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Industry Standard, Flexible Architecture

GREEN

Less Heat, Less Power Consumption

STABLE

Robust Design, Quality Parts

Stable and
Reliable Solution

Server/Workstation

Motherboard

W680 WS

User Manual

Version 1.02
Published July 2024

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

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CALIFORNIA, USA ONLY

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

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

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FCC

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

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

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

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

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

UKCA

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

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

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

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

Contents

Chapter 1 Introduction

Thank you for purchasing ASRock Rack *W680 WS* motherboard, a reliable motherboard produced under ASRock Rack's consistently stringent quality control. It delivers excellent performance with robust design conforming to ASRock Rack's commitment to quality and endurance.

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

1.1 Package Contents

- ASRock Rack W680 WS Motherboard
  (ATX Form Factor: 12" x 9.6", 30.5cm x24.4cm)
- Quick Installation Guide
- 1 x SATA3 Cable (60cm)
- 1 x I/O Shield
- 2 x Screws for M.2 Sockets

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

English

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1.2 Specifications

W680 WS	
Physical Status	
Form Factor	ATX
Dimension	12" x 9.6" (30.5cm x24.4cm)
Processor System	
CPU	Supports Intel® Core™ 14th, 13th & 12th Gen series processors
Socket	Single Socket LGA1700
Thermal Design Power (TDP)	125W
Chipset	Intel® W680
System Memory	
DIMM Quantity	4 DIMM slots (2DPC)
Type	Supports DDR5 288-pin ECC / non-ECC UDIMM
Max. Capacity per DIMM	48GB on Intel® Core™ 14th Gen, 13th Gen Intel® Core™ processors
	32GB on 12th Gen Intel® Core™ processors
Max. Frequency	4400MT/s (2DPC-1DIMM) / 4000MHz (2DPC-2DIMM 1R) / 3600MHz (2DPC-2DIMM 2R)
Voltage	1.1V
Note	*Memory support is to be validated.*
PCIe Expansion Slots (SLOT7 close to CPU)	
SLOT7	PCIe4.0 x4 [CPU]
SLOT6	PCIe5.0 x16/x8* [CPU]
SLOT4	PCIe5.0 x8* [CPU]
SLOT2	PCIe4.0 x4 [PCH]
Note	**SLOT6 share lanes with SLOT4. SLOT6 will switch to x8 when SLOT4 is popu-lated.*
Other PCIe Expansion Connectors	
M.2	1 M-key M2_2* (PCIe4.0 x4 or SATA 6Gb/s); support 2280/2260/2242/2230 form factor [PCH]
	1 M-key M2_3 (PCIe3.0 x4); support 2280/2260/2242/2230 form factor [PCH]
Note	**SATA0 share lanes with SATA M2_2, SATA M2_2 support possible by depopulating SATA0 and other BOM*
SATA/SAS Storage	
PCH Built-in Storage	**Intel® W680 (8 SATA 6Gb/s; RAID 0/1/5/10):** 8 SATA 7-pin
Additional SATA Controller	**ASM1061 (6 SATA 6Gb/s):** 6 SATA 7-pin
Ethernet	
Additional GbE Controller	4 RJ45 (1GbE) by Intel® i210

Graphics	
Controller	Intel® Integrated Processor Graphics: 1 HDMI, 1 Display Port
	Realtek RTD2168: 1 DB15 (VGA)
Rear I/O	
Video Output	1 DB15 (VGA), 1 HDMI, 1 DisplayPort
Serial Port	1 DB9 (COM)
USB	2 Type A (USB3.2 Gen1)
RJ45	4 RJ45(1GbE)
Audio	HD Audio Jacks: Optical SPDIF Out Port / Line Out Jack /
	Microphone Input Jack
Hardware Monitor	
Temperature	CPU, MB1~MB4, TR1 Temperature sensing
Fan	Fan Tachometer
	CPU Quiet Fan (Allow Chassis Fan Speed Auto-Adjust by CPU
	Temperature)
	Fan Multi-Speed Control
Voltage	+12V, +5V, +3.3V, 1.05V_PCH, VCCSA, VCORE, +VDD2,
	VCCIN_AUX, +1.05V_PROC
System BIOS	
Type	AMI 256Mb SPI Flash ROM
Features	Plug and Play, ACPI 6.4 and above compliance wake up events,
	SMBIOS 2.8 and above, ASRock Rack Instant Flash
Internal Connector/Headers	
PSU connectors	1 (24-pin, ATX main power), 3 (8-pin, ATX 12V)
Auxiliary Panel Header	1 (18-pin): chassis intrusion, system fault LED, LAN1/LAN2 activity LED, locate, SMBus
System Panel	1 (9-pin): power switch, reset switch, system power LED, HDD activity LED
NMI Header	1
Front Lan LED Header	1
VGA Header	1
Speaker Header	1 (4-pin)
Buzzer	1
Fan Header	7 (4-pin)
Thermal Sensor Header	1
TPM Header	1 (13-pin, SPI)
SGPIO Header	1
Clear CMOS	1 (contact pads)
Audio Header	1 (9-pin)
USB Header	2 header (19-pin, 4 USB3.2 Gen1), 1 header (9-pin, 2 USB2.0)

English

LED Indicators	
Standby PWR LED	1 (5VSB)
80 Debug Port LED	1
Support OS	
OS	Microsoft® Windows®
	- Windows 10 (64bit)
	- Windows 11 (64bit)
	Linux®
	- RedHat Enterprise Linux Server 8.5 (64bit)
	- CentOs 8.5 (64bit)
	- SUSE SLES 15.2 (64bit) / 12.5 (64bit)
	- UBuntu 21.10 (64bit)
	Supports UEFI BOOT only.
	The Linux system doesn't support Raid Mode.
	Please refer to the website for the latest OS support list.
Environment	
Temperature	Operation temperature: 10°C ~ 35°C
	Non operation temperature: -40°C ~ 70°C
Humidity	Non operation humidity: 20% ~ 90% (Non condensing)

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

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

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

1.3 Unique Features

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

1.4 Motherboard Layout

24.4cm (9.6in)

30.5cm (12in)

W680 WS

ASRock Rack

CPU1

Intel W680

Dr.Debug
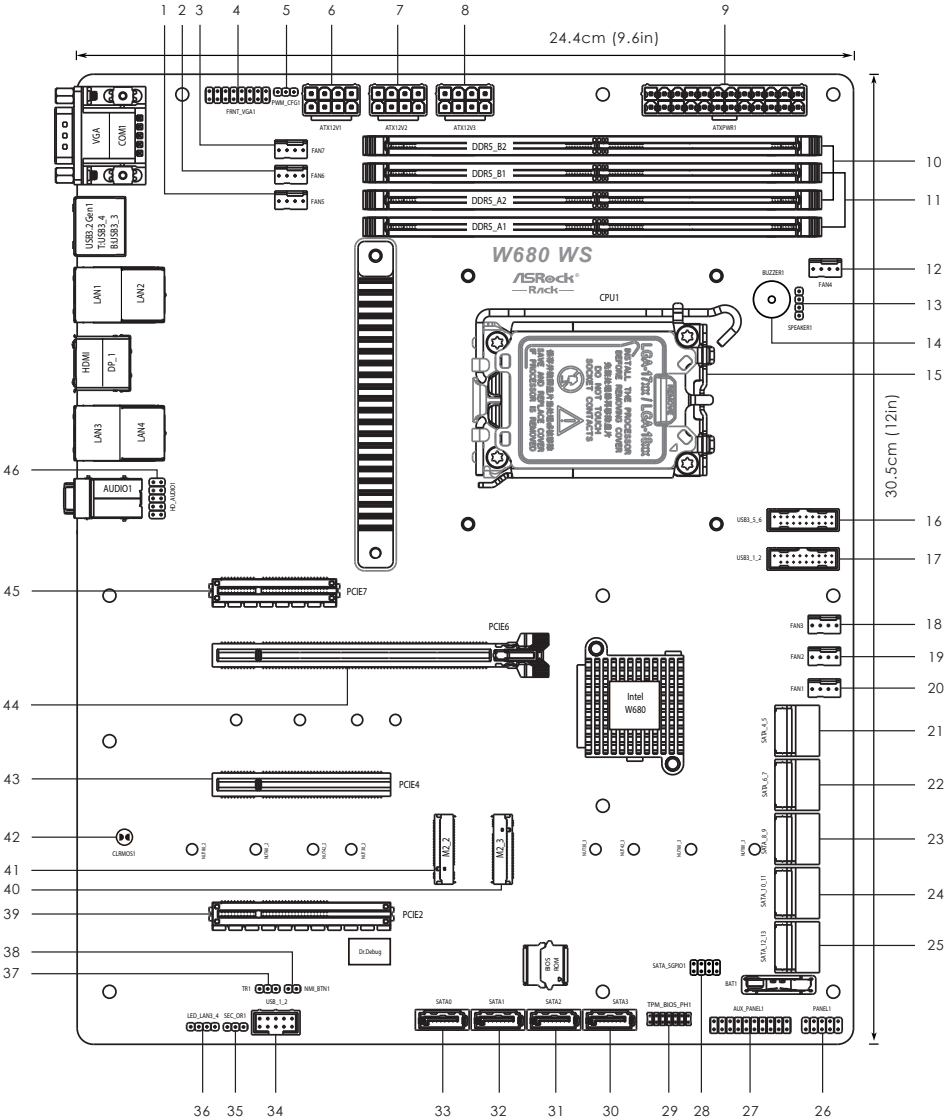
No.	Description
1	Chassis Fan Connector (FAN5)
2	Chassis Fan Connector (FAN6)
3	Chassis Fan Connector (FAN7)
4	Front VGA Header (FRNT_VGA1)
5	PWM Configuration Header (PWM_CFG1)
6	ATX 12V Power Connector (ATX12V1)
7	ATX 12V Power Connector (ATX12V2)
8	ATX 12V Power Connector (ATX12V3)
9	ATX Power Connector (ATXPWR1)
10	2 x 288-pin DDR5 DIMM Slots (DDR5_A2, DDR5_B2)*
11	2 x 288-pin DDR5 DIMM Slots (DDR5_A1, DDR5_B1)*
12	Chassis Fan Connector (FAN4)
13	Chassis Speaker Header (SPEAKER1)
14	BUZZER1
15	LGA1700 CPU Socket (CPU1)
16	USB 3.2 Gen1 Header (USB3_5_6)
17	USB 3.2 Gen1 Header (USB3_1_2)
18	Chassis Fan Connector (FAN3)
19	Chassis Fan Connector (FAN2)
20	Chassis Fan Connector (FAN1)
21	SATA3 Connectors (SATA_4)(Lower), (SATA_5)(Upper)
22	SATA3 Connectors (SATA_6)(Lower), (SATA_7)(Upper)
23	SATA3 Connectors (SATA_8)(Lower), (SATA_9)(Upper)
24	SATA3 Connectors (SATA_10)(Lower), (SATA_11)(Upper)
25	SATA3 Connectors (SATA_12)(Lower), (SATA_13)(Upper)
26	System Panel Header (PANEL1)
27	Auxiliary Panel Header (AUX_PANEL1)
28	SATA SGPIO Connector (SATA_SGPIO1)
29	SPI TPM Header (TPM_BIOS_PH1)
30	SATA3 Connector (SATA3)
31	SATA3 Connector (SATA2)
32	SATA3 Connector (SATA1)
33	SATA3 Connector (SATA0)
34	USB 2.0 Header (USB_1_2)

