes
Carrier Height	16.70mm	17.55mm

XCC Carrier

No Shim

16.70mm

MCC Carrier

Shim Installed

17.55mm

Follow the steps below to finish the CPU installation and please save the Socket Dust Cover when returning for service.

1

Socket Dust Cover

2

CPU Carrier

5

180°

6

7

CPU Carrier

8

Heatsink

CPU Carrier

Socket
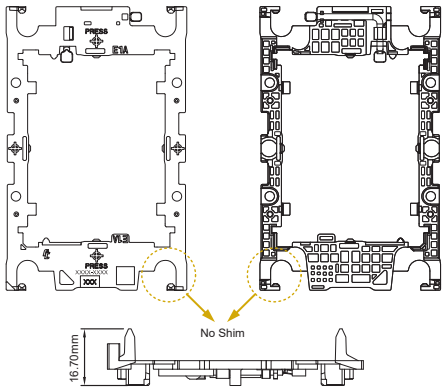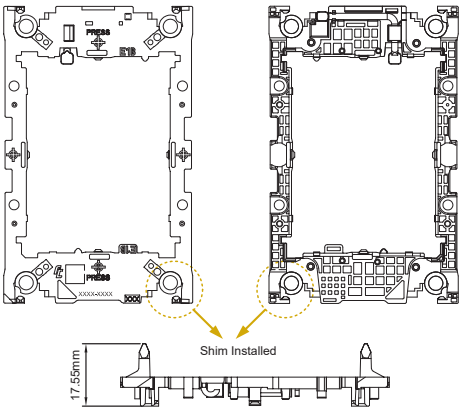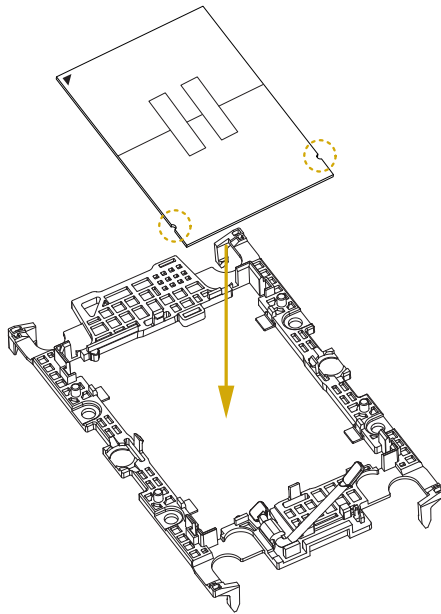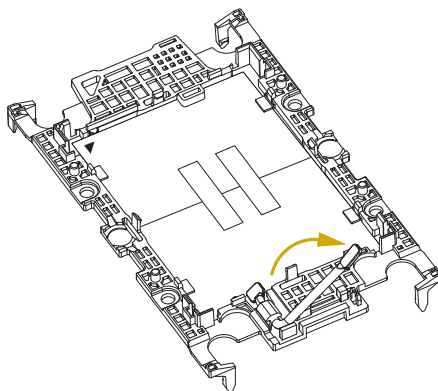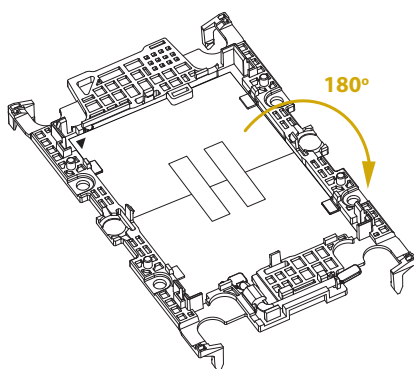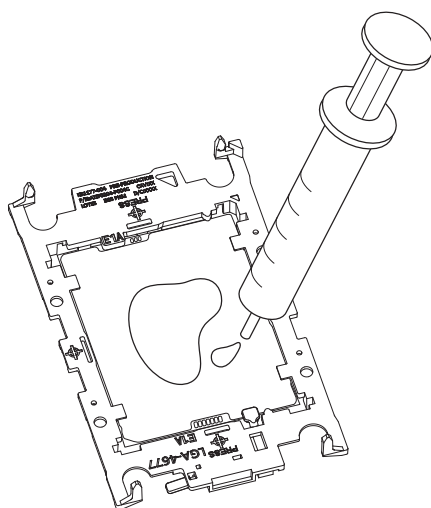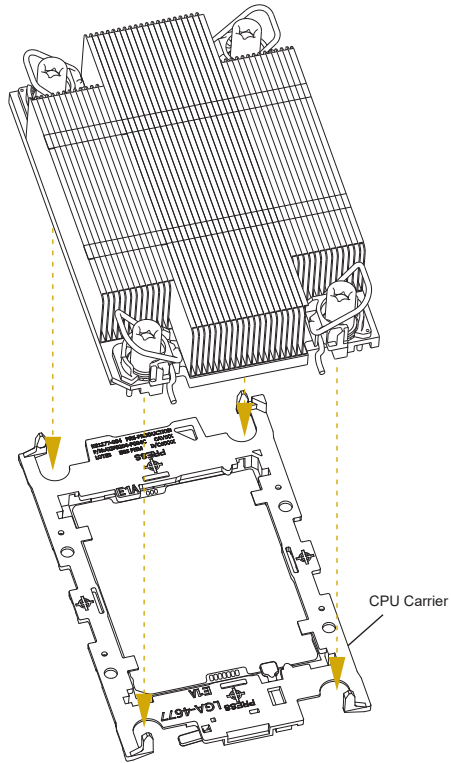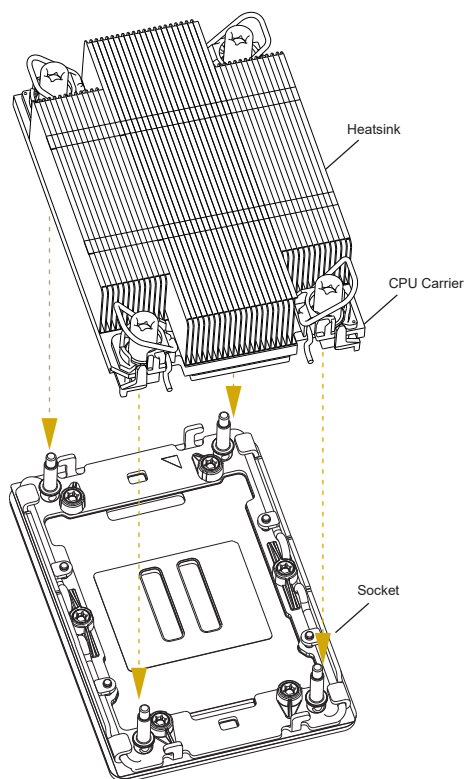
9
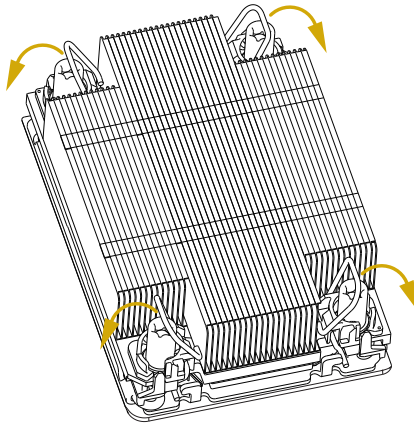
10
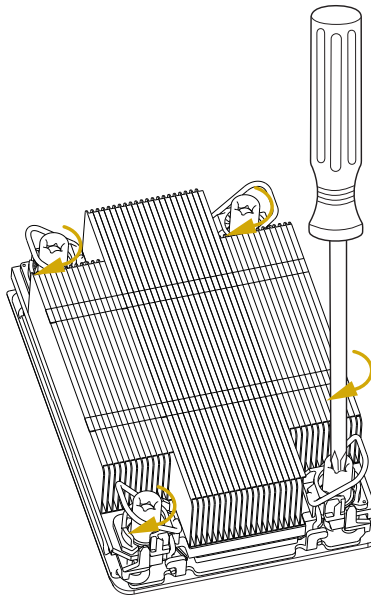
2.4 Installing Memory Modules (DIMM)

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

CPU0

DDR5_A1, B1, C1, D1, E1, F1, G1 H1

☆
1. Before installing a memory module, make sure to turn off the computer and unplug the powercord from the power outlet to prevent damage to the memory module.
2. For Eight channel configuration, it always need to install identical (the same brand, speed, size and chip-type) DDR5 DIMM groups.
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.

2.4.1 Memory Support

4th Gen Intel® Xeon® Scalable Processors - SP

Type	Ranks Per DIMM and Data Width	DRAM Density & DIMM Capacity			Speed (MT/s); Voltage (V); DIMM Per Channel (DPC)	
					1DPC[1]	2DPC
		16Gb	24Gb[2]	32Gb	1.1V	
RDIMM	SRx8 (RC D)	16GB	24GB	NA	4800	4400
	SRx4 (RC C)	32GB	48GB	NA		
	SRx4 (RC F) 9x4	32GB	NA	NA		
	DRx8 (RC E)	32GB	48GB	NA		
	DRx4 (RC A)	64GB	96GB	128GB		
	DRx4 (RC B) 9x4	64GB	NA	NA		
RDIMM-3DS	(4R/8R) x4 (RC A)	2H-128GB 4H-256GB	NA	NA		

Note1: 1DPC applies to 1 SPC or 2SPC implementations (SPC-Sockets Per Channel).
Note2: 24Gb XCC only w/ limited configs: 1DPC all DIMM types, 2DPC 96GB only. Only 8 and 16 DIMM configs, no fallbacks.
Note3: The memory speed will be 4800 MT/s 1DPC and 4400 MT/s 2DPC.
Note4: The table is for reference only.

