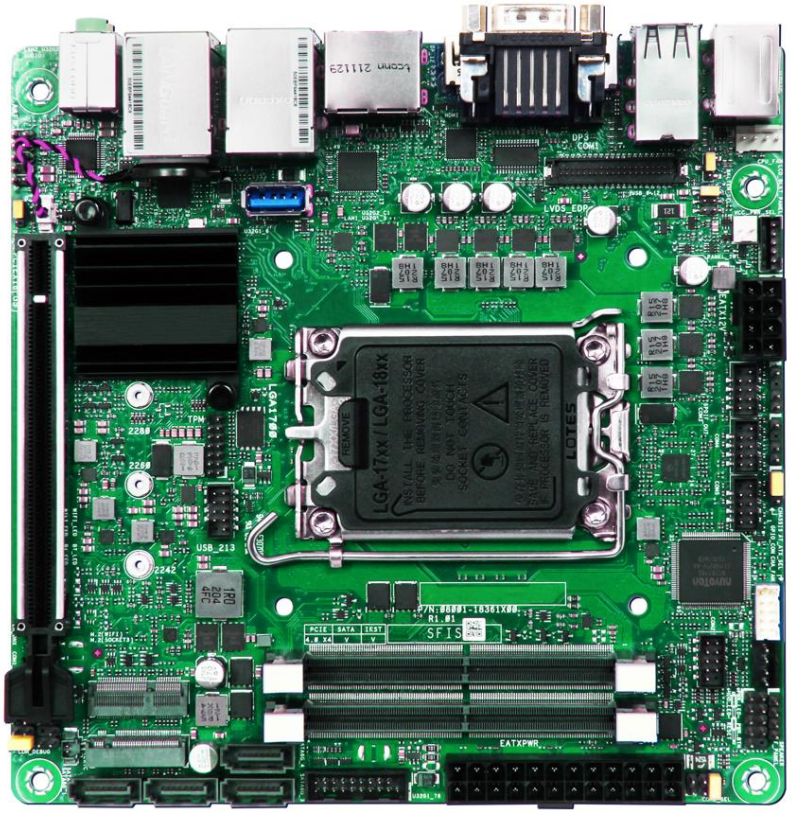
WADE-8213-Q670E

Industrial mini-ITX Board

Version 1.9



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Revision History

R1.0	Preliminary
R1.1	Update SATA RAID support information
R1.2	Update Block Diagram information
R1.3	Update information to support Raptor Lake-S Refresh
R1.4	Update SATA RAID functionality description
R1.5	Update BIOS set up items
R1.6	Update Graphics spec
R1.7	Update TPM header pin define
R1.8	Update HDMI specification
R1.9	Update RTC Battery pin define

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Preface

This user's guide provides information about the components, features, connectors and BIOS Setup menus available on the WADE-8213-Q670E. This document should be referred to when designing mini-ITX application. The other reference documents that should be used include the following:

- ✧ Intel Alder Lake/Raptor Lake/Raptor Lake Refresh Design Guide
- ✧ Intel Alder Lake/Raptor Lake/Raptor Lake Refresh Specification

Please contact Portwell Sales Representative for above documents.

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1 Introduction

WADE-8213-Q670E is based on the Intel® Core™ S Processor which offers 10nm process with Hybrid technology. WADE-8213-Q670E supports dual channels DDR5 SO-DIMM up to 96GB.

Desktop solution is still popular in the market of DVR and Factory Automation which can fulfill most of these applications; therefore, with high performance and high-end specifications, WADE-8213-Q670E is our first generation Alder Lake/Raptor Lake/Raptor Lake Refresh -S chip architecture on mini-ITX line.

2 Specifications

Main Processor	◆ Intel® Alder Lake/Raptor Lake/Raptor Lake Refresh -S Core™ i9 / i7 / i5 / i3, Pentium® and Celeron® Processors
System Chipset	◆ Intel® Q670E Express chipset
System BIOS	◆ AMI UEFI BIOS
Main Memory	◆ Supports two DDR5 dual channel up to 96GB SO-DIMM sockets ◆ Supports DDR5-5600 MT/s 1DPC 1R and DDR5-5200 MT/s 1DPC 2R SO-DIMM memory on all i9,i7 and select i5 SKUs
Graphics	◆ Controller: Intel® UHD 770 Graphics, support DirectX12, OpenGL 4.6 ◆ LVDS: Supports one LVDS up to resolution 1920 x 1200 (Support either eDP or LVDS; switch by BIOS) ◆ DP: Supports three DP up to 4K ◆ HDMI: Supports one HDMI 2.0 port
Expansion Interface	◆ One M.2 (Key E_2230) for Wifi/BT device(PCIe x1 / CNVi) ◆ One M.2 (Key M_2242/2260/2280) for SSD(PCIe x4 / SATA) ◆ One PCIe Gen5 x16 slot(1 x16 mode / 2 x8 mode)
SATA Interface	◆ Four SATA ports(SATA Gen3.0 6Gb/s) ◆ Supports RAID 0,1,5,10
Input/Output	◆ COM Ports: Five Ports: 1x RS-232/422/485 on rear I/O & 1x RS-232/422/485 on board header & 3x RS-232 on board header ◆ USB Port: 3x USB 3.2 Gen2 on rear I/O (2x type A, 1x Type C), 1x USB 3.2 Gen1 on rear I/O (Type A), 1x Header support additional 2x USB3.2 Gen1 ports, 1x USB3.2 Gen1 vertical type A connector, 4x USB2.0(Type A) & 1x Header support additional 2x USB2.0 on board header ◆ Audio Interface: Line-In / Line-Out
Ethernet	◆ Supports one 10/100/1000 Mbps Ethernet port (s) via PCI Express x1 bus ◆ Supports one 10/100/1000/2500 Mbps Ethernet port (s) via PCI Express x1 bus

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High Drive GPIO	◆ One pin-header for GPIO(8bit GPIO)
Mechanical and environmental specifications	◆ Operating temperature: 0 ~ 60° C ◆ Storage temperature: -20 ~ 80° C ◆ Humidity: 5 ~ 95% non-condensing ◆ Power supply voltage: ATX ◆ Board size: 170mm x 170 mm
Safety	◆ CE, FCC

2.1 Supported Operating Systems

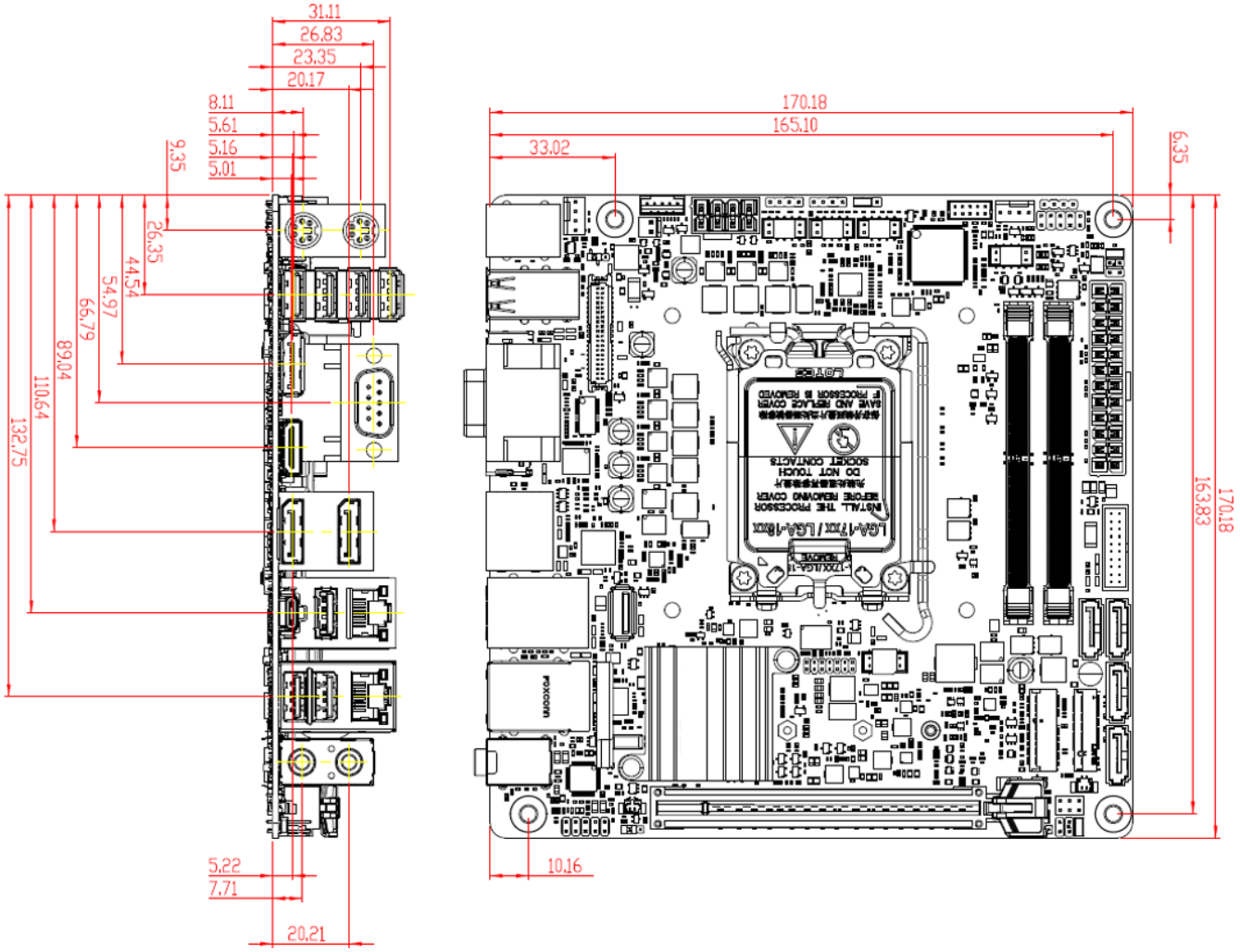
The WADE-8213-Q670E supports the following operating systems.

✧ Windows* 10 IOT Enterprise (64-bit)

✧ Windows* 11 IOT Enterprise (64-bit, Need to pair with TPM function)

✧ Ubuntu, Fedora Workstation, OpenSUSE

2.2 Mechanical Dimensions



2.3 Power Consumption

Test Configuration	
CPU Type	Intel® Core™ i9-12900 CPU @ 1.8GHz
BIOS	1.13.00.92
Memory	Hynix/DDR5 4800 SO-DIMM 32G
VGA Card	Onboard Intel® UHD Graphics 770 driven by XeArchitecture
VGA Driver	Intel® Graphics Accelerator Driver V30.0.101.1002
LAN Card	Onboard Intel® LAN I225
LAN Driver	Intel® Ethernet Connection I225 Version: 1.0.2.14
LAN Card #2	Onboard Intel® I210AT Gigabit Network Connection
LAN Driver #2	Intel® Ethernet Connection I210 Version: 12.18.11.1
Audio Card	Onboard Realtek ALC897 High Definition Audio
Audio Driver	Realtek ALC897 High Definition Audio Version: 6.0.9285.1
Chipset Driver	Intel® Alder lake-S Chipset Device Software Version: 10.1.18838.8284
USB 3.0 Driver	Intel® USB 3.0 eXtensible Host Controller -1.20(Microsoft)
SATA HDD	SK Hynix 512G
Power Supply	AXT PSU: 600W ATX PSU 12V DC IN: ASUS EMA-DCB-A (DC source)

S

Power consumption

ATX:

Source	Voltage	Minimum Load (A)	Max Voltage Tolerance	MB Capacitive Load (uf)	Mean Mean / Max. Mean MB Current w/o peripherals(A)
ATX PSU	+12V	0.216	±5%	1300	6.13 / 7.154
	+5V	0.292	±5%	500	1.834 / 2.067
	+3V	0.169	±5%	100	0.265 / 0.403
	+5VSB_ATX	N/A	±5%	100	0.019 / 0.126
12V DC in	+12V	N/A	±5%	1300	7.484 / 8.43

2.4 Environmental Specifications

Storage Temperature: -20~80°C

Operation Temperature: 0~60°C

Storage Humidity: 5~95%

Operation Humidity: 10~90%

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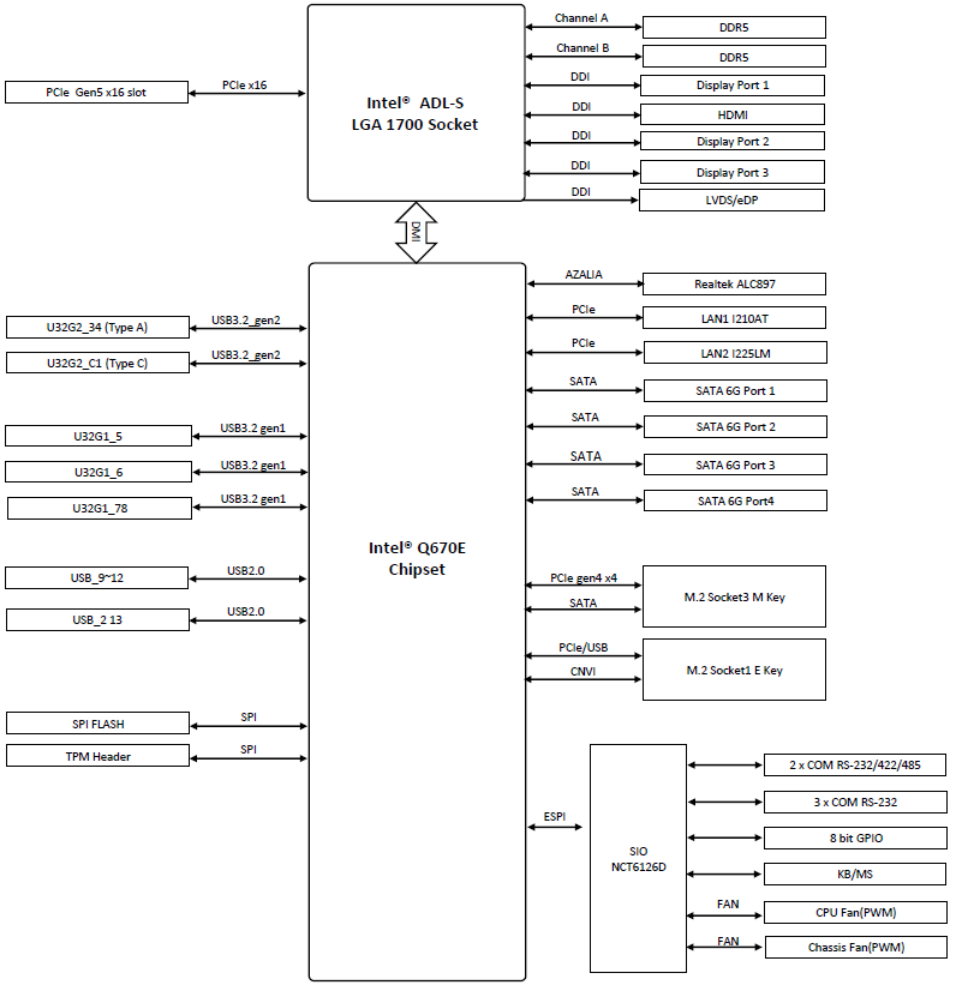
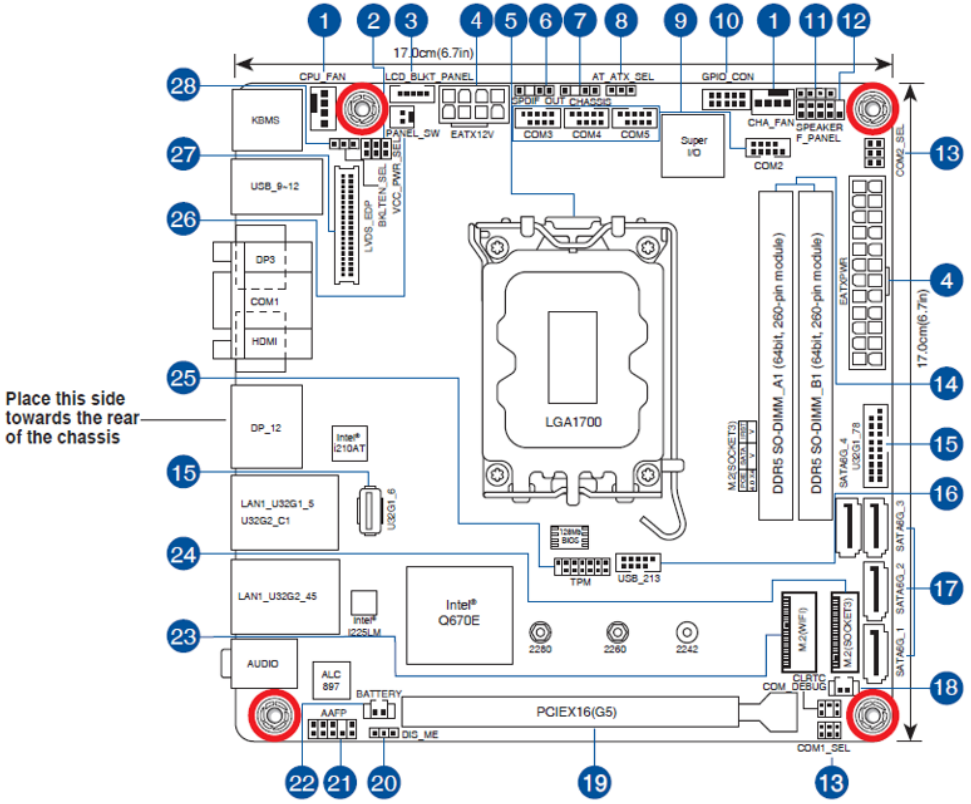
3 Block Diagram



4 Hardware Configuration

4.1 Jumpers and Connectors

This chapter indicates jumpers', headers' and connectors' locations. Users may find useful information related to hardware settings in this chapter.



4.2 Jumpers Settings

For users to customize WADE-8213-Q670E's features. In the following sections, Short means covering a jumper cap over jumper pins; Open or N/C (Not Connected) means removing a jumper cap from jumper pins. Users can refer to Figure 1 for the Jumper allocations.

Jumper Table

The jumper settings are schematically depicted in this manual as follows:

Jumper Function List	
1	CPU and Chassis Fan headers (4-pin CPU_FAN, 4-pin CHA_FAN)
2	Display panel VCC power selection (6-pin VCC_PWR_SEL)
3	LVDS/eDP Backlight panel connector (5-pin LCD_BLKT_PANEL)
4	ATX Power connectors (24-pin EATXPWR, 8-pin EATX12V)
5	Intel LGA1700 CPU socket
6	Digital Audio header (4-1 pin SPDIF_OUT)
7	Chassis Intrude header (4-1 pin CHASSIS)
8	AT/ATX mode selection (3-pin AT_ATX_SEL)
9	Serial Port headers (10-1 pin COM2, COM3, COM4, COM5)
10	General purpose input/output connector (10-pin GPIO_CON)
11	Speaker header (4-pin SPEAKER)
12	System Panel header (10-1 pin F_PANEL)
13	COM1/2 Ring/+5V/+12V selection jumpers (6-pin COM1_SEL, COM2_SEL)

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14	DDR5 SO-DIMM slots
15	USB 3.2 Gen 1 connectors (20-1 pin U32G1_78)/ (U32G1_6)
16	USB 2.0 header (10-1 pin USB_213)
17	SATA 6.0Gb/s ports (7-pin SATA6G_1-4)
18	Clear CMOS header (2-pin CLRTC)
19	PCI Express 5.0 x16 slot
20	Disable ME jumper (3-pin DIS_ME)
21	Front Panel Audio header (10-1 pin AAFP)
22	RTC Battery header (2-pin BATTERY)
23	M.2 Wi-Fi
24	M.2 socket 3
25	SPI TPM header (14-1 pin SPI_TPM)
26	LCD Panel Monitor Switch header (2-pin PANEL_SW)
27	LVDS/eDP Signal connector (LVDS_eDP)
28	LVDS/eDP Panel Enable Signal Selection header (3-pin BKLTEN_SEL)

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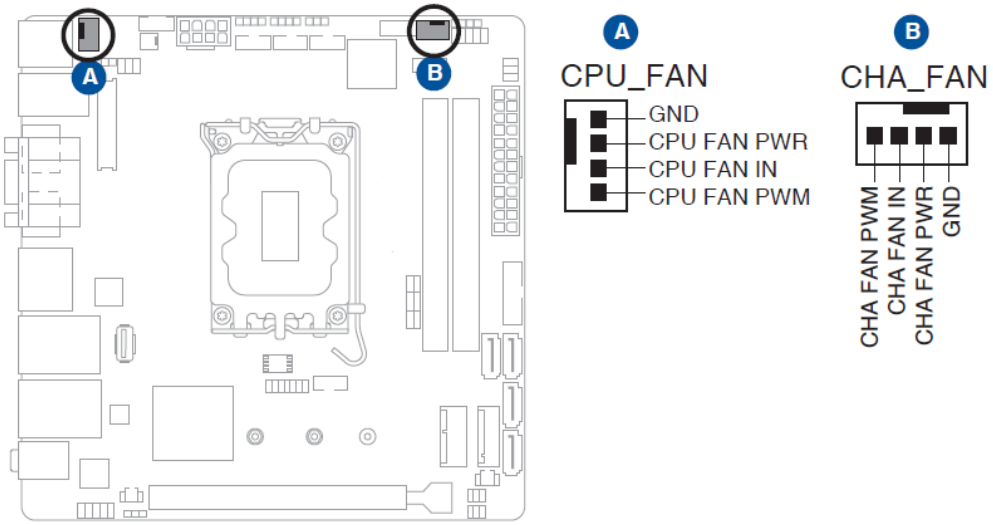
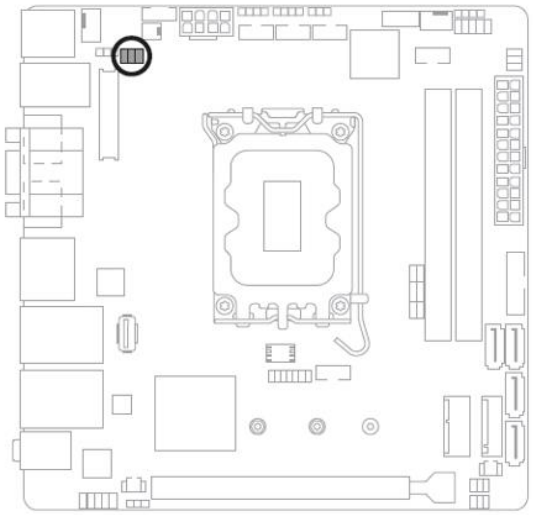
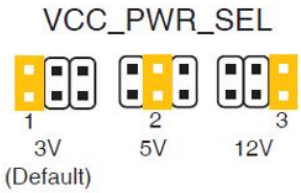
1: CPU and Chassis Fan headers (4-pin CPU_FAN, 4-pin CHA_FAN)



*Connector Type: 2.54mm pitch

2: Display panel VCC power selection (6-pin VCC_PWR_SEL)

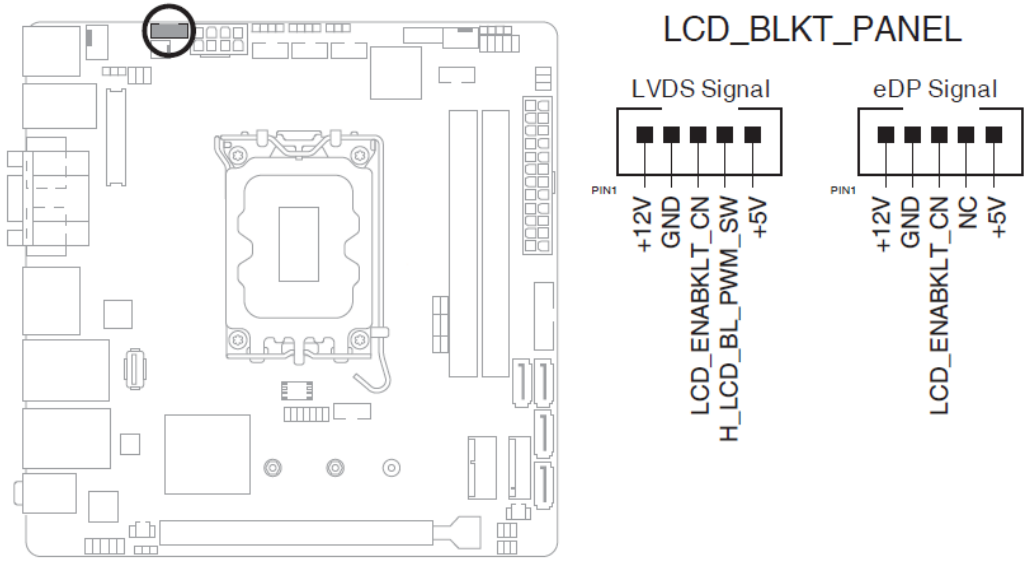




PIN No.	Description
1-2(Short)	3V(Default)
2-3(Short)	5V
5-6(Short)	12V

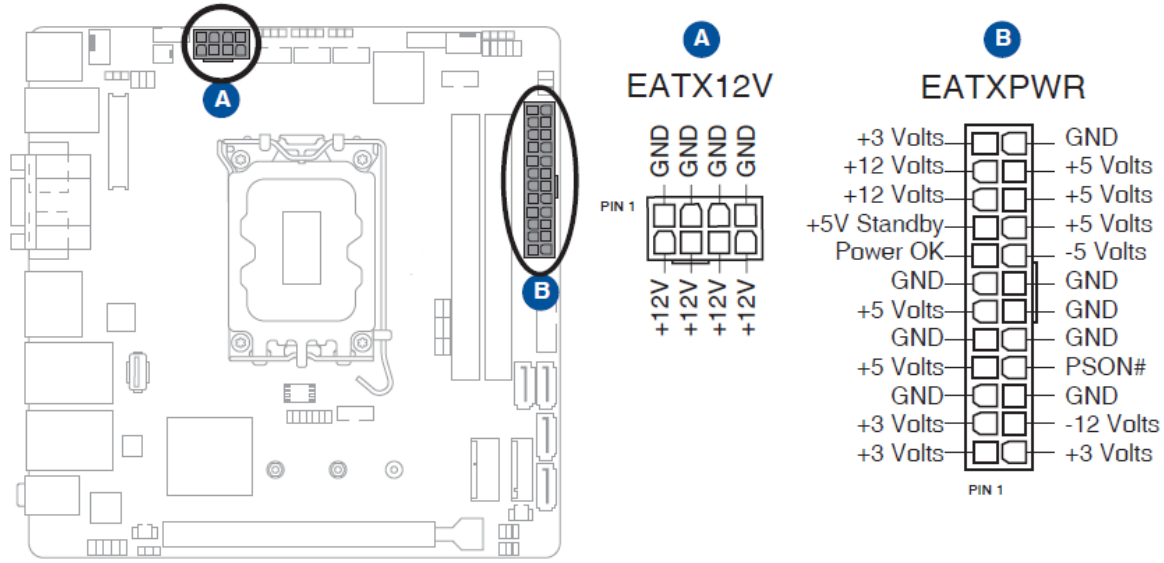
*Connector Type: 2.54mm pitch

3: LVDS/eDP Backlight panel connector (5-pin LCD_BLKT_PANEL)