English

No.	Description
35	Security Override Jumper (SEC_OR1)
36	Front LAN LED Connector (LED_LAN3_4)
37	Thermal Sensor Header (TR1)
38	Non Maskable Interrupt Button (NMI_BTN1)
39	PCI Express 4.0 x4 Slot (PCIE2)
40	M.2 Socket (M2_3) (Type 2230/2242/2260/2280)
41	M.2 Socket (M2_2) (Type 2230/2242/2260/2280)
42	Clear CMOS Pad (CLRCMOS1)
43	PCI Express 5.0 x8 Slot (PCIE4)
44	PCI Express 5.0 x16/x8 Slot (PCIE6)
45	PCI Express 4.0 x4 Slot (PCIE7)
46	Front Panel Audio Header (HD_AUDIO1)

* For DIMM installation and configuration instructions, please see p.16 (Installation of Memory Modules (DIMM)) for more details.

1.5 Onboard LED Indicators
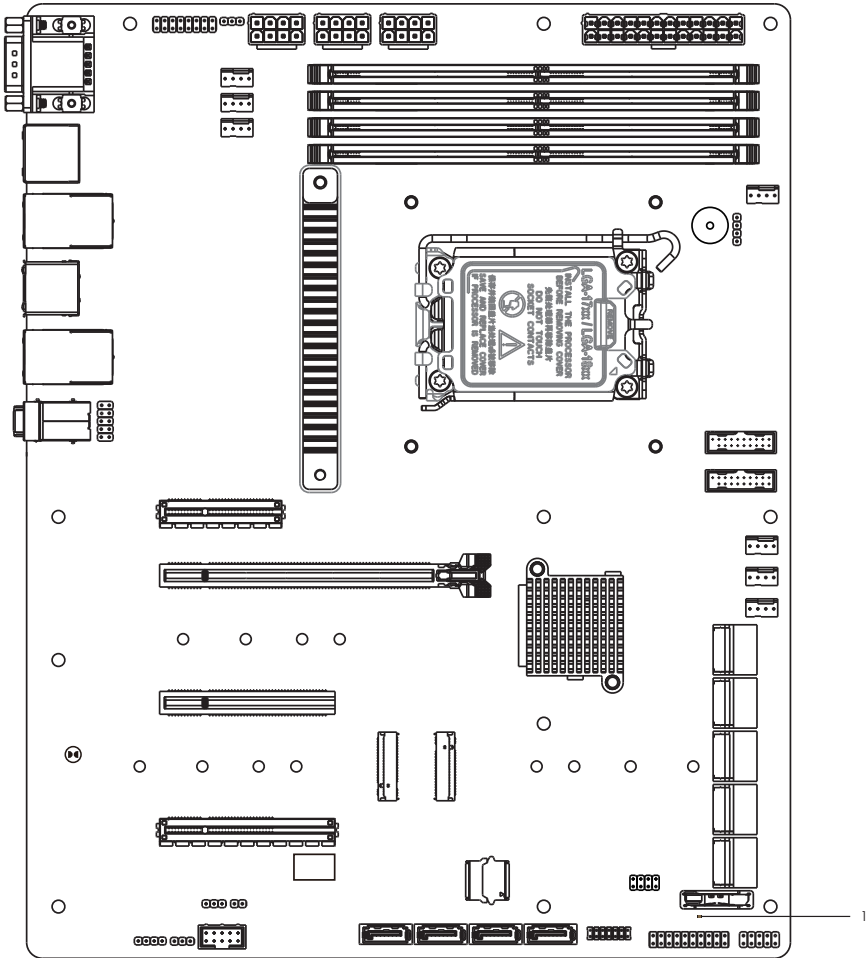
No.	Item	Status	Description
1	SB_PWR1	Green	STB PWR ready

1.6 I/O Panel
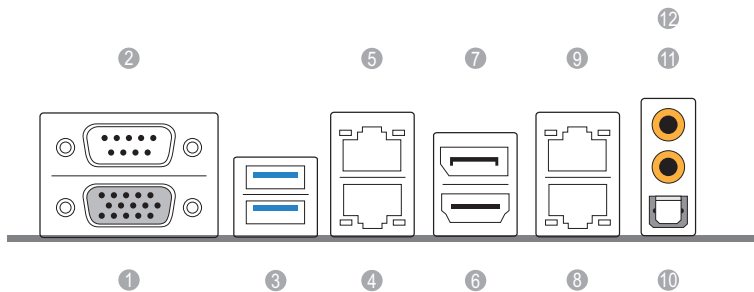
No.	Description	No.	Description
1	VGA Port (VGA)	7	Display Port (DP_1) (1.4a)
2	Serial Port (COM1)	8	1G LAN RJ-45 Port (LAN3)*
3	USB 3.2 Gen1 Ports (USB3_3_4)	9	1G LAN RJ-45 Port (LAN4)*
4	1G LAN RJ-45 Port (LAN1)*	10	Optical SPDIF Out Port
5	1G LAN RJ-45 Port (LAN2)*	11	Line Out Jack
6	HDMI Port (HDMI) (1.4b)	12	Microphone Input Jack

LAN Port LED Indications

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

ACT/LINK LED
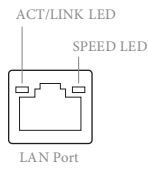
SPEED LED

LAN Port

1G LAN Port LED Indications

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

1.7 Block Diagram

D-Sub — RGB — RTD2168-CG (DP to VGA) — DDI — INTEL Processor LGA-1700 Pin Socket

HDMI + DP — DDI

PCIE5.0 SLOT6 x16/x8 — PCIE5.0 x16/x8 — PS7101 Mux+Rediriver — PCIE5.0 x16
PCIE5.0 SLOT4 x8/x0 — PCIE5.0 x8/x0

PCIE4.0 SLOT7 x4 — PCIE4.0 x4

Channel A — DDR5 [ECC/non-ECC], DDR5 [ECC/non-ECC]
4400 (2SPC - 1DIMM)
4000 (2SPC - 2DIMM 1R)
3600 (2SPC - 2DIMM 2R)
Channel B — DDR5 [ECC/non-ECC], DDR5 [ECC/non-ECC]

DMI 4.0 x8

USB3.2 Gen1 2 front header1 Type A — USB3.2 5 Gb/s — HSIO 0-1
IPMI LAN USB3.2 Gen1 2 rear ports Type A — USB3.2 5 Gb/s — HSIO 2-3
USB 3.2 Gen1 2 front header2 Type A — USB3.2 5 Gb/s — HSIO 8-9
USB 2.0 2 front header Type A — USB2.0

Audio — ALC4082 — USB2.0

SPI TPM Header — SPI

BIOS — Switch

INTEL W680 PCH-H

HSIO 10 — PCIEx1 — LAN1 (1GBE) I210 (NCSI)
HSIO 11 — PCIEx1 — LAN2 (1GBE) I210
HSIO 12 — PCIEx1 — LAN3 (1GBE) I210
HSIO 13 — PCIEx1 — LAN4 (1GBE) I210
HSIO 34-37 — PCIE4.0x4 — M.2 2 (PCIE4.0) (BOM option with SATA0 for SATA M2)
HSIO 18-21 — PCIE3.0x4 — M.2 3 (PCIE3.0)
HSIO 22-23 — SATA[0:3] — SATA0~3
HSIO 26-29 — SATA[4:7] — SATA4~7
HSIO 30-33 — PCIE4.0x4 — PCIE4.0 SLOT2 x4
HSIO 15 — PCIEx1 — ASM1061 (PCIE to SATAx2) — SATAx2 — SATA8~9
HSIO 16 — PCIEx1 — ASM1061 (PCIE to SATAx2) — SATAx2 — SATA10~11
HSIO 17 — PCIEx1 — ASM1061 (PCIE to SATAx2) — SATAx2 — SATA12~13
HSIO 14