5th Gen Intel® Xeon® Scalable Processors - SP

Type	Ranks Per DIMM and Data Width	DRAM Density & DIMM Capacity			Speed (MT/s); Voltage (V); DIMM Per Channel (DPC)	
					1DPC[1]	2DPC
		16Gb	24Gb	32Gb	1.1V	
RDIMM	SRx8 (RC D)	16GB	24GB[2]	NA	5600[3]	4400[3]
	SRx4 (RC C)	32GB	48GB[2]	NA		
	SRx4 (RC F) 9x4	NA	NA	NA		
	DRx8 (RC E)	32GB	48GB[2]	NA		
	DRx4 (RC A)	64GB	96GB	128GB		
	DRx4 (RC B) 9x4	NA	NA	NA		
RDIMM-3DS	(4R/8R) x4 (RC A)	2H-128GB 4H-256GB	NA	NA	5600[4]	

Note1: 1DPC applies to 1 SPC or 2SPC implementations (SPC-Sockets Per Channel).
Note2: 24Gb 2DPC not POR w/ 24GB and 48GB DIMMs.
Note3: DDR5-5600 RDIMMs will be limited to 5600 MT/s 1DPC and 4400 MT/s 2DPC. DDR5-4800 DIMMs will be limited to 4800 MT/s 1DPC and 4400 MT/s 2DPC.
Note4: DDR5-5600 DIMM are required for 5600 and 5200 1DPC speeds.
Note5: EE LCC DDR5 memory support POR is 16GB/24GB/32GB at 4400 for 1DPC and 2DPC.
Note6: The table is for reference only.

2.4.2 DIMM Population for DDR5

The following is the recommended memory population for installing all volatile DDR5 memory modules, without mixing any Intel Persistent Memory 300 series (BPS).

Memory Configurations (DDR5)

DIMM Slot		1	1	1	1	2	2	4	6	6	6	6	8
CPU0	A1	V				V		V	V	V		V	V
	B1			V						V	V	V	V
	C1						V	V	V	V	V		V
	D1								V		V	V	V
	E1		V				V	V	V	V	V		V
	F1				V				V		V	V	V
	G1					V		V	V	V		V	V
	H1									V	V	V	V

The symbol V indicates the slot is populated.
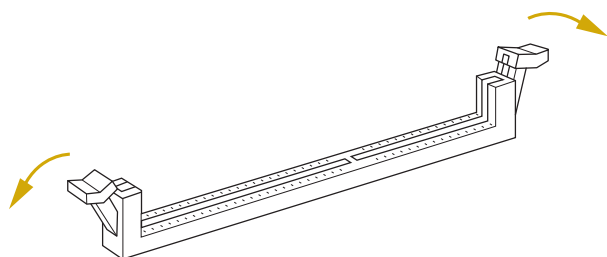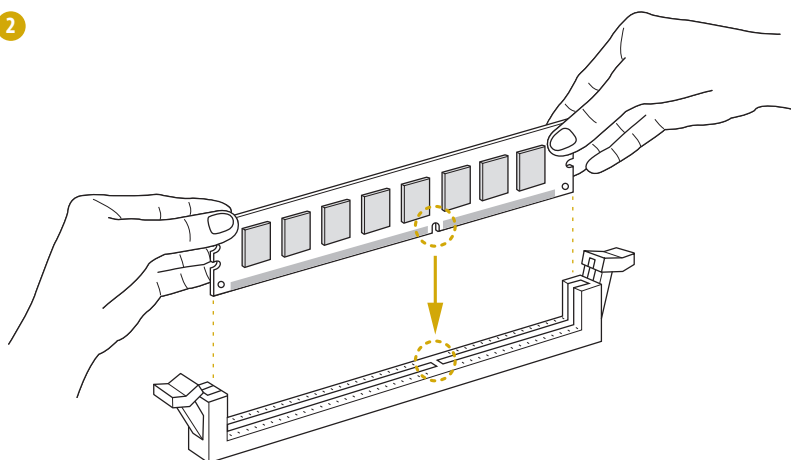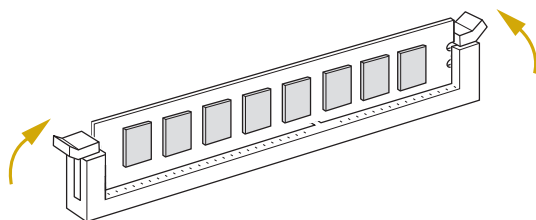
2.5 Expansion Slots (PCI Express Slots)

There are 4 PCI Express slots on this motherboard.

PCIE slots:

PCIE1 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.
PCIE3 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.
PCIE5 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.
PCIE7 (PCIE 5.0 x16 slot, from CPU0) is used for PCI Express x16 lane width cards.

Slot	Generation	Mechanical	Electrical	Source
PCIE1	5.0	x16	x16	CPU0
PCIE3	5.0	x16	x16	CPU0
PCIE5	5.0	x16	x16	CPU0
PCIE7	5.0	x16	x16	CPU0

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 begin 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.

English

2.6 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
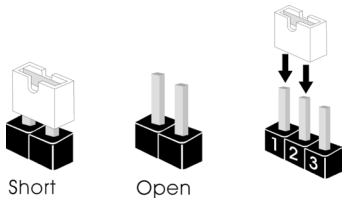
MiniSAS HD SATA/PCIE Selection Jumper (3-pin MINISAS_1) (see p.6, No. 21)	**1_2** SATA	**2_3** PCIE (Default)
CPU PECI Mode Jumper (3-pin PECI1) (see p.6, No. 38)	**1_2** CPU PECI connected to PCH	**2_3** CPU PECI connected to BMC (Default)
ME Recovery Jumper (3-pin ME_RECOVERY1) (see p.6, No. 40)	**1_2** Normal Mode (Default)	**2_3** ME Recovery Mode

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".

Short   Open
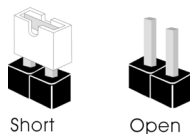
Password Reset Jumper (2-pin PASSWORD_ CLEAR1) (see p.6, No. 41)	1_2 2-pin Jumper	Open: Normal Mode (Default) Short: Password Clear
BIOS Swap Override Jumper (BIOS_SWAP_OVER-RIDE1) (see p.6, No. 42)	1_2 2-pin Jumper	Open: Disable Override (Default) Short: Enable Override
Flash Override Jumper (FLASH_SEC_OVER-RIDE1) (see p.6, No. 43)	1_2 2-pin Jumper	Open: Disable Override (Default) Short: Enable Override
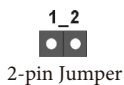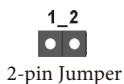
English
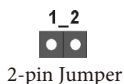
2.7 Onboard Headers and Connectors

⚠️ *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. 30)

```
        PLED+
          PLED-
            PWRBTN#
              GND
   ┌────────────────┐
   │ ○ ○ ○ ○        │
 1 │ ○ ○ ○ ○ ○      │
   └────────────────┘
                GND
                RESET#
            GND
         HDLED-
       HDLED+
```
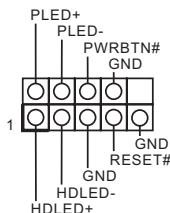
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

⊕ **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. 31)

A
System Fault LED+
System Fault LED-
GND
LOCATORBTN#
B
LOCATORLED1-
LOCATORLED1+
GND
C
CASEOPEN
+5VSB
1

LAN2_LINK
LED_PWR
LED_PWR
LAN1_LINK
+3VSB
SMB_DATA
GND
SMB_CLK
SMB_Alert
D
E
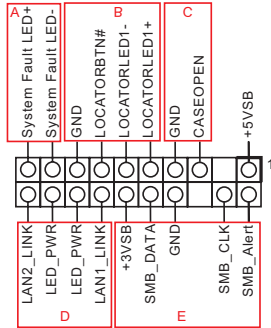
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

A. System Fault LED (2-pin LOCATOR)
This header is for the Fault LED on the system.

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

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. 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.

E. 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.

SATA SGPIO Connectors
(7-pin SATA0_SGPIO)
(see p.6, No. 20)
(7-pin SATA1_SGPIO)
(see p.6, No. 24)

SCLOCK
SLOAD
GND

1

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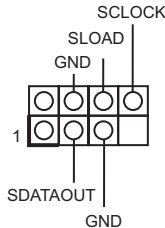
The header supports Serial Link interface for onboard SATA connections.

English

Backplane PCI Express
Hot-Plug Connector
(5-pin CPU1_ HSBP1)
(see p.6, No. 35)

1

GND
P0_HP_ALERT_L
CPU_HP_SDA
CPU_HP_SCL
+3V
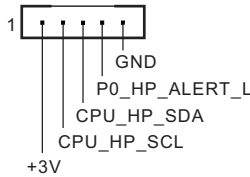
This header is used for the hot plug feature of HDDs on the backplane.

Thermal Sensor Header
(3-pin TR1)
(see p.6, No. 36)

TR1   TR1

1

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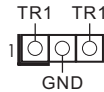
Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device for monitoring its temperature.

PWM Configuration
Header
(3-pin PWM_CFG1)
(see p.6, No. 8)

SMB_CLK_VSB
SMB_DATA_VSB
GND

1
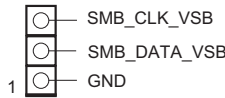
The header is used for PWM configurations.

Non Maskable Interrupt
Button Header
(NMI_BTN1)
(see p.6, No. 39)

GND
1
CONTROL

Please connect a NMI device to this header.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 32)

TPM_CS#
GND
RSMRST#
MISO
SPI_CS
SPI_WP

1

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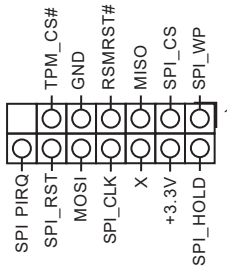
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Front LAN LED
Connector
(FRONT_LED_LAN34)
(see p.6, No. 33)

LAN4_LINK
LED_PWR

1

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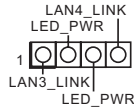
This 4-pin connector is used
for the front LAN status
indicator.

BMC SMB Header
(5-pin BMC_SMB_1)
(see p.6, No. 45)

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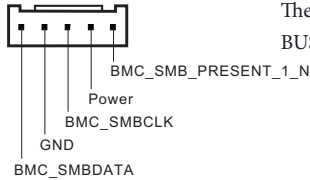
The header is used for the SM
BUS devices.

Clear CMOS Pad
(CLRMOS1)
(see p.6, No. 22)

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

PSU SMBus Header
(5-pin PSU_SMB1)
(see p.6, No. 3)

ALERT
SMBCLK   +3V

1

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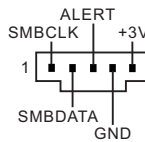
PSU SMBus monitors the
status of the power supply, fan
and system temperature.