*Connector Type: 2.0mm pitch

4: ATX Power connectors (24-pin EATXPWR, 8-pin EATX12V)



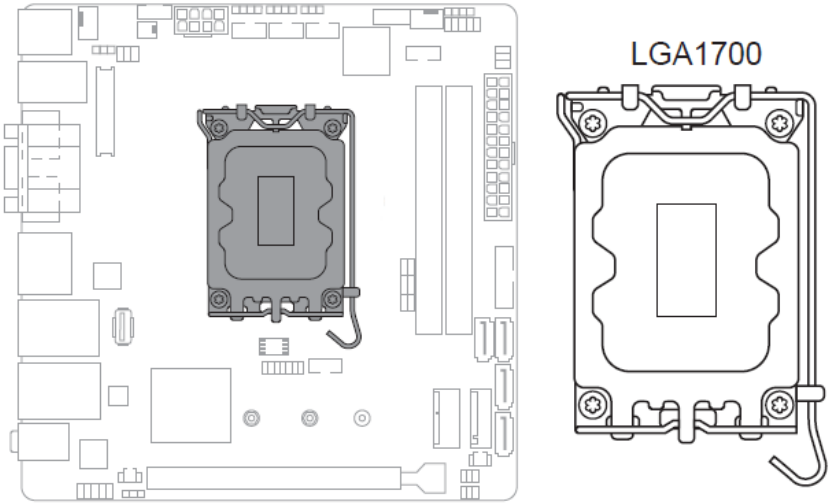
DC Mode EATXPWR

PIN No.	Description	PIN No.	Description	PIN No.	Description	PIN No.	Description
1	+3.3V out	7	GND	13	+3.3V out	19	GND
2	+3.3V out	8	NC	14	NC	20	+12V out
3	GND	9	NC	15	GND	21	+5V out
4	+5V out	10	+12V in	16	PSON#	22	+5V out
5	GND	11	+12V in	17	GND	23	+5V out
6	+5V out	12	+3.3V out	18	GND	24	GND

DC Mode EATX12V

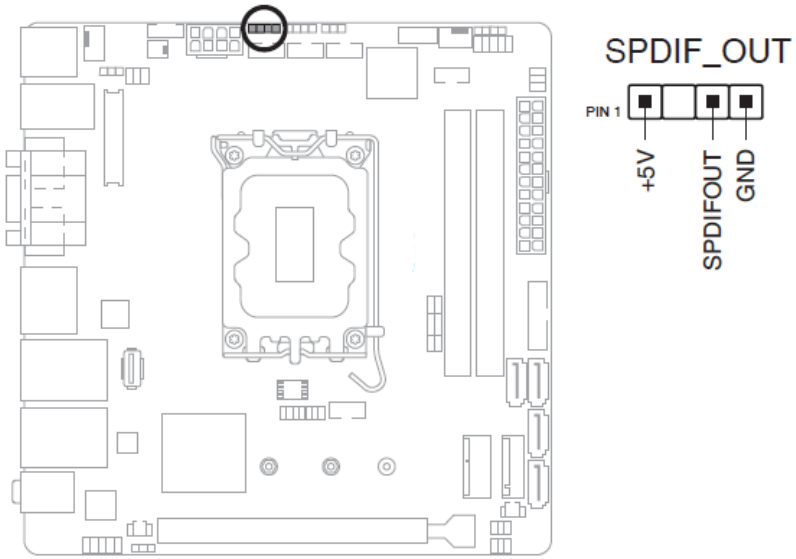
PIN No.	Description	PIN No.	Description
1	GND	5	+12V in
2	GND	6	+12V in
3	GND	7	+12V in
4	GND	8	+12V in

5: Intel LGA1700 CPU socket



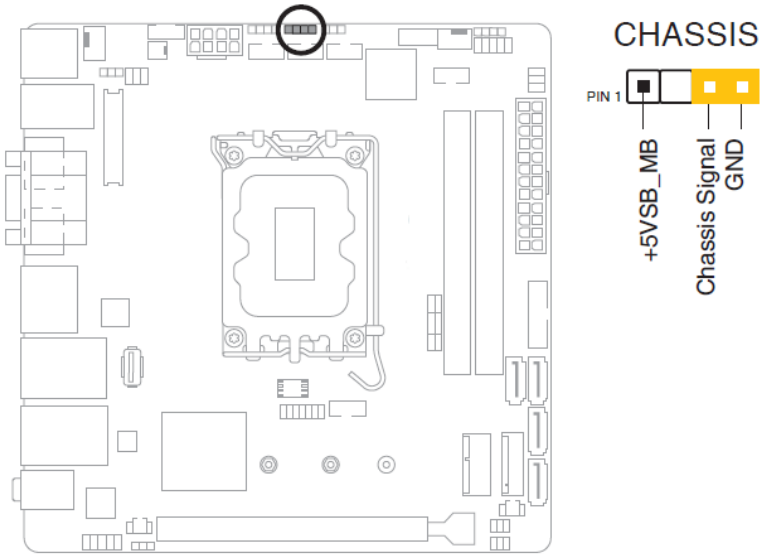
- Unplug all power cables before installing the CPU.

6: Digital Audio header (4-1 pin SPDIF_OUT)



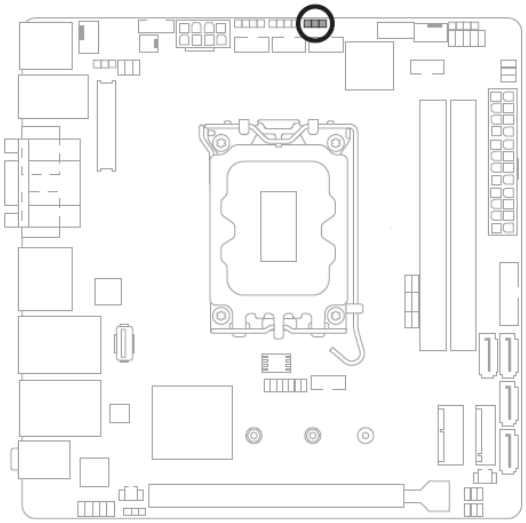
*Connector Type: 2.54mm pitch

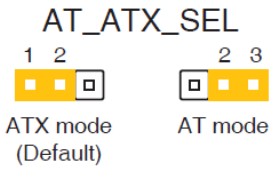
7: Chassis Intrude header (4-1 pin CHASSIS)



*Connector Type: 2.54mm pitch

8: AT/ATX mode selection (3-pin AT_ATX_SEL)

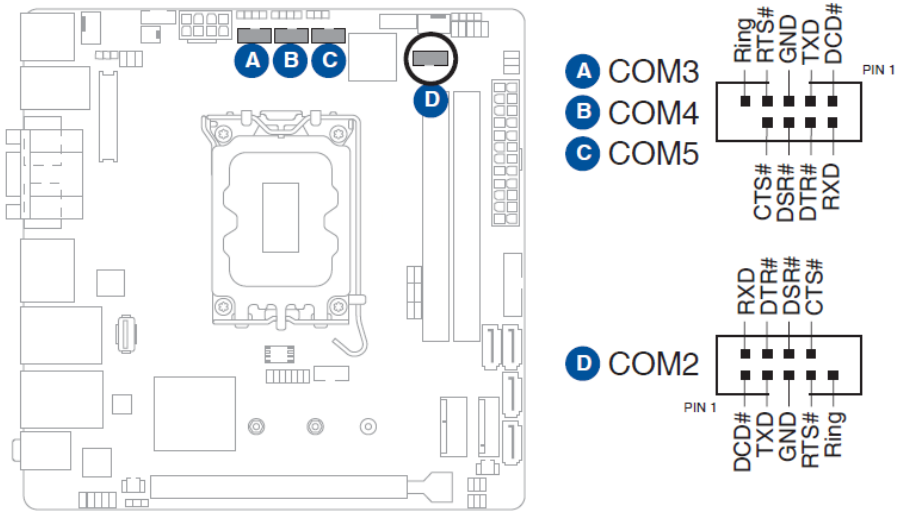




PIN No.	Description
1-2(Default)	ATX mode
2-3	AT mode

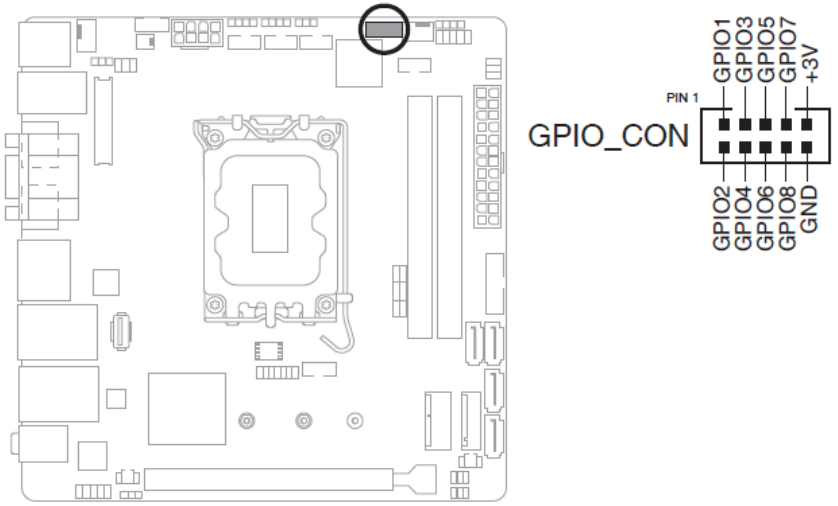
*Connector Type: 2.54mm pitch

9: Serial Port headers (10-1 pin COM2, COM3, COM4, COM5)



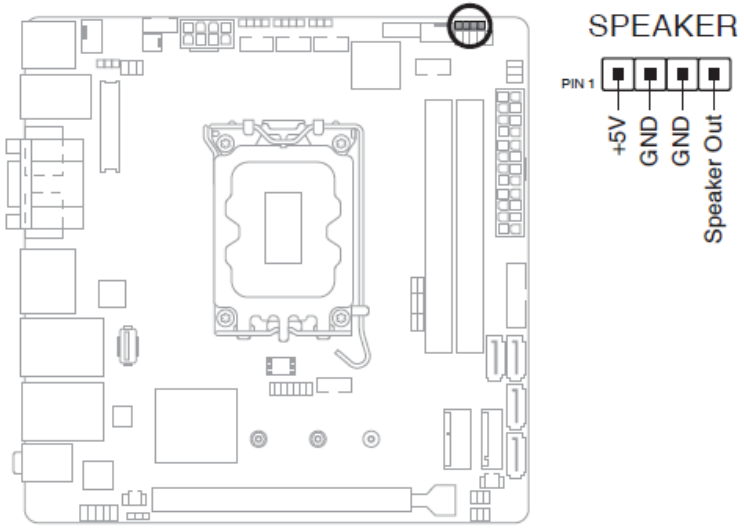
*Connector Type: 2.0mm pitch

10: General purpose input/output connector (10-pin GPIO_CON)



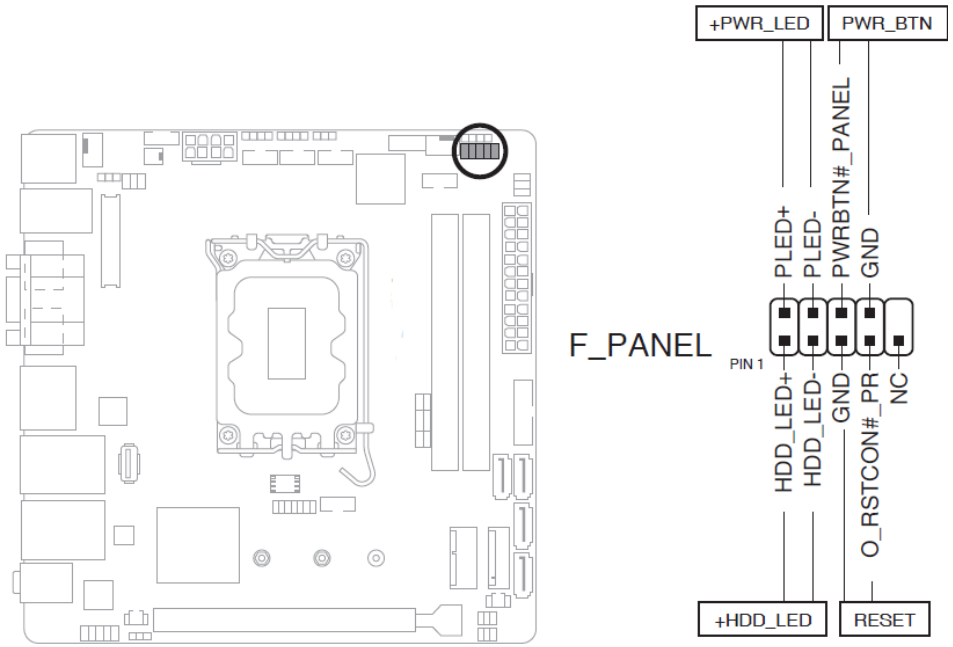
*Connector Type: 2.0mm pitch

11: Speaker header (4-pin SPEAKER)



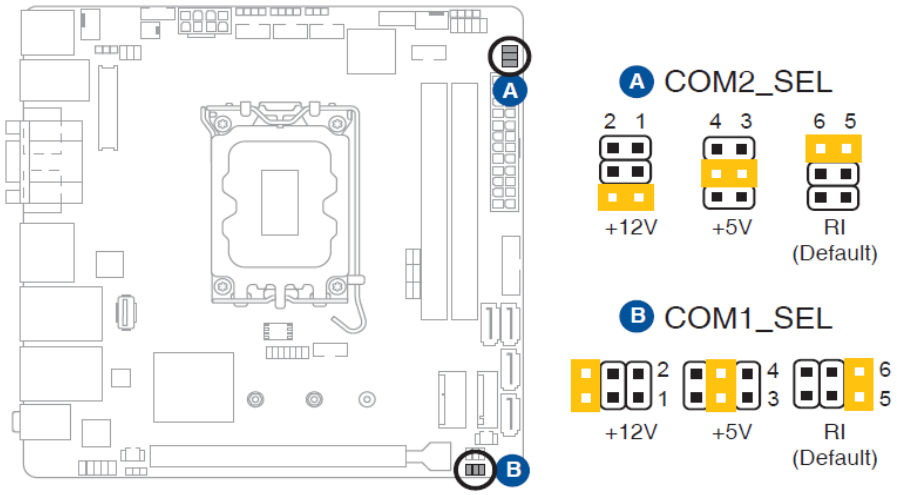
*Connector Type: 2.54mm pitch

12: System Panel header (10-1 pin F_PANEL)



*Connector Type: 2.54mm pitch

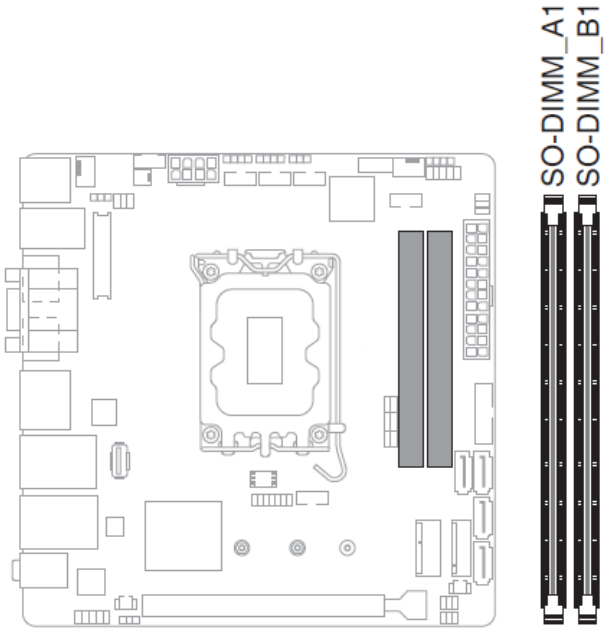
13: COM1/2 Ring/+5V/+12V selection jumpers (6-pin COM1_SEL, COM2_SEL)



PIN No.	Description
1-2	+12V
3-4	+5V
5-6	Ring(Default)

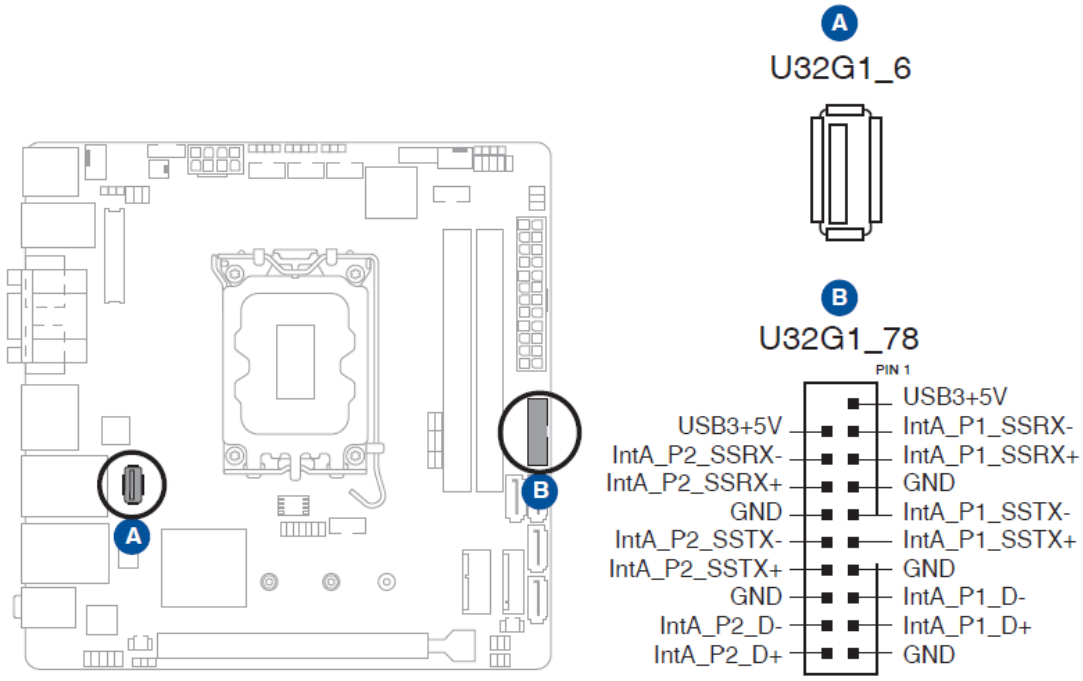
*Connector Type: 2.54mm pitch

14: DDR5 SO-DIMM slots

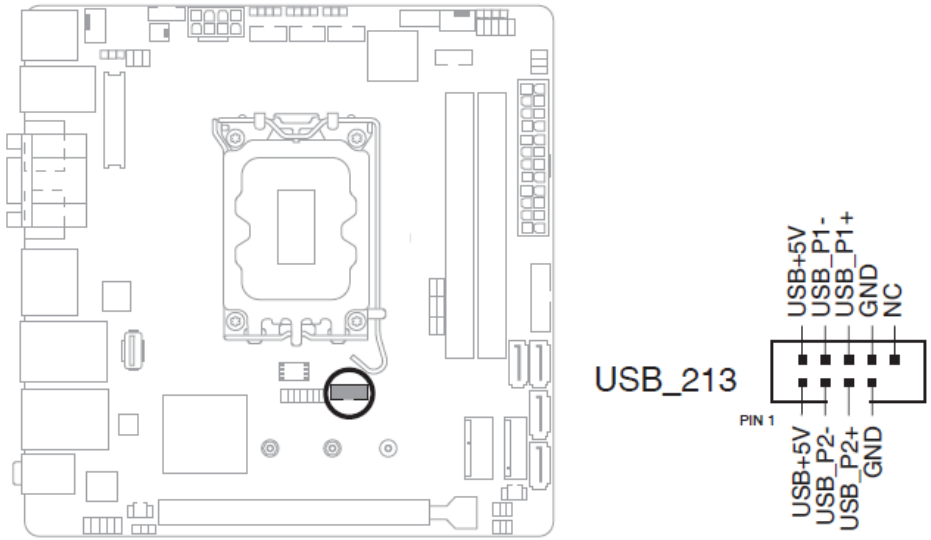


Channel	Sockets
Channel A	SO-DIMM_B1
Channel B	SO-DIMM_A1

15: USB 3.2 Gen 1 connectors (20-1 pin U32G1_78)/ (U32G1_6)

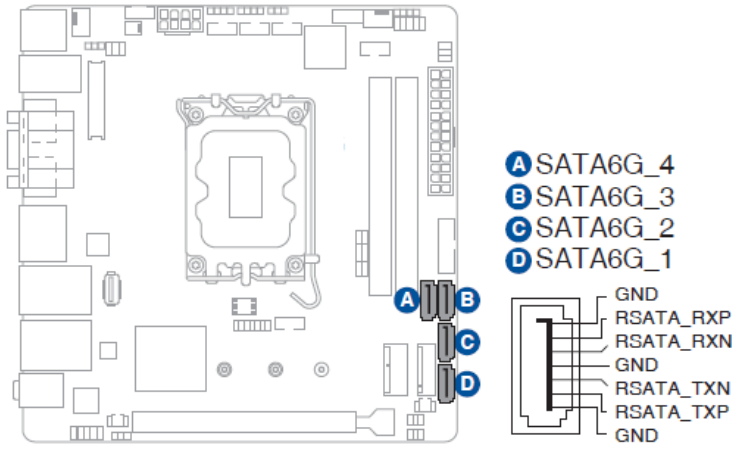


16: USB 2.0 header (10-1 pin USB_213)

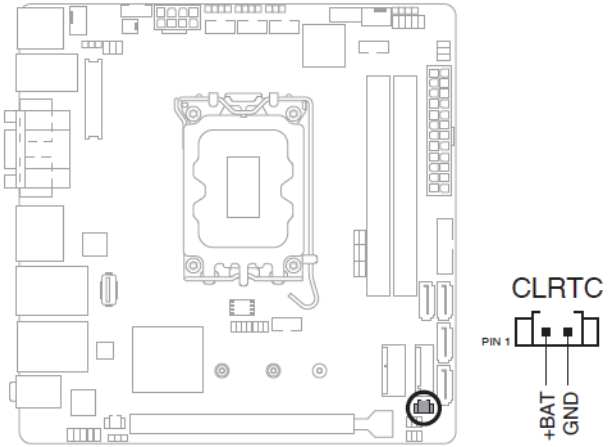


*Connector Type: 2.0mm pitch

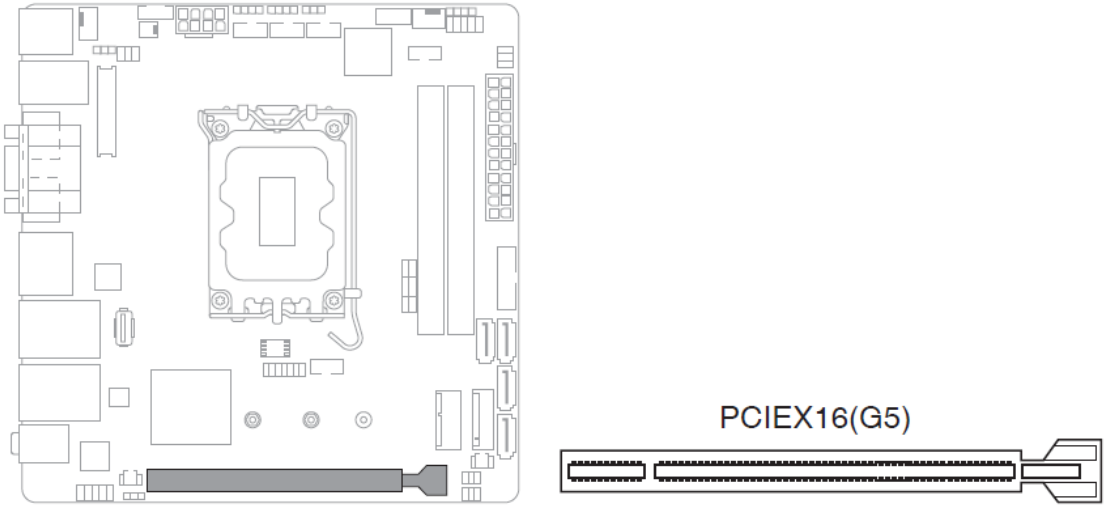
17: SATA 6.0Gb/s ports (7-pin SATA6G_1-4)



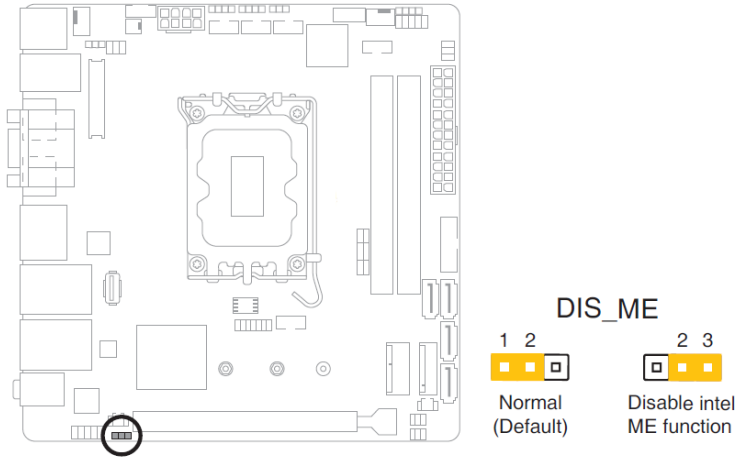
18: Clear CMOS header (2-pin CLRTC)



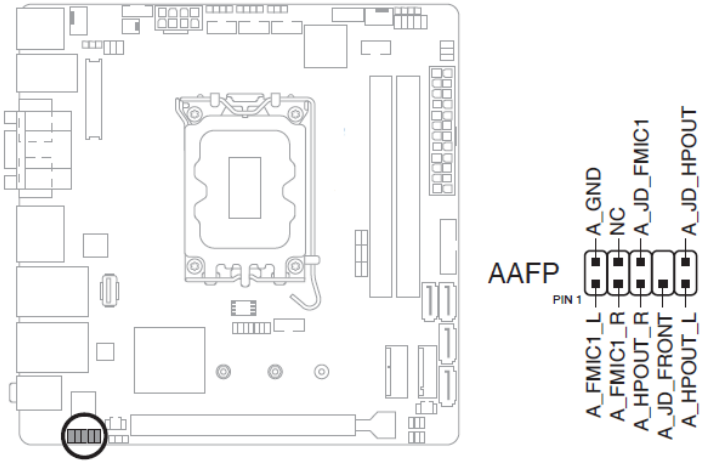
19: PCI Express 5.0 x16 slot



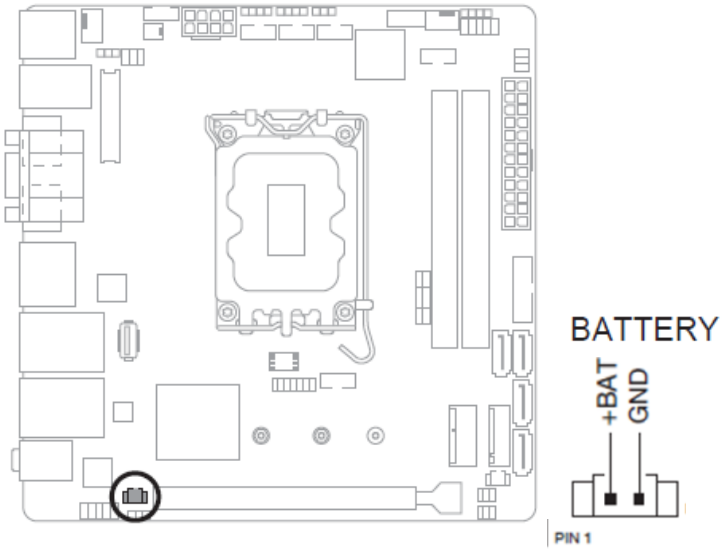
20: Disable ME jumper (3-pin DIS_ME)