ESPI

SIO NCT6796D

COM Port

PCA9557PW — FAN1 FAN4, FAN2 FAN5, FAN3 FAN6, FAN7

Chapter 2 Installation

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

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

2.1 Screw Holes

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

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

2.2 Pre-installation Precautions

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

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

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

2.3 Installing the CPU

1. *Before inserting the 1700-Pin CPU into the socket, please check if the **PnP cap** is on the socket, if the CPU surface is unclean, or if there are any **bent pins** in the socket. Do not force to insert the CPU into the socket if above situation is found. Otherwise, the CPU will be seriously damaged.*
2. *Unplug all power cables before installing the CPU.*
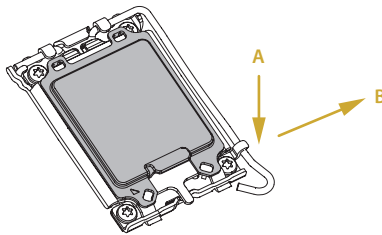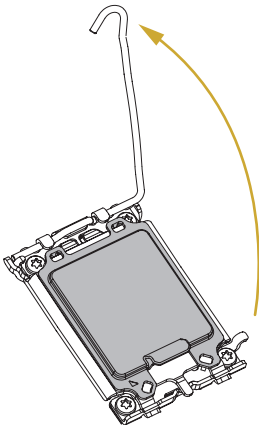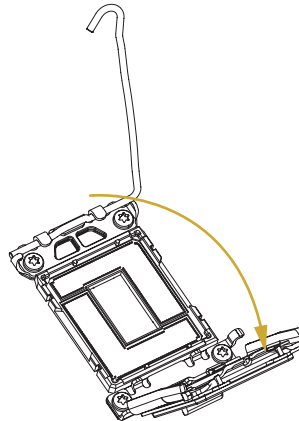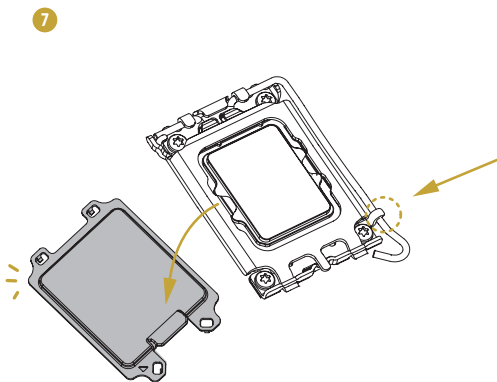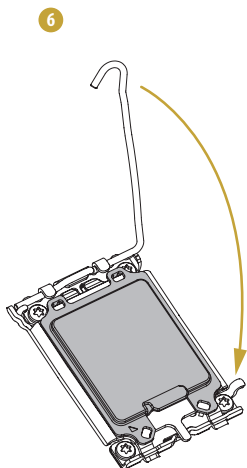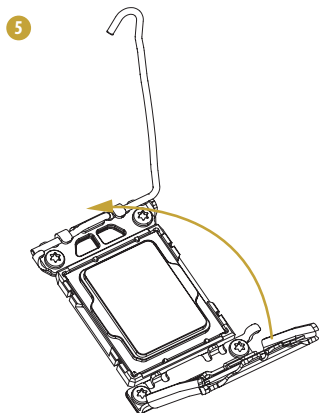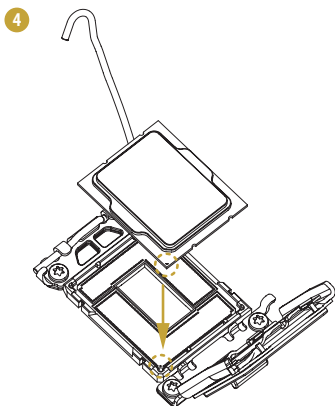
2.4 Installing the CPU Fan and Heatsink
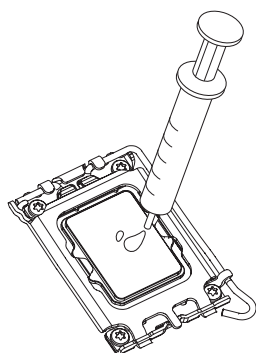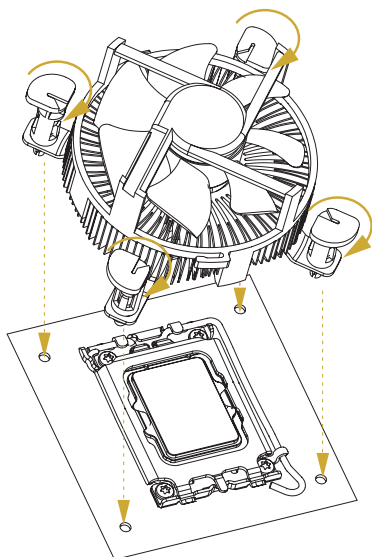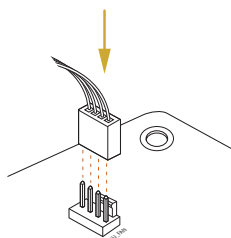
2.5 Installing Memory Modules (DIMM)

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

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

Dual Channel Memory Configuration

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

The symbol V indicates the slot is populated.

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

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

English

17
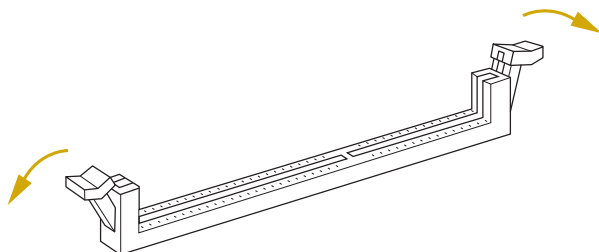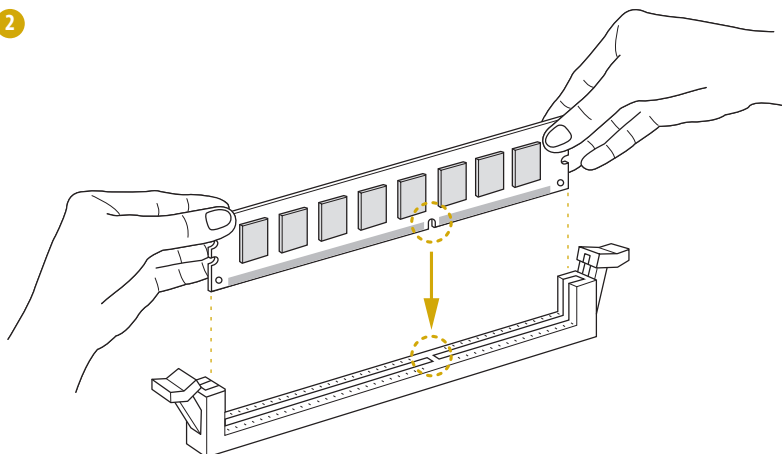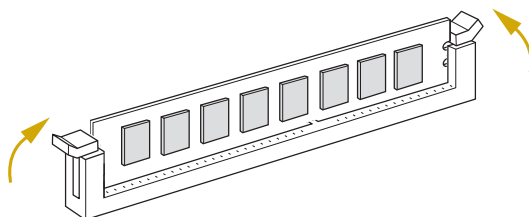
2.6 Expansion Slots (PCI Express Slots)

There are 4 PCI Express slots on this motherboard.

PCIE slots:
PCIE7 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.
PCIE6 (PCIe 5.0 x16 slot) is used for PCI Express x16/x8 lane width cards.
PCIE4 (PCIe 5.0 x8 slot) is used for PCI Express x8 lane width cards.
PCIE2 (PCIe 4.0 x4 slot) is used for PCI Express x4 lane width cards.

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

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

PCI Express Slot Configuration

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

Installing an expansion card

Step 1.   Before installing an expansion card, please make sure that the power supply is switched off or the power cord is unplugged. Please read the documentation of the expansion card and make necessary hardware settings for the card before starting the installation.

Step 2.   Remove the system unit cover (if the motherboard is already installed in a chassis).

Step 3.   Remove the bracket facing the slot that intending to use. Keep the screws for later use.

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

Step 5.   Fasten the card to the chassis with screws.

Step 6.   Replace the system cover.

2.7 Jumper Setup

The illustration shows how jumpers are setup. When the jumper cap is placed on the pins, the jumper is "Short". If no jumper cap is placed on the pins, the jumper is "Open". The illustration shows a 3-pin jumper whose pin1 and pin2 are "Short" when a jumper cap is placed on these 2 pins.

Short   Open
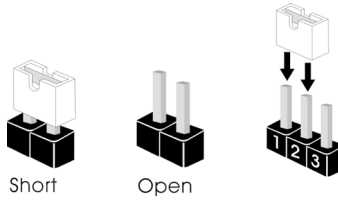
| Security Override Jumper (3-pin SEC_OR1) (see p.6, No. 35) | **1_2**   Descriptor Security Override | **2_3**   Not override (Default) |

2.8 Onboard Headers and Connectors

⚠️ *Onboard headers and connectors are NOT jumpers. Do NOT place jumper caps over these headers and connectors. Placing jumper caps over the headers and connectors will cause permanent damage to the motherboard.*

System Panel Header
(9-pin PANEL1)
(see p.6, No. 26)

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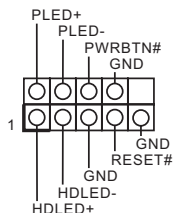
Connect the power switch, reset switch and system status indicator on the chassis to this header according to the pin assignments. Particularly note the positive and negative pins before connecting the cables.

🔍 **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. 27)
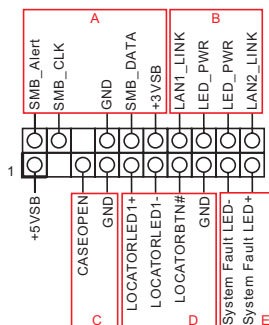
This header supports multiple functions on the front panel, including the front panel SMB, internet status indicator and chassis intrusion pin.

Top row labels (left to right):
A: SMB_Alert, SMB_CLK, GND, SMB_DATA, +3VSB
B: LAN1_LINK, LED_PWR, LED_PWR, LAN2_LINK

Bottom row labels:
1, +5VSB
C: CASEOPEN, GND
LOCATORLED1+, LOCATORLED1-, LOCATORBTN#
D: GND
E: System Fault LED-, System Fault LED+

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

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

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

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

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

ATX Power Connector
(24-pin ATXPWR1)
(see p.6, No. 9)
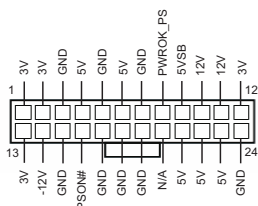
This motherboard provides a 24-pin ATX power connector. To use a 20-pin ATX power supply, please plug it along Pin 1 and Pin 13.

Top row (1 to 12): 3V, 3V, GND, 5V, GND, 5V, GND, PWROK_PS, 5VSB, 12V, 12V, 3V
Bottom row (13 to 24): 3V, -12V, GND, PSON#, GND, GND, GND, N/A, 5V, 5V, 5V, GND

Serial ATA3 Connectors
(SATA0)
(see p.6, No. 33)
(SATA1)
(see p.6, No. 32)
(SATA2)
(see p.6, No. 31)
(SATA3)
(see p.6, No. 30)

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

Right Angle:
(SATA_4) (Lower)
(SATA_5) (Upper)
(see p.6, No. 21)
(SATA_6) (Lower)
(SATA_7) (Upper)
(see p.6, No. 22)
(SATA_8) (Lower)
(SATA_9) (Upper)
(see p.6, No. 23)
(SATA_10) (Lower)
(SATA_11) (Upper)
(see p.6, No. 24)
(SATA_12) (Lower)
(SATA_13) (Upper)
(see p.6, No. 25)
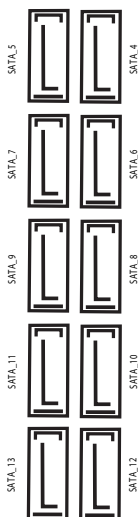
USB 2.0 Header
(9-pin USB_1_2)
(see p.6, No. 34)
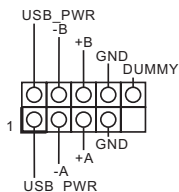
There is one USB 2.0 header on this motherboard. Each USB 2.0 header can support two ports.