System Fan Connectors
(6-pin FAN1)
(see p.6, No. 4)
(6-pin FAN2)
(see p.6, No. 7)
(6-pin FAN3)
(see p.6, No. 14)
(6-pin FAN4)
(see p.6, No. 15)
(6-pin FAN5)
(see p.6, No. 25)
(6-pin FAN6)
(see p.6, No. 27)

6   5   4   3   2   1

GND
FAN_VOLTAGE
FAN_SPEED_SENSOR1
FAN_SPEED_CONTROL
FAN_SPEED_SENSOR2
NC
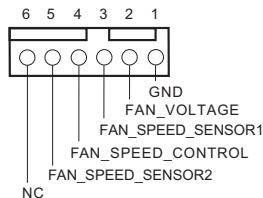
Please connect fan cables to
the fan connectors and match
the black wire to the ground
pin. All fans support Fan
Control.

English

Chassis Speaker Header
(4-pin SPEAK1)
(see p.6, No. 37)

DUMMY SPEAKER

1 ⬚⬚⬚⬚

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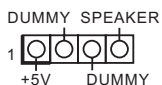
Please connect the chassis
speaker to this header.

USB 3.2 Gen1 Header
(19-pin USB3_3_4)
(see p.6, No. 23)

Vbus
IntA_PB_SSRX-
IntA_PB_SSRX+
GND
IntA_PB_SSTX-
IntA_PB_SSTX+
GND
IntA_PB_D-
IntA_PB_D+
Dummy

1

Vbus
IntA_PA_SSRX-
IntA_PA_SSRX+
GND
IntA_PA_SSTX-
IntA_PA_SSTX+
GND
IntA_PA_D-
IntA_PA_D+

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.

Serial Port Header
(9-pin COM1)
(see p.6, No. 34)

RRXD1
DDTR#1
DDSR#1
CCTS#1

1

RRI#1
RRTS#1
GND
TTXD1
DDCD#1
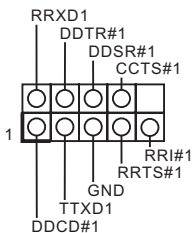
This COM1 header
supports a serial port
module.

USB 2.0 Header
(9-pin USB_2_3)
(see p.6, No. 29)

USB_PWR
-A
+A
GND

1

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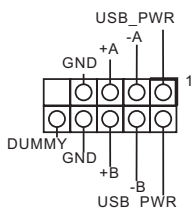
There is one USB 2.0 header
on this motherboard. Each
USB 2.0 header can support
two ports.

Intelligent Platform
Management Bus Header
(4-pin IPMB_1)
(see p.6, No. 44)

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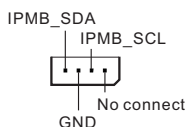
This 4-pin connector is
used to provide a cabled
base-board or front panel
connection for value added
features and 3rd-party add-
in cards, such as Emergency
Management cards, that
provide management features
using the IPMB.

ATX 12V Power
Connectors
(8-pin ATX12V1)
(see p.6, No. 11)
(8-pin ATX12V2)
(see p.6, No. 12)
(8-pin ATX12V3)
(see p.6, No. 16)

8   5
4   1

8   5
4   1
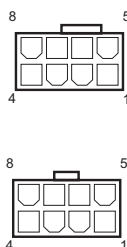
This motherboard provides
three 8-pin ATX 12V power
connectors.

Micro-Fit ATX 4Pin
Power Connector
(4-pin ATX4PIN1
(ATX 24pin-to-4pin))
(see p.6, No. 9)

4   3
PSON# ——   —— ATX_+5VSB
GND ——   —— ATX_PWROK
2   1
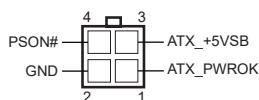
The motherboard provides
one 4-pin power/signal
connector which is a required
input for ATX power source.

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

Serial ATA3 Connectors
(SPC741D8-2T/BCM only)
(SATA0)(Lower)
(SATA1)(Upper)
(see p.6, No. 17)
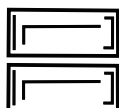
These two SATA3 connectors
support SATA data cables for
internal storage devices with
up to 6.0Gb/s data transfer
rate.

English

35

Virtual RAID On CPU
Header
(4-pin RAID_1)
(see p.6, No. 28)

1 | VROC RAID KEY | GND | +3VSB | GND
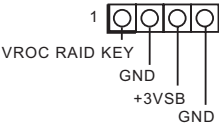
This connector supports Intel®
Virtual RAID on CPU and
NVME/AHCI RAID on CPU
PCIE.

With the introduction of the Intel VROC product, there are three modes of operation:

SKU	HW key required	Key features
Pass-thru	Not needed	• Pass-thru only (no RAID) • LED Management • Hot Plug Support • RAID 0 support for Intel Fultondale NVMe SSDs
Standard	VROCSTANMOD	• Pass-thru SKU features • RAID 0, 1, 10
Premium	VROCPREMMOD	• Standard SKU features • RAID 5 • RAID 5 Write Hole Closure
ISS	VROCISSDMOD	

*Only Intel SSDs are supported.
*For further details on VROC, please refer to the official information released by Intel.

Mini Cool Edge IO x8
Connectors
(MCIO1)
(see p.6, No. 5)
(MCIO2)
(see p.6, No. 6)
Mini Cool Edge IO x4
(MCIO3)
(see P6, No.19)
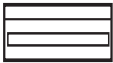
This motherboard supports
two Mini Cool Edge IO x8
and a Mini Cool Edge IO x4
Connector. Please connect
these connectors to the HDD
backplane board.

MCIO1 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	RX_DP0	B2	TX_DP0
A3	RX_DN0	B3	TX_DN0
A4	GND	B4	GND
A5	RX_DP1	B5	TX_DP1
A6	RX_DN1	B6	TX_DN1
A7	GND	B7	GND
A8	SPARE_A1	B8	SCL1
A9	WAKE_N	B9	SDA1
A10	GND	B10	GND
A11	DP	B11	RESET_N
A12	DN	B12	PRSNT0_N
A13	GND	B13	GND
A14	RX_DP2	B14	TX_DP2
A15	RX_DN2	B15	TX_DN2
A16	GND	B16	GND
A17	RX_DP3	B17	TX_DP3
A18	RX_DN3	B18	TX_DN3
A19	GND	B19	GND
A20	RX_DP4	B20	TX_DP4
A21	RX_DN4	B21	TX_DN4
A22	GND	B22	GND
A23	RX_DP5	B23	TX_DP5
A24	RX_DN5	B24	TX_DN5
A25	GND	B25	GND
A26	SPARE_A2	B26	SCL2
A27	WAKE_N	B27	SDA2
A28	GND	B28	GND
A29	DP	B29	RESET_N
A30	DN	B30	PRSNT1_N
A31	GND	B31	GND
A32	RX_DP6	B32	TX_DP6
A33	RX_DN6	B33	TX_DN6
A34	GND	B34	GND
A35	RX_DP7	B35	TX_DP7
A36	RX_DN7	B36	TX_DN7
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

MCIO2 Pin Definition

Pin	Defeinition	Pin	Defeinition
A1	GND	B1	GND
A2	RX_DP8	B2	TX_DP8
A3	RX_DN8	B3	TX_DN8
A4	GND	B4	GND
A5	RX_DP9	B5	TX_DP9
A6	RX_DN9	B6	TX_DN9
A7	GND	B7	GND
A8	SPARE_A1	B8	SCL1
A9	WAKE_N	B9	SDA1
A10	GND	B10	GND
A11	DP	B11	RESET_N
A12	DN	B12	PRSNT2_N
A13	GND	B13	GND
A14	RX_DP10	B14	TX_DP10
A15	RX_DN10	B15	TX_DN10
A16	GND	B16	GND
A17	RX_DP11	B17	TX_DP11
A18	RX_DN11	B18	TX_DN11
A19	GND	B19	GND
A20	RX_DP12	B20	TX_DP12
A21	RX_DN12	B21	TX_DN12
A22	GND	B22	GND
A23	RX_DP13	B23	TX_DP13
A24	RX_DN13	B24	TX_DN13
A25	GND	B25	GND
A26	SPARE_A2	B26	SCL2
A27	WAKE_N	B27	SDA2
A28	GND	B28	GND
A29	DP	B29	RESET_N
A30	DN	B30	PRSNT3_N
A31	GND	B31	GND
A32	RX_DP14	B32	TX_DP14
A33	RX_DN14	B33	TX_DN14
A34	GND	B34	GND
A35	RX_DP15	B35	TX_DP15
A36	RX_DN15	B36	TX_DN15
A37	GND	B37	GND
75	NP_NC_1	76	NP_NC_2
77	PGND_1	78	PGND_3
79	PGND_2	80	PGND_4

2.8 ATX PSU Power Connections

This motherboard support ATX power input. Please refer to the table below for the required connections between the motherboard and the power supply.
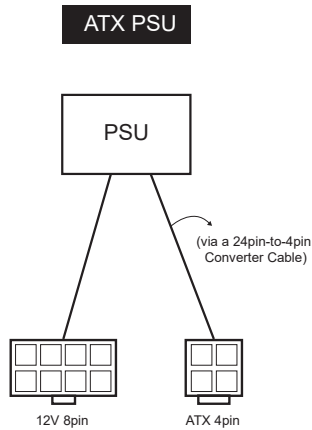
The following diagram illustrates how to connect the bundled ATX 24pin-to-4pin converter cable.

24pin-to-4pin
Converter Cable

* Make sure the latch and the socket are aligned in the right direction.
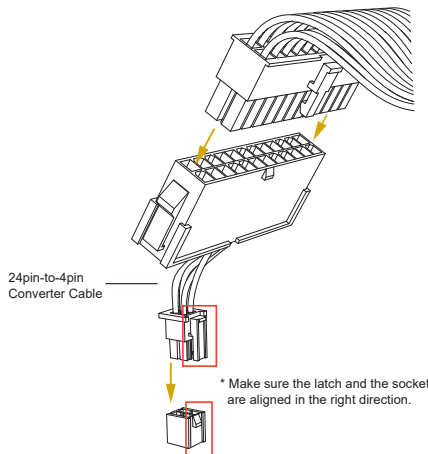
2.9 Dr. Debug

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

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

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

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

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

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

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

English

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2.10 Unit Identification purpose LED/Switch

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

Unit Identification purpose LED/Switch (UID1)

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

☆ *Press and hold the UID button for 4 seconds, the BMC will trigger an external reset.*

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

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

English

2.12 M.2 SSD Module Installation Guide

The M.2 Socket (M2_1/M2_2, Key M) supports either a M.2 SATA3.6.0 Gb/s module or a M.2 PCI Express moduel up to Gen3x4 (8Gb/s x4).