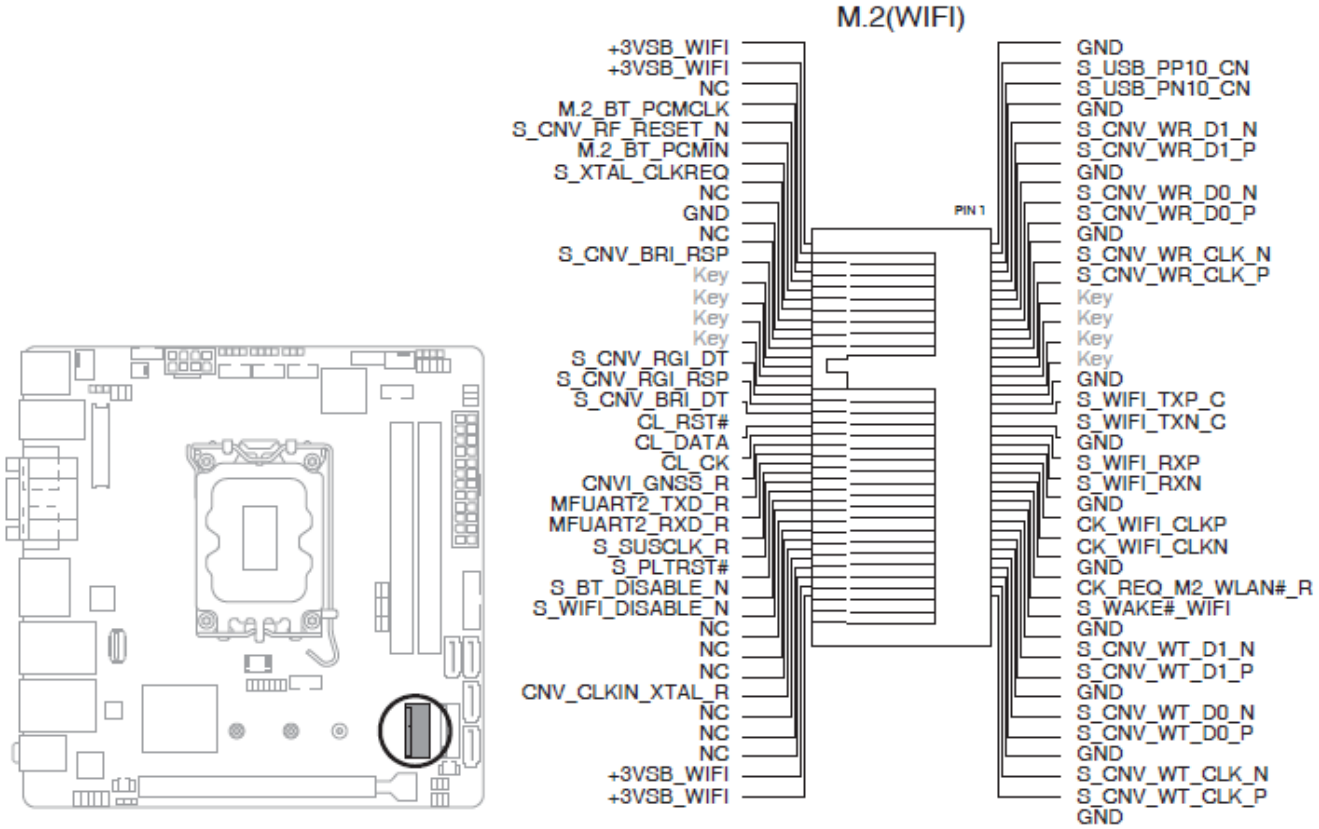
21: Front Panel Audio header (10-1 pin AAFP)



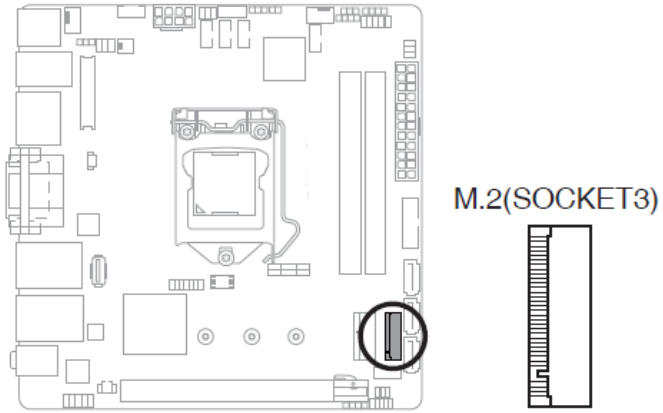
22: RTC Battery header (2-pin BATTERY)



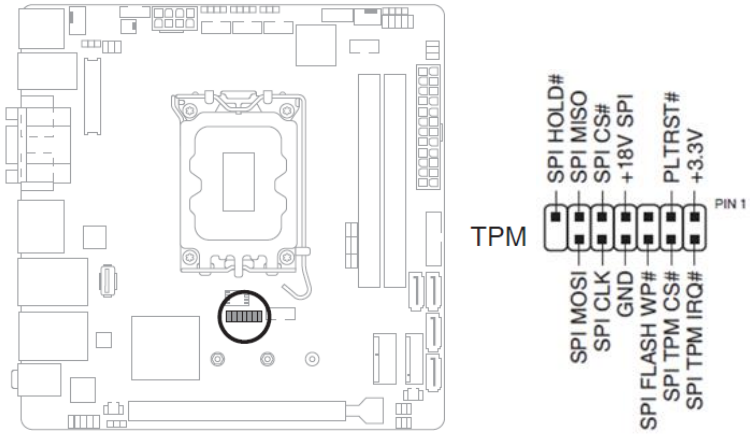
23: M.2 Wi-Fi


M.2(WIFI)
PIN 1
+3VSB_WIFI
+3VSB_WIFI
NC
M.2_BT_PCMCLK
S_CNV_RF_RESET_N
M.2_BT_PCMIN
S_XTAL_CLKREQ
NC
GND
NC
S_CNV_BRI_RSP
Key
Key
Key
Key
S_CNV_RGI_DT
S_CNV_RGI_RSP
S_CNV_BRI_DT
CL_RST#
CL_DATA
CL_CK
CNVI_GNSS_R
MFUART2_TXD_R
MFUART2_RXD_R
S_SUSCLK_R
S_PLTRST#
S_BT_DISABLE_N
S_WIFI_DISABLE_N
NC
NC
NC
CNV_CLKIN_XTAL_R
NC
NC
NC
+3VSB_WIFI
+3VSB_WIFI
GND
S_USB_PP10_CN
S_USB_PN10_CN
GND
S_CNV_WR_D1_N
S_CNV_WR_D1_P
GND
S_CNV_WR_D0_N
S_CNV_WR_D0_P
GND
S_CNV_WR_CLK_N
S_CNV_WR_CLK_P
Key
Key
Key
Key
GND
S_WIFI_TXP_C
S_WIFI_TXN_C
GND
S_WIFI_RXP
S_WIFI_RXN
GND
CK_WIFI_CLKP
CK_WIFI_CLKN
GND
CK_REQ_M2_WLAN#_R
S_WAKE#_WIFI
GND
S_CNV_WT_D1_N
S_CNV_WT_D1_P
GND
S_CNV_WT_D0_N
S_CNV_WT_D0_P
GND
S_CNV_WT_CLK_N
S_CNV_WT_CLK_P
GND

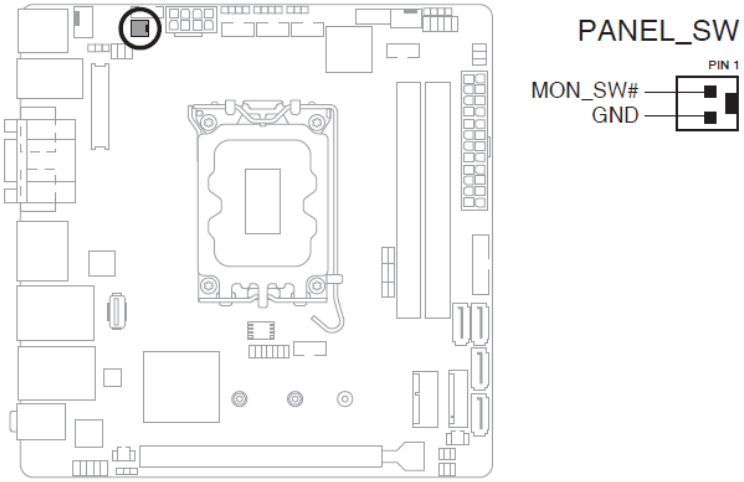
24: M.2 socket 3



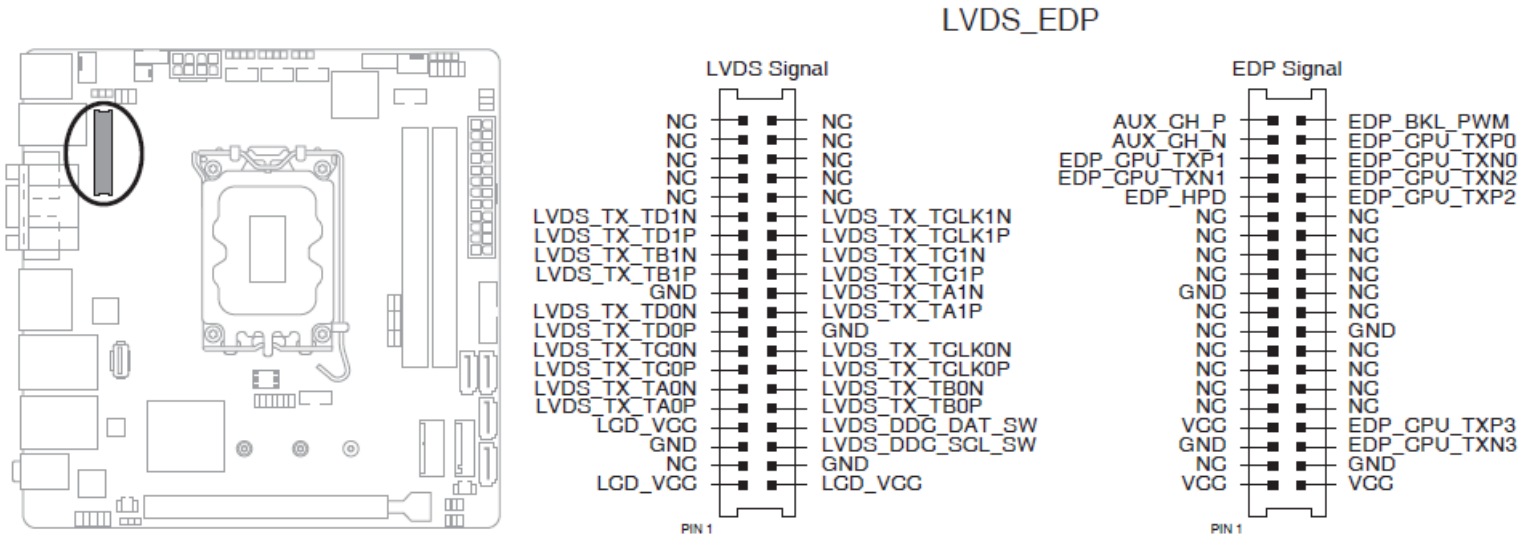
25: SPI TPM header (14-1 pin SPI_TPM)



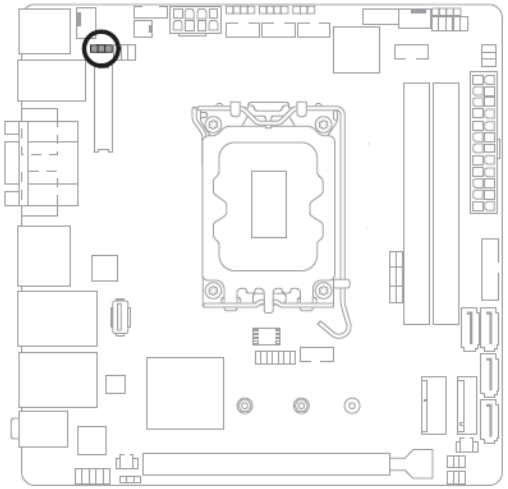
26: LCD Panel Monitor Switch header (2-pin PANEL_SW)

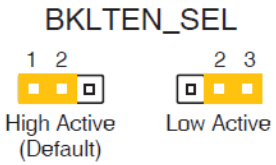


27: LVDS/eDP Signal connector (LVDS_eDP)



28: LVDS/eDP Panel Enable Signal Selection header (3-pin BKLTEN_SEL)





PIN No.	Description
1-2(Default)	High Active
2-3	Low Active

*Connector Type: 2.54mm pitch

5 Signal Descriptions

5.1 Watch Dog Signal

WDT setting

SIO_INDEX_PORT is 0x2E
SIO_DATA_PORT is 0x2F

1. Set WDT Time Unit

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT,    0x08);
Outportb(SIO_INDEX_PORT, 0xF0); //select WDT setting
val = Inportb(SIO_DATA_PORT) // Read current WDT setting

val = val | 0x08; // minute mode, val = val & 0xF7 if second mode
Outportb(SIO_INDEX_PORT, 0xF0); //select WDT setting
Outportb(SIO_DATA_PORT,    val); // Write back WDT setting

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

2. Set WDT Time

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT,    0x08);
Outportb(SIO_INDEX_PORT, 0xF1); //select time value
Outportb(SIO_DATA_PORT,    Time); // Write WDT time, value 1 to 255

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

3. Enable WDT

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07); // select device
Outportb(SIO_DATA_PORT,    0x08); // device 8
Outportb(SIO_INDEX_PORT, 0x30); //select WDT status port
val = Inportb(SIO_DATA_PORT) // Read current WDT status

val = val | 0x01; // Enable WDT Timer
Outportb(SIO_INDEX_PORT, 0x30); //select WDT status port
```

```
Outportb(SIO_DATA_PORT,    val); // Write back WDT status

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

4. Disable WDT

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT,    0x08);
Outportb(SIO_INDEX_PORT, 0xF1); //select time value
Outportb(SIO_DATA_PORT,    0x00); // Clear WDT time, it means WDT Time-Out disable
Outportb(SIO_INDEX_PORT, 0x30); //select WDT status port

val = Inportb(SIO_DATA_PORT) // Read current WDT status
val = val & 0xFE; // Disable WDT Timer
Outportb(SIO_INDEX_PORT, 0x30); //select WDT status port
Outportb(SIO_DATA_PORT,    val); // Write back WDT status

Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

5. WADE-8213-Q670E SIO not support WDT Reset Flag judgement.

5.2 GPIO Signal

GPIO Setting

SIO_INDEX_PORT is 0x2E
SIO_DATA_PORT is 0x2F

1. Set GPIOn to GPI or GPO

```
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

Outportb(SIO_INDEX_PORT, 0x07);
Outportb(SIO_DATA_PORT,    0x07);

Outportb(SIO_INDEX_PORT, 0x30);
val = Inportb(SIO_DATA_PORT)
val = val | 0x10;
Outportb(SIO_INDEX_PORT, 0x30);
Outportb(SIO_DATA_PORT,    val); // Active GPIO

Outportb(SIO_INDEX_PORT, 0xF0);
val = Inportb(SIO_DATA_PORT) // Read current value
val = val | (0x01 << GPIOn); // GPO, val = val & ~(0x01 << GPIOn); if GPI, GPIOn is value 0 to 7
Outportb(SIO_INDEX_PORT, 0xF0);
```

```
    Outportb(SIO_DATA_PORT,    val);

    Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

2. Get GPIOn GPI value

```
    Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
    Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

    Outportb(SIO_INDEX_PORT, 0x07);
    Outportb(SIO_DATA_PORT,    0x07);

    Outportb(SIO_INDEX_PORT, 0x30);
    val = Inportb(SIO_DATA_PORT)
    val = val | 0x10;
    Outportb(SIO_INDEX_PORT, 0x30);
    Outportb(SIO_DATA_PORT,    val); // Active GPIO

    Outportb(SIO_INDEX_PORT, 0xF1);
    val = Inportb(SIO_DATA_PORT) // Read current value

    Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO

    if (val & (0x01 << GPIOn)) // Determine if GPIOn is High or Low; GPIOn is value 0 to 7
          return HIGH; //GPI High
```

```
    else
        return LOW; //GPI Low
```

3. Set GPIOn GPO value

```
    Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO
    Outportb(SIO_INDEX_PORT, 0x87); // Unlock SIO

    Outportb(SIO_INDEX_PORT, 0x07);
    Outportb(SIO_DATA_PORT,    0x07);

    Outportb(SIO_INDEX_PORT, 0x30);
    val = Inportb(SIO_DATA_PORT)
    val = val | 0x10;
    Outportb(SIO_INDEX_PORT, 0x30);
    Outportb(SIO_DATA_PORT,    val); // Active GPIO

    Outportb(SIO_INDEX_PORT, 0xF1);
    val = Inportb(SIO_DATA_PORT) // Read current value
    val = val | (0x01 << GPIOn); // GPO LOW, val = val & ~(0x01 << GPIOn); if GPO High, GPIOn is value 0 to 7
    Outportb(SIO_INDEX_PORT, 0xF1);
    Outportb(SIO_DATA_PORT,    val);