Chassis Speaker Header
(4-pin SPEAKER1)
(see p.6, No. 13)
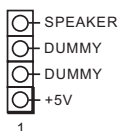
Please connect the chassis speaker to this header.

System Fan
Connectors
(4-pin FAN1)
(see p.6, No. 20)
(4-pin FAN2)
(see p.6, No. 19)
(4-pin FAN3)
(see p.6, No. 18)
(4-pin FAN4)
(see p.6, No. 12)
(4-pin FAN5)
(see p.6, No. 1)
(4-pin FAN6)
(see p.6, No. 2)
(4-pin FAN7)
(see p.6, No. 3)

```
4   3   2   1
GND
FAN_VOLTAGE
FAN_SPEED
FAN_SPEED_CONTROL
```
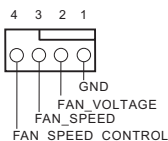
Please connect fan cables to the fan connectors and match the black wire to the ground pin. All fans support Fan Control.

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

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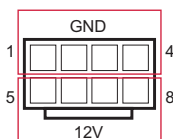
This motherboard provides three 8-pin ATX 12V power connectors.

SPI TPM Header
(13-pin TPM_BIOS_PH1)
(see p.6, No. 29)

```
                SPI_DQ2
              SPI_CS0
            SPI_MISO
          RSMRST#
            GND
SPI_TPM_CS#

                         1
TPM_PIRQ
    RST#
  SPI_MOSI
        CLK
      Dummy
        SPI_PWR
          SPI_DQ3
```
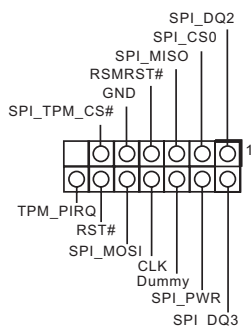
This connector supports SPI Trusted Platform Module (TPM) system, which can securely store keys, digital certificates, passwords, and data. A TPM system also helps enhance network security, protects digital identities, and ensures platform integrity.

Serial General Purpose Input/Output Header (7-pin SATA_SGPIO1) (see p.6, No. 28)	SCLOCK SLOAD GND 1 SDATAOUT GND	The header supports Serial Link interface for onboard SATA connections.
Non Maskable Interrupt Button Header (NMI_BTN1) (see p.6, No. 38)	GND 1 CONTROL	Please connect a NMI device to this header.
PWM Configuration Header (3-pin PWM_CFG1) (see p.6, No. 5)	GND SMB_DATA_VSB SMB_CLK_VSB 1	This header is used for PWM configurations.
Thermal Sensor Header (3-pin TR1) (see p.6, No. 37)	TR1 TR1 1 GND	Please connect the thermal sensor cable to either pin 1-2 or pin 2-3 and the other end to the device which wishing to monitor its temperature.
Front LAN LED Connector (LED_LAN3_4) (see p.6, No. 36)	LAN4_LINK LED_PWR 1 LAN3_LINK LED_PWR	This 4-pin connector is used for the front LAN status indicator.
Clear CMOS Pad (CLRCMOS1) (see p.6, No. 42)		CLRMOS1 allows user to clear the data in CMOS. To clear CMOS, take out the CMOS battery and short the Clear CMOS Pad.
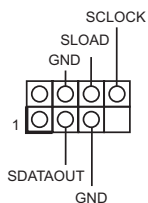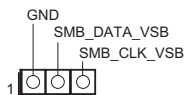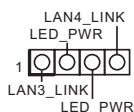
USB 3.2 Gen1 Header
(19-pin USB3_1_2)
(see p.6, No. 17)
(19-pin USB3_5_6)
(see p.6, No. 16)

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

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

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.

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

DDC_CLK
H_SYNC
+5V
GND
GND
Blue
Red

V_SYNC
DDC_DATA
GND
GND
GND
Green
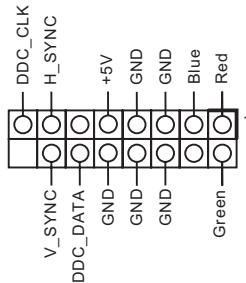
Please connect either end of VGA_2X8 cable to VGA header.

Front Panel Audio Header
(9-pin HD_AUDIO1)
(see p.6, No. 46)

OUT_RET — OUT2_L
— J_SENSE
MIC_RET — OUT2_R
PRESENCE# — MIC2_R
GND — MIC2_L

1
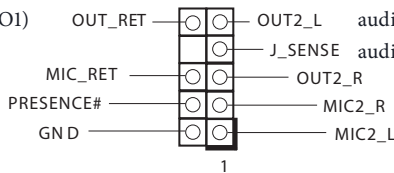
This header is for connecting audio devices to the front audio panel.

1. *High Definition Audio supports Jack Sensing, but the panel wire on the chassis must support HDA to function correctly. Please follow the instructions in our manual and chassis manual to install the system.*
2. *If using an AC'97 audio panel, please install it to the front panel audio header by the steps below:*
   A. Connect Mic_IN (MIC) to MIC2_L.
   B. Connect Audio_R (RIN) to OUT2_R and Audio_L (LIN) to OUT2_L.
   C. Connect Ground (GND) to Ground (GND).
   D. MIC_RET and OUT_RET are for the HD audio panel only. Don't need to connect them for the AC'97 audio panel.
   E. To activate the front mic, go to the "FrontMic" Tab in the Realtek Control panel and adjust "Recording Volume".

English

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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

English

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

2.10 Dual LAN and Teaming Operation Guide

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

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

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

Step 1

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

Step 2

Click the **Settings** tab.

Step 3

Click the **Modify Team** button.

Step 4

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

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

2.11 M.2 SSD Module Installation Guide

The motherboard supports three M.2 Sockets:
- The M.2 Socket (M2_2, Key M) supports either a M.2 SATA3, 6.0Gb/s module or a M.2 PCI Express moduel up to Gen4x4 (16Gb/s x4). [PCH]
- The M.2 Socket (M2_3, Key M) supports a M.2 PCI Express moduel up to Gen3x4 (8Gb/s x4). [PCH]

Installing the M.2 SSD Module
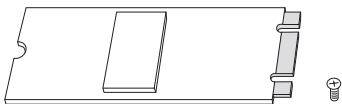
Step 1

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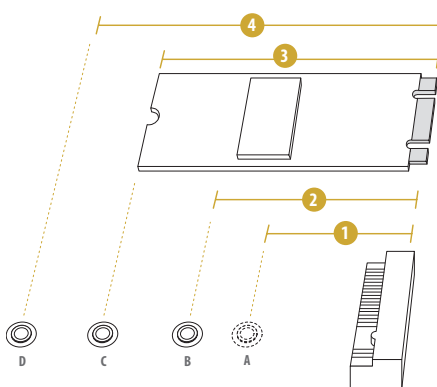
Step 2

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

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

English
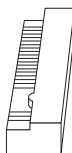
Step 3

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

D   C   B   A

Step 4
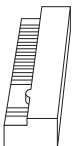
Peel off the yellow protective film on the nut to be used. Hand tighten the standoff into the desired nut location on the motherboard.

D   C   B   A
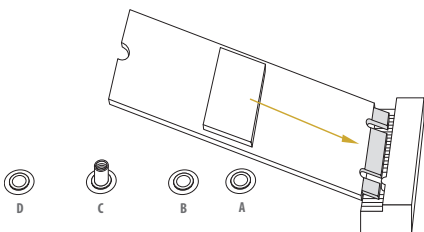
Step 5

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

D   C   B   A

D   C   B   A   20°
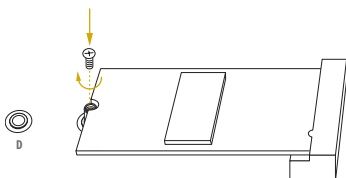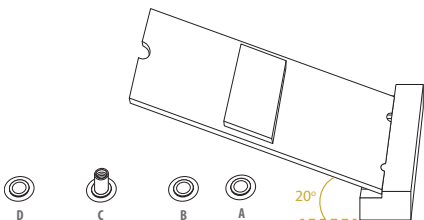
Step 6

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

D

Chapter 3 UEFI Setup Utility

3.1 Introduction

This section explains how to use the UEFI SETUP UTILITY to configure the system. The UEFI chip on the motherboard stores the UEFI SETUP UTILITY. Run the UEFI SETUP UTILITY when starting up the computer. Please press <F2> or <Del> during the Power-On-Self-Test (POST) to enter the UEFI SETUP UTILITY; otherwise, POST will continue with its test routines.

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

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

3.1.1 UEFI Menu Bar

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

Item	Description
Main	To set up the system time/date information
Advanced	To set up the advanced UEFI features
Security	To set up the security features
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

3.2 Main Screen

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

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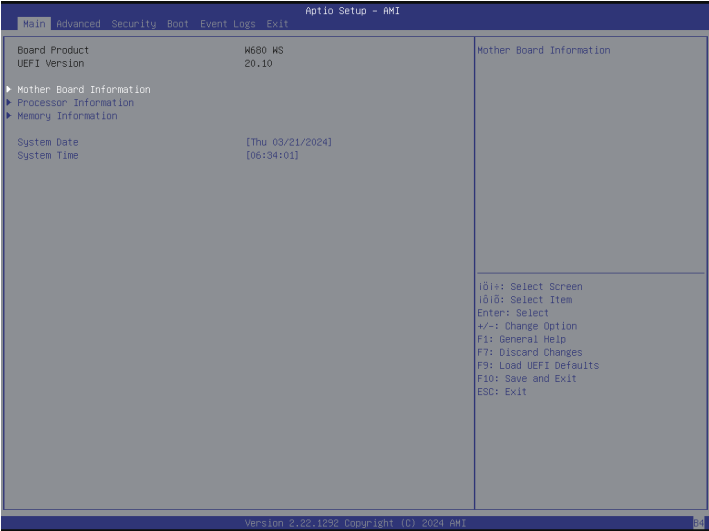
3.2.1 Motherboard Information

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

```
                                    Aptio Setup - AMI
  Main

  Mother Board Information
  MotherBoard                        W680 WS

  BIOS Information
  BIOS Vendor                        American Megatrends
  Core Version                       5.27
  Compliancy                         UEFI 2.8; PI 1.7
  Project Version                    A9143 20.10 x64
  Build Date and Time                02/23/2024 19:22:47
  Intel RC Revision                  0C.00.B2.10
  AMI RC Revision                    1AYRT 0.44
  Memory RC Version                  0.0.4.169
  ACPI Version                       64
  SMBIOS Version                     3.6.0

  Platform Information
  PCH                                PCH-S W680 - B1
  TXT Capability of Platform/PCH     Supported

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

                            Version 2.22.1292 Copyright (C) 2024 AMI
```