Installing the M.2 SSD Module
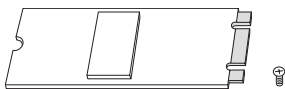
Step 1

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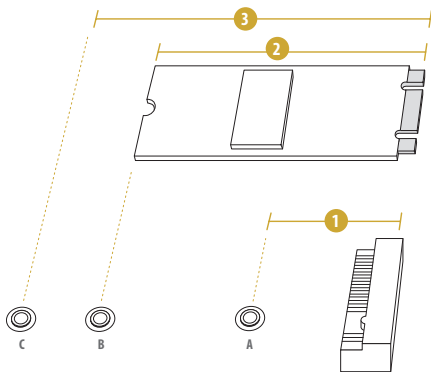
Step 2

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

M2_1:

No.	1	2	3
Nut Location	A	B	C
PCB Length	4.2cm	8cm	11cm
Module Type	Type2242	Type2280	Type22110

M2_2:

No.	1	2
Nut Location	B	C
PCB Length	8cm	11cm
Module Type	Type2280	Type22110
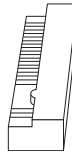
Step 3

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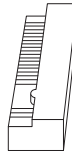
Step 4

Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.
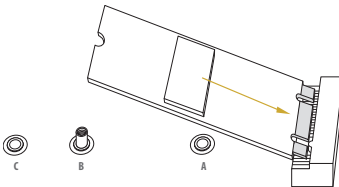
Step 5

Align and gently insert the M.2 SSD module into the M.2 slot. Please be aware that the M.2 SSD module only fits in one orientation.

20°
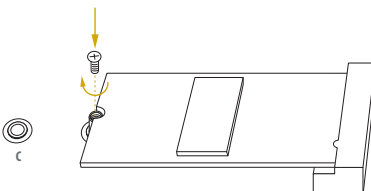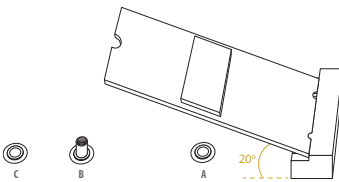
Step 6

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

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> when entering the UEFI SETUP UTILITY after POST, or by pressing the reset button on the system chassis. It can be also 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.*

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

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

3.1.2 Navigation Keys

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

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

English

3.2 Main Screen

Entering the UEFI SETUP UTILITY, the Main screen displays the system overview. The Main screen provides system overview information and allows user to set the system time and date.

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

   Board Product              SPC741D8-2L2T         Mother Board Information
   UEFI Version               1.23
   BMC Version                1.05.00

 ▶ Mother Board Information
 ▶ Processor Information
 ▶ Memory Information

   System Date                [Wed 03/15/2023]
   System Time                [14:36:50]



                                                  ←→: 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 2.22.1287 Copyright (C) 2023 AMI
```

3.2.1 Motherboard Information

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

```
                              Aptio Setup - AMI
    Main

    Mother Board Information
    MotherBoard                  SPC741D8-2L2T

    BIOS Information
    BIOS Vendor                  American Megatrends
    Core Version                 5.29
    Compliancy                   UEFI 2.8; PI 1.7
    Project Version              A2882 1.23 x64
    Build Date and Time          03/07/2023 14:41:57
    Intel RC Revision            9409.P09
    AMI RC Revision              0ACOR 0.73
    BIOS ACM                     1.1.2
    SINIT ACM                    1.1.2
    ACPI Version                 62                      ←→: Select Screen
    SMBIOS Version               3.5.0                   ↑↓: Select Item
                                                         Enter: Select
    Platform Information                                 +/-: Change Option
    Platform                     TypeArcherCityRP        F1: General Help
    Processor                    806F8 - SPR-SP E5       F7: Discard Changes
    PCH                          EBG A0/A1/B0/B1 SKU - B1 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 Socket             CPU1
    Processor ID                 000806F8
    Processor Frequency          2.400GHz
    Processor Core               48-Core
    Processor TDP                330W
    Memory Channel               8
    Processor Max Ratio          18H
    Processor Min Ratio          08H
    Microcode Revision           2B000181
    L1 Cache RAM                 80KB
    L2 Cache RAM                 2048KB
    L3 Cache RAM                 99840KB
    CPU1 Version                 Intel(R) Xeon(R)
                                 Platinum 8468V          ←→: Select Screen
                                                         ↑↓: Select Item
    Intel Turbo Boost            Support                 Enter: Select
    Intel VT-d Technology        Support                 +/-: Change Option
                                                         F1: General Help
                                                         F7: Discard Changes
                                                         F9: Load UEFI Defaults
                                                         F10: Save and Exit
                                                         ESC: Exit

                     Version 2.22.1287 Copyright (C) 2023 AMI
```

English

3.2.3 Memory Information

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

```
                              Aptio Setup – AMI
    Main

    Total Memory                    256 GB
    Total DCPMM                     None

    Memory Present Number           8
    Memory Not Present Number       0
    Memory Channel Mode             Octuple-Channel Memory
                                    Mode

    DDR5_A1                         DDR5-4800 SRx4 32GB
                                    R-DIMM
    DDR5_B1                         DDR5-4800 SRx4 32GB
                                    R-DIMM
    DDR5_C1                         DDR5-4800 SRx4 32GB
                                    R-DIMM                    ↔: Select Screen
    DDR5_D1                         DDR5-4800 SRx4 32GB       ↑↓: Select Item
                                    R-DIMM                    Enter: Select
    DDR5_E1                         DDR5-4800 SRx4 32GB       +/-: Change Option
                                    R-DIMM                    F1: General Help
    DDR5_F1                         DDR5-4800 SRx4 32GB       F7: Discard Changes
                                    R-DIMM                    F9: Load UEFI Defaults
    DDR5_G1                         DDR5-4800 SRx4 32GB       F10: Save and Exit
                                    R-DIMM                    ESC: Exit
    DDR5_H1                         DDR5-4800 SRx4 32GB
                                    R-DIMM



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```

3.3 Advanced Screen

In this section, it allows user to configure and view the following items: CPU Configuration, Platform Power Configuration, DRAM Configuration, Chipset Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Runtime Error Logging, Intel SPS Information, Network Stack Configuration, Intel VMD Technology, Driver Health, Tls Auth Configuration and Instant Flash.
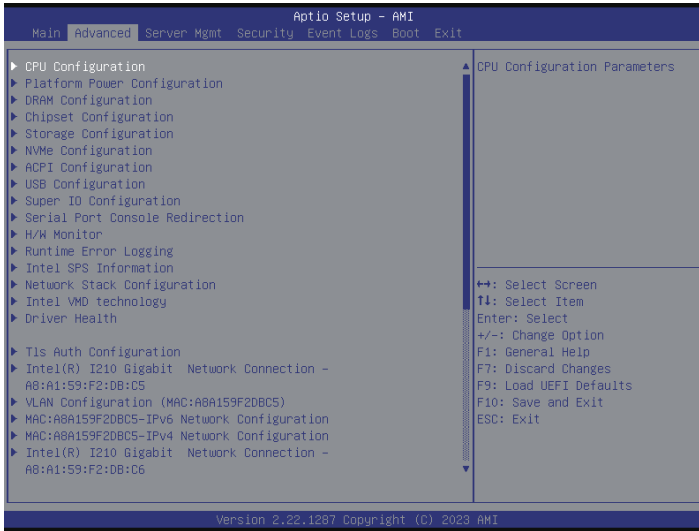
⚠ *Setting wrong values in this section may cause the system to malfunction.*

3.3.1 CPU Configuration

```
                              Aptio Setup - AMI
        Advanced

     CPU Configuration                                    Core Disable Bitmap (Hex)
                                                          0: Enable all cores. 0xffff:
     CPU 1 Available Bitmap: 0B7F7777F7DDE9FF             Disable all cores
     Active Processor 1 Cores              0

     Intel Hyper Threading Technology      [Enabled]

     Enable Intel TXT Support              [Disabled]
     Intel Virtualization Technology       [Enabled]
     Enable SMX                            [Disabled]

     Memory Encryption (TME)               [Disabled]
     SW Guard Extensions (SGX)             [Disabled]     →←: Select Screen
                                                          ↑↓: Select Item
     DCU Streamer Prefetcher               [Enabled]      Enter: Select
     Hardware Prefetcher                   [Enabled]      +/-: Change Option
     Adjacent Cache Line Prefetch          [Enabled]      F1: General Help
     AES-NI                                [Enabled]      F7: Discard Changes
                                                          F9: Load UEFI Defaults
                                                          F10: Save and Exit
                                                          ESC: Exit

                         Version 2.22.1287 Copyright (C) 2023 AMI
```

Active Processor 1 Cores

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

Intel Hyper Threading Technology

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

Enable Intel TXT Support

Enables Intel Trusted Execution Technology Configuration.

Intel Virtualization Technology

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

Enable SMX

Use this item to enable Safer Mode Extensions.

Memory Encryption (TME)

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

SW Guard Extensions (SGX)

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

DCU Streamer Prefetcher

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

Hardware Prefetcher

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

Adjacent Cache Line Prefetch

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

AES-NI

Use this item to enable or disable AES-NI support.