    Outportb(SIO_INDEX_PORT, 0xAA); // Lock SIO
```

6 System Resources

6.1 Intel® PCH

Intel® Q670E Chipset

6.2 Main Memory

WADE-8213-Q670E provides 2x SO-DIMM sockets. The maximum memory can be up to 96GB.
Watch out the contact and lock integrity of memory module with socket, it will impact on the system reliability. Follow normal procedures to install memory module into memory socket. Before locking, make sure that all modules have been fully inserted into the card slots.

6.3 Installing the Single Board Computer

To install your WADE-8213-Q670E into standard chassis or proprietary environment, please perform the following:
Step 1 : Check all jumpers setting on proper position
Step 2 : Install and configure CPU,CPU cooling and memory module on right position
Step 3 : Place WADE-8213-Q670E into the dedicated position in the system
Step 4 : Attach cables to existing peripheral devices and secure it

WARNING

Please ensure that mother board is properly inserted and fixed by mechanism.

Note:

Please refer to section 6.3.1 to 6.3.3 to install INF/Graphic/LAN

6.3.1 Chipset Component Driver

WADE-8213-Q670E is based on Intel® Q670E chipset and desktop processors including Core™ i9 / i7 / i5 / i3 sku . It's a new chipset that some old operating systems might not be able to recognize. To overcome this compatibility issue, for Windows Operating Systems such as Windows 10, please install its INF before any of other Drivers are installed.

6.3.2 Intel® UHD 770 Graphics

WADE-8213-Q670E has integrated Intel® UHD 770 Graphics which supports DirectX 12, OpenGL 4.6. It is the most advanced design to gain an outstanding graphic performance. WADE-8213-Q670E supports DP, HDMI, eDP/LVDS display output. This combination makes WADE-8213-Q670E an excellent performance hardware.

Drivers Support

Please find the Graphic driver in the WADE-8213-Q670E of Portwell download center. The driver supports Windows 10.

6.3.3 Intel LAN I225LM / I210AT Gigabit Ethernet Controller

- Intel I225 Gigabit Ethernet controller and 1x RJ45 connectors on rear I/O
- Intel I210 Gigabit Ethernet controller and 1x RJ45 connectors on rear I/O

Drivers Support

Please find Intel I225LM / I210AT LAN driver in the WADE-8213-Q670E of Portwell download center. The driver supports Windows 10 and Windows 11.

7 BIOS Setup Items

7.1 Introduction

The following section describes the BIOS setup program. The BIOS setup program can be used to view and change the BIOS settings for the module. Only experienced users should change the default BIOS settings.

7.2 BIOS Setup

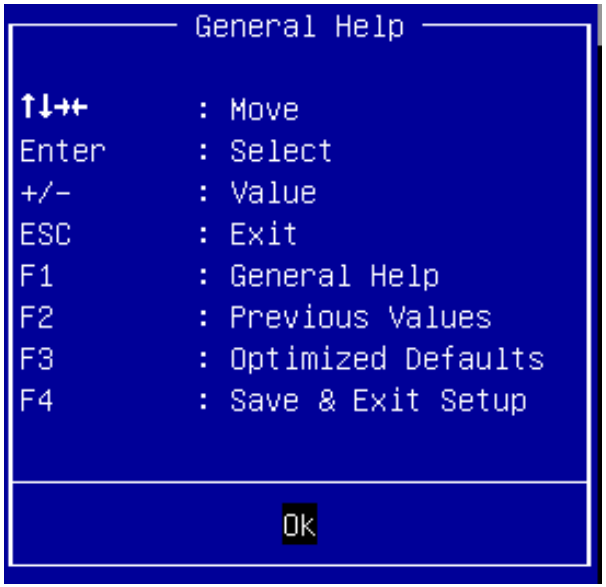
Power on the computer and the system will start POST (Power on Self Test) process. When the message below appears on the screen, press <Delete> or <ESC> key will enter BIOS setup screen.

Press<Delete> or <ESC> to enter SETUP

If the message disappears before responding and still wish to enter Setup, please restart the system by turning it OFF and On or pressing the RESET button. It can be also restarted by pressing <Ctrl>, <Alt>, and <Delete> keys on keyboard simultaneously.

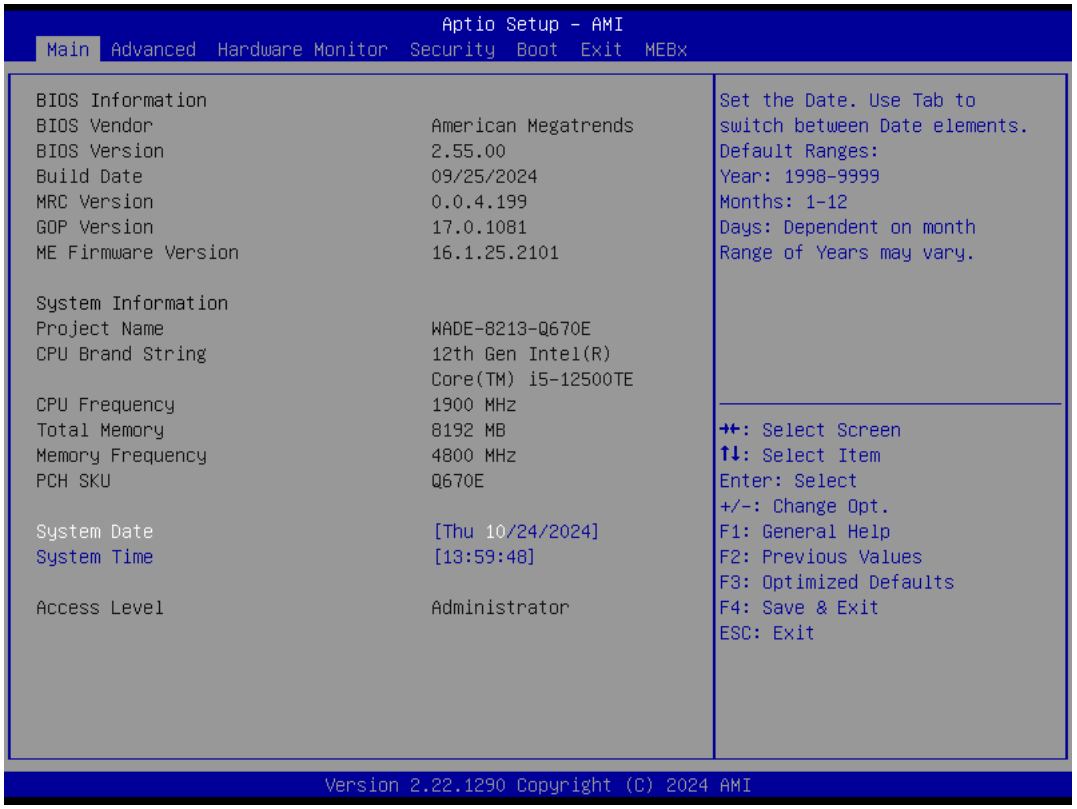
Press <F1> to Run General Help or Resume

The BIOS setup program provides a General Help screen. The menu can be easily called up from any menu by pressing <F1>. The Help screen lists all the possible keys to use and the selections for the highlighted item. Press <Esc> to exit the Help Screen.


General Help
↑↓→← : Move
Enter : Select
+/- : Value
ESC : Exit
F1 : General Help
F2 : Previous Values
F3 : Optimized Defaults
F4 : Save & Exit Setup
Ok

7.2.1 Main

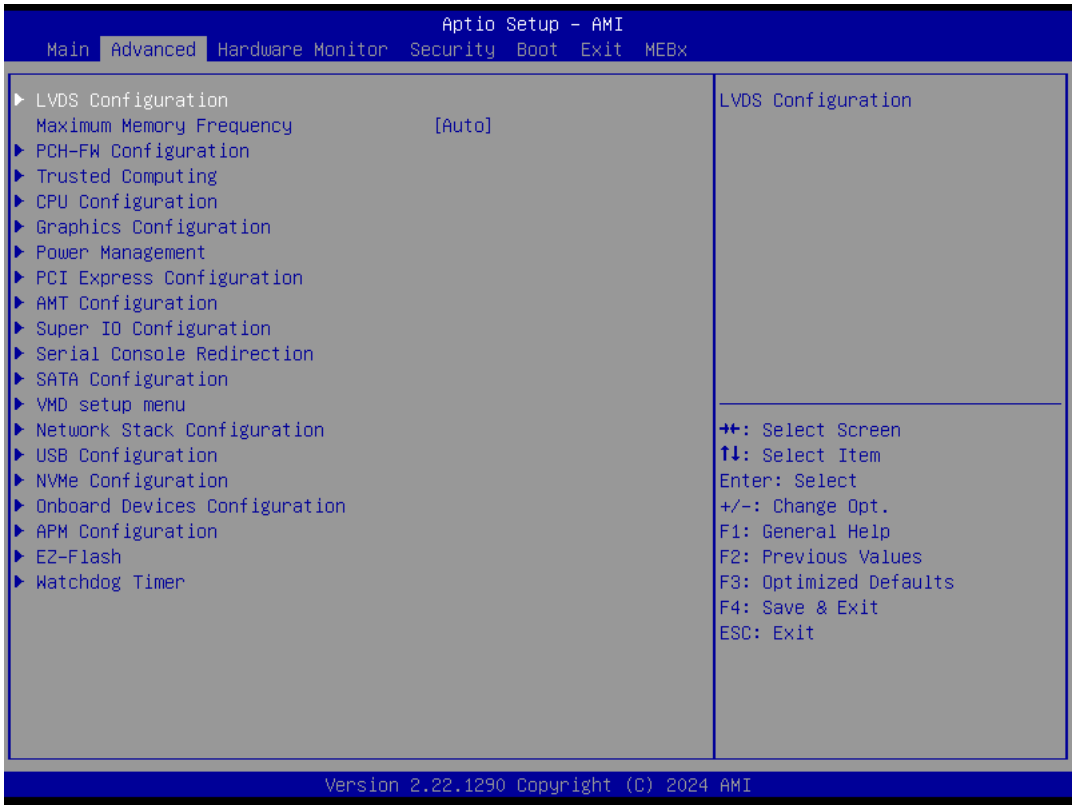
Use this menu for basic system configurations, such as time, date etc.



Feature	Description	Options
System Date	The date format is <Day>, <Month> <Date> <Year>. Use [+] or [—] to configure system Date.	
System Time	The time format is <Hour> <Minute> <Second>. Use [+] or [—] to configure system Time.	

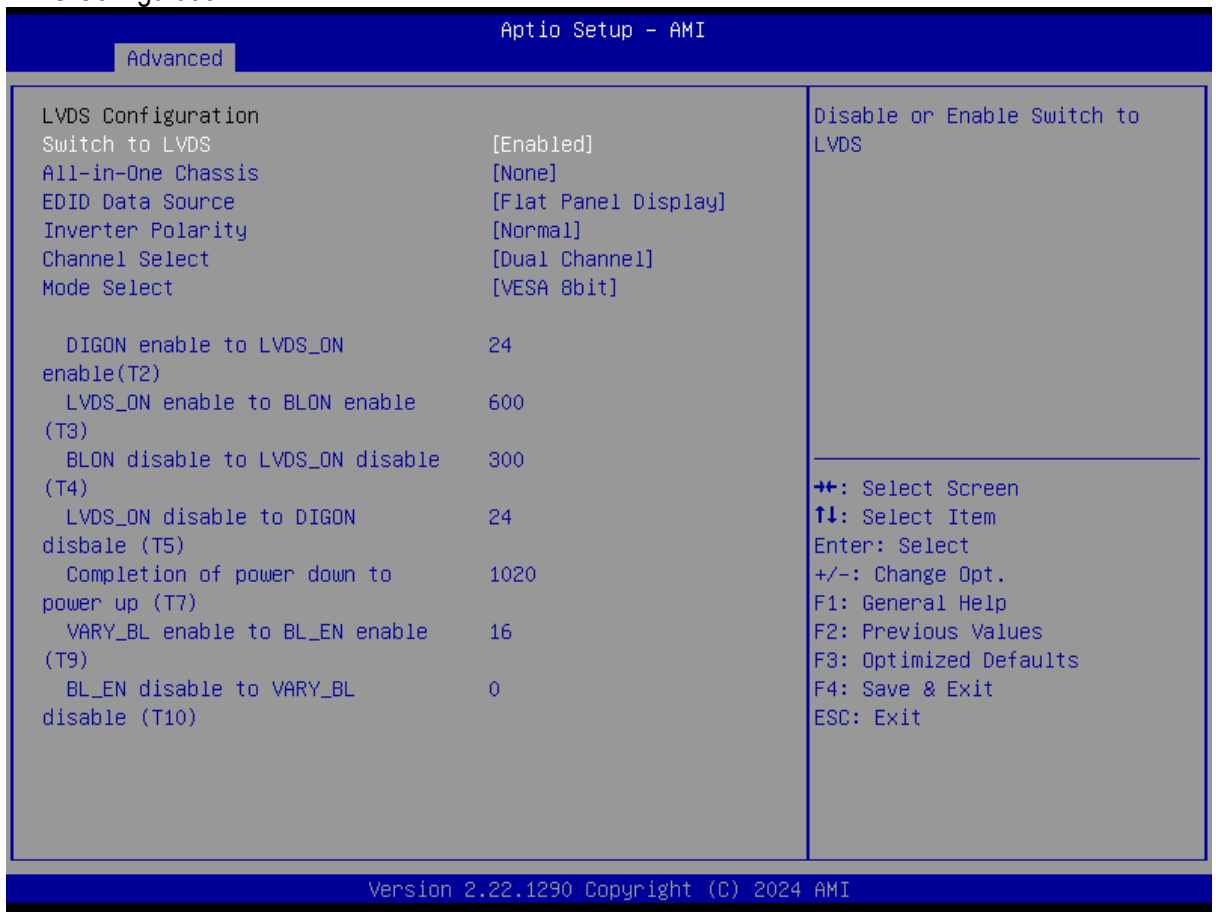
7.2.2 Advanced

Use this menu to set up the items of special enhanced features



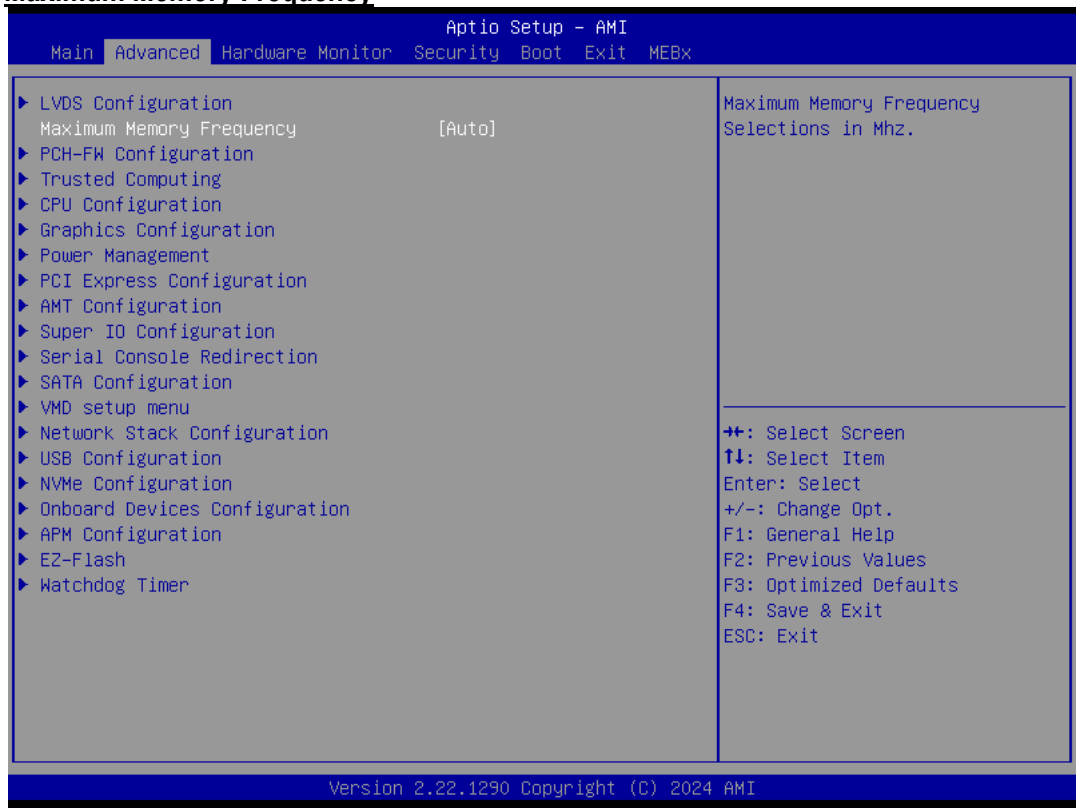
LVDS Configuration

LVDS Configuration



Feature	Description	Options
Switch to LVDS	Disable or Enable Switch to LVDS	★Disabled, Enabled
Switch to LVDS [Enable]		
All –in-One Chassis	Select All-in-One (AiO) Chassis (if applicable) for simplified AiO configuration. Warning: Incorrect selection of AiO chassis may result in incorrect operation or potential damage to AiO chassis hardware.	★None, 1920x1080 LVDS1, 1920x1080 LVDS2, 1920x1080 LVDS3, 1600x900 LVDS4,