3.2.2 Processor Information

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

```
                                    Aptio Setup - AMI
  Main

  CPU Version                        13th Gen Intel(R) Core(TM) i5-13500
  Processor ID                       000B06F2*
  Processor Frequency                4500MHz
  Processor Core                     14 (6 + 8)
  Processor TDP                      65W
  Memory Channel                     4
  Microcode Version                  0000002E
  Cache Information                         P Core    |      E Core
   L1 Data Cache                          48 KB x 6   |    32 KB x 8
   L1 Instruction Cache                   32 KB x 6   |    64 KB x 8
   L2 Cache                             1280 KB x 6   |  2048 KB x 2
   L3 Cache                               24 MB       |    24 MB
  IGFX GOP Version                   17.0.1081

  Intel Turbo Boost                  Support
  Intel VT-d Technology              Support

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

                            Version 2.22.1292 Copyright (C) 2024 AMI
```

3.2.3 Memory Information

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

```
                              Aptio Setup – AMI
   Main

   Total Memory                  Total Memory: 16GB with 1024MB
                                 Shared Memory
   Memory Channel Mode           Single-Channel Memory Mode

   Memory Present Number         1
   Memory Not Present Number     3

   DDR5_A1                       None
   DDR5_A2                       Transcend 16GB (DDR5-4400)
   DDR5_B1                       None
   DDR5_B2                       None




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




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```

3.3 Advanced Screen

This section allows user to set the configurations for the following items: CPU Configuration, Memory Configuration, Chipset Configuration, PCH-FW Configuration, Storage Configuration, NVMe Configuration, ACPI Configuration, USB Configuration, Super IO Configuration, Serial Port Console Redirection, H/W Monitor, Runtime Error Logging Settings, Intel ME Information, Network Stack Configuration, VMD Configuration, Driver Health, Tls Auth Configuration and Insant Flash.
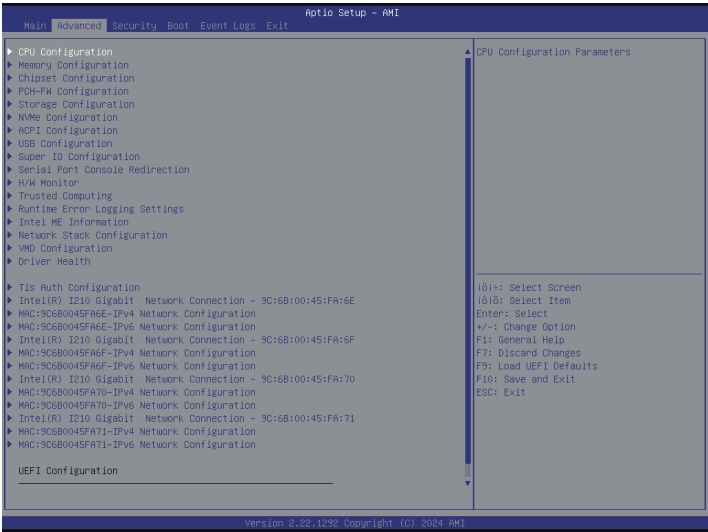
> ⚠ *Setting wrong values in this section may cause the system to malfunction.*

3.3.1 CPU Configuration

```
                            Aptio Setup - AMI
     Advanced

                                                        ▲  Displays the P-Core Information
  Processor ID                000B06F2*
  Microcode Revision          0000002E
  Processor Max Speed         2500 MHz
  Processor Min Speed         400 MHz
  Processor P-Cores           6Core(s) / 12Thread(s)
  Processor E-Cores           8Core(s) / 8Thread(s)

▶ Processor P-Core Information
▶ Processor E-Core Information

  Intel Hyper Threading Technology    [Enabled]
  Active Processor P-Cores            [All]
  Active Processor E-Cores            [All]
  CPU C States Support                [Enabled]
   Enhanced Halt State(C1E)           [Auto]
   CPU C6 State Support               [Auto]
   CPU C7 State Support               [Auto]
   Package C State Support            [Enabled]      ↔: Select Screen
   CFG Lock                           [Disabled]     ↑↓: Select Item
  C6DRAM                              [Disabled]     Enter: Select
                                                     +/-: Change Option
  CPU Thermal Throttling              [Enabled]      F1: General Help
  Intel AVX/AVX2                      [Enabled]      F7: Discard Changes
  Intel Virtualization Technology     [Enabled]      F9: Load UEFI Defaults
  Hardware Prefetcher                 [Enabled]      F10: Save and Exit
  Adjacent Cache Line Prefetch        [Enabled]      ESC: Exit
  Legacy Game Compatibility Mode      [Disabled]

  Intel SpeedStep Technology          [Enabled]
  Intel Turbo Boost Technology        [Enabled]
  Intel Speed Shift Technology        [Enabled]
  Intel Turbo Boost Max Technology 3.0   [Enabled]  ▼

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```

Processor P-Core Information

This item displays the P-Core Information.

Processor E-Core Information

This item displays the E-Core Information.

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.

Active Processor P-Cores

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

Active Processor E-Cores

Select the number of E-Cores to enable in each processor package.

CPU C States Support

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

Enhanced Halt State (C1E)

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

CPU C6 State Support

Enable C6 deep sleep state for lower power consumption.

CPU C7 State Support

Enable C7 deep sleep state for lower power consumption.

Package C State Support

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

CFG Lock

This item allows user to disable or enable the CFG Lock.

C6DRAM

Enable or disable moving of DRAM contents to PRM memory when CPU is in C6 state.

CPU Thermal Throttling

Enable CPU internal thermal control mechanisms to keep the CPU from overheating.

Intel AVX/AVX2

Enable or disable the Intel AVX and AVX2 Instructions. This is applicable for Big Core only.

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.

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.

Legacy Game Compatibility Mode

When enabled, pressing the scroll lock key will toggle the Efficient cores between being parked when Scroll Lock LED is on and un-parked when LED is off.

Intel SpeedStep Technology

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

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

Intel Turbo Boost Technology

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

Intel Speed Shift Technology

Enable or disable Intel Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-sates.

To Get best support for Intel Turbo Boost Max Technology 3.0 (ITBMT 3.0), you have to enable Intel Speed Shift Technology. If the CPU does not support ITBMT 3.0, option will still grayed out.

Intel Turbo Boost Max Technology 3.0

Enable or disable Intel Turbo Boost Technology 3.0 (ITBMT 3.0) support. Disabling will report the maximum ratio of the slowest core in _CPC object. Processors supportinh the ITBMT 3.0 feature contain at least on processor core whose maximum ratio is higher than the others.

Intel Thermal Velocity Boost Voltage Optimizations

This service controls thermal based voltage optimizations for processors that implment the Intel Thermal Velocity Boost (TVB) feature.

Long Duration Power Limit 65.000

Configure Package Power Limit 1 in watts. When the limit is exceeded, the CPU ratio will be lowered after a period of time. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

English

43

Long Duration Maintained 28

Configure the period of time until the CPU ratio is lowered when the Long Duration Power Limit is exceeded.

Short Duration Power Limit 154.000

Configure Package Power Limit 2 in watts. When the limit is exceeded, the CPU ratio will be lowered immediately. A lower limit can protect the CPU and save power, while a higher limit may improve performance.

3.3.2 Memory Configuration

```
                              Aptio Setup - AMI
      Advanced

   Memory Configuration                                          If [Auto] is selected, the motherboard
                                                                 will detect the memory module(s)
   DRAM Frequency DDR5-4400          [Auto]                      inserted and assign the appropriate
   ECC Support                       [Auto]                      frequency automatically.
   ECC DFT                           [Disabled]
   Write0                            [Disabled]




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




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```

DRAM Frequency DDR5-4400

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

ECC Support

Use this item to enable or disable DDR ECC Support.

ECC DFT

Use this item to enable or disable ECC DFT feature.

Write0

Use this item to enable or disable Write0 feature for LP5/DDR5.

3.3.3 Chipset Configuration

SR-IOV Support

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

Re-Sized BAR Support

If system has Resizable BAR capable PCIe Devices, this option Enables or Disables Resizable BAR Support (Only if System Supports 64 bit PCI Decoding).

Onboard LAN1/2/3/4

Use this to enable or disable the Onboard LAN function.

Primary Graphics Adapter

Use this to select a primary VGA.

IGPU Multi-Monitor

Select disabled to disable the integrated graphics when an external graphics card is installed.Or select enable to keep the integrated graphics enabled at all times.

Share Memory

Use this item to configure the size of memory that is allocated to the integrated graphics processor when the system boots up.

Onboard HDMI HD Audio

Enable audio for the onboard digital outputs.

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.

Restore on AC/Power Loss

Select the power state after a power failure. If [Power off] is selected, the power will remain off when the power recovers. If [Power On] is selected, the system will start to boot up when the power recovers.

HSIO Mode Selection

Select this item to configure HSIO Mode Selection.

PCIE Link Width

Select this item to configure PCIE Link Width.

PCIE6 Link Width
Configure PCIE6 Slot Link Width.

PCIE Link Speed

Select this item to configure PCIE Link Speed.

PCIE7 Link Speed
Configure PCIE7 Slot Link Speed. Auto mode is optimizing for overclocking.

PCIE6 Link Speed
Configure PCIE6 Slot Link Speed. Auto mode is optimizing for overclocking.

PCIE4 Link Speed
Configure PCIE4 Slot Link Speed. Auto mode is optimizing for overclocking.

PCIE2 Link Speed
Configure PCIE2 Slot Link Speed. Auto mode is optimizing for overclocking.

English

M.2_2 Link Speed

Configure M.2_2 Slot Link Speed. Auto mode is optimizing for overclocking.

M.2_3 Link Speed

Configure M.2_3 Slot Link Speed. Auto mode is optimizing for overclocking.

PCIE Hot Plug

Select this item to configure PCIE Hot Plug globally.

PCIE7 Hot Plug
Enalbe or disable PCIE7 Hot Plug.

PCIE6 Hot Plug
Enalbe or disable PCIE6 Hot Plug.

PCIE4 Hot Plug
Enalbe or disable PCIE4 Hot Plug.

PCIE2 Hot Plug
Enalbe or disable PCIE2 Hot Plug.

M.2_2 Hot Plug
Enalbe or disable M.2_2 PCI Express Hot Plug.

M.2_3 Hot Plug
Enalbe or disable M.2_3 PCI Express Hot Plug.

PCIE ASPM

Selec this item to configure the PCIE ASPM.

PCIE7 ASPM Support
This option can disable PCIE 7 ASPM support in a PCIe root port. [Auto] keeps hardware default.

PCIE6 ASPM Support
This option can disable PCIE6 ASPM support in a PCIe root port. [Auto] keeps hardware default.

PCIE4 ASPM Support
This option can disable PCIE 4 ASPM support in a PCIe root port. [Auto] keeps hardware default.

PCIE2 ASPM Support
This option can disable PCIE2 ASPM support in a PCH downstream device. [Auto] keeps hardware default.

M.2_2 ASPM Support
This option can disable M.2_2 ASPM support in a PCH downstream device. [Auto] keeps hardware default.

M.2_3 ASPM Support

This option can disable M.2_3 ASPM support in a PCH downstream device. [Auto] keeps hardware default.

Onboard Debug Port LED

Enable or disable the onboard Dr. Debug LED.

3.3.4 PCH-FW Configuration