English

3.3.2 Platform Power Configuration

```
                              Aptio Setup - AMI
        Advanced

  Platform Power Configuration                          Enable/Disable EIST (P-States)

  CPU P State Control
  Intel SpeedStep Technology          [Enabled]
  Intel Turbo Boost Technology        [Enabled]
  AVX P1                              [Nominal]
  Intel SST-PP                        [Auto]
  Dynamic SST-PP                      [Disabled]
  --------------------------------------------------------
  SST-PP          Core   P1     Package
  Level  Capable  Count  Ratio  TDP (W)  TjMax
  --------------------------------------------------------
    0      Yes    040    20     300      095
    3      Yes    036    21     300      096      ↔: Select Screen
    4      Yes    032    23     300      097      ↑↓: Select Item
  --------------------------------------------------------       Enter: Select
                                                         +/-: Change Option
  Activate SST-BF                     [Disabled]         F1: General Help
  Configure SST-BF                    [Enabled]          F7: Discard Changes
                                                         F9: Load UEFI Defaults
  CPU Hardware PM State Control                          F10: Save and Exit
  Hardware P-States                   [Native Mode]      ESC: Exit

  Frequency Prioritization
  SST-CP                              [Disabled]

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```

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.

AVX P1

Select this item to configure AVX P1 level.

Intel SST-PP

Select this item to configure hardware supported level.

Dynamic SST-PP

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

⚠ *HWP Native Mode is a pre-requisite for enabling Dynamic SST-PP.*

Activate SST-BF

Select this item to enable or disable the SST-BF.

⚠ *HWP Native Mode is a pre-requisite for enabling SST-BF; HWP Native Mode with No Legacy is a pre-requisite for configuring SST-BF.*

Configure SST-BF

Select this item to enable or disable the BIOS to configure SST-BF High Priority Cores so that SW does not have to configure.

Hardware P-States

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

SST-CP

Select this item to enable or disable the SST-CP feature.

⚠ *About SST configurations are base on the Intel® related supported specifications.*

Enable Monitor MWAIT

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

CPU C6 State Support

Select this item to configure the CPU C6 (ACPI C3) report to OS.

Enhanced Halt State (C1E)

This item specific the Core C1E auto promotion Control whether takes effect after reboot.

Package C state Support

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

English

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CPU Thermal Throttling

Select this item to enable or disable Thermal Monitor.

Power Performance Tuning

This allows user to decides which controls EFB.
OS Controls EPB: Specifies IA32_ENERGY_PERF_BIAS is used.
BIOS Controls EPB: Specifies ENERGY_PERF_BIAS_CONFIG is used.
PECI Controls EPB: Specifies PCS53 is used.

ENERGY_PERF_BIAS_CFG mode

This allows user to use input from ENERGY_PERF_BIAS_CONFIG mode seletion. PERF/Balanced, Perf/Bananced or Power/Power.

Long Duration Power Limit

Select this item to configure the Long Duration Power Limit. PL1 Power Limit is in Watts and the value may vary from 0 to Fused Value. If the value is 0, the fused value will be programmed. A value greater than fused TDP value will not be programmed.

Long Duration Maintained

Select this item to configure the Long Duration Maintained value. PL1 value is in seconds. The value may vary from 0 to 448. Indicates the time window over which TDP value should be maintained.

Short Duration Power Limit

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

Short Duration Maintained

Select this item to configure the Short Duration Maintained value. PL2 value is in seconds. The value may vary from 0 to 0.438. Indicates the time window over which TDP value should be maintained.

3.3.3 DRAM Configuration

```
                              Aptio Setup - AMI
         Advanced

    DRAM Configuration                                    Enforces Plan Of Record
                                                          restrictions for DDR frequency
    Enforce DDR Memory Frequency POR    [Enforce POR]     programming.
    DRAM Frequency                      [Auto]

    Volatile Memory Mode                [1LM]
    DIMM Interleaving                   [Enabled]
    3-Way Channel Interleaving          [Enabled]
    Max Rank Interleaving in IMC        [8-way Interleave]
    Mirror Mode                         [Disabled]
    ADDDC Sparing                       [Disabled]
    Patrol Scrub                        [Enable at End of POST]
    Data Scrambling for DDR4/5          [Enabled]
    Data Scrambling for PMem            [Auto]            ↔: 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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```

Enforce DDR Memory Frequency POR

Enable to enforce POR restrictions for DDR frequency and voltage programming.

DRAM Frequency

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

Volatile Memory Mode

Select 1LM or 2LM mode for Volatile memory. For 2LM memory mode, BIOS will try to configure 2LM but if BIOS is unable to configure 2LM, volatile memory mode will fail back to 1LM.

DIMM Interleaving

Enable this item to allow interleaving to be performed at the highest posible MC * Channel interleaving ways. Or disable this item to enforce interleaving to only 1-way.

3-Way Channel Interleaving

Enable this item to allow 3-way channel interleaving. Or disable this item to default to number of channels available per MC when DIMM interleaving is enabled.

Max Rank Interleaving in IMC

This item allows to select Rank Interleaving setting.

English

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Mirror Mode

Mirror Mode will set entire 1LM/2LM memory in system to be mirrored, consequently reducing the memory capacity by half. Mirror Enable will disable XPT Prefetch.

ADDDC Sparing

Enable or disable Memory Rank Sparing.

Patrol Scrub

Patrol Scrub is a background activity initiated by the processor to seek out and fix memory errors.

Data Scrambling for DDR4/5

Enable - Enables data scrambling for DDR4 and DDR5.
Disable - Disables this feature.
Auto - Sets it to the MRC default setting; current default is Enable.

Data Scrambling for PMem

Enable - Enables data scrambling for PMem.
Disable - Disables this feature.
Auto - Sets it depending on stepping.

3.3.4 Chipset Configuration
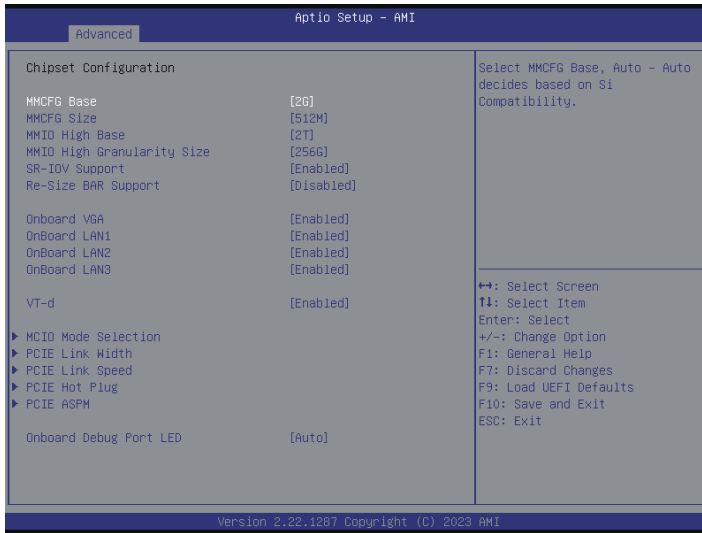
MMCFG Base

Use this item to select MMCFG Base.

MMCFG Size

Use this item to select MMCFG Size.

MMIO High Base

Use this item to select MMIO High Base.

MMIO High Granularity Size

Use this item to select MMIO Granularity Size.

SR-IOV Support

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

Re-Size BAR Support

Enable or disable this item to Re-Size BAR supported upon the sysem has resizable BAR capable PCIE Devices.

Onboard VGA

Use this to enable or disable the Onboard VGA function. The default value is [Auto].

Onboard LAN1/2/3

Use this to enable or disable the Onboard LAN1/2/3 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.

MCIO Mode Selection

Select SATA or PCIe work in MCIO port.

PCIE Link Width

Select this item to configure PCIE Link Width.

PCIE1/PCIE3/PCIE5/PCIE7 Link Width
Select PCIe port Bifurcation for PCIE1/PCIE3/PCIE5/PCIE7.

MCIO1/2 Link Width
Select MCIO1/2 Link Width.

PCIE Link Speed

Select PCIE Link Speed.

MCIO3 Link Speed
Select MCIO3 Link Speed.

PCIE1/PCIE3/PCIE5/PCIE7 Link Speed
Select Link Speed for PCIE1/PCIE3/PCIE5/PCIE7.

MCIO1-1/1-2/2-1/2-2 Link Speed
Select Link Speed for MCIO1-1/1-2/2-1/2-2.

PCIE Hot Plug

Select this item to configure PCIE Hot Plug globally.

MCIO3 Hot Plug
Enable or disable MCIO3 Hot Plug.

PCIE1/PCIE3/PCIE5/PCIE7/MCIO1-1/MCIO1-2/MCIO2-1/MCIO2-2 Hot Plug
Enable or disable PCIE and MCIO Hot Plug.

PCIE1/PCIE3/PCIE5/PCIE7/MCIO1-1/MCIO1-2/MCIO2-1/MCIO2-2 Surprise Hot Plug
Enable or disable PCIE and MCIO Surprise Hot Plug.

PCIE ASPM

Selec this item to configure the PCIE ASPM.

PCI-E ASPM Support (Global)

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

MCIO3 ASPM Support

Select this item to configure PCIE Active State Power Management settings.

PCIE1/PCIE3/PCIE5/PCIE7 ASPM Support

Enables or disables the ASPM support for all CPU downstream devices. Select [Auto] for the default value.

MCIO1-1/1-2/2-1/2-2 ASPM Support

Enables or disables the ASPM support for all CPU downstream devices.

Onboard Debug Port LED

Enable or disable the onboard Dr. Debug LED.

3.3.5 Storage Configuration
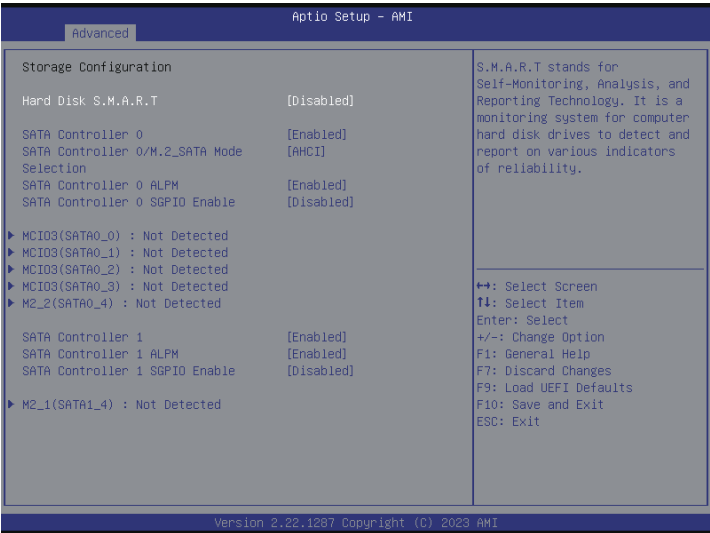
Hard Disk S.M.A.R.T.

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

SATA Controller 0/1

Use this item to enable or disable SATA Controllers.