EDID Data Source	EDID Data Source	★Flat Panel Display, Pre-defined
Inverter Polarity	Inverter board polarity Normal: PWM=0%(Dim) Inverted: PWM=0%(Bright) Consult inverter board specifications for proper value.	★Normal, Inverted
Channel Select	Channel Select	★Dual Channel, Single Channel
Mode Select	Mode Select	★VESA 8bit, JEIDA, VESA 6bit,VESA 10 bit
DIGON enable to LVDS_ON enable(T2)	Timing value from 0 to 1023ms	★24
LVDS_ON enable to BLON enable(T3)	Timing value from 0 to 1023ms	★600
BLON disable to LVDS_ON disable(T4)	Timing value from 0 to 1023ms	★300
LVDS_ON disable to DIGON disable(T5)	Timing value from 0 to 1023ms	★24
Completion of power down to power up(T7)	Timing value from 0 to 1023ms	★1020
VARY_BL enable to BL_EN enable(T9)	Timing value from 0 to 1023ms	★16
BL_EN disable to VARY_BL disable(T10)	Timing value from 0 to 1023ms	★0

Maximum Memory Frequency

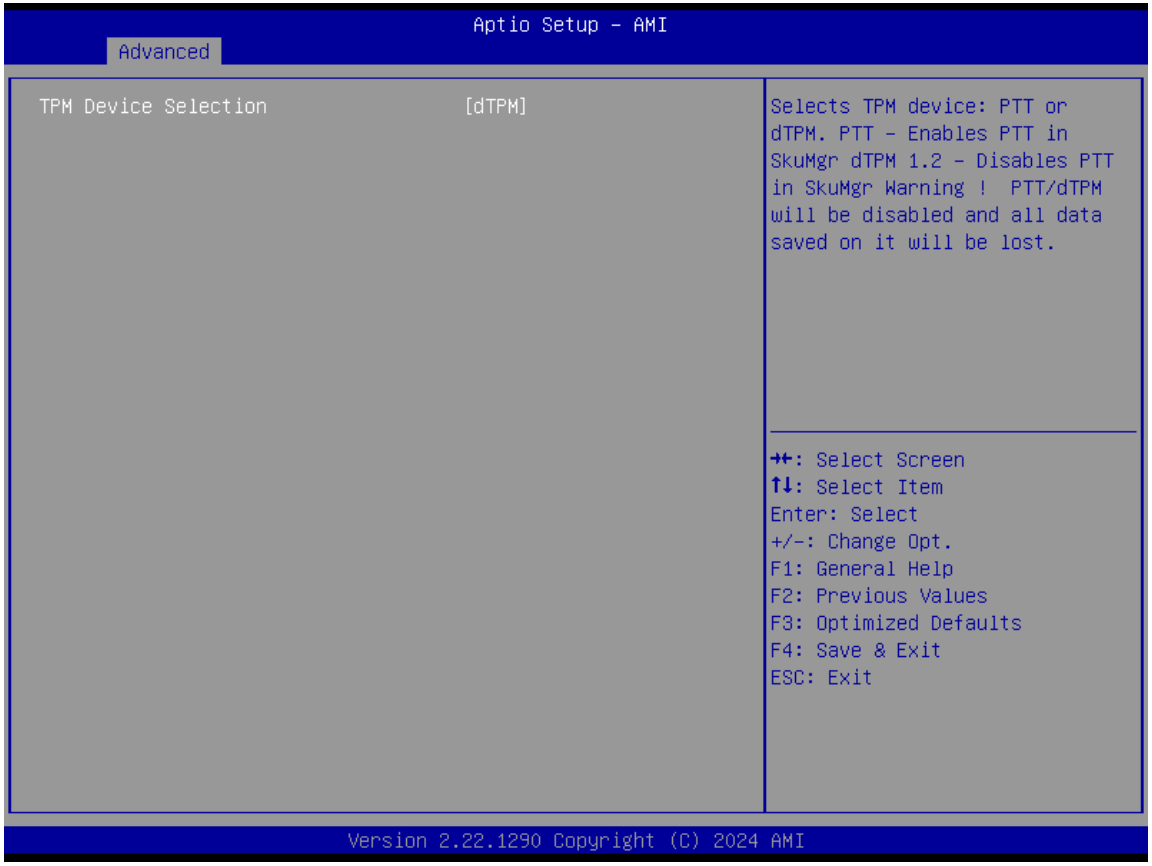


Feature	Description	Options

Maximum Memory Frequency	Maximum Memory Frequency Selections in Mhz.	★Auto,1067,1333,1400,1600,1800,1867,2000,2133,2200,2400, 2600,2667,2800,2933,3000,3200,3467,3600,3733,4000,4200,4267, 4400,4600,4800,5000,5200,5400,5600,5800,6000,6200,6400,6600, 6800,7000,7200,7400,7600,7800.8000.8200,8400,8600,8800,9000, 9200,9400,9600,9800,10000,12800

PCH-FW Configuration

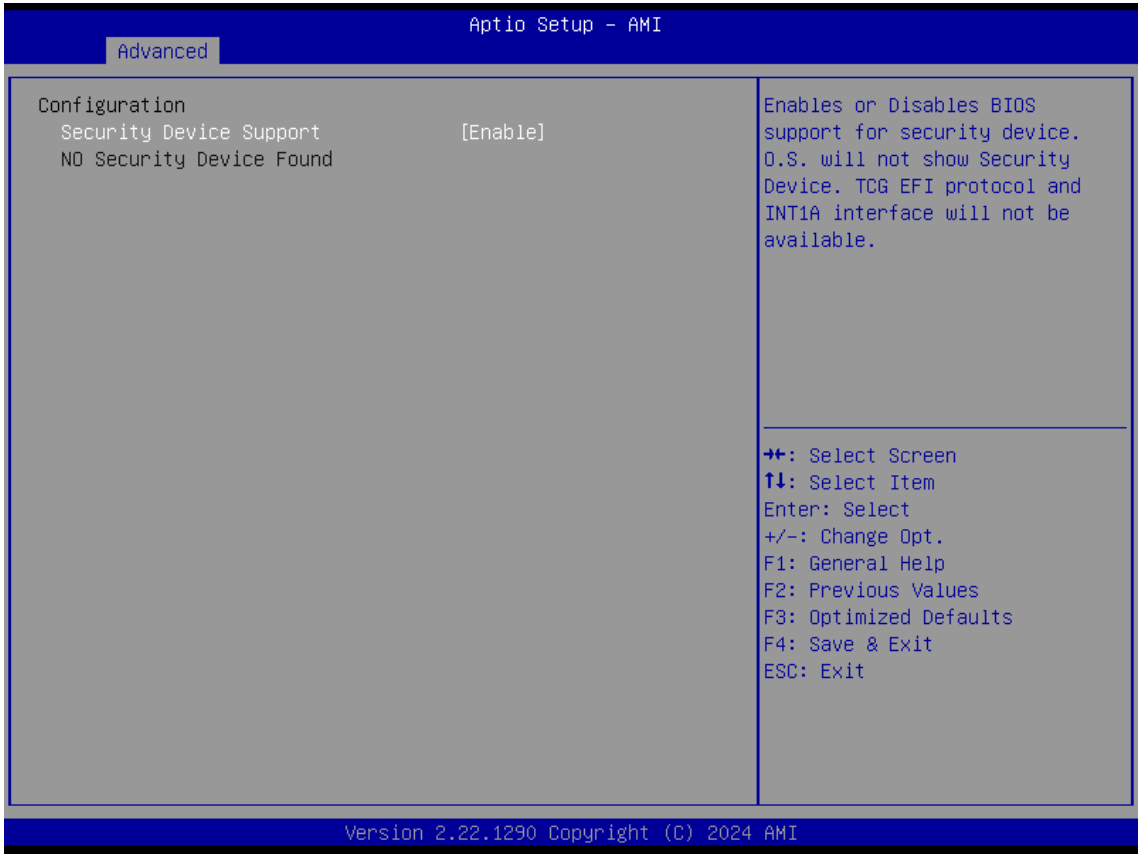
Configure Management Engine Technology Parameters



Feature	Description	Options
TPM Device Selection	Selects TPM device: PTT or dTPM. PTT-Enable PTT in SkuMgr dTPM1.2 –Disables PTT in SkuMgr Warning! PTT/ dTPM will be disabled and all data saved on it will be lost.	★dTPM, PTT

Trusted Computing

Trusted Computing Settings



Feature	Description	Options
Security Device Support	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.	★Enable, Disable

CPU Configuration

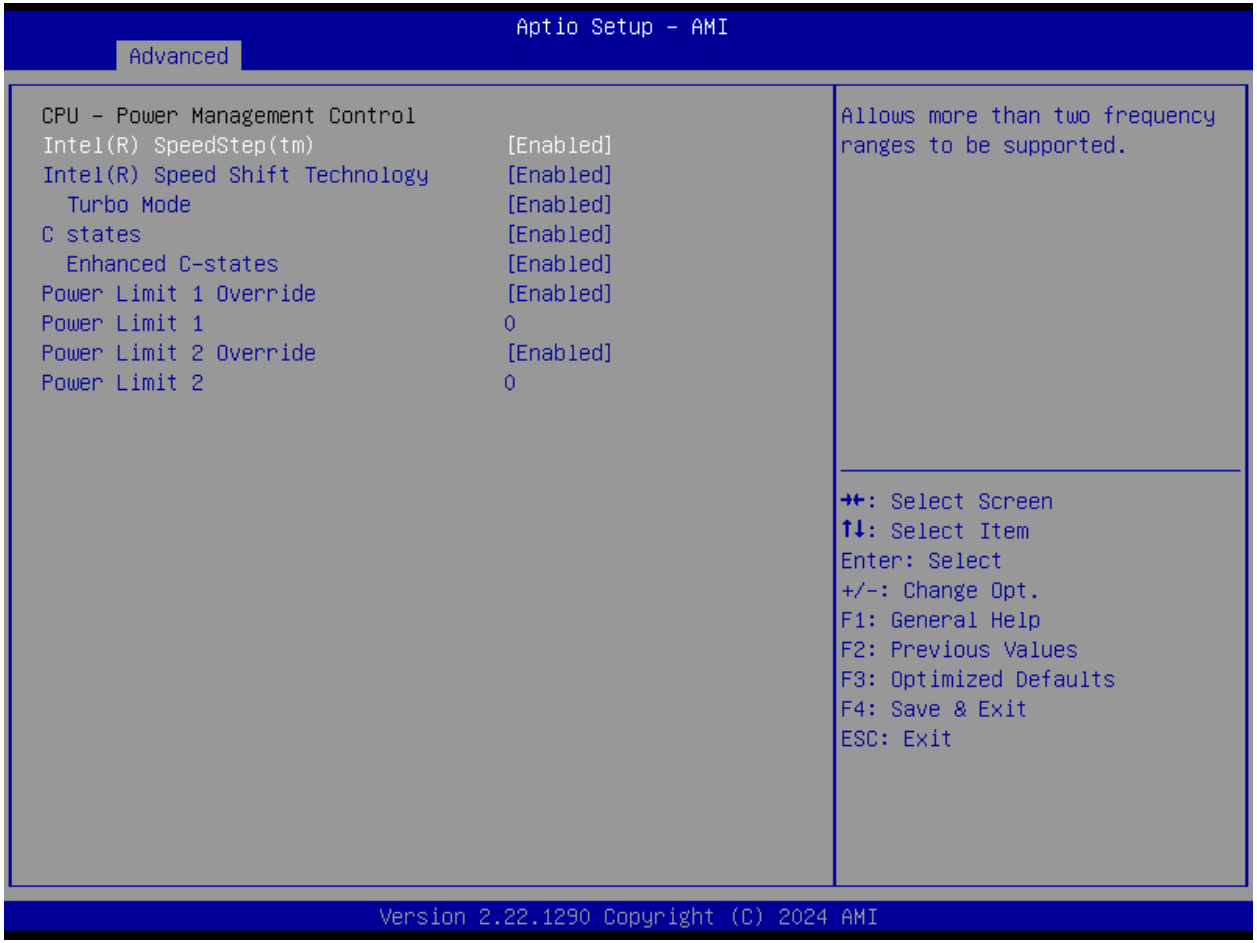
CPU Configuration Parameters

Feature	Description	Options
Intel (VMX)Virtualization	When enabled, a VMM can utilize the additional hardware capabilities provided by	★Enabled ,Disabled

Technology	Vanderpool Technology.	
Hyper-Threading	Enable or Disable Hyper-Threading Technology.	★Enabled ,Disabled
Intel Trusted Execution Technology	Enables utilization of additional hardware capabilities provided by Intel(R) Trusted Execution Technology. Changes require a full power cycle to take effect.	★Disabled, Enabled
VT-d	VT-d capability	★Enabled ,Disabled
Max TOLUD	Maximum Value of TOLUD. Dynamic assignment would adjust TOLUD automatically of installed graphic controller. Please note that might boot fail if adjust improper value, clear CMOS back to default if system can't boot.	★Dynamic,0.75GB,1GB, 1.25GB,1.5GB,1.75GB,2GB, 2.25GB,2.5GB

CPU- Power Management Control

CPU- Power Management Control Options

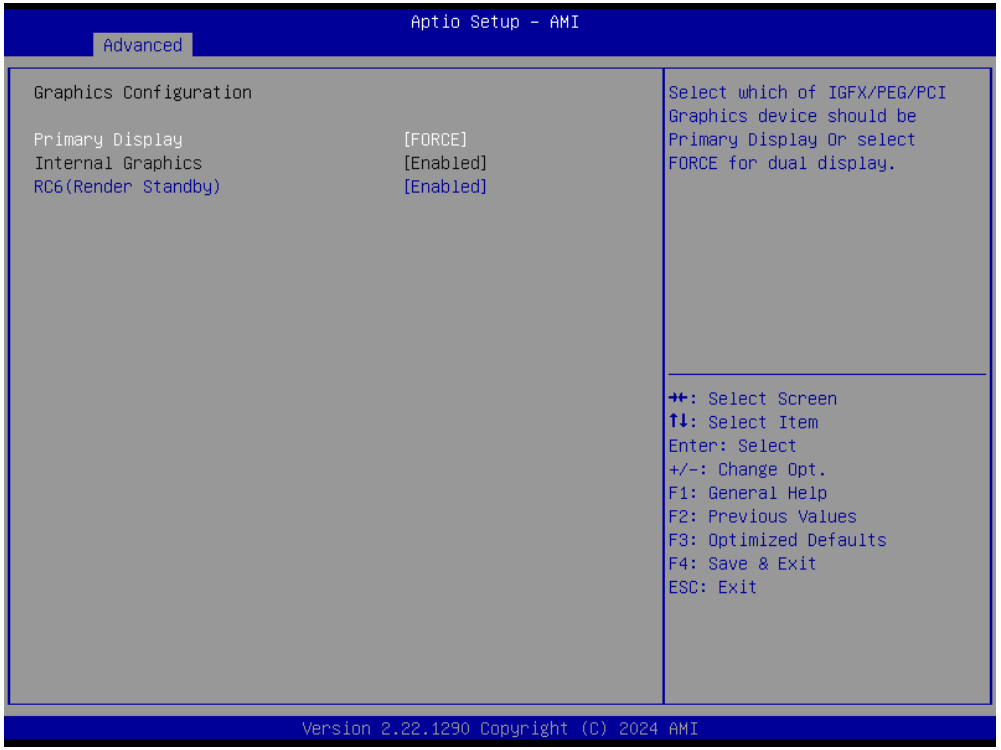


Feature	Description	Options
Intel(R) SpeedStep(tm)	Allows more than two frequency ranges to be supported.	★Enabled ,Disabled

Intel(R) Speed Shift Technology	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.	★Enabled ,Disabled
Turbo Mode	Enable/Disable processor Turbo Mode(requires EMTTM enabled too).Auto means enabled	★Enabled ,Disabled
C states	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.	★Enabled ,Disabled
Enhanced C-states	Enable/Disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-State.	★Enabled ,Disabled
Power Limit 1 Override	Enable/Disable Power Limit 1 override. If this option is disables, BIOS will program the default values for power Limit 1 and Power Limit 1 Time Window.	★Disabled, Enabled
Power Limit 1 Override [Enable]		
Power Limit 1	Power Limit 1 in Milli Wattts. BIOS will round to the nearest 1/8W when programming. 0=no custom override. For 12.50W, enter 12500. Overclocking SKU: Value must be between Max and Min Power Limits(specified by PACKAGE_POWER_SKU_MSR). Other SKUs: This value must be between Min Power Limit and Processor Base Power (TDP).	★0
Power Limit 2 Override	Enable/Disable Power Limit 1 override. If this option is disables, BIOS will program the default values for Power Limit 2 .	★Enabled ,Disabled
Power Limit 2	Power Limit 2 value in Milli Wattts. BIOS will round to the nearest 1/8W when programming. If value is 0, BIOS will program this value as 1.25*TDP. For 12.50w, enter 12500. Processor applies control policies such that the package power does not exceed this limit.	★0

Graphics Configuration

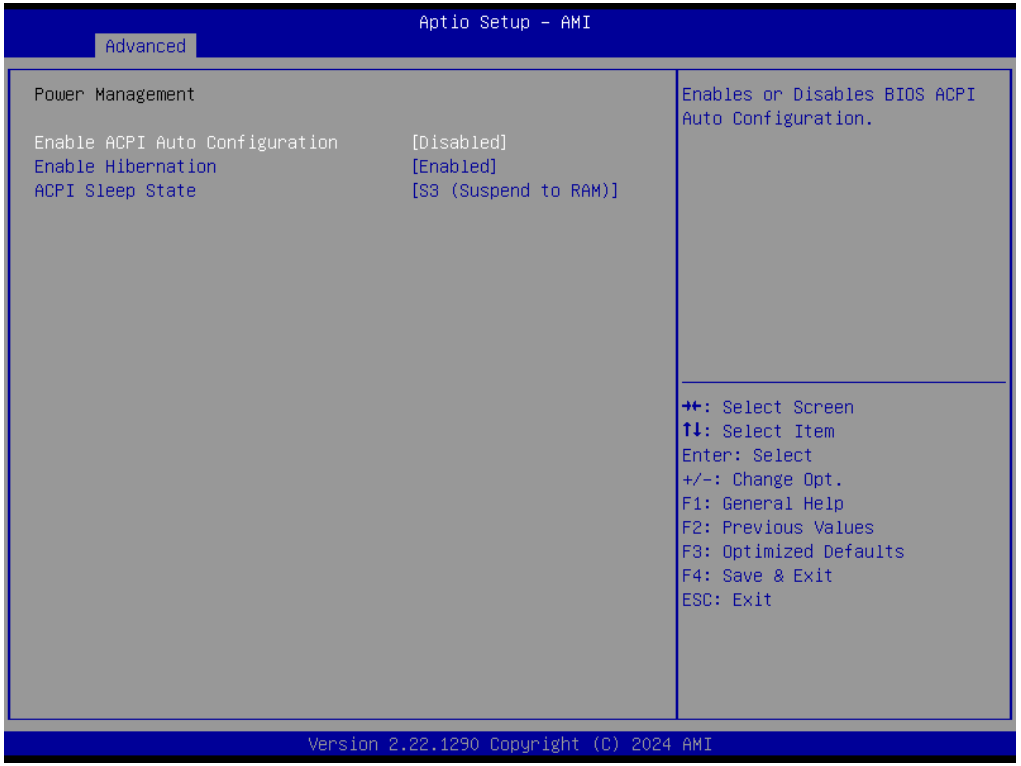
System Agent (SA)Parameters



Feature	Description	Options
Primary Display	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select FORCE for dual display.	★FORCE, Auto, IGFX,PEG Slot, PCH PCI