```
                              Aptio Setup - AMI
        Advanced

Intel(R) Platform Trust Technology     [Enabled]          Enabled/Disabled Intel PTT function.
Notice                                                    Enabled: Enable Intel PTT in ME,
                                                          Disabled: Disable Intel PTT in ME, Use
The firmware TPM key will be stored in Intel ME data region once you enable   discrete TPM Module.
Intel PTT and Windows Bitlocker for drive encryption.
Please note that when update BIOS or the recovery key is lost, the system will
not boot into the operating system and the data will stay encrypted and cannot
be restored.
If want to update BIOS in the feature, it is suggested to make sure that you
have already stored and backed-up the recovery key or disable Intel PTT before
you update the BIOS.

                                                          →←: 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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```

Intel(R) Platform Trust Technology

Enable or disable Intel PTT function in ME. Disable this option to use discrete TPM Module.

3.3.5 Storage Configuration
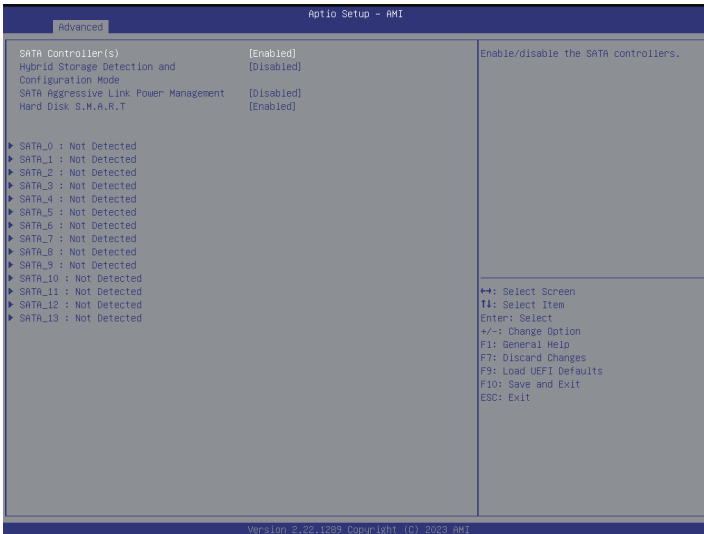
SATA Controller(s)

Enable or disable the SATA controllers.

Hybrid Storage Detection and Configuration Mode

This item allows user to select Hybrid Storage Detection and Configuration Mode.

SATA Aggressive Link Power Management

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

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.

3.3.6 NVME Configuration

```
                              Aptio Setup – AMI
    Advanced

  NVMe Configuration

  No NVME Device Found                                      ↔: Select Screen
                                                            ↑↓: Select Item
                                                            Enter: Select
                                                            +/-: Change Option
                                                            F1: General Help
                                                            F7: Discard Changes
                                                            F9: Load UEFI Defaults
                                                            F10: Save and Exit
                                                            ESC: Exit

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```
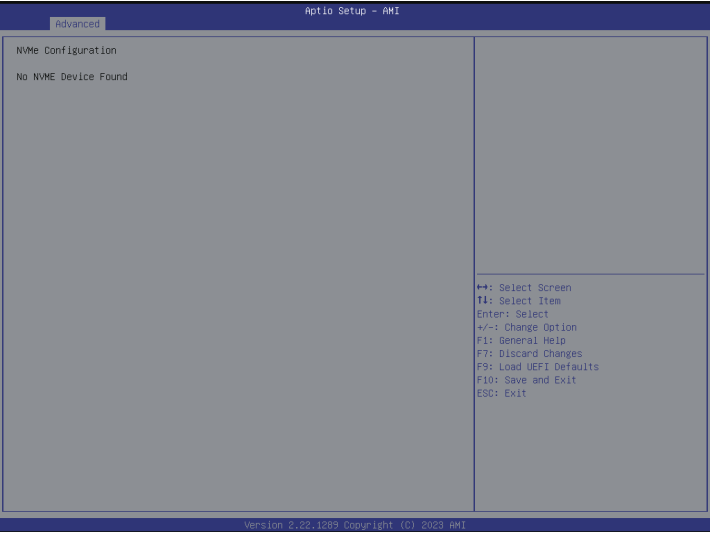
The NVMe Configuration displays the NVMe controller and Drive information.

3.3.7 ACPI Configuration
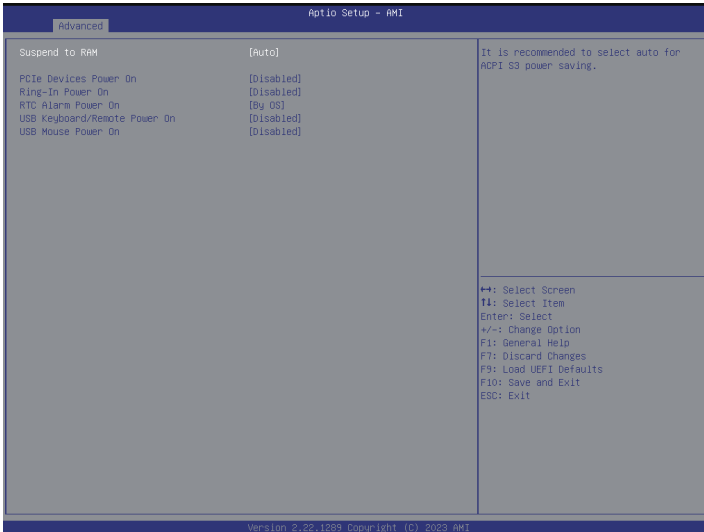
Suspend to RAM

Select disable for ACPI suspend type S1. It is recommended to select auto for ACPI S3 power saving.

PCIe Devices Power On

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

Ring-In Power On

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

RTC Alarm Power On

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

USB Keyboard/Remote Power On

Allow the system to be waked up by an USB keyboard or remote controller.

USB Mouse Power On

Allow the system to be waked up by an USB mouse.

3.3.8 USB Configuration

```
                              Aptio Setup – AMI
        Advanced

 USB Configuration

 USB Module Version                    31

 USB Controllers:
      1 XHCI
 USB Devices:
      1 Drive, 1 Keyboard, 1 Hub



                                               ↔: 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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```
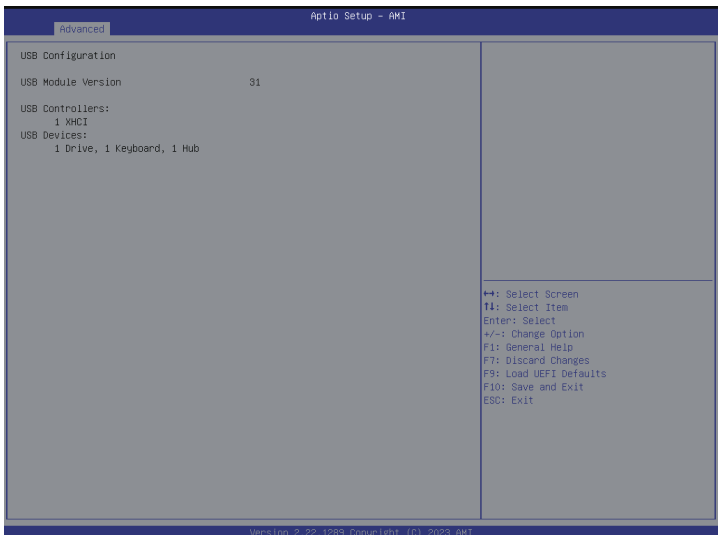
This page displays the information of the USB controllers, USB Module Version and USB devices.

3.3.9 Super IO Configuration

```
                              Aptio Setup - AMI
    Advanced

Serial Port                    [Enabled]              Enable or Disable Serial Port (COM)
  Serial Port Address          [3F8h/IRQ4]




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



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```
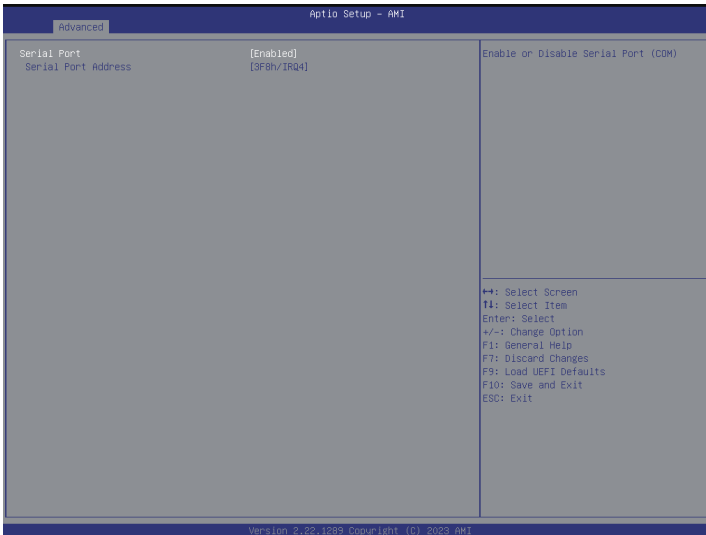
Serial Port

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

Serial Port Address

Use this item to select the address of the serial port.

3.3.10 Serial Port Console Redirection

```
                              Aptio Setup - AMI
       Advanced

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

       Serial Port for Out-of-Band Management/
       Windows Emergency Management Services (EMS)
       Console Redirection EMS             [Disabled]
    ▶ 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

Console Redirection

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

Console Redirection Settings

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

Terminal Type

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

Option	Description
VT100	ASCII character set
VT100Plus	Extended VT100 that supports color and function keys
VT-UTF8	UTF8 encoding is used to map Unicode chars onto 1 or more bytes
ANSI	Extended ASCII character set

Bits Per Second

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

Data Bits

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

Parity

Use this item to select the parity bit. The options include [None], [Even], [Odd], [Mark] and [Space]. A parity bit can be sent with the data bits to detect some transmission errors.Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.