SATA Controller 0/M.2_SATA Mode Selection

Identify the SATA port is connected to Solid State Drive or Hard Disk Drive. Press <Ctrl+I> to enter RAID ROM during UEFI POST process.

SATA Controller 0/1 ALPM

Use this item to enable or disable Aggressive Link Power Management.

SATA Controller 0/1 SGPIO Enable

Use this item to enable or disable Serial GPIO for SATA controller.

MCIO3 (SATA0_0/1/2/3)/M2_2 (SATA0_4)/M2_1 (SATA1_4)

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

3.3.6 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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```
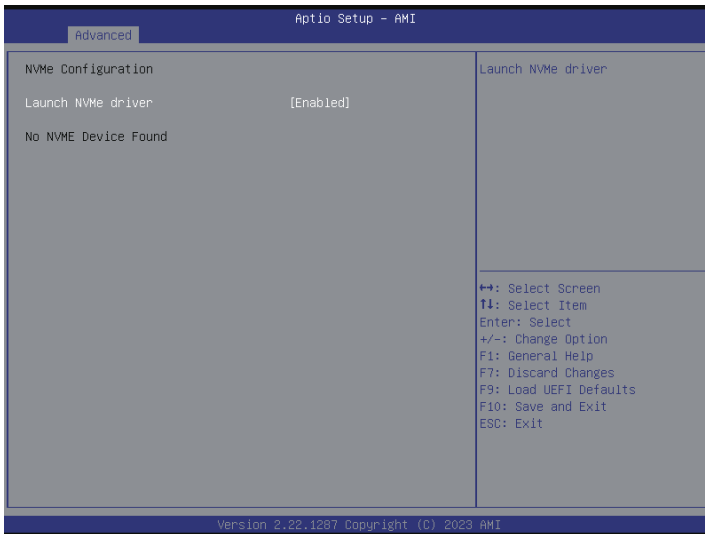
NVMe Configuration

The NVMe Configuration displays the NVMe controller and Drive information.

Launch NVMe driver

Select this item to enable or disable launch NVMe driver.

3.3.7 ACPI Configuration


```
                          Aptio Setup – AMI
      Advanced

  ACPI Configuration                              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

Use this item to enable or disable RTC (Real Time Clock) to power on the system.

3.3.8 USB Configuration

```
                              Aptio Setup - AMI
        Advanced

 USB Configuration

 USB Controllers:
       1 XHCI
 USB Devices:
       8 Drives, 2 Keyboards, 3 Mice, 4 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 2.22.1287 Copyright (C) 2023 AMI
```
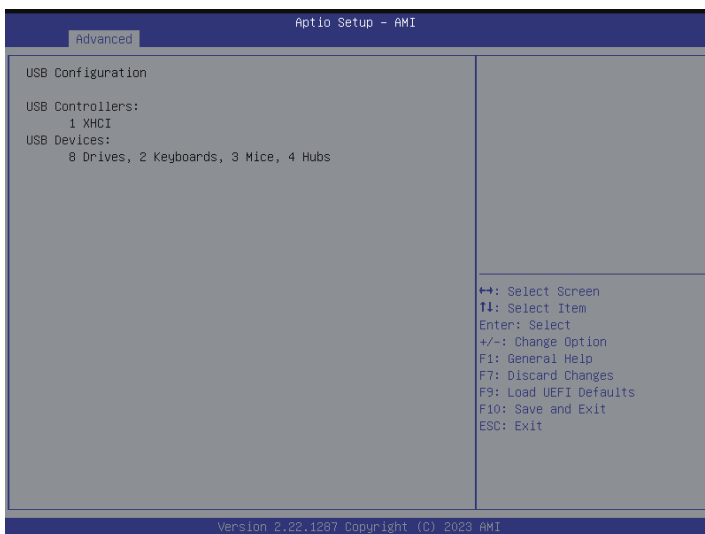
USB Configuration

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

3.3.9 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


                        Version 2.22.1287 Copyright (C) 2023 AMI
```
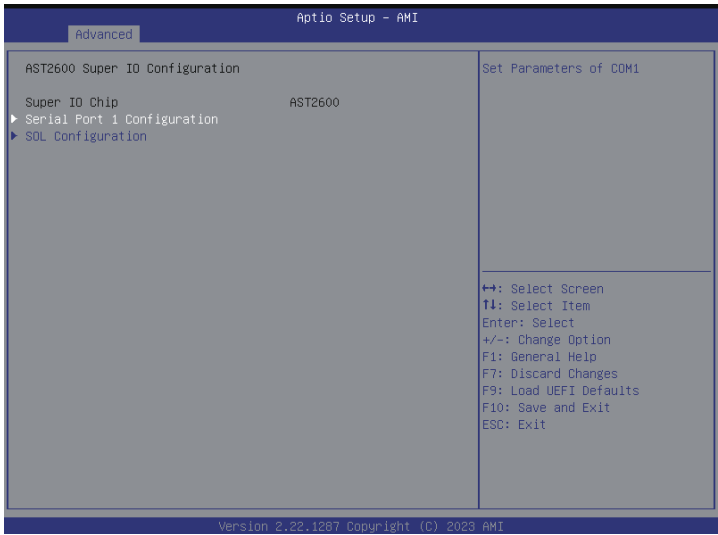
Serial Port 1 Configuration

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

Serial Port

Use this item to enable or disable the serial port.

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 set parameters of SOL.

Change Settings

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

3.3.10 Serial Port Console Redirection

```
                              Aptio Setup - AMI
         Advanced

                                                     Console Redirection Enable or
    COM1                                             Disable.
    Console Redirection              [Enabled]
  ▶ 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]
  ▶ Console Redirection 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


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```

COM1 / SOL

Console Redirection

Use this option to enable or disable Console Redirection. If this item is set to Enabled, it allows user to select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how the computer and the host computer to which are connected exchange information. Both computers should have the same or compatible settings.

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

Option	Description
VT100	ASCII character set
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

Use this item to select the serial port transmission speed. The speed used in the host computer and the client computer must be the same. Long or noisy lines may require lower transmission speed. The options include [9600], [19200], [38400], [57600] and [115200].

Data Bits

Use this item to set the data transmission size. The options include [7] and [8] (Bits).

Parity

Use this item to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space].

Stop Bits

The item indicates the end of a serial data packet. The standard setting is [1] Stop Bit. Select [2] Stop Bits for slower devices.

Flow Control

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

VT-UTF8 Combo Key Support

Use this item to enable or disable the VT-UTF8 Combo Key Support for ANSI/VT100 terminals.

Recorder Mode

Use this item to enable or disable Recorder Mode to capture terminal data and send it as text messages.

Resolution 100x31

Use this item to enable or disable extended terminal resolution support.

Putty KeyPad

Use this item to select Function Key and Keypad on Putty.

Serial Port for Out-of-Band Management/Windows Emergency Management Services (EMS)

Console Redirection EMS

Use this option to enable or disable Console Redirection. If this item is set to Enabled, it allows user to select a COM Port to be used for Console Redirection.

Console Redirection Settings

Use this option to configure Console Redirection Settings, and specify how the computer and the host computer to which are connected exchange information.

Out-of-Band Mgmt Port

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

Terminal Type EMS

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

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

Bits Per Second EMS

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

Flow Control EMS

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

Data Bits EMS

Parity EMS

Stop Bits EMS

English

3.3.11 H/W Monitor

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

```
                            Aptio Setup - AMI
         Advanced

  H/W Monitor                                          ▲

  VOLT_3VSB                    : 3.42 V
  VOLT_5VSB                    : 5.04 V
  VOLT_P0_PVCCIN               : 1.84 V
  VOLT_PCH_PVNN                : 0.92 V
  VOLT_PCH_1P05                : 1.06 V
  VOLT_PCH_1P8                 : 1.83 V
  VOLT_12VSB                   : 12 V
  VOLT_BAT                     : 3.08 V
  VOLT_3V                      : 3.38 V
  VOLT_5V                      : 5.01 V
  VOLT_12V                     : 12.06 V
  TEMP_CPU                     : 44 °C        ↔: Select Screen
  TEMP_PCH                     : 55 °C        ↑↓: Select Item
  TEMP_M.2                     : N/A          Enter: Select
  TEMP_DDR5_A                  : 45 °C        +/-: Change Option
  TEMP_DDR5_B                  : 46 °C        F1: General Help
  TEMP_DDR5_C                  : 46 °C        F7: Discard Changes
  TEMP_DDR5_D                  : 44 °C        F9: Load UEFI Defaults
  TEMP_DDR5_E                  : 48 °C        F10: Save and Exit
  TEMP_DDR5_F                  : 50 °C        ESC: Exit
  TEMP_DDR5_G                  : 50 °C
  TEMP_DDR5_H                  : 47 °C
  TEMP_CPU_SIO                 : 43 °C        ▼

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```

3.3.12 Runtime Error Logging

```
                                    Aptio Setup - AMI
        Advanced

  Runtime Error Logging                                    System Error Enable/Disable
                                                           setup options
  System Error                      [Enabled]
  WHEA Support                      [Enabled]
  EMCA Logging Support              [Enabled]
  IIO/PCH Global Error Support      [Enabled]

  Memory Corrected Error            [Enabled]
   Memory Correctable Error         FF
  Threshold

  PCIe Corrected Error Enable       [Enabled]
   PCIe Corrected Error Threshold   1
  PCIe Uncorrected Error            [Enabled]         ↔: Select Screen
  PCIe Fatal Error Enable           [Enabled]         ↑↓: 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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```

System Error

Use this item to enable or disable System Error feature. When it is set to [Enabled], it allows user to configure Memory Error and PCIE Error log features.

WHEA Support

Use this item to enable or disable Windows Hardware Error Architecture.

EMCA Logging Support

Use this item to enable or disable EMCA Logging.

II0/PCH Global Error Support

Use this item to enable or disable II0/PCH Error Support.

Memory Corrected Error

Use this item to enable or disable Memory Corrected Error.

Memory Correctable Error Threshold

Correctable Error Threshold (0 - 0x7FFF) used for sparing, tagging, and leaky bucket.

PCIE Corrected Error Enable

Use this item to enable or disable PCIe Correctable errors.

PCIE Corrected Error Threshold

PCIE Correctable Error Threshold (0x01-0xFF) used for sparing, tagging, and leaky bucket.

PCIE Uncorrected Error

Use this item to enable or disable PCIe Uncorrectable errors.

PCIE Fatal Error Enable

Use this item to enable or disable PCIe Ftal errors.

3.3.13 Intel SPS Configuration