Primary Display[Auto]		
Internal Graphics	Keep IGFX enabled based on the setup options.	★Enabled ,Disabled
RC6(Render Standby)	Check to enable render standby support.	★Enabled ,Disabled

Power Management

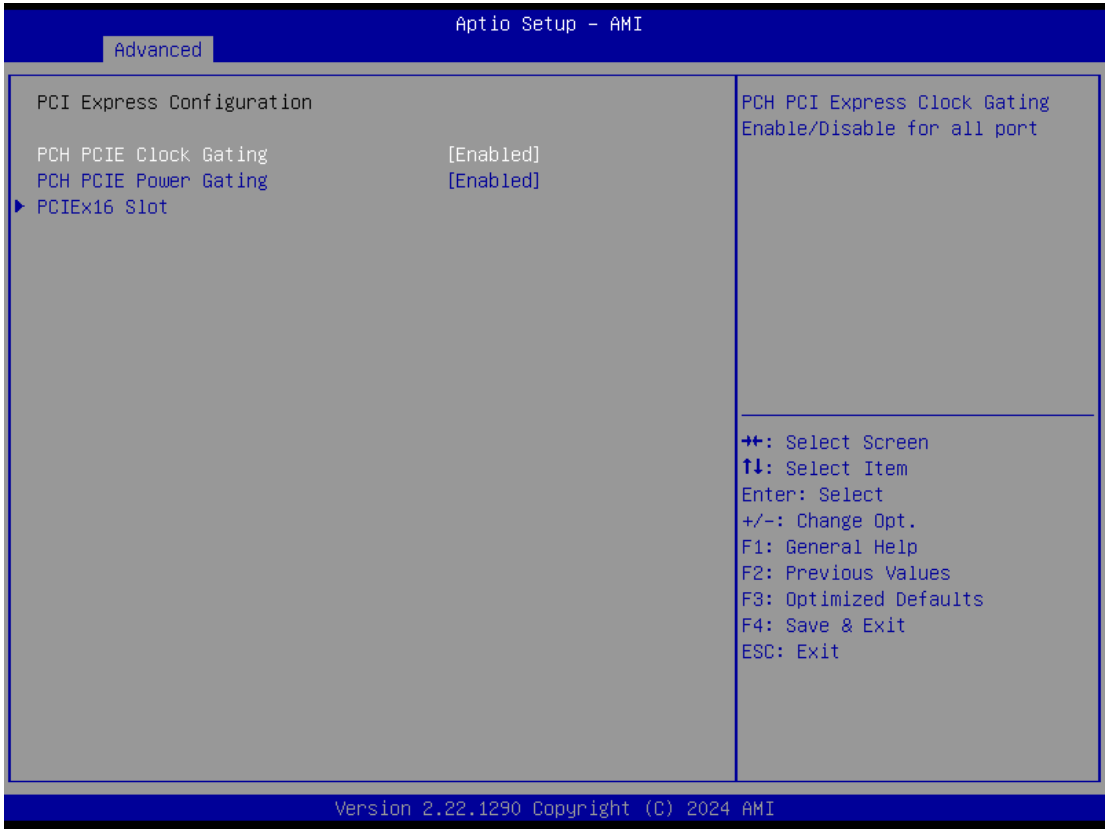
System ACPI Parameters



Feature	Description	Options
Enable ACPI Auto Configuration	Enables or Disables BIOS ACPI Auto Configuration.	★Disabled ,Enabled
Enable Hibernation	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may not be effective with some operating systems.	★Enabled, Disabled
ACPI Sleep State	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed,	★S3(Suspend to RAM), Suspend Disabled

PCI Express Configuration

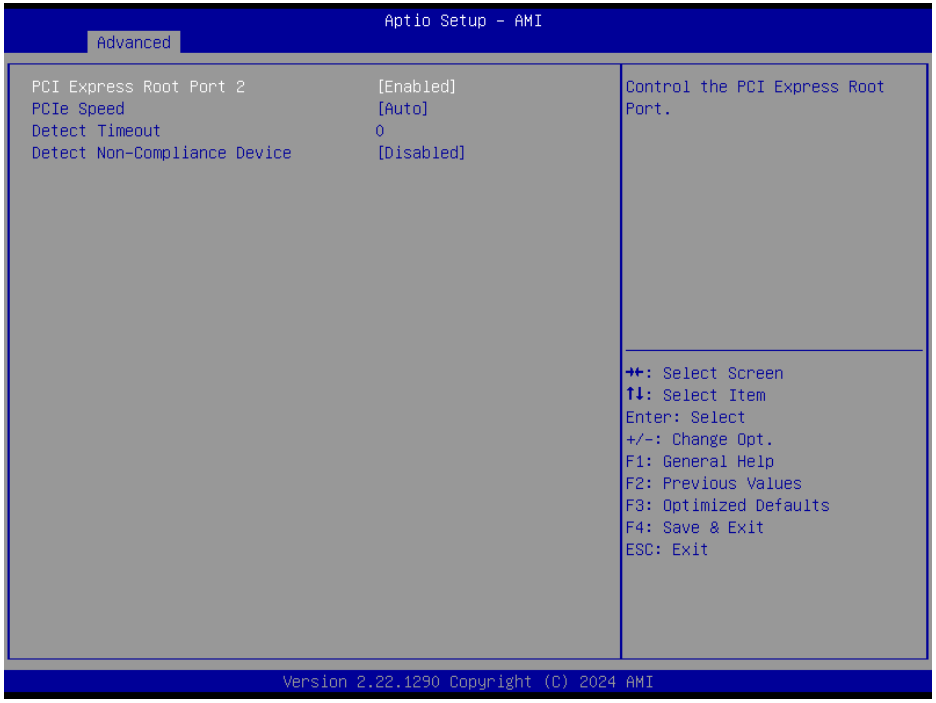
PCI Express Configuration settings



Feature	Description	Options
PCH PCIE Clock Gating	PCH PCIE Clock Gating Enable/Disable for all port.	★Enabled, Disabled
PCH PCIE Power Gating	PCH PCIE Power Gating Enable/Disable for all port.	★Enabled, Disabled

PCIE x16 Slot

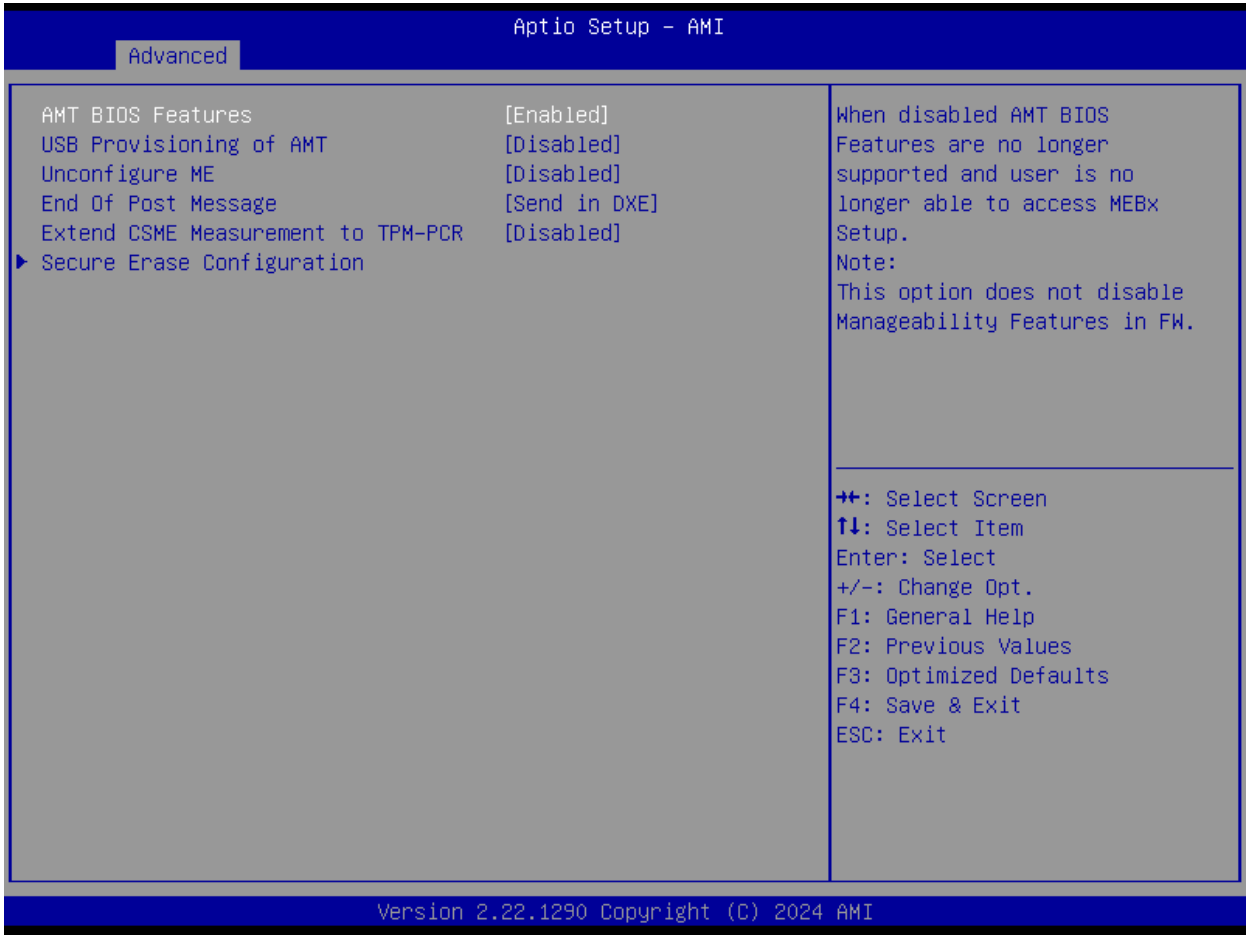
PCI Express Root Port Settings



Feature	Description	Options
PCI Express Root Port 2	Control the PCI Express Root Port	★Enabled, Disabled
PCIE Speed	Configure PCIe Speed	★Auto,Gen1,Gen2,Gen3,Gen4,Gen5
Detect Timeout	The number of milliseconds reference code will wait for link to exit Detect state for enabled ports before assuming there is no device and potentially disabling the port.	★0
Detect Non-Compliance Device	Enable when using Compliance Load Board	★Disabled, Enabled

AMT Configuration

Configure Intel(R) Active Management Technology Parameters

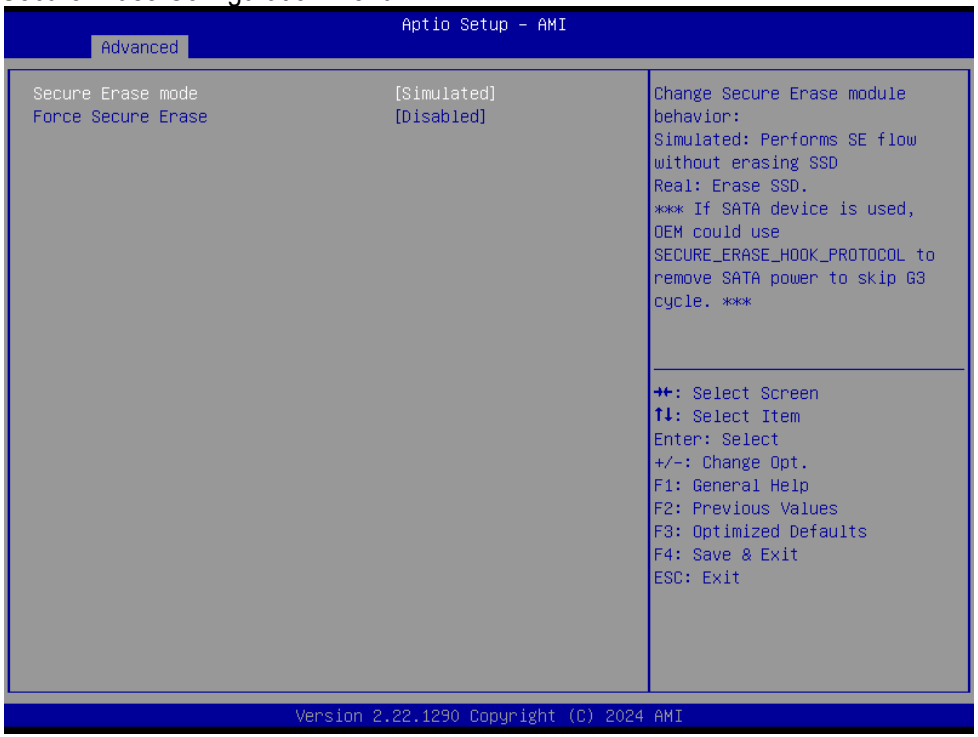


Feature	Description	Options

AMT BIOS Features	When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW.	★Enable, Disabled
USB Provisioning of AMT	Enable/Disable of AMT USB Provisioning.	★Disabled, Enable
Unconfigure ME	Unconfigure ME with resetting MEBx password to default on next boot.	★Disabled, Enable
End Of Post Message	Enable/Disable End of Post message sent to ME.	★Send in DXE, Disabled
Extend CSME Measurement to TPM-PCR	Enable/Disable Extend CSME Measurement to TPM-PCR[0] and AMT Config to TPM-PCR[1]	★Disabled, Enable

Secure Erase Configuration

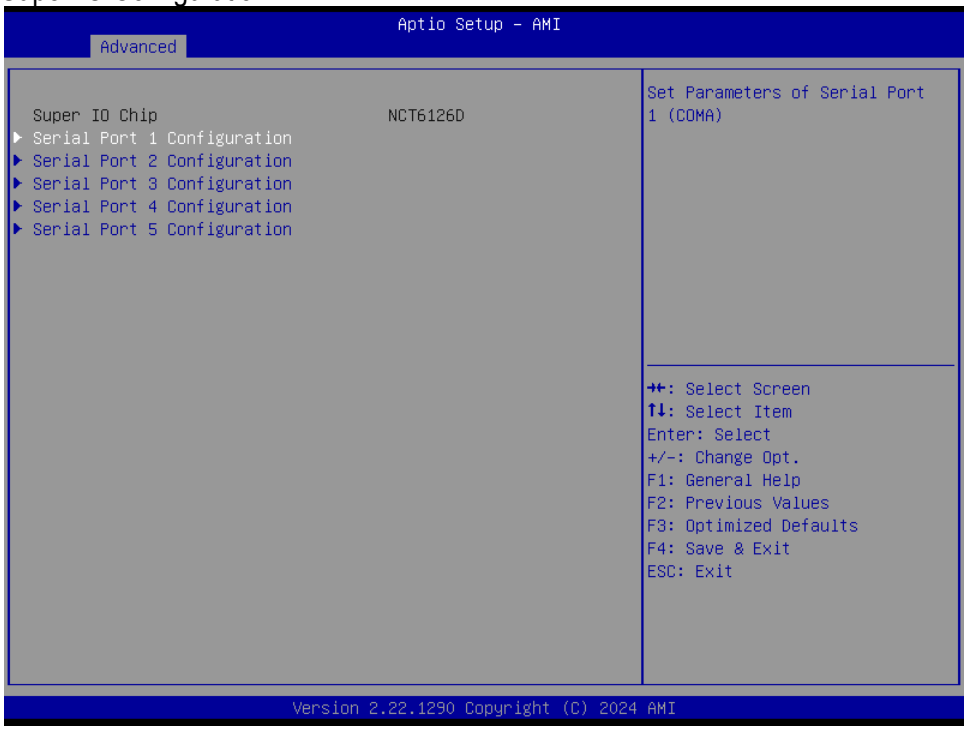
Secure Erase Configuration menu



Feature	Description	Options
Secure Erase mode	Change Secure Erase module behavior: Simulated: Performs SE flow without erasing SSD Real: Erase SSD. ***If SATA device is used.OEM could use SECURE_ERASE_HOOK_PROTOCOL to remove SATA power to skip G3 cycle.***	★Simulated, Real
Force Secure Erase	Force Secure Erase on next boot	★Disabled, Enable

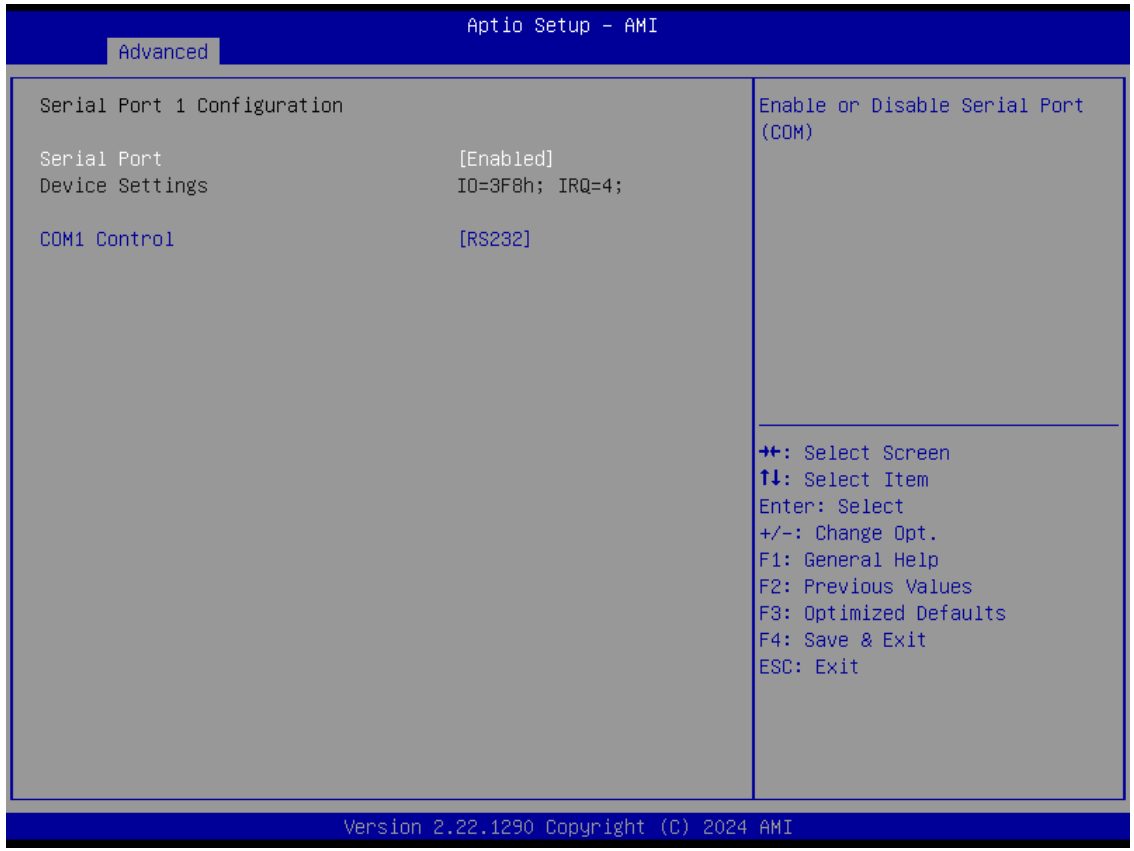
Super IO Configuration

Super IO Configuration



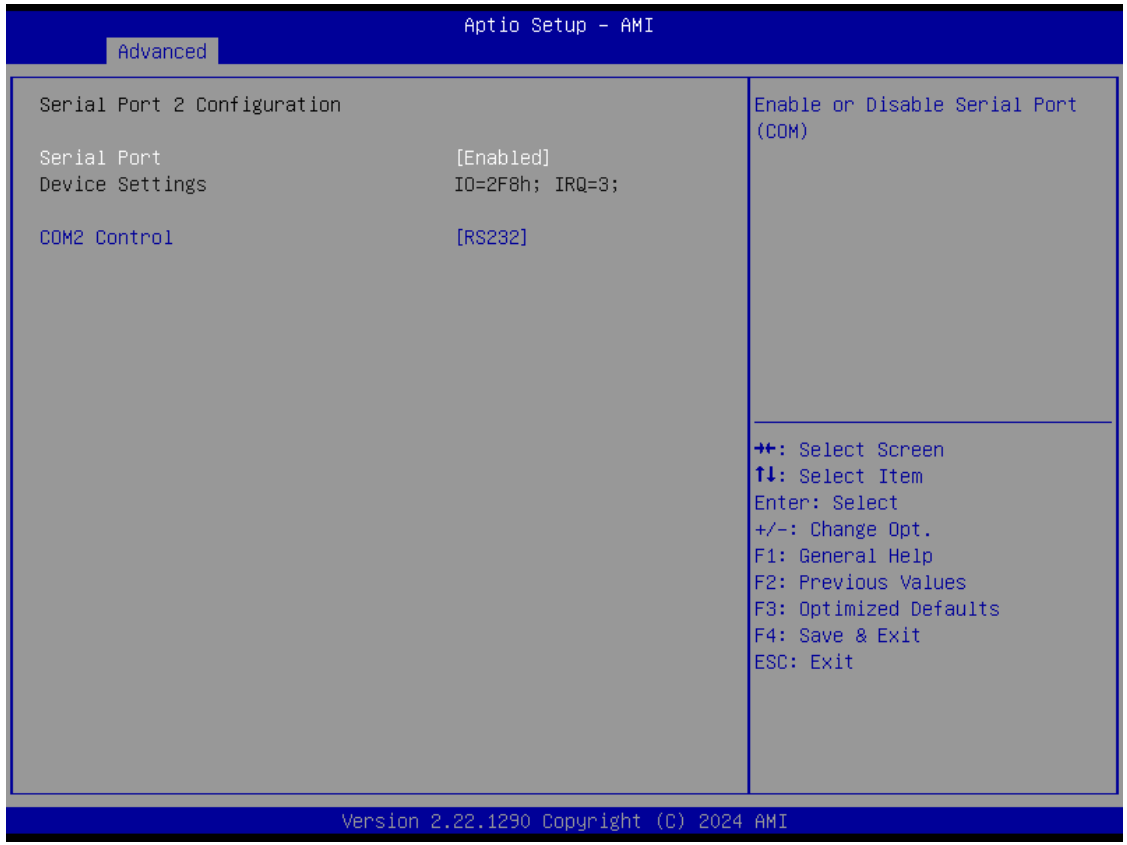
Feature	Description	Options
Serial Port 1 Configuration	Set Parameters of Serial Port1(COMA)	
Serial Port 2 Configuration	Set Parameters of Serial Port2(COMB)	
Serial Port 3 Configuration	Set Parameters of Serial Port3(COMC)	
Serial Port 4 Configuration	Set Parameters of Serial Port4(COMD)	
Serial Port 5 Configuration	Set Parameters of Serial Port5(COME)	

Serial Port 1 Configuration



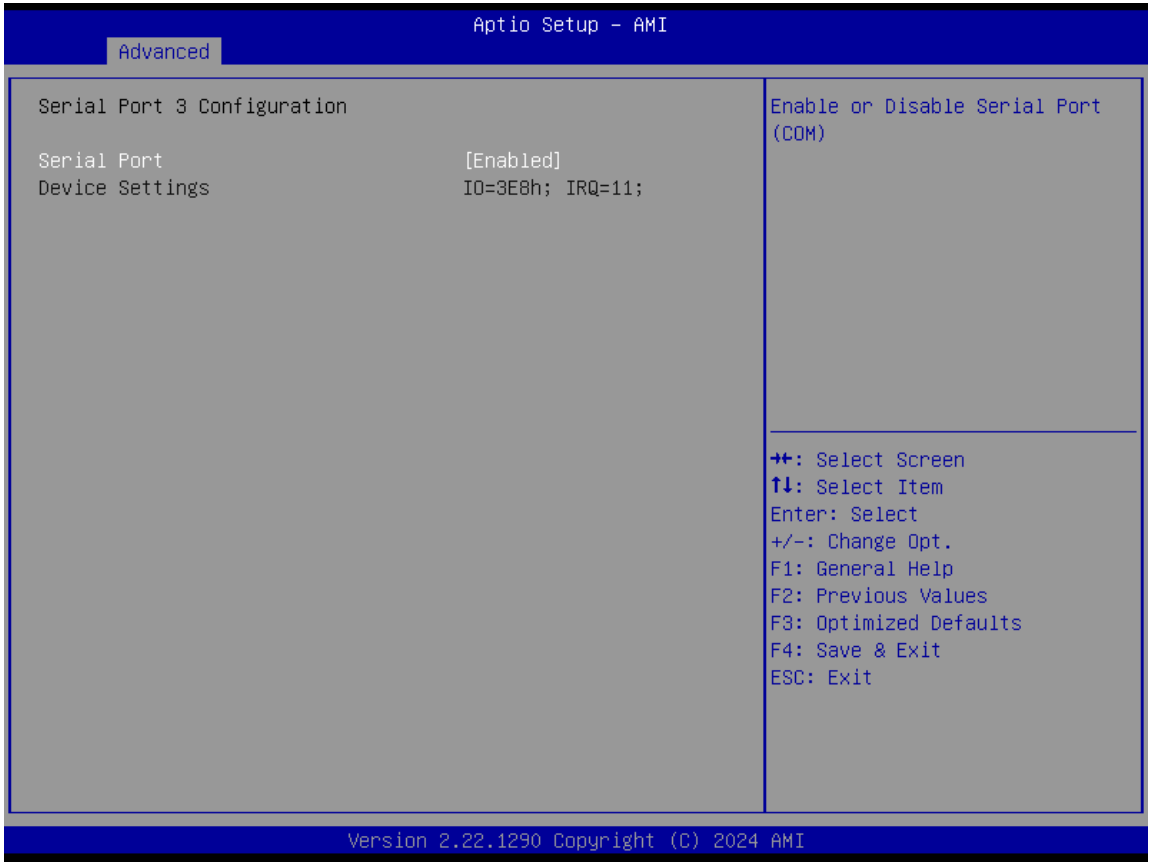
Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled ,Disabled
COM1 Control	Select COM1 mode. RS232, RS422 or RS485	★RS232,RS422,RS485

Serial Port 2 Configuration



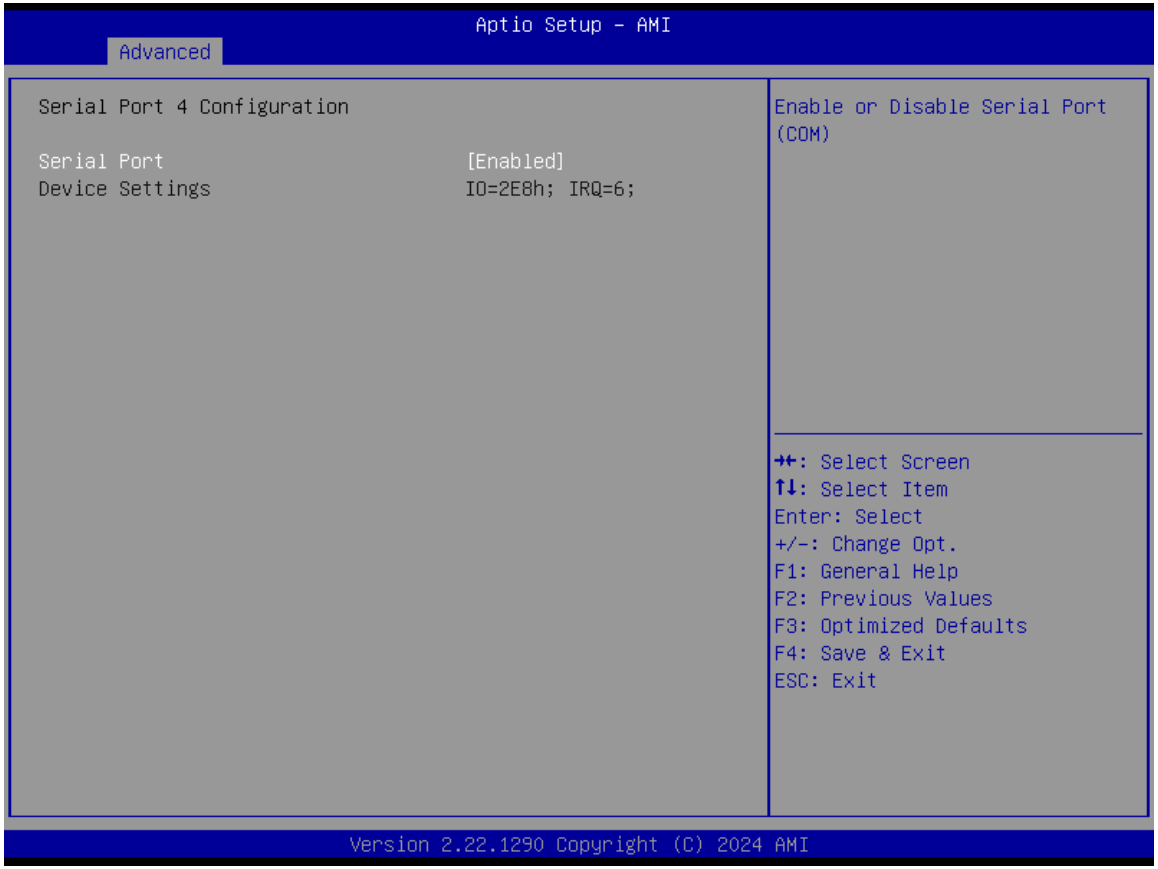
Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled ,Disabled
COM2 Control	Select COM2 mode. RS232, RS422 or RS485	★RS232,RS422,RS485

Serial Port 3 Configuration



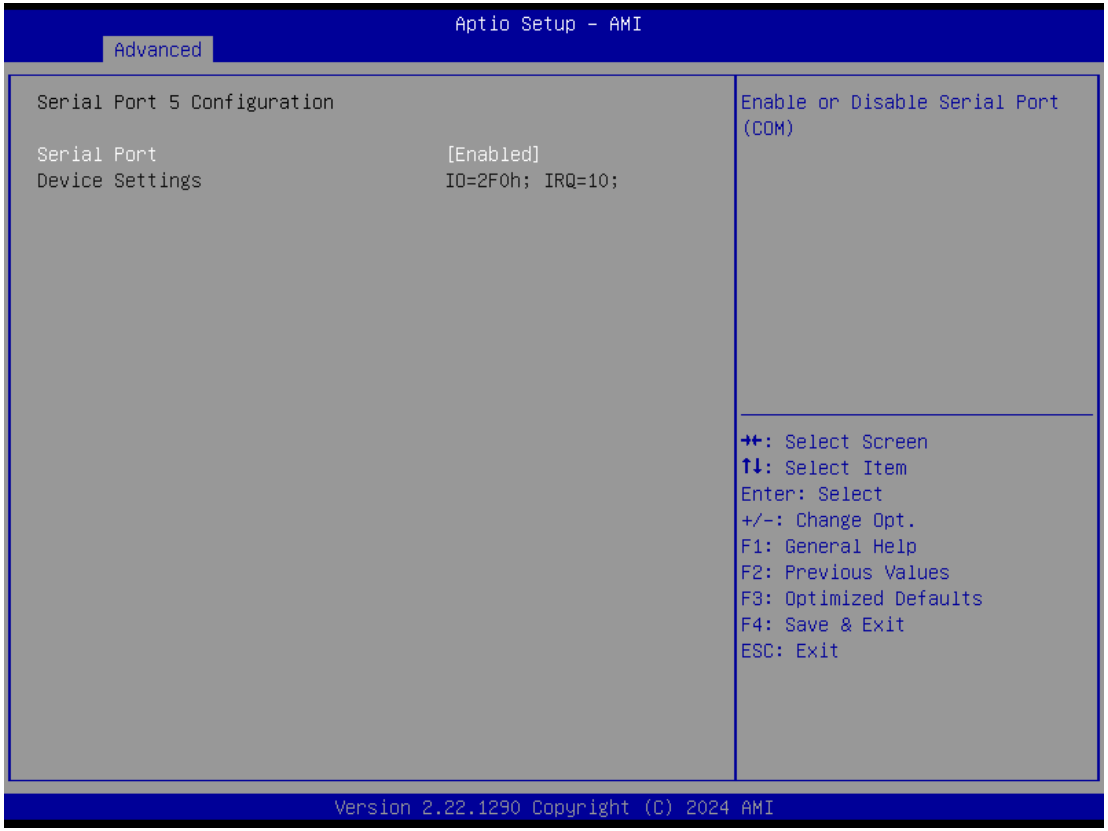
Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled ,Disabled

Serial Port 4 Configuration



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled ,Disabled

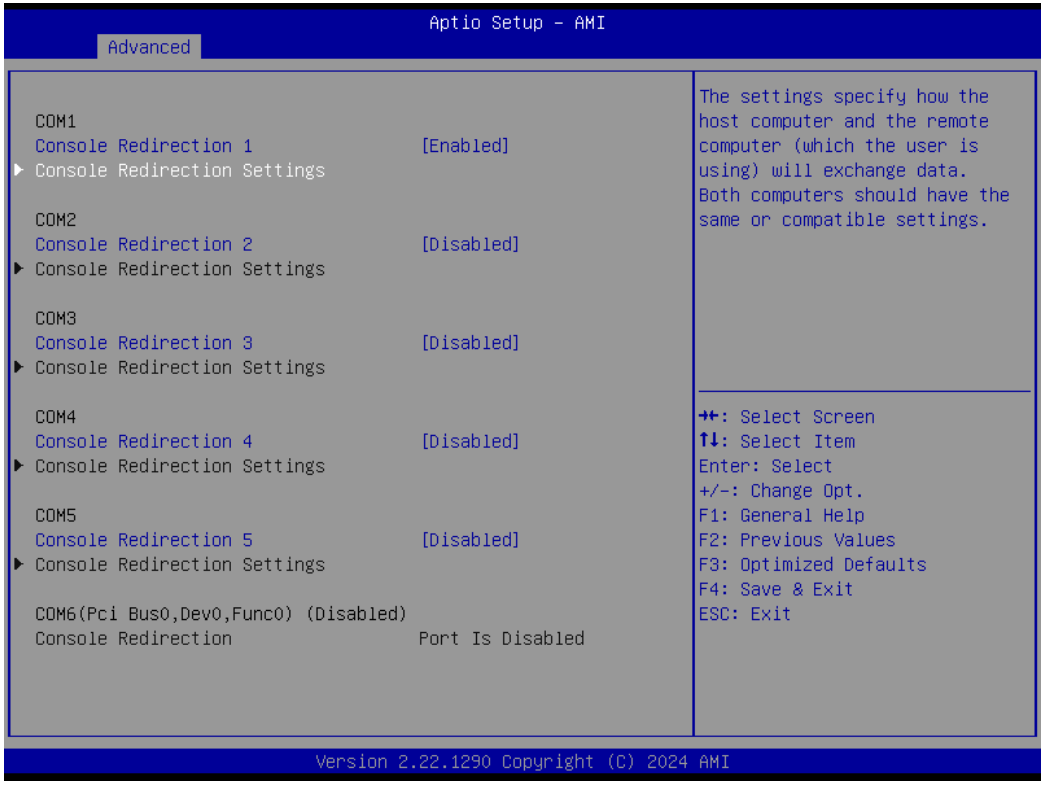
Serial Port 5 Configuration



Feature	Description	Options
Serial Port	Enable or Disable Serial Port (COM)	★Enabled ,Disabled

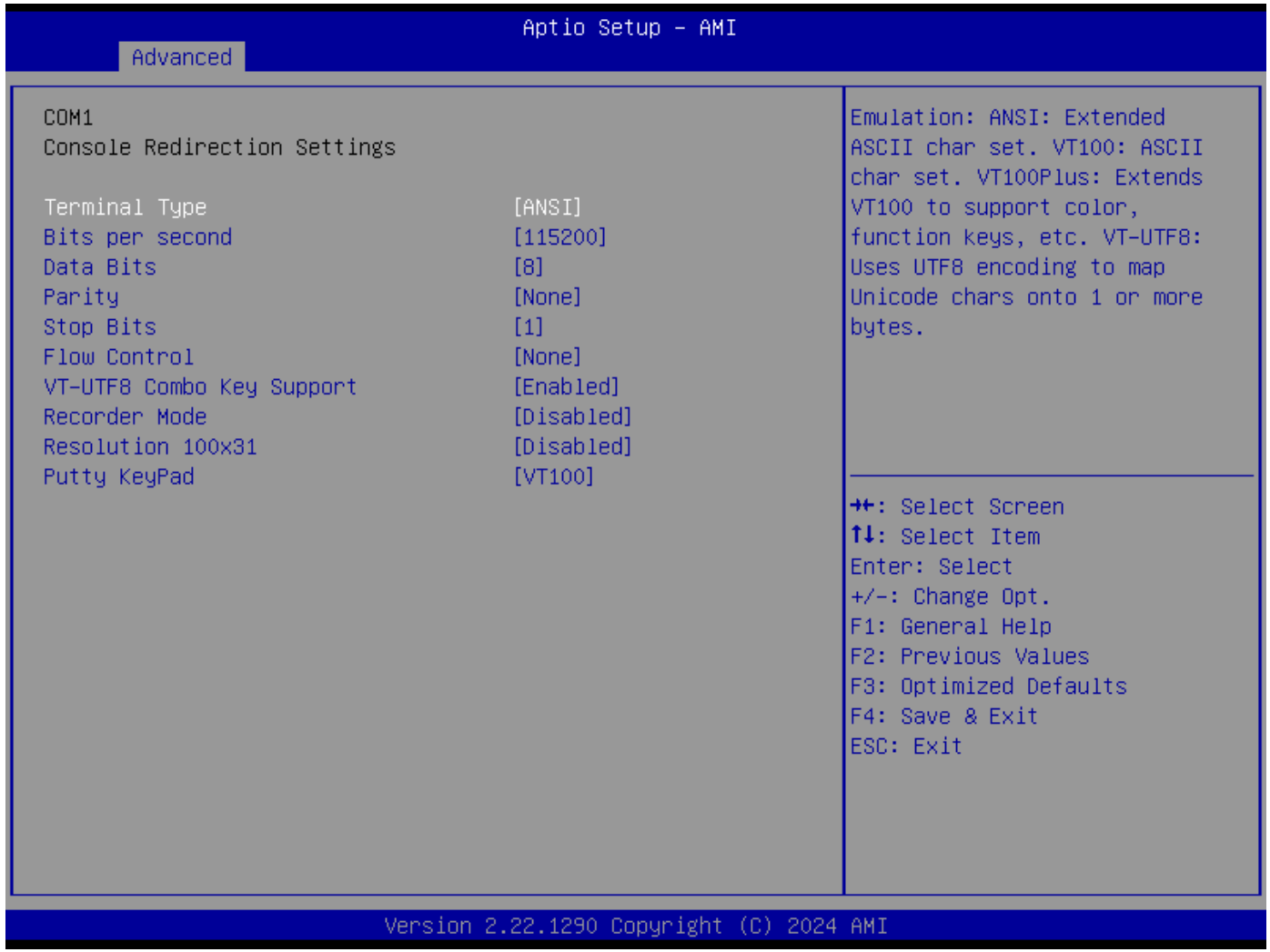
Serial Console Redirection

Serial Console Redirection



Feature	Description	Options
Console Redirection	Console Redirection Enable or Disable	★Disabled, Enabled
Console Redirection [Enabled]		
Console Redirection Settings	The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.	

Console Redirection Settings

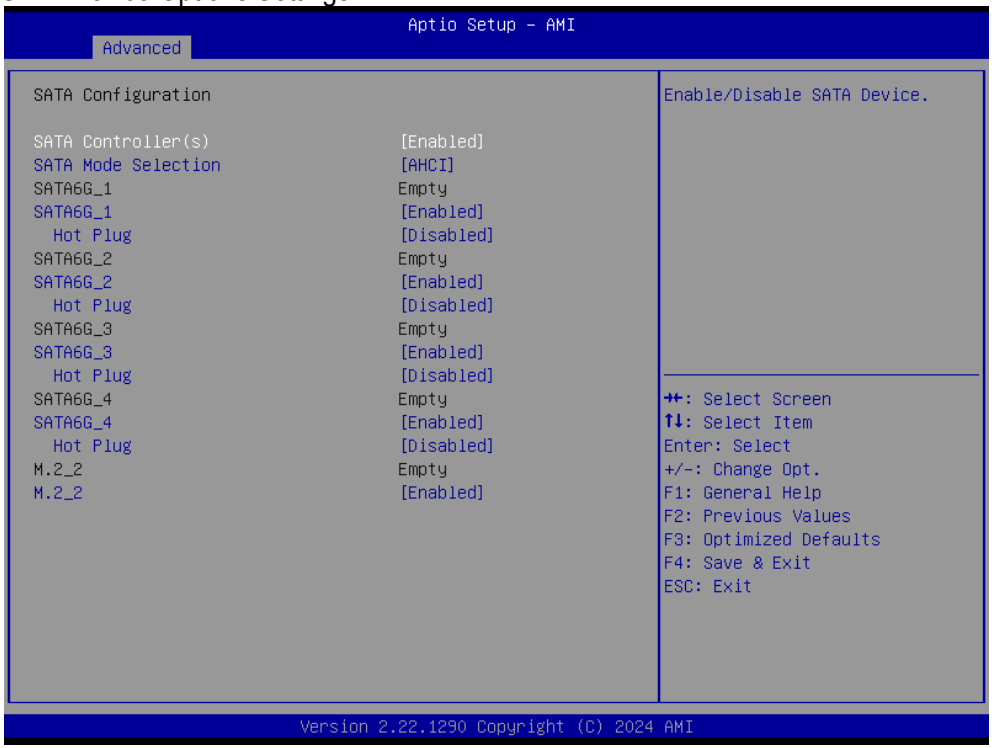


Feature	Description	Options

Terminal Type	Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.	★ANSI, VT100, VT100Plus, VT-UTF8