Even: parity bit is 0 if the num of 1's in the data bits is even.

Odd: parity bit is 0 if num of 1's in the data bits is odd.

Mark: parity bit is always 1.

Space: Parity bit is always 0.

Stop Bits

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

Flow Control

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

VT-UTF8 Combo Key Support

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

Recorder Mode

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

Resolution 100x31

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

Putty KeyPad

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

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

Console Redirection EMS

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

Console Redirection Settings

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

Out-of-Band Mgmt Port
Microsoft Windows Emergency Management Services (EMS) allows for remote management of a Windows Server OS through a serial port.

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

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

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

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

Data Bits EMS

Parity EMS

Stop Bits EMS

3.3.11 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, critical voltage and so on.

```
                                    Aptio Setup - AMI
    Advanced

 CPU_TEMP                          : 87 °C              Select a fan mode for Fan, or choose
 TR1                               : N/A                Customize to set 5 CPU temperatures and
 FAN2 Speed                        : N/A                assign a respective fan speed for each
 FAN1 Speed                        : N/A                temperature.
 FAN4 Speed                        : 5555 RPM
 FAN7 Speed                        : N/A
 FAN3 Speed                        : N/A
 FAN5 Speed                        : N/A
 FAN6 Speed                        : N/A
 CPU Vcore Voltage                 : 1.34 V
 +1.05V_PCH Voltage                : 1.1 V
 VDD2 Voltage                      : 1.1 V
 VCCIN_AUX Voltage                 : 1.79 V
 VCCSA Voltage                     : 0.86 V
 +1.05V_PROC Voltage               : 1.04 V
 + 12.00V                          : 11.8 V
 + 5.00V                           : 5.07 V
 + 3.30V                           : 3.34 V
 TEMP_DDR5_A1                      : N/A                ↑↓→←: Select Screen
 TEMP_DDR5_A2                      : 40 °C              ↑↓→←: Select Item
 TEMP_DDR5_B1                      : N/A                Enter: Select
 TEMP_DDR5_B2                      : N/A                +/-: Change Option
 TEMP_MB_1                         : 40 °C              F1: General Help
 TEMP_MB_2                         : 40 °C              F7: Discard Changes
 TEMP_MB_3                         : 37 °C              F9: Load UEFI Defaults
 TEMP_MB_4                         : 30 °C              F10: Save and Exit
                                                        ESC: Exit

 FAN2 Setting                      [Customize]
   Temperature 1                   [30 °C/86 °F]
   Fan Speed for Temperature 1     [20%]
   Temperature 2                   [50 °C/122 °F]
   Fan Speed for Temperature 2     [30%]
   Temperature 3                   [70 °C/158 °F]

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```

Watch Dog Timer

This item allows to enable or disable the Watch Dog Timer.

3.3.12 Runtime Error Logging Settings
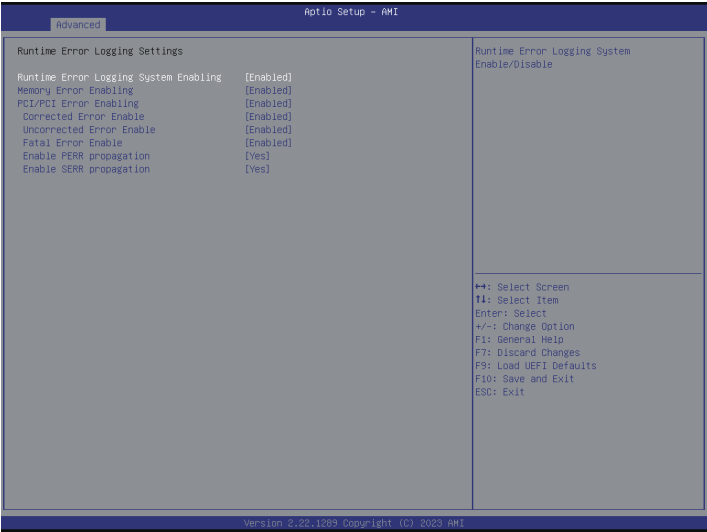
Runtime Error Logging System Enabling

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

Memory Error Enabling

Use this item to enable or disable Memory Error Enabling .

PCI/PCI Error Enabling

Use this item to enable or disable PCI/PCI Error Enabling .

Corrected Error Enable

Use this item to enable or disable Correctad Error.

Uncorrected Error Enable

Use this item to enable or disable Uncorrected Error.

Fatal Error Enable

Use this item to enable or disable Fatal Error.

Enable PERR Propagation

Use this item to enable or disable PERR.

Enable SERR Propagation

Use this item to enable or disable SERR.

3.3.13 Intel ME Configuration


```
                          Aptio Setup - AMI
  Advanced

 ME Version                 16.1.27.2176
 ME FW State                Operational




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



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```
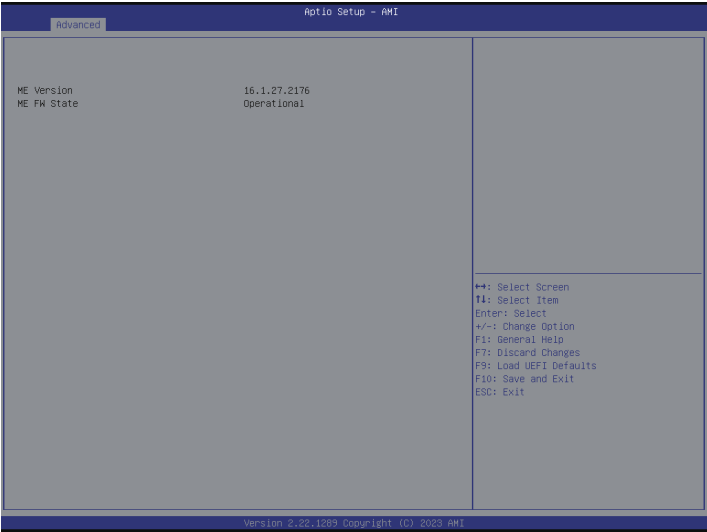
ME Subsystem screen displays the Intel ME Subsystem Configuration information including ME Version and ME Firmware State.

3.3.14 Network Stack Configuration
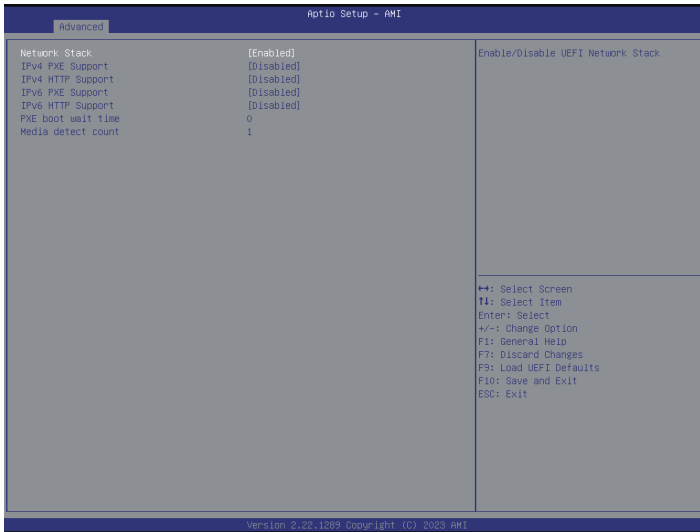
Network Stack

Use this item to enable or disable UEFI Network Stack.

Ipv4 PXE Support

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

Ipv4 HTTP Support

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

Ipv6 PXE Support

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

Ipv6 HTTP Support

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

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 VMD Configuration
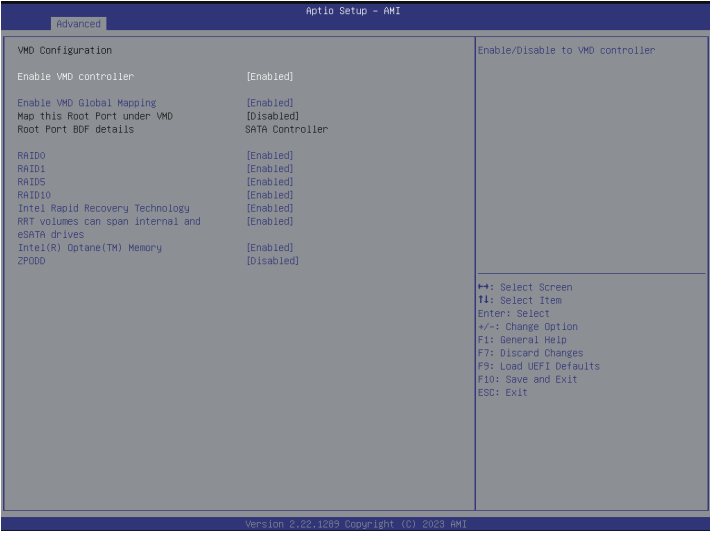
Enable VMD Controller

Use this item to enable or disable VMD Controller.

When enabled, the options below appear.

Enable VMD Global Mapping

Use this item to enable or disable VMD Global Mapping.

Map this Root Port under VMD

Use this item to map or unmap Root Port to VMD.

RAID0/1/5/10

Use this item to enable or disable RAID0/1/5/10 support.

Intel Rapid Recovery Technology

Use this item to enable or disable Intel Rapid Recovery Technology.

RRT Volumes can Span Internal and eSATA Drives

Use this item to enable or disable RRT Volumes to span internal and eSATA drives.

Intel(R) Optane(TM) Memory

Use this item to enable or disable System Acceleration with Intel(R) Optane(TM) Memory feature.

ZP0DD

Use this item to enable or disable ZP0DD. The option is only needed to be enabled when ZP0DD is connected in VMD mode.