```
                               Aptio Setup – AMI
        Advanced

    Intel SPS Information

    SPS Version                   6.0.4.25
    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




                         Version 2.22.1287 Copyright (C) 2023 AMI
```
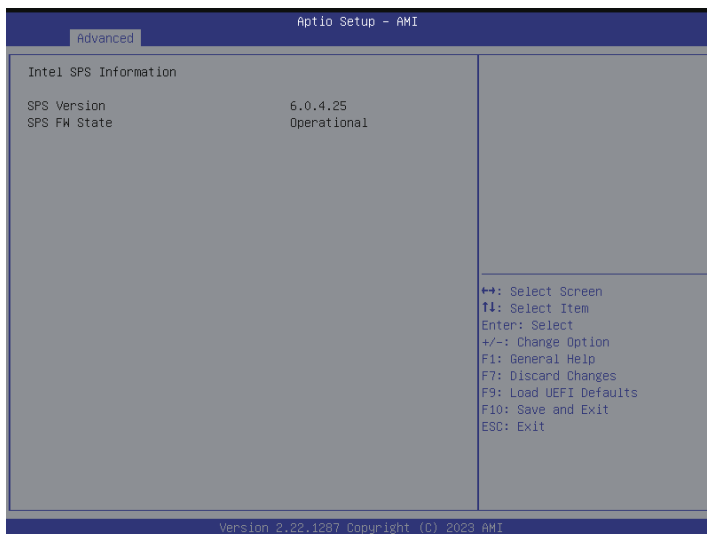
SPS screen displays the Intel SPS Configuration information, such as Operational Firmware Version and Firmware State.

English

3.3.14 Network Stack Configuration

```
                              Aptio Setup - AMI
        Advanced

    Network Stack Configuration                           Enable/Disable UEFI Network
                                                          Stack
    Network Stack                    [Enabled]
    IPv4 PXE Support                 [Disabled]
    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

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

IPv4 PXE Support

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

IPv4 HTTP Support

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

IPv6 PXE Support

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

IPv6 HTTP Support

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

PXE Boot Wait Time

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

Media Detect Count

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

3.3.15 Intel® VMD technology
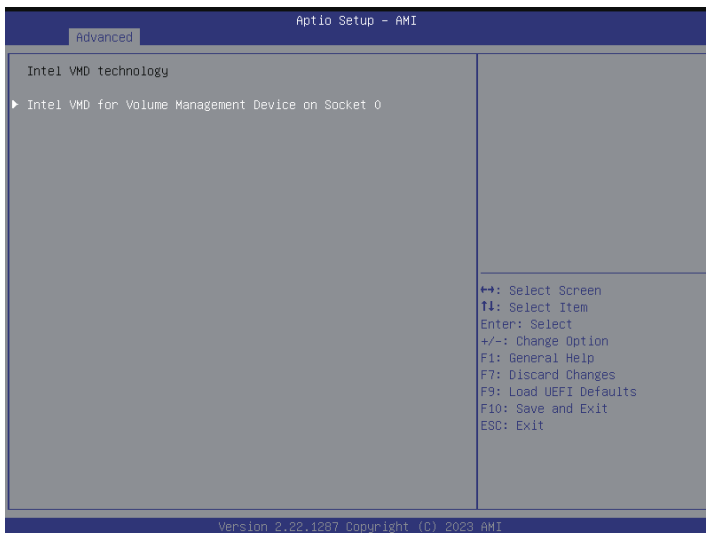
Press <Enter> to bring up the Intel(R) VMD for Volume Management Device Configuration menu.

Intel VMD for Volume Management Device on Socket 0

VMD Config for IOU0/IOU1/IOU2/IOU3/IOU4

Use this item to enable or disable Intel(R) Volume Management Device Technology in specific Stack.
When [Enabled], users are allowed to configure the options below.

VMD port X

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

Hot Plug Capable

Use this item to enable or disable Hot Plug for specific Ports.

3.3.16 Driver Health

```
                              Aptio Setup - AMI
        Advanced

  ► Intel(R) PRO/1000 9.0.03 PCI-E      Healthy          Provides Health Status for the
  ► Intel(R) PRO/1000 9.0.03 PCI-E      Healthy          Drivers/Controllers
  ► Broadcom NXE Gigabit Ethernet Driver      Healthy
  ► Broadcom NXE Gigabit Ethernet Driver      Healthy




                                                        ↔: 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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```

Inter (R) PRO/1000 9.0.03 PCI-E Healthy

Provides Health Status for the Drivers/Controllers

Broadcom NXE Gigabit Ethernet Driver Healthy

Provides Health Status for the Drivers/Controllers

3.3.17 Tls Auth Configuration

```
                          Aptio Setup - AMI
        Advanced

                                                    Press <Enter> to configure
▶ Server CA Configuration                           Server CA.

▶ Client Cert 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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```
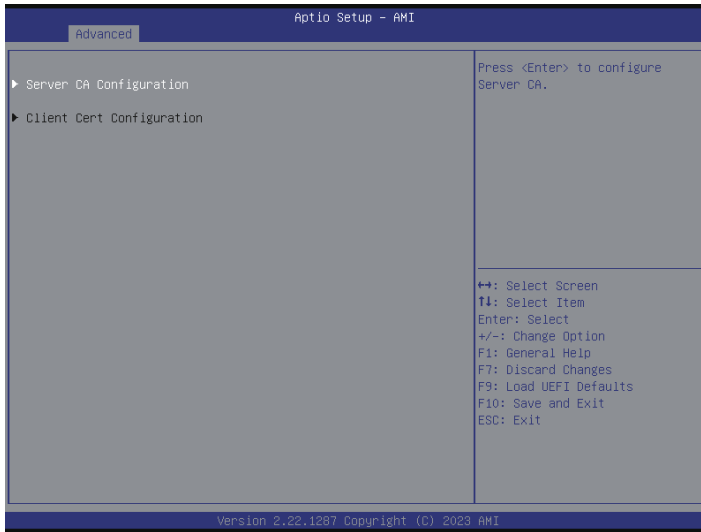
Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Press <Enter> to configure Client Cert.

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

3.3.18 Instant Flash

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

3.4 Server Mgmt

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

   BMC Self Test Status            FAILED              Wait For BMC response for
   BMC Device ID                   32                  specified time out. In
   BMC Device Revision             1                   PILOTII, BMC starts at the
   BMC Firmware Revision           1.05.00             same time when BIOS starts
   IPMI Version                    2.0                 during AC power ON. It takes
   IPMI BMC Interface              KCS                 around 255 seconds to
                                                       initialize Host to BMC
   Wait For BMC                    [Enabled]           interfaces.
   FRB-2 Timer                     [Disabled]
   FRB-2 Timer timeout             6
   FRB-2 Timer Policy              [Do Nothing]
   OS Watchdog Timer               [Disabled]
   OS Wtd Timer Timeout            10
   OS Wtd Timer Policy             [Reset]             ↔: Select Screen
                                                       ↑↓: Select Item
 ▶ BMC Network Configuration                           Enter: Select
 ▶ System Event Log                                    +/-: Change Option
 ▶ BMC Tools                                           F1: General Help
                                                       F7: Discard Changes
                                                       F9: Load UEFI Defaults
                                                       F10: Save and Exit
                                                       ESC: Exit


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```

Wait For BMC

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

FRB-2 Timer

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

FRB-2 Timer Timeout

Select this item to define the FRB-2 Time Expiration between 1 to 30 value.

FRB-2 Timer Policy

Configure how the system should respond. If the FRB-2 Timer expires is disabled, this item is not available.

OS Watchdog Timer

Select this item to enable or disable OS Watchdog Timer. If enabled, starts a BIOS timer which can only be shut off by Management Software after the OS loads.

OS Wtd Timer Timeout

Configure the OS Boot Watchdog Timer Expiration between 1 to 30 min value. If the OS Boot Watchdog Timer is disabled, this item is not available.

OS Wtd Timer Policy

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

BMC Network Configuration

Select this item to configure BMC network parameters.