Bits per second	Select Serial port transmission speed. The speed must be matched on other side. Long or noisy lines may require lower speeds.	★115200, 9600, 19200, 38400, 57600
Data bits	Data bits	★8, 7
Parity	A parity bit can be sent with the data bits to detect some transmission errors. 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. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.	★None, Even, Odd, Mark, Space
Stop Bits	Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.	★1,2
Flow Control	Flow control can 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 re-start the flow. Hardware flow control uses two wires to send start/stop signals.	★None, Hardware RTS/CTS
VT-UTFB Combo Key Support	Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals	★Enabled, Disabled
Recorder Mode	With this mode enabled only text will be sent. This is to capture Terminal data.	★Disabled, Enabled
Resolution 100x31	Enables or disables extended terminal resolution	★Disabled, Enabled
Putty KeyPad	Select FunctionKey and KeyPad on Putty	★VT100, LINUX,XTERMR6, SCO, ESCN, VT400

SATA Configuration

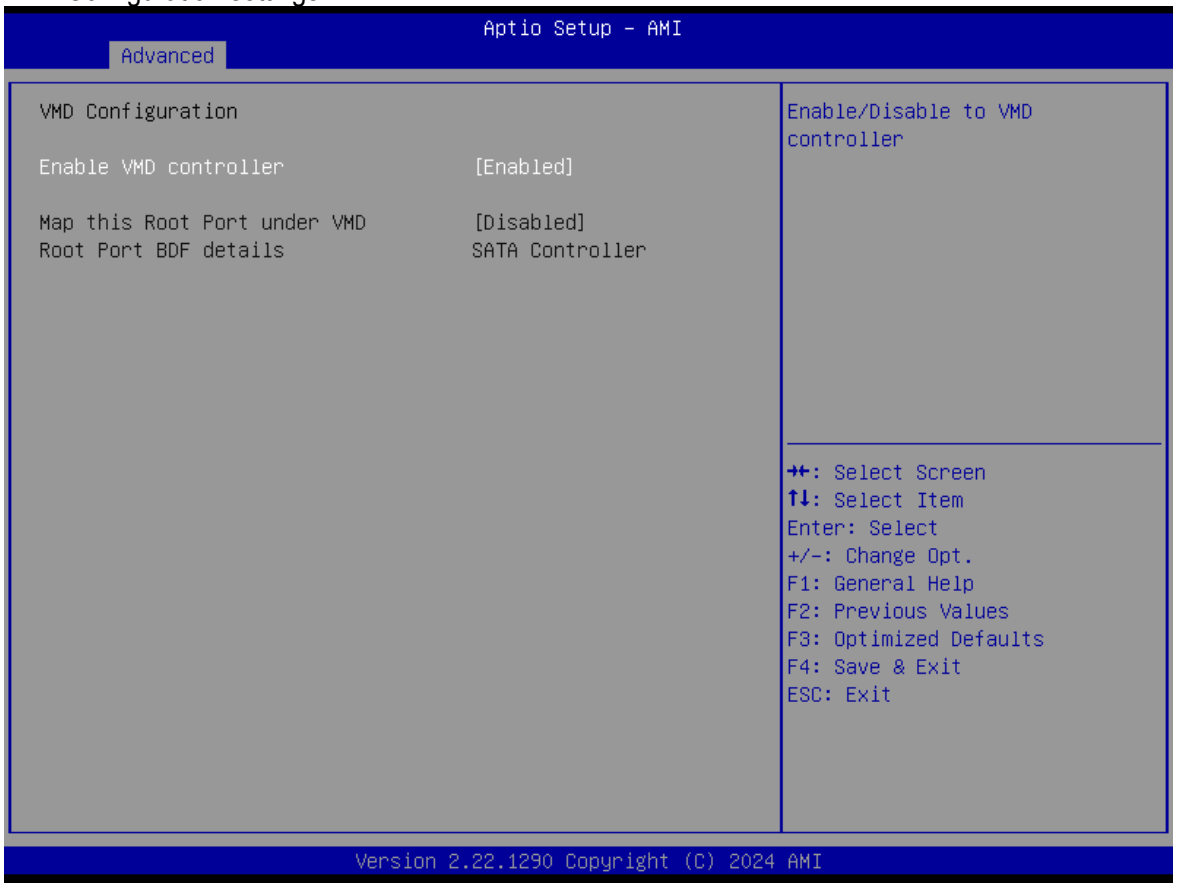
SATA Device Options Settings



Feature	Description	Options
SATA Controller(s)	Enable/Disable SATA Device.	★Enabled , Disabled
SATA Mode Selection	Determines how SATA controller(s) operate.	★AHCI
SATA6G_1~ SATA6G_4	Enable or Disable SATA Port.	★Enabled, Disabled
Hot Plug	Designates this port as Hot Pluggable.	★Disabled, Enabled
M.2_2	Enable or Disable SATA Port.	★Enabled, Disabled

VMD setup menu

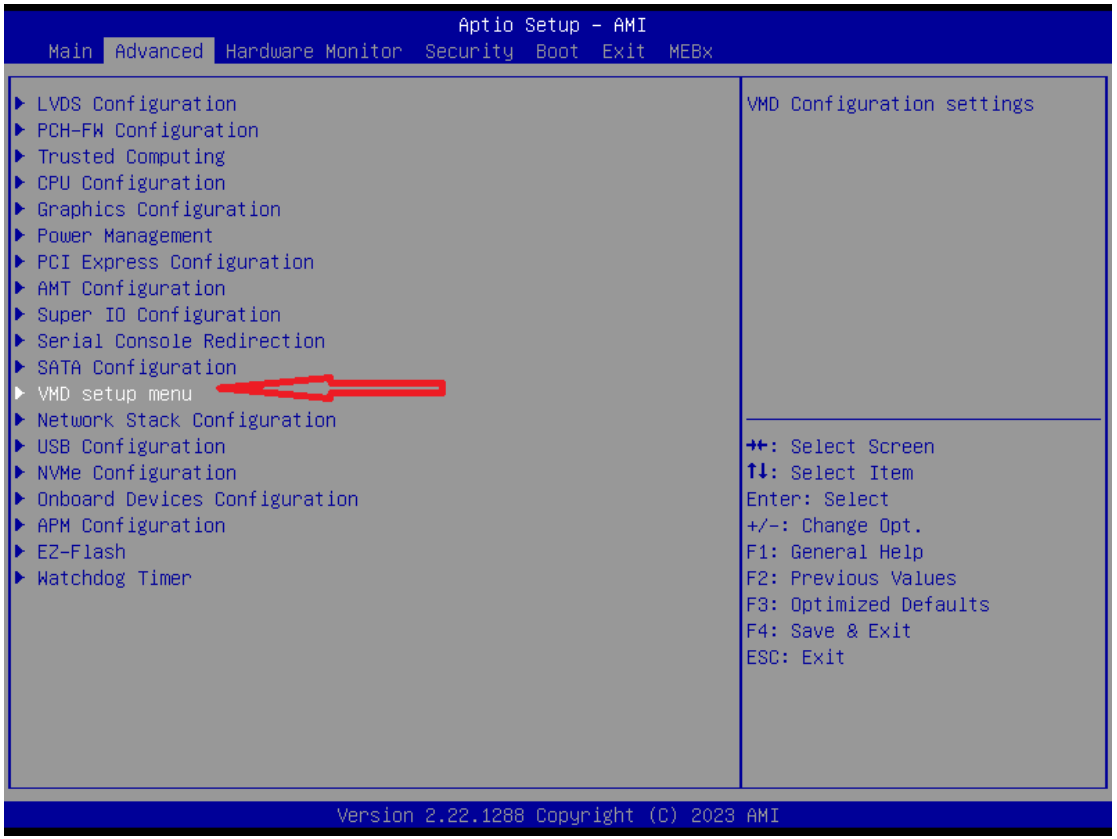
VMD Configuration settings

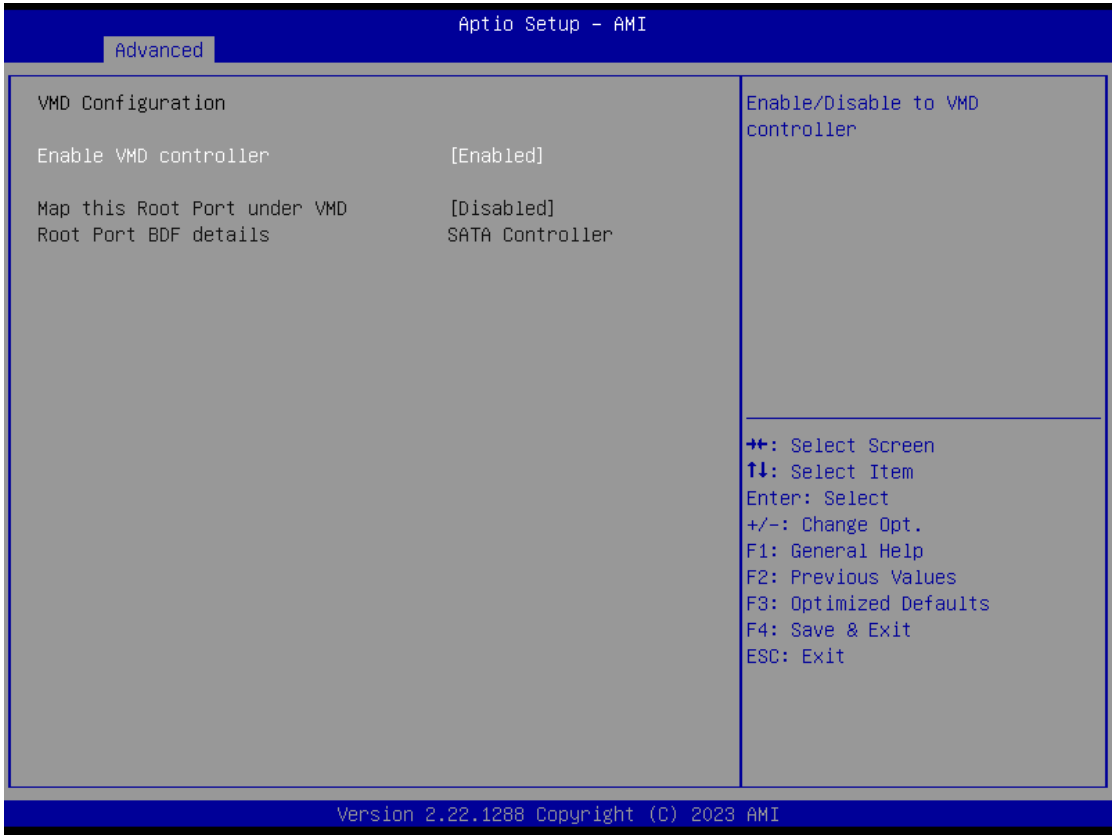


Feature	Description	Options
Enable VND controller	Enable/ Disable to VMD controller.	★Disabled, Enabled

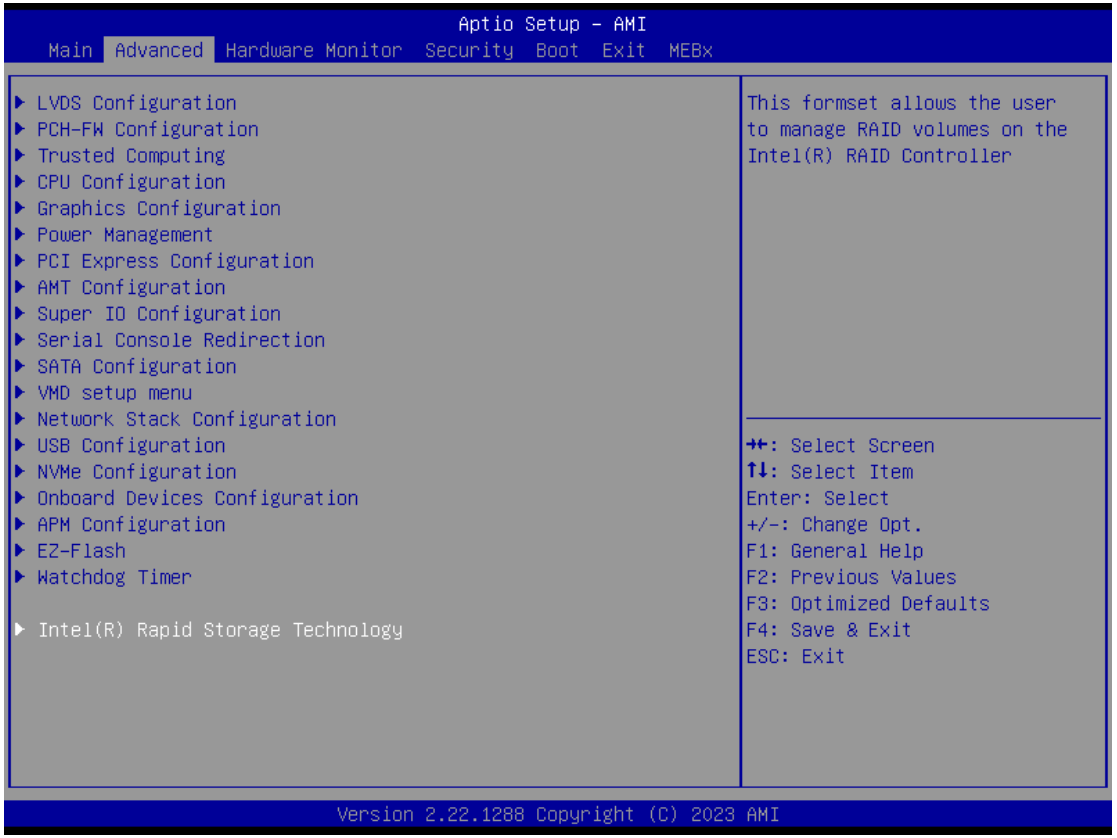
UEFI RAID Mode

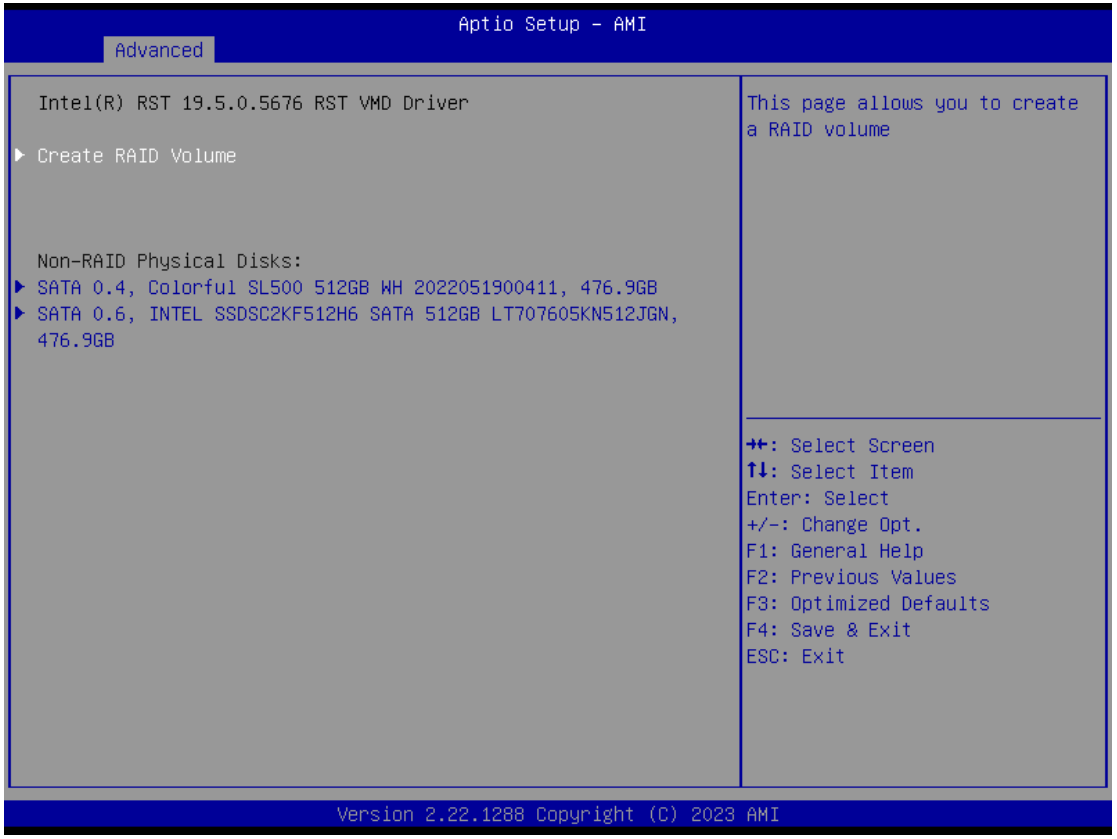
1.BIOS Setup \Advanced Page\ Enable VMD（F4 Save Changes and restart）

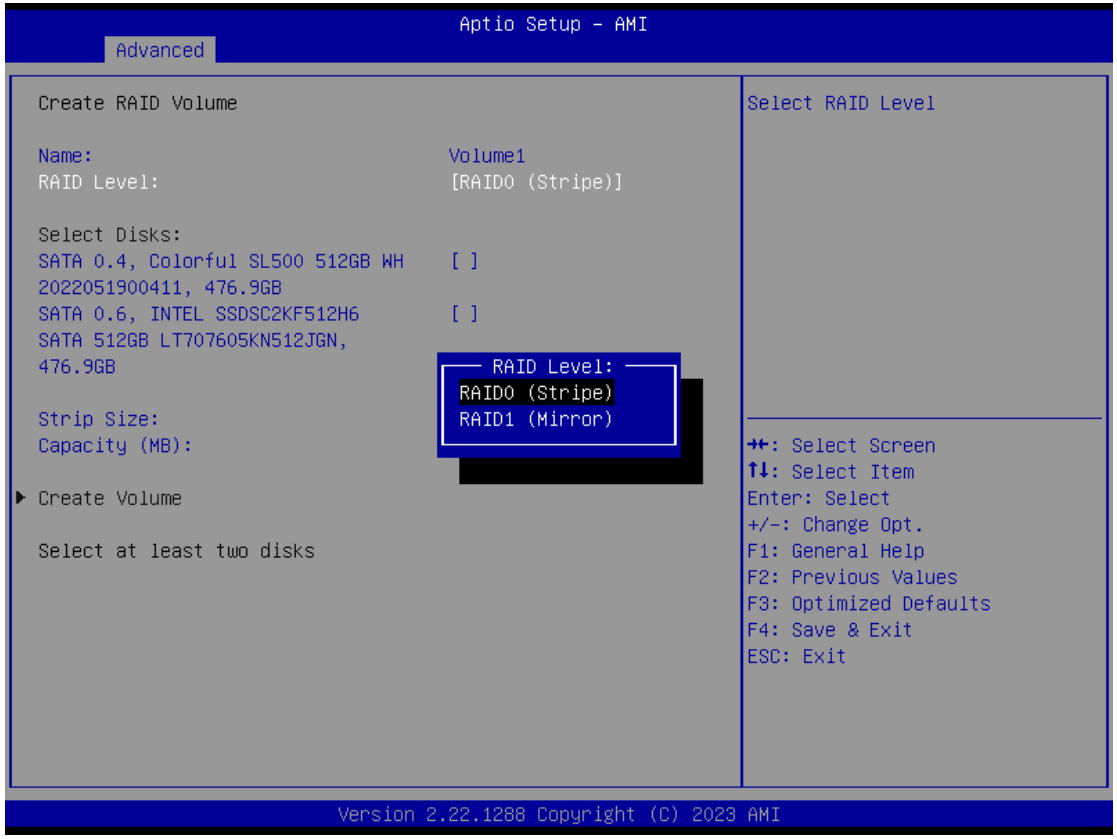



Aptio Setup – AMI
Advanced
VMD Configuration
Enable VMD controller [Enabled]
Map this Root Port under VMD [Disabled]
Root Port BDF details SATA Controller
Enable/Disable to VMD controller
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

2. BIOS Setup \Advanced Page\Intel Rapid Storage Technology\Create Raid volume



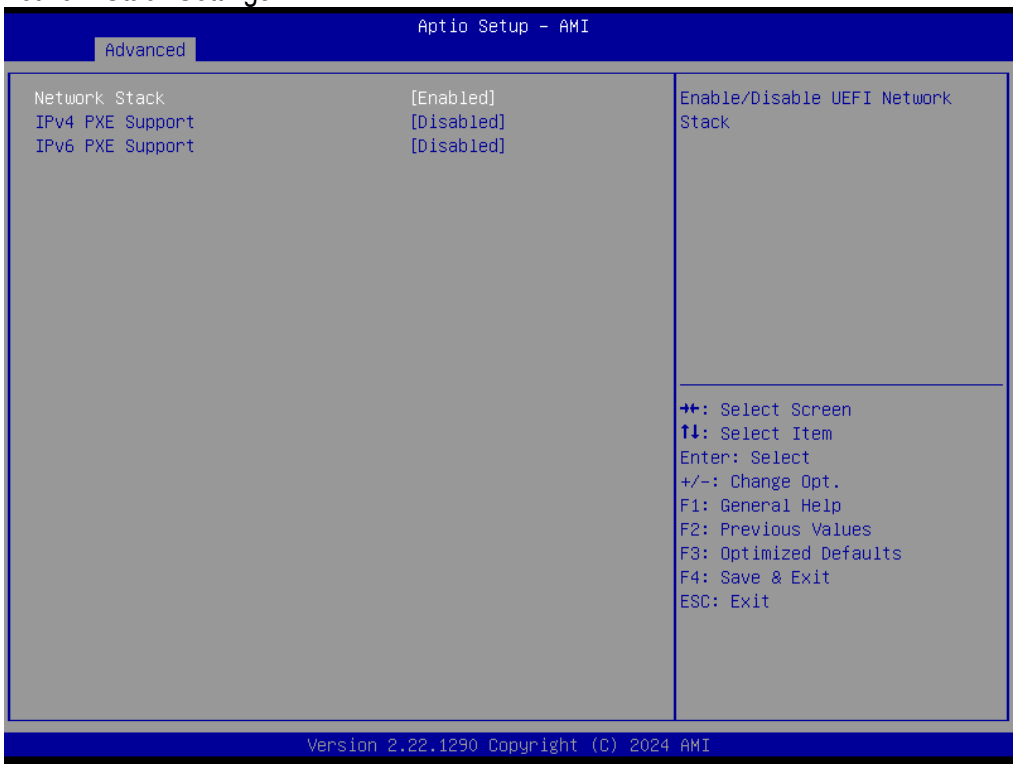

Aptio Setup - AMI
Advanced
Intel(R) RST 19.5.0.5676 RST VMD Driver
Create RAID Volume
Non-RAID Physical Disks:
SATA 0.4, Colorful SL500 512GB WH 2022051900411, 476.9GB
SATA 0.6, INTEL SSDSC2KF512H6 SATA 512GB LT707605KN512JGN, 476.9GB
This page allows you to create a RAID volume
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI


Aptio Setup - AMI
Advanced
Create RAID Volume
Name: Volume1
RAID Level: [RAID0 (Stripe)]
Select Disks:
SATA 0.4, Colorful SL500 512GB WH 2022051900411, 476.9GB [ ]
SATA 0.6, INTEL SSDSC2KF512H6 SATA 512GB LT707605KN512JGN, 476.9GB [ ]
Strip Size:
Capacity (MB):
Create Volume
Select at least two disks
RAID Level:
RAID0 (Stripe)
RAID1 (Mirror)
Select RAID Level
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

Aptio Setup - AMI
Advanced
Create RAID Volume
Name: Volume1
RAID Level: [RAID0 (Stripe)]
Select Disks:
SATA 0.4, Colorful SL500 512GB WH [X]
2022051900411, 476.9GB
SATA 0.6, INTEL SSDSC2KF512H6 [ ]
SATA 512GB LT707605KN512JGN,
476.9GB
SATA 0.6, INTEL SSDSC2KF512H6 SATA 512GB LT707605KN512JGN, 476.9GB
X
Strip Si
Capacity
Create Volume
Select at least two disks
X - to Select Disk
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1288 Copyright (C) 2023 AMI

Network Stack Configuration

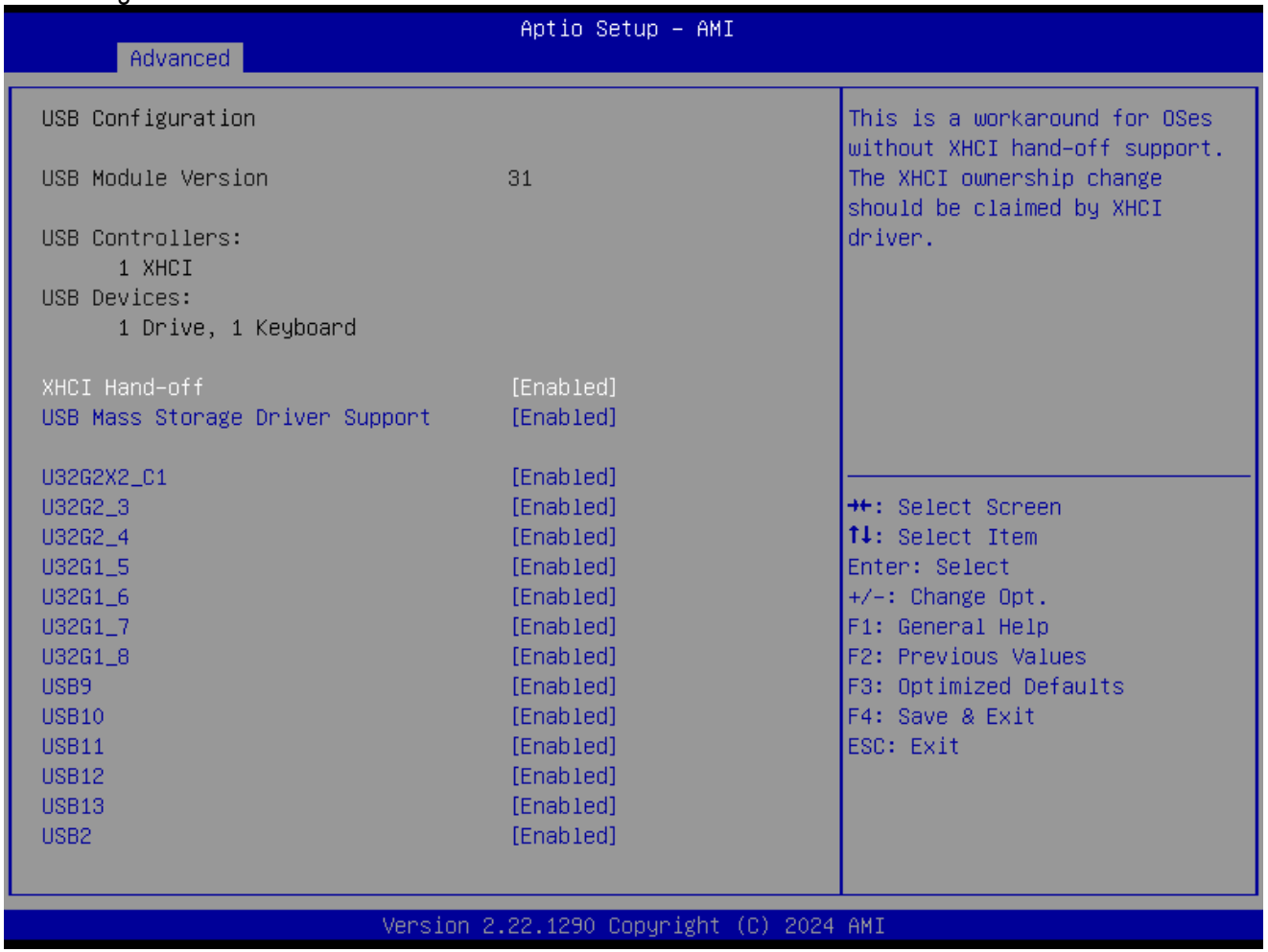
Network Stack Settings



Feature	Description	Options
Network Stack	Enable/ Disable UEFI Network Stack	★Disabled, Enabled
Network Stack [Enabled]		
Ipv4 PXE Support	Enable/Disable IPv4 PXE boot support. If disable, IPv4 PXE boot support will not be available.	★Disabled, Enabled
Ipv6 PXE Support	Enable/Disable IPv6 PXE boot support. If disable, IPv6 PXE boot support will not be available.	★Disabled, Enabled

USB Configuration

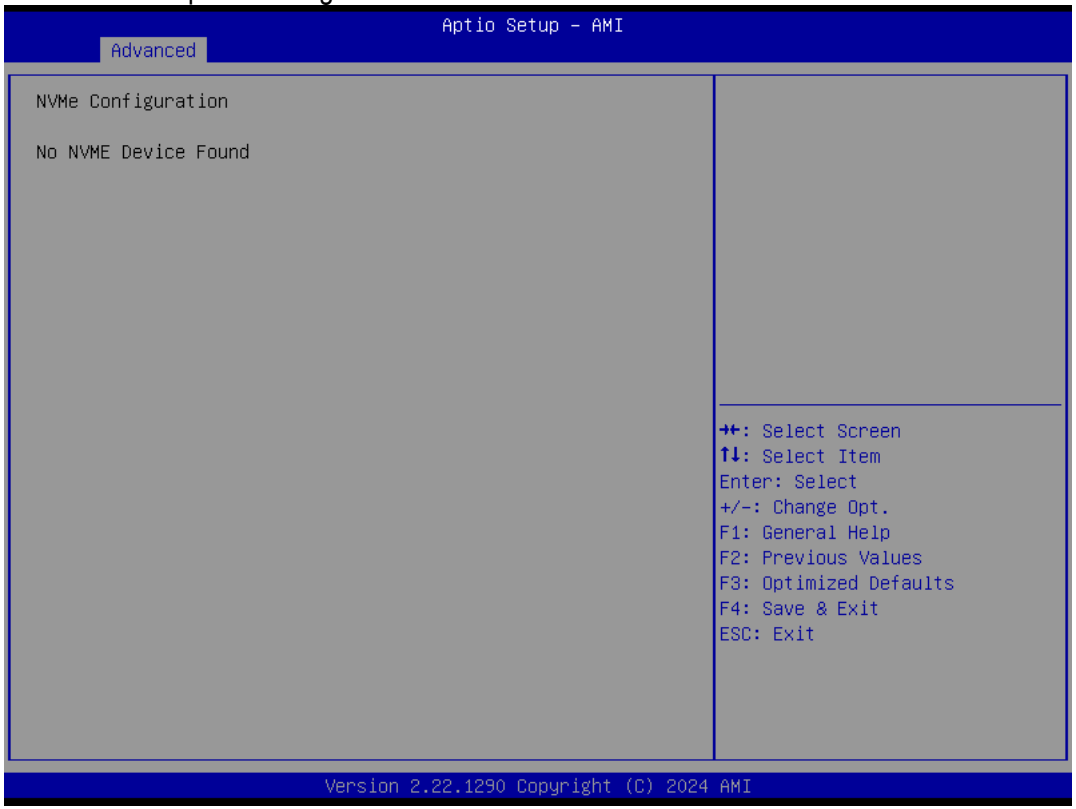
USB Configuration Parameters



Feature	Description	Options
XHCI Hand-off	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver	★Enabled, Disabled
USB Mass Storage Driver Support	Enable/Disable USB Mass Storage Driver Support	★Enabled, Disabled
U32G2X2_C1	Enable/Disable U32G2X2_C1.	★Enabled, Disabled
U32G2_3~ U32G2_4	Enable/Disable U32G2_3~ U32G2_4.	★Enabled, Disabled
U32G1_5~ U32G1_8	Enable/Disable U32G1_5~ U32G1_8.	★Enabled, Disabled
USB9~13	Enable/Disable USB9~13.	★Enabled, Disabled