3.3.16 Driver Health
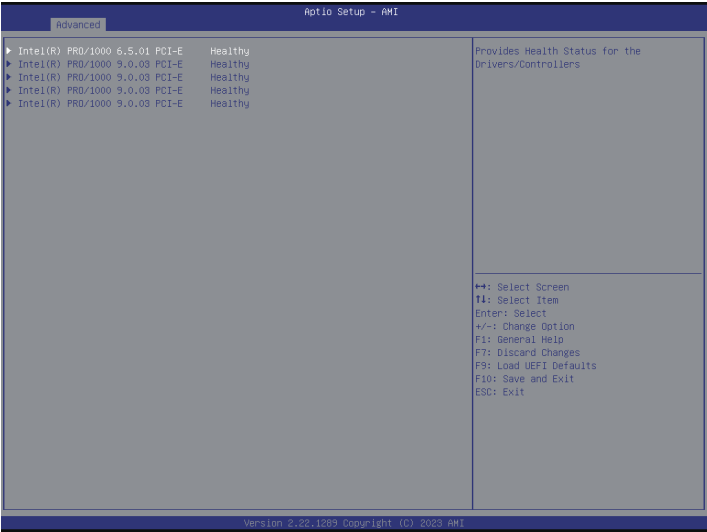
This page provides health status for the drivers/controllers.

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

3.3.17 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                  │
   │                                           │                            │
   │                                           │                            │
   │                                           │                            │
   ├──────────────────────────────────────────┴───────────────────────────┤
   │            Version 2.22.1289 Copyright (C) 2023 AMI                    │
   └──────────────────────────────────────────────────────────────────────┘
```
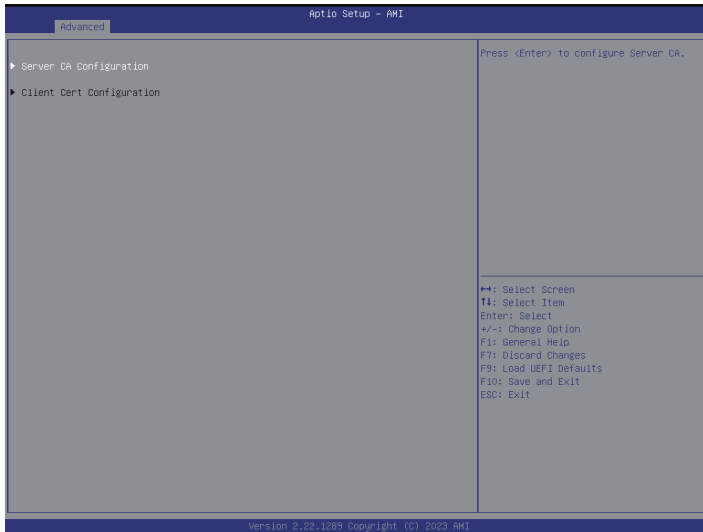
Server CA Configuration

Press <Enter> to configure Server CA.

Client Cert Configuration

Enroll Cert
Press <Enter> to enroll cert.

Delete Cert
Press <Enter> to delete cert.

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

3.4 Security Screen

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

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

 Supervisor Password              Not Installed          Set or change the password for the
 User Password                    Not Installed          administrator account. Only the
                                                         administrator has authority to change
 Supervisor Password                                     the settings in the UEFI Setup Utility.
 User Password                                           Leave it blank and press enter to
                                                         remove the password.
 ▶ Secure Boot



                                                         ↔: 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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```

Supervisor Password

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

User Password

Set or change the password for the user account. Users are unable to change the settings in the UEFI Setup Utility. Leave it blank and press enter to remove the password.
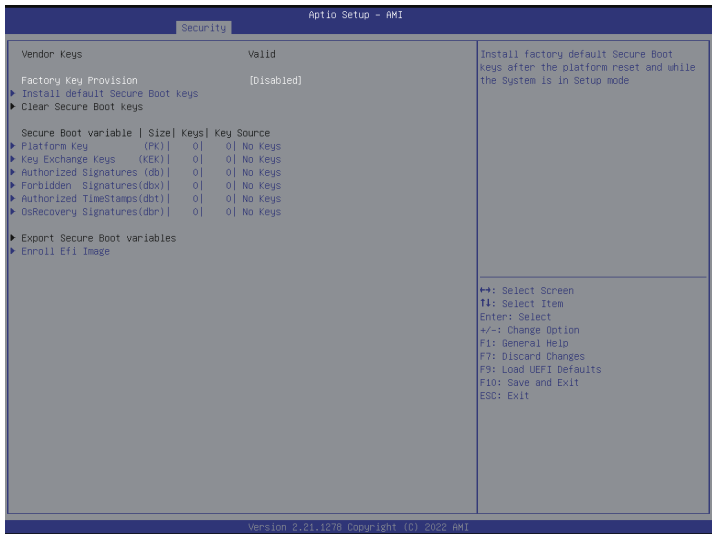
Secure Boot

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

Secure Boot Mode

Enable to support Windows 8 or later versions Secure Boot.

3.4.1 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 to use secure boot.

Clear Secure Boot keys

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

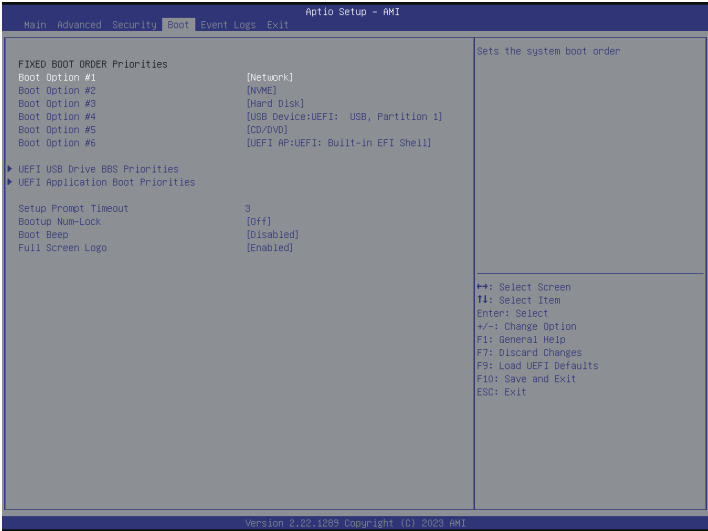### Export Secure Boot variables

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

Enroll Efi Image

Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

3.5 Boot Screen

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

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

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

      ▶ UEFI USB Drive BBS Priorities
      ▶ UEFI Application Boot Priorities

        Setup Prompt Timeout           3
        Bootup Num-Lock                [Off]
        Boot Beep                      [Disabled]
        Full Screen Logo               [Enabled]

                                                              ↔: 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 2.22.1289 Copyright (C) 2023 AMI
```

Boot Option #1~#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.
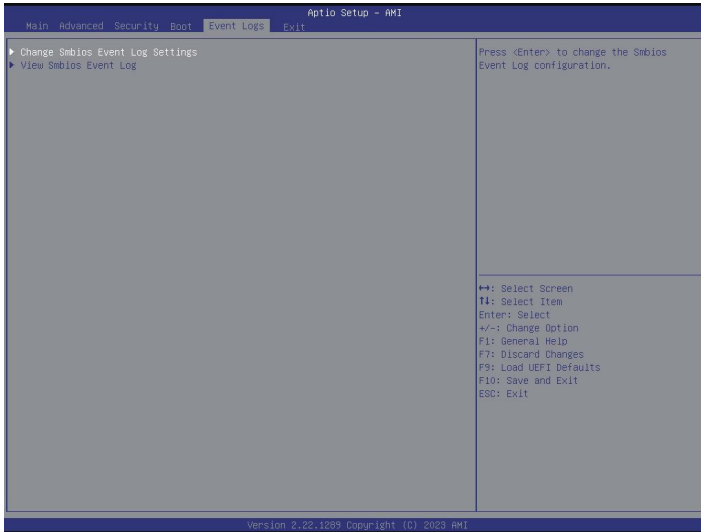
Boot Beep

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

Full Screen Logo

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

3.6 Event Logs

Change Smbios Event Log Settings

This allows user to configure the Smbios Event Log Settings.

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

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

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

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

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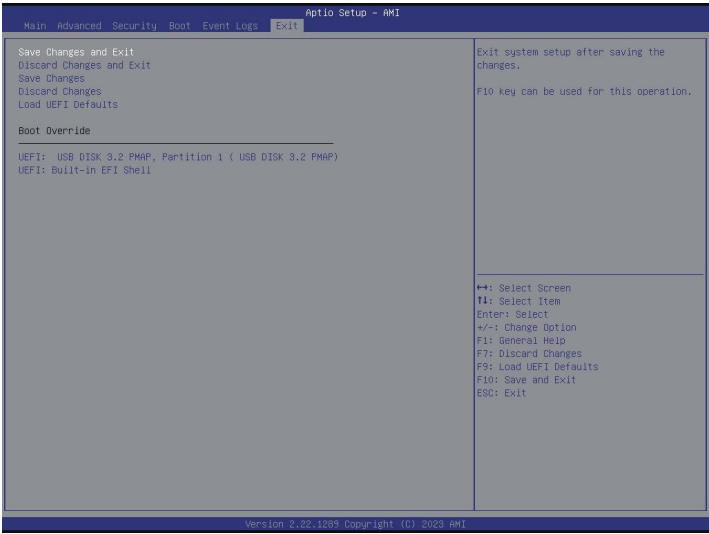Choose option to enable/disable logging of System boot event.

View Smbios Event Log

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

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

3.7 Exit Screen


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

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

 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. Select [Yes] to save all changes.

Discard Changes

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

Load UEFI Defaults

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

Chapter 4 Software Support

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

4.1 Download and Install Operating System

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

*Please download the Intel® SATA Floppy Image 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 our website at http://www.ASRockRack.com.

To download necessary drivers, go the the product page, click on the "Download" tab, choose the operating system used, and select the driver needed to be donwloaded.

4.3 Contact Information

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

English

Chapter 5 Troubleshooting

5.1 Troubleshooting Procedures

Follow the procedures below to troubleshoot the system.

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

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

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

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

If there are memory errors...
1. Verify that the DIMM modules are properly seated in the slots.
2. Use recommended DDR5 ECC / non-ECC UDIMM.
3. If installing more than one DIMM modules, they should be identical with the same brand, speed, size and chip-type.
4. Try inserting different DIMM modules into different slots to identify faulty ones.
5. Check the settings of the 115V/230V switch on the power supply.

Unable to save system setup configurations...
1. Verify if the battery on the motherboard provides ~3VDC. Install a new battery if it does not.
2. Confirm whether the power supply provides adaquate and stable power.

Other problems...

1. Try searching keywords related to the problem on ASRock Rack's FAQ page:
    http://www.asrockrack.com/support

5.2 Technical Support Procedures

If it has tried the troubleshooting procedures mentioned above and the problems are still unsolved, please contact ASRock Rack's technical support with the following information:

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

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

5.3 Returning Merchandise for Service

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

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

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

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

Contact Information

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

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