System Event Log

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

BMC Tools

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

3.4.1 BMC Network Configuration

```
                                    Aptio Setup - AMI
              Server Mgmt

  BMC Network Configuration                              ▲  Enable/Disable bonding, if you
                                                            want to enable bonding please
▶ Bonding Setting                                           enable all Lan channel first
    Bonding Status                  Enabled
▶ Bond0 enable setting
    Bond0 status                    Enabled

  ************************
  Configure IPV4 support
  ************************
  Lan channel   (Failover)
  Manual setting IPMI LAN           [No]
  Configuration address source      DHCP
  Station IP address                0.0.0.0
  Current subnet mask               0.0.0.0                 ↔: Select Screen
  Current MAC address               F2-09-5F-B9-41-54       ↑↓: Select Item
  Current router IP address         0.0.0.0                 Enter: Select
  VLAN                              [Disabled]              +/-: Change Option
                                                            F1: General Help
  ************************                                  F7: Discard Changes
  Configure IPV6 support                                   F9: Load UEFI Defaults
  ************************                                  F10: Save and Exit
  Lan channel   (Failover)                                 ESC: Exit
  IPV6 Support                      [Enabled]
  Manual setting IPMI LAN(IPV6)     [No Change]          ▼

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```

Bonding Setting

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

Lan Channel (Failover)

Manual Setting IPMI LAN

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

Configuration Address Source

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

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

English

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The default login information for the IPMI web interface is:
  Username: admin
  Password: admin

For more instructions on how to set up remote control environment and use the IPMI management platform, please refer to the IPMI Configuration User Guide or go to the Support website at: http://www.asrockrack.com/support/ipmi.asp

VLAN

Enabled or disabled Virtual Local Area Network. If [Enabled] is selected, configure the items below.

IPV6 Support

Enable or disable LAN1 IPV6 Support.

Manual Setting IPMI LAN(IPV6)

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

3.4.2 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 event logging for error/progress codes during boot.

Erase SEL

Use this to choose options for earsing SEL.

When SEL is Full

Use this to choose options for reactions to a full SEL.
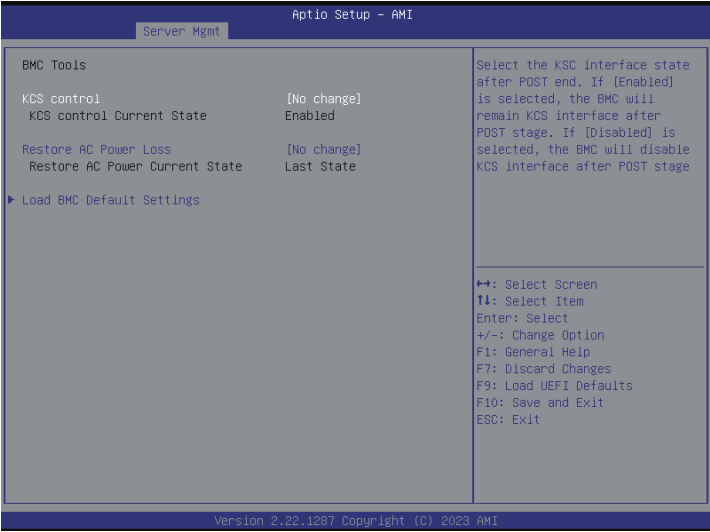
Log EFI Status Codes

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

PCIe Device Degrade ELog Support

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

3.4.3 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


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```

KCS control

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

Restore AC Power Loss

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

Load BMC Default Settings

Use this item to load BMC default settings.

3.5 Security

This section allows user to set or change the supervisor/user password for the system. For the user password item is also allowed to clear it.

Supervisor Password

Set or change the password for the administrator account. Only the administrator has authority to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

User Password

Set or change the password for the user account. User is unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.

Secure Boot

Use this to enable or disable Secure Boot Control. The default value is [Disabled]. Enable to support Windows Server 2012 R2 or later versions Secure Boot.

Secure Boot Mode

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

3.5.1 Key Management

In this section, expert users can modify Secure Boot Policy variables without full authentication.

Factory Key Provision

Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

Install Default Secure Boot Keys

Please install default secure boot keys if it's the first time using the 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 of the binary into Authorized Signature Database (db).

Export Secure Boot Variables

Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device.

Platform Key(PK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Key Exchange Keys(KEK)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Authorized Signatures(db)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Forbidden Signatures(dbx)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

Authorized TimeStamps(dbt)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)

c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

OsRecovery Signatures(dbr)

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate in:

a) EFI_SIGNATURE_LIST

b) EFI_CERT_X509 (DER)
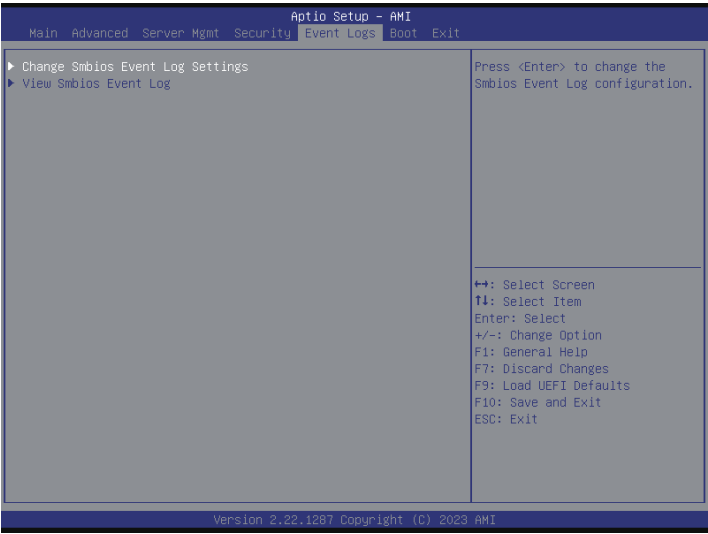
c) EFI_CERT_RSA2048 (bin)

d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image(SHA256)

Key Source: Factory, Modified, Mixed

3.6 Event Logs

Change Smbios Event Log Settings

Select this item to configure the Smbios Event Log Settings.

When entering the item, the screen displays following sub-items:

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

Erase Event Log
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 or disable logging of System boot event.
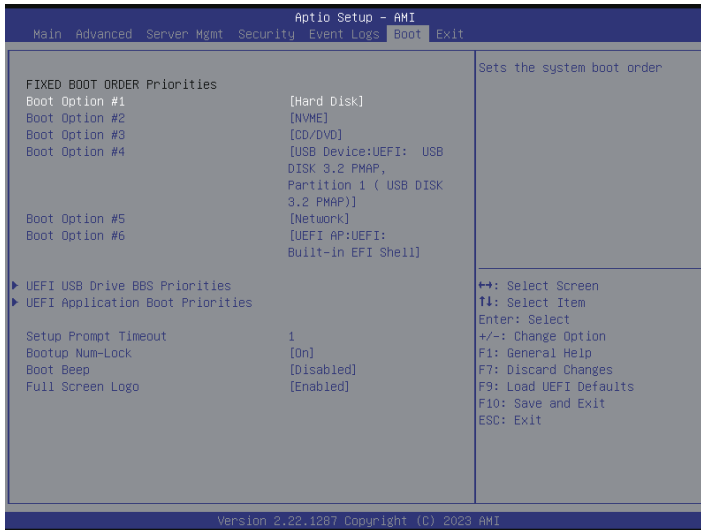
View Smbios Event Log
Press <Enter> to view the Smbios Event Log records.

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

3.7 Boot Screen

In this section, it displays the available devices on the system and allows user to configure the boot settings and the boot priority.

```
                              Aptio Setup - AMI
     Main  Advanced  Server Mgmt  Security  Event Logs  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:UEFI:  USB
                                 DISK 3.2 PMAP,
                                 Partition 1 ( USB DISK
                                 3.2 PMAP)]
     Boot Option #5              [Network]
     Boot Option #6              [UEFI AP:UEFI:
                                 Built-in EFI Shell]

   ▶ UEFI USB Drive BBS Priorities                    ↔: Select Screen
   ▶ UEFI Application Boot Priorities                 ↑↓: Select Item
                                                      Enter: Select
     Setup Prompt Timeout        1                    +/-: Change Option
     Bootup Num-Lock             [On]                 F1: General Help
     Boot Beep                   [Disabled]           F7: Discard Changes
     Full Screen Logo            [Enabled]            F9: Load UEFI Defaults
                                                      F10: Save and Exit
                                                      ESC: Exit



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```

Boot Option #1/#2/#3/#4/#5/#6

Use this item to set the system boot order.

UEFI USB Drive BBS Priorities

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

UEFI Application Boot Priorities

Specifies the Boot Device Priority sequence from available UEFI Application.

Setup Prompt Timeout

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

Bootup Num-Lock

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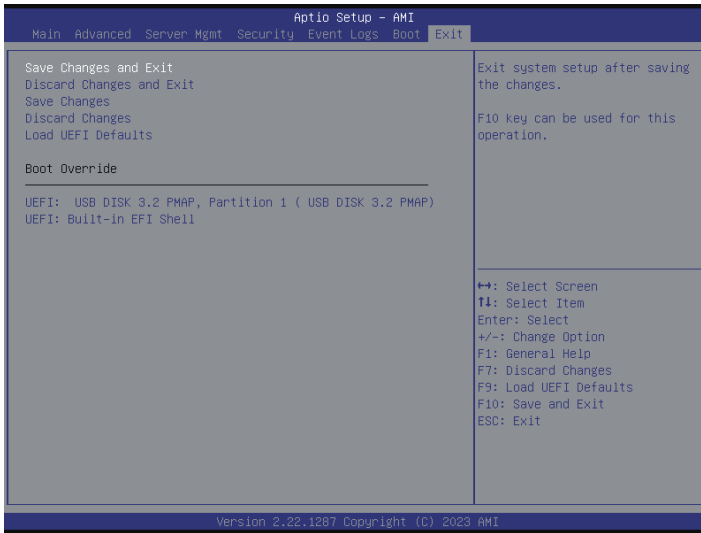
Boot Beep

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

English

Full Screen Logo

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

3.8 Exit Screen

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

   Save Changes and Exit                          Exit system setup after saving
   Discard Changes and Exit                       the changes.
   Save Changes
   Discard Changes                                F10 key can be used for this
   Load UEFI Defaults                             operation.

   Boot Override

   UEFI:  USB DISK 3.2 PMAP, Partition 1 ( USB DISK 3.2 PMAP)
   UEFI: Built-in EFI Shell


                                                  ↔: 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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```

Save Changes and Exit

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

Discard Changes and Exit

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

Save Changes

When selecting this option, the following message "Save changes?" will pop-out. Press <F7> key or select [Yes] to save all changes.

Discard Changes

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

Load UEFI Defaults

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

English

Chapter 4 Software Support

After all the hardware has been installed, it suggests to go 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 the USB drive while installing OS in SATA RAID mode.

4.2 Download and Install Software Drivers

This motherboard supports various Microsoft® Windows® compliant drivers. Please download the required drivers from the website at http://www.ASRockRack.com.

To download necessary drivers, go to the product page, click on the "Download" tab, choose the operating system that is used, and then download the using driver.

4.3 Contact Information

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

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.

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

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

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

If there is no video...
1. Try replugging the monitor cables and power cord.
2. Check for memory errors.

If there are memory errors...
1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR4 RDIMM/RDIMM-3DS/LRDIMM/LRDIMM-3DS/ Intel®Optane™ Persistent Memory 200 Series.
3. Install more than one DIMM modules that should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

English

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 related problem on ASRock Rack's FAQ page: http://www.asrockrack.com/support

5.2 Technical Support Procedures

If the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

1. Contact information
2. Model name, BIOS version and problem type.
3. System configuration.
4. Problem description.

Contact ASRock Rack's technical support at:
http://www.asrockrack.com/support/tsd.asp

5.3 Returning Merchandise for Service

For warranty service, the receipt or a copy of the invoice marked with the date of purchase is required. By calling the vendor or going to RMA website (http://event. asrockrack.com/tsd.asp) to obtain a Returned Merchandise Authorization (RMA) number.

The RMA number should be displayed on the outside of the shipping carton which is mailed prepaid or hand-carried when returning the motherboard to the manufacturer. Shipping and handling charges will be applied for all orders that must be mailed when service is complete.

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

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

English

Contact Information

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

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