USB2	Enable/Disable USB2.	★Enabled, Disabled

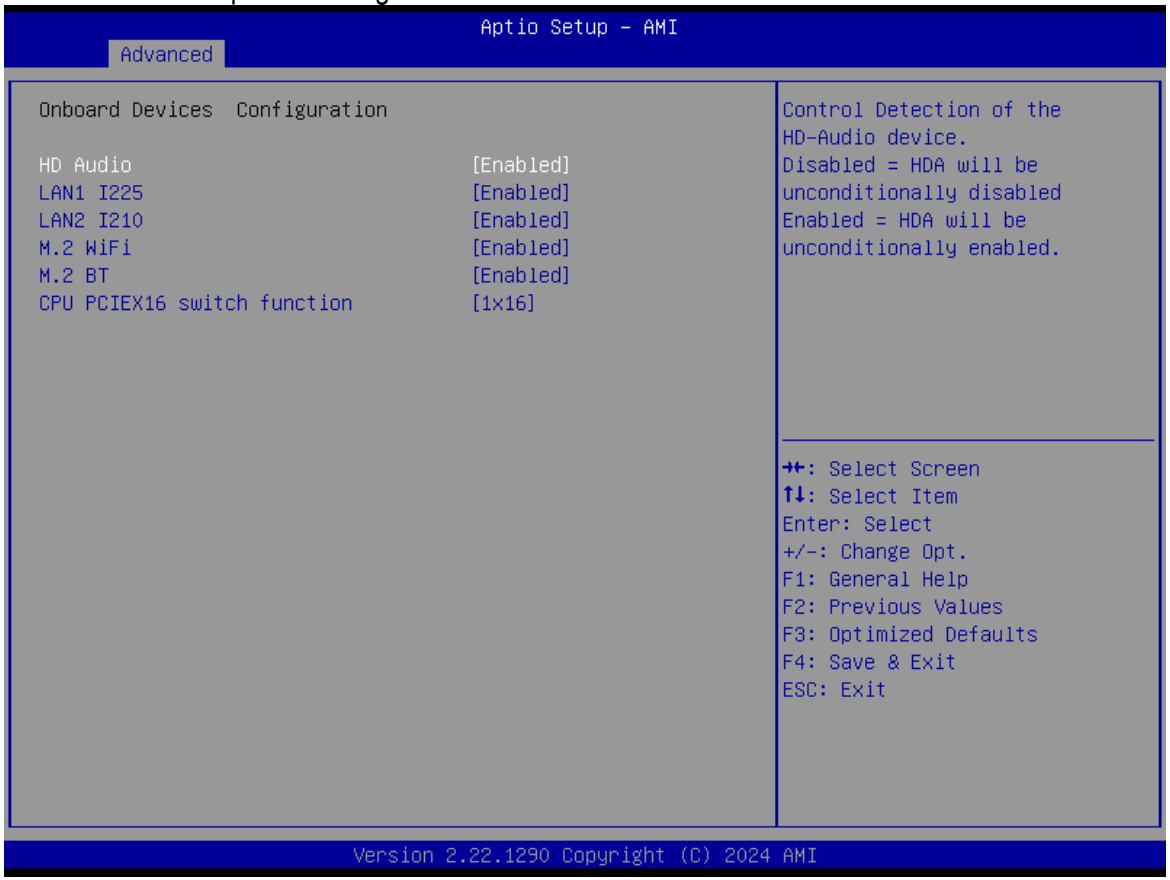
NVMe Configuration

NVMe Device Option Settings



Onboard Devices Configuration

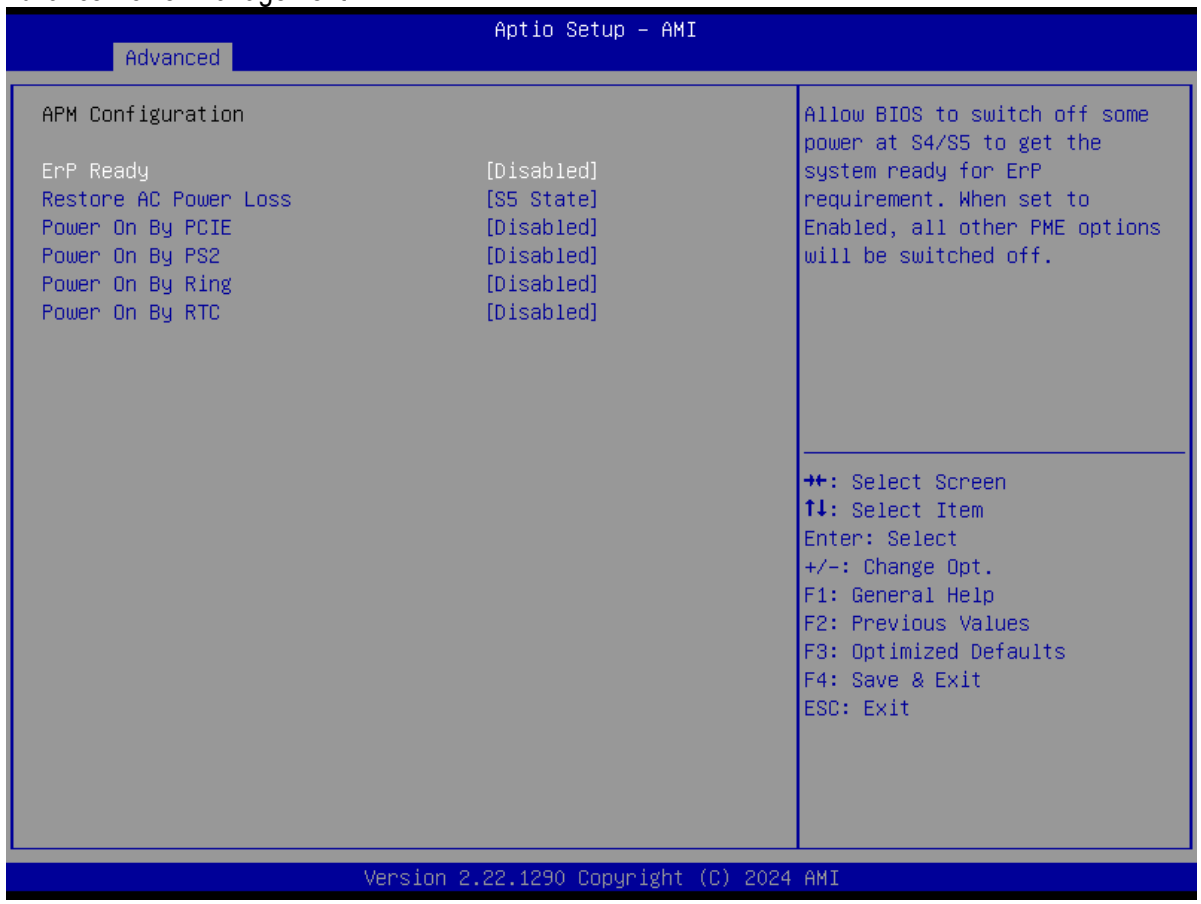
Onboard Devices Options Settings



Feature	Description	Options
HD Audio	Control Detection of the HD-Audio device. Disabled= HDA will be unconditionally disabled. Enabled= HDA will be unconditionally enabled.	★Enabled, Disabled
LAN1 I225	Enable/Disable LAN1 I225.	★Enabled, Disabled
LAN2 I210	Enable/Disable LAN2 I210.	★Enabled, Disabled
M.2 WiFi	Enable/Disable M.2 WiFi.	★Enabled, Disabled
M.2 BT	Enable/Disable M.2 BT.	★Enabled, Disabled
CPU PCIEX16 switch function	CPU PCIEX16 switch function1x16/2x8	★1x16,2x8

APM Configuration

Advance Power Management



Feature	Description	Options
ErP Ready	Allow BIOS to switch off some power at S4/S5 to get the system ready for ErP requirement. When set to Enabled, all other PME options will be switched off.	★Disabled, Enabled
Restore AC Power Loss	Select AC power state when power is re-applied after a power failure.	★S5 State, S0 State
Power On By PCIE	Enable or disable the Wake-on-LAN function of the onboard LAN controller or other installed PCIE LAN devices.	★Disabled, Enabled
Power On By PS2	Enable/disable resume from S5 via PS2.	★Disabled, Enabled
Power On By Ring	Power On By Ring.	★Disabled, Enabled
Power On By RTC	Select whether to enable Wake Up on Alarm, to turn on your system on a special day of the week or daily. NOTE: Values in these fields may be overwritten by the operating system.	★Disabled, Single event, Daily event, Weekly event, Monthly event

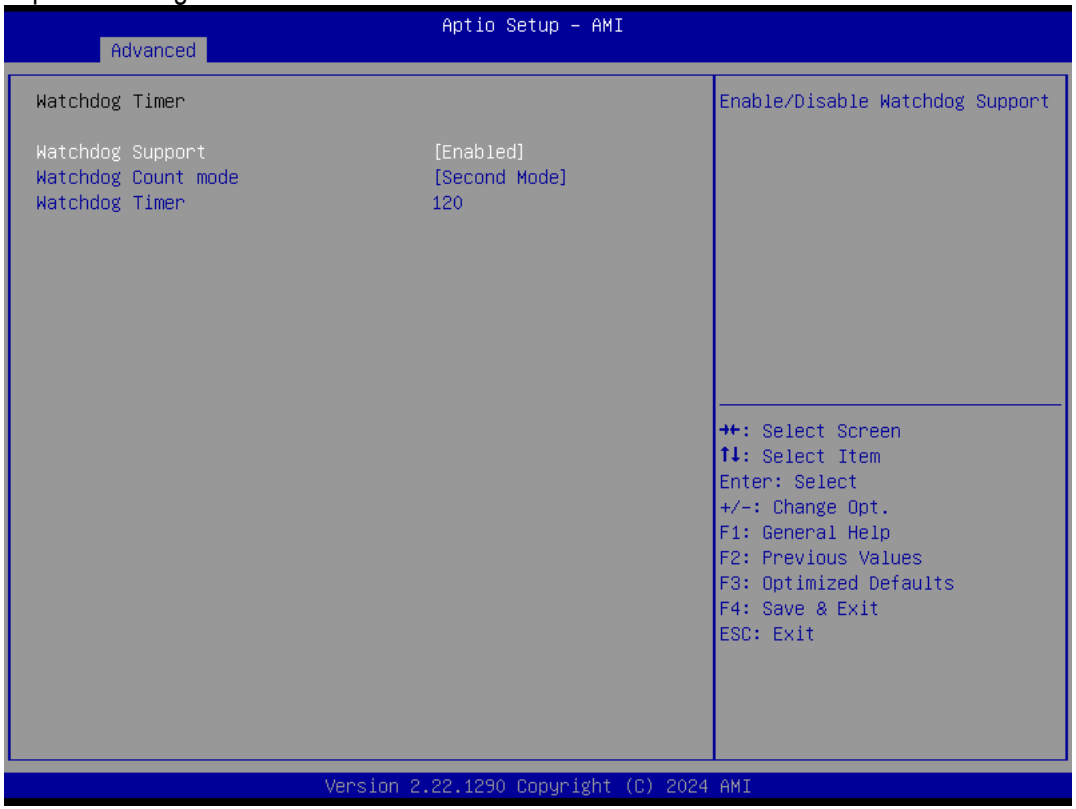
EZ-Flash

EZ-Flash

Feature	Description	Options
Enter Ez-Flash mode	Enter Ez-Flash mode	

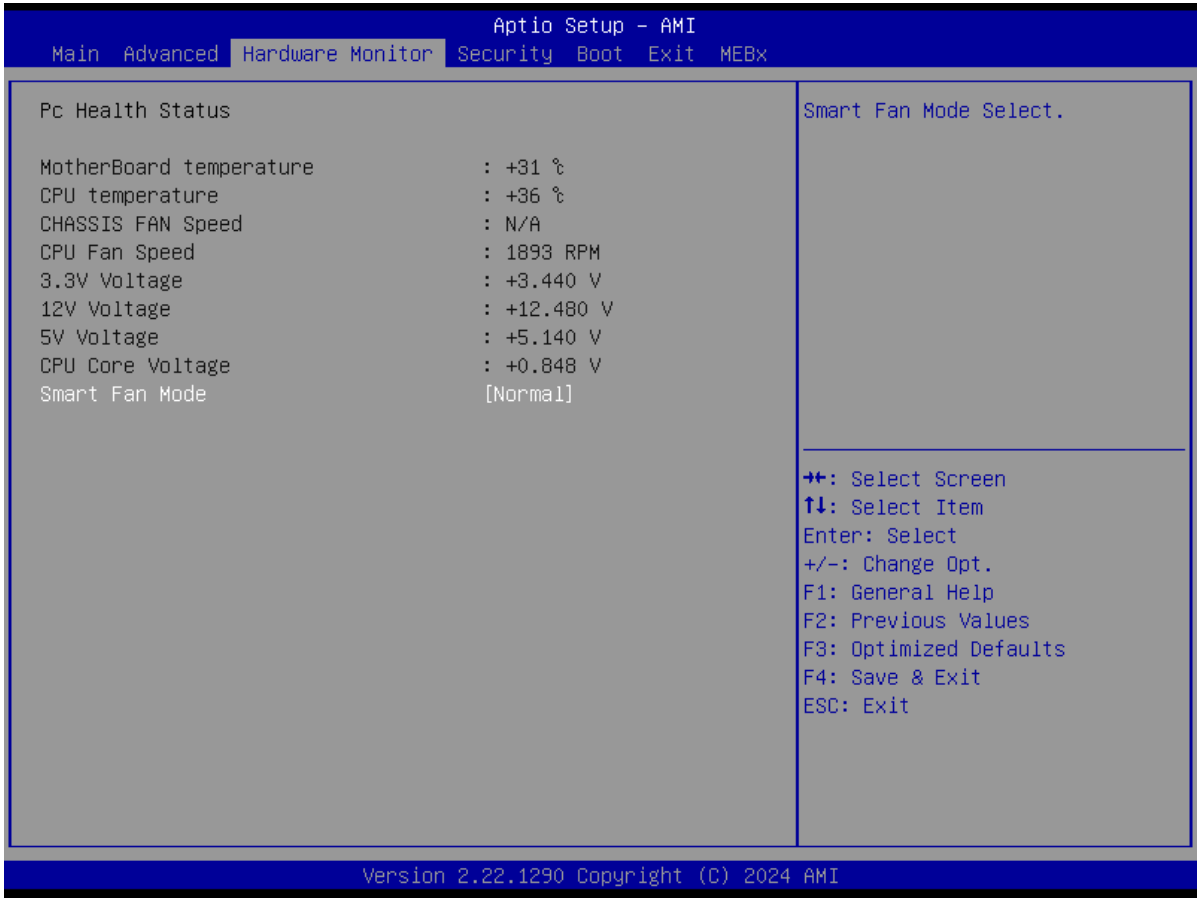
Watchdog Timer

Super IO Configuration



Feature	Description	Options
Watchdog Support	Enable/Disable Watchdog Support.	★Enable, Disabled
Watchdog Count mode	Select Watchdog Timer I count mode.	★Second Mode, Minute Mode
Watchdog Timer	Watchdog Timer I Time-out value.	★120

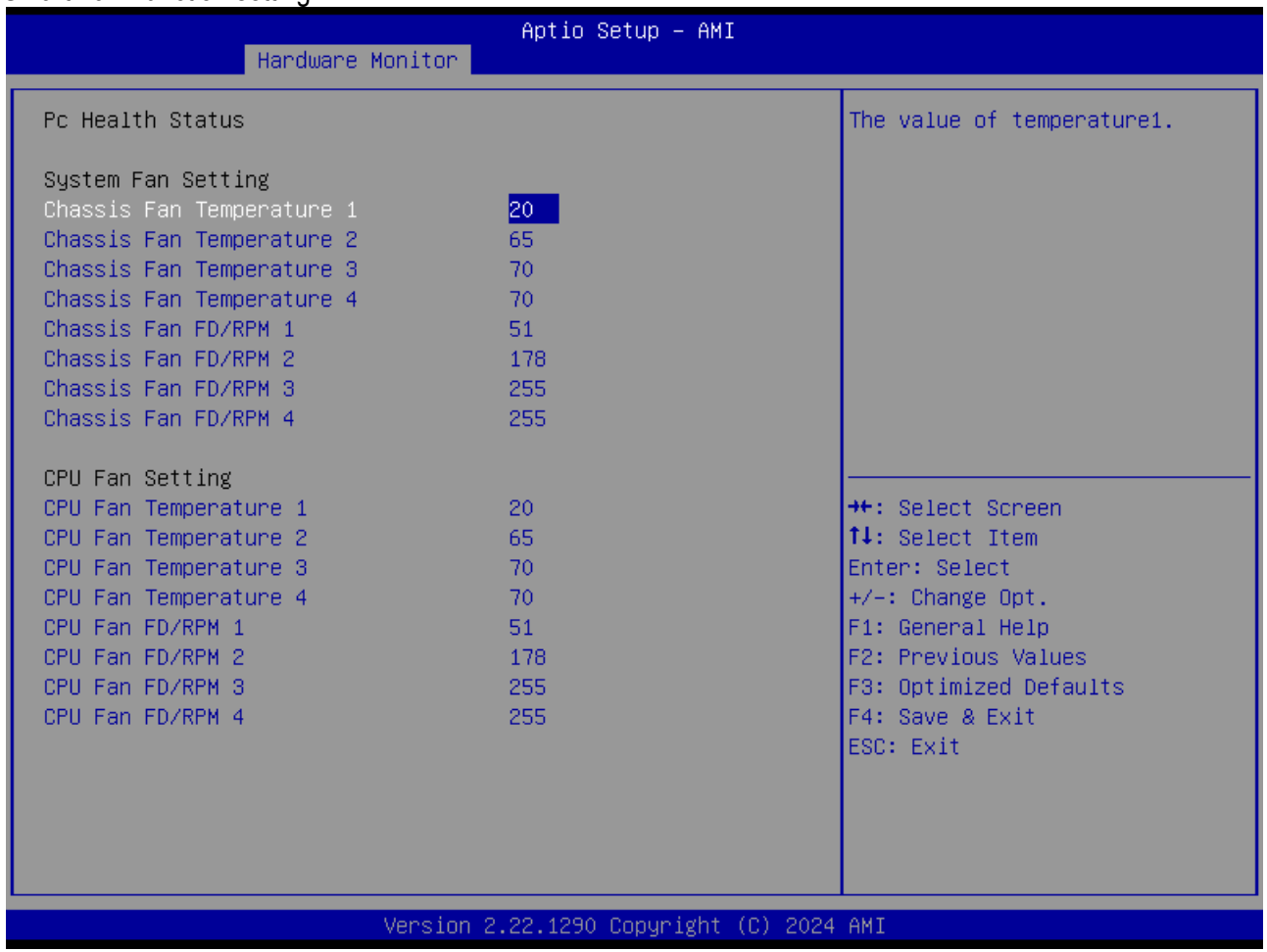
7.2.3 H/W Monitor



Feature	Description	Options
Smart Fan Mode	Smart Fan Mode Select	★Normal, Disabled, Manual Mode

Smart Fan Function

Smart Fan Function setting



Feature	Description	Options
System Fan Setting		
Temperature 1	The value of temperature 1.	★20
Temperature 2	The value of temperature 2.	★65
Temperature 3	The value of temperature 3.	★70
Temperature 4	The value of temperature 4.	★70
FD/RPM 1	The value of Fan Duty/RPM 1 when temperature is T1.	★51
FD/RPM 2	The value of Fan Duty/RPM 2 when temperature is T2.	★178
FD/RPM 3	The value of Fan Duty/RPM 3 when temperature is T3.	★255
FD/RPM 4	The value of Fan Duty/RPM 4 when temperature is T4.	★255
CPU Fan Setting		
Temperature 1	The value of temperature 1.	★20
Temperature 2	The value of temperature 2.	★65
Temperature 3	The value of temperature 3.	★70
Temperature 4	The value of temperature 4.	★70
FD/RPM 1	The value of Fan Duty/RPM 1 when temperature is T1.	★51
FD/RPM 2	The value of Fan Duty/RPM 2 when temperature is T2.	★178
FD/RPM 3	The value of Fan Duty/RPM 3 when temperature is T3.	★255
FD/RPM 4	The value of Fan Duty/RPM 4 when temperature is T4.	★255

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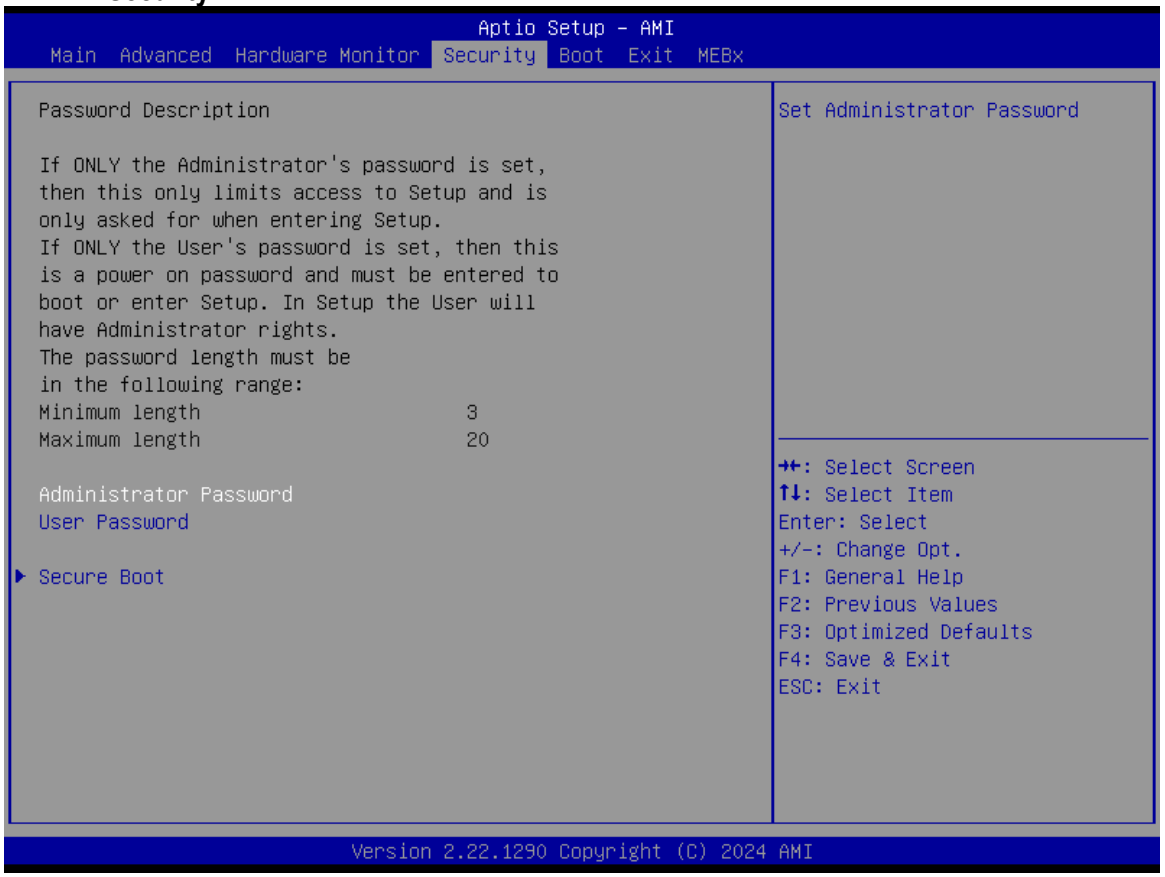
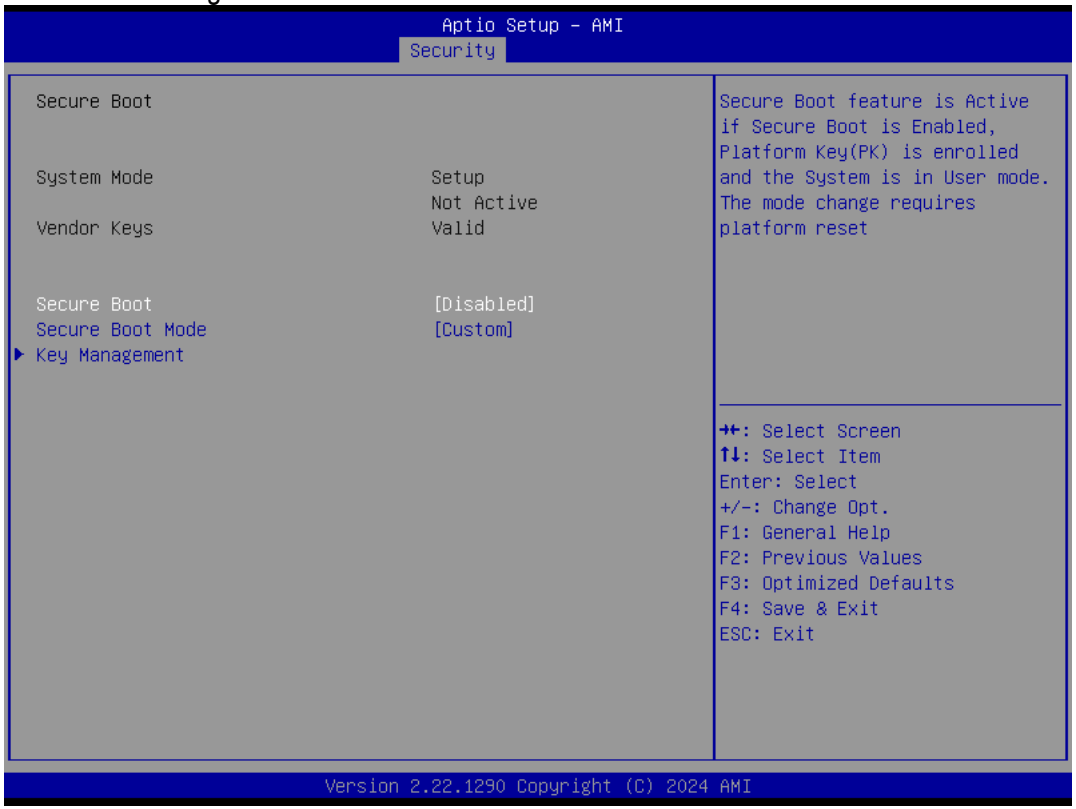
7.2.4 Security



Feature	Description	Options
Administrator Password	Set Administrator password.	
User Password	Set User Password	

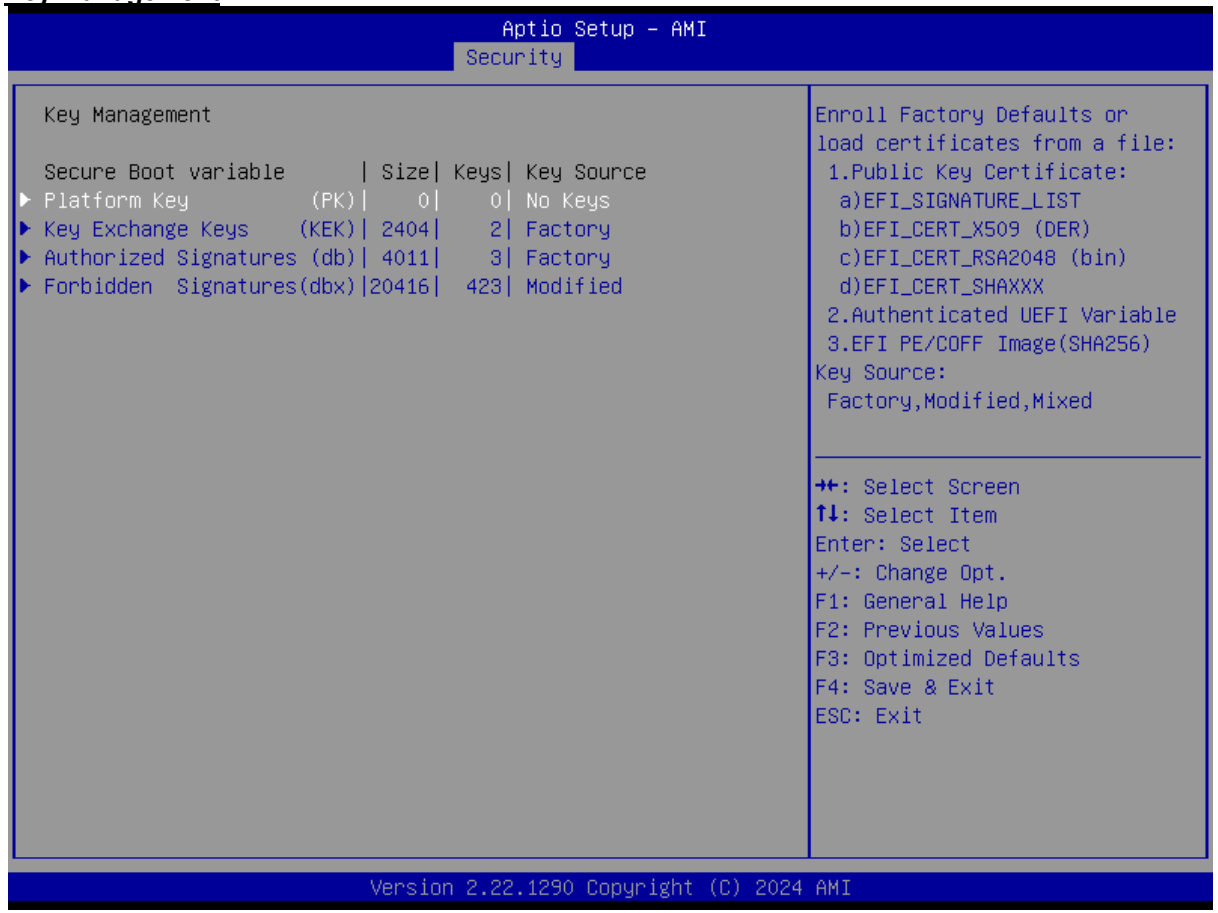
Secure Boot

Secure Boot configuration



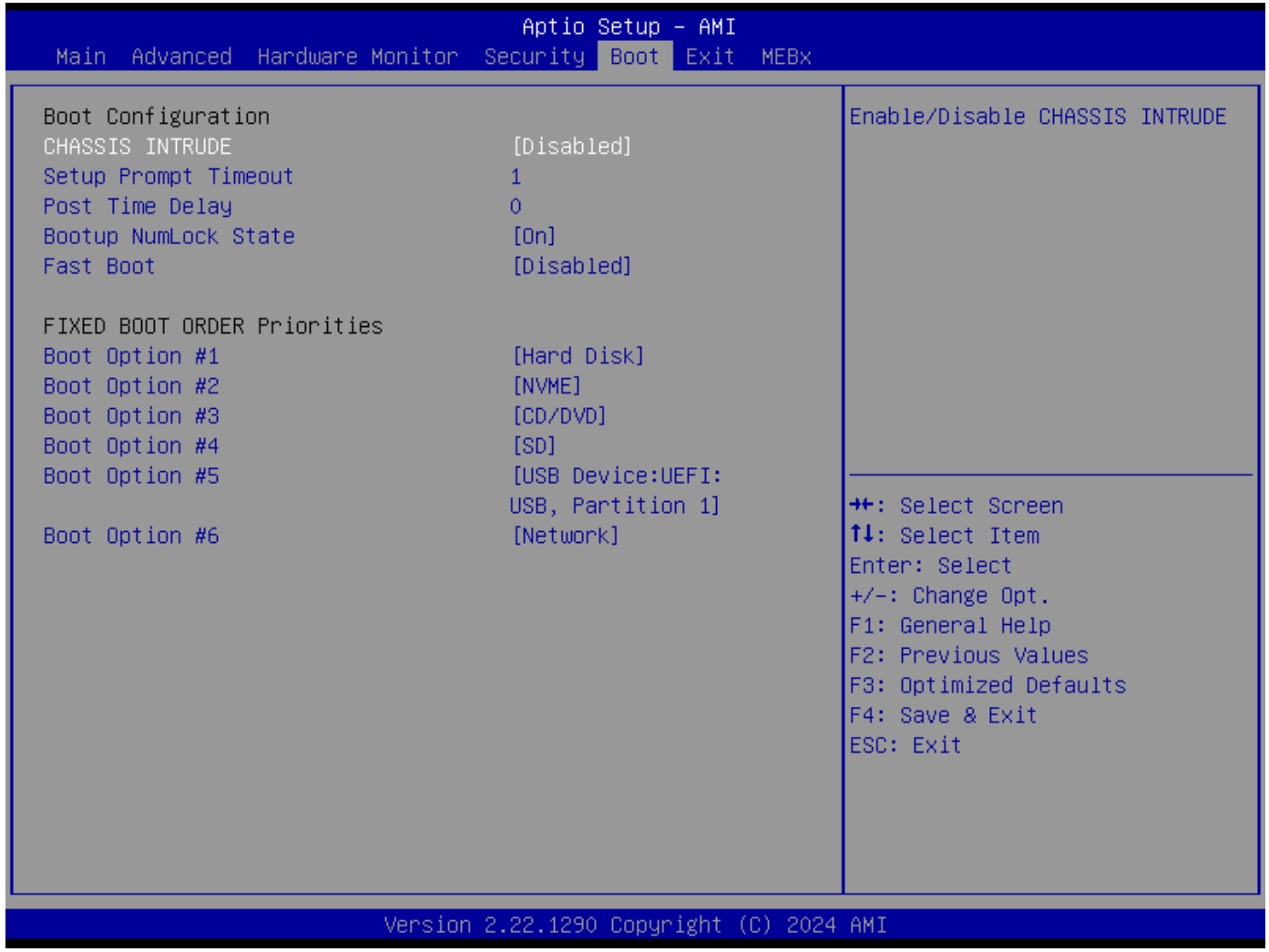
Feature	Description	Options
Secure Boot	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.	★Disabled, Enabled
Secure Boot Mode	Secure Boot Mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication	★Custom ,Standard

Key Management



Feature	Description	Options
Platform Key(PK)	Enroll Factory Defaults or load certificates from a file: 1.Publuc Key Certificate: a)EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d)EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image(SHA256) Key Source: Factory, External, Mixed	
Key Exchange Keys		
Authorized Signatures		
Forbidden Signatures		

7.2.5 Boot


Aptio Setup - AMI
Main Advanced Hardware Monitor Security Boot Exit MEBx
Boot Configuration
CHASSIS INTRUDE [Disabled]
Setup Prompt Timeout 1
Post Time Delay 0
Bootup NumLock State [On]
Fast Boot [Disabled]
FIXED BOOT ORDER Priorities
Boot Option #1 [Hard Disk]
Boot Option #2 [NVME]
Boot Option #3 [CD/DVD]
Boot Option #4 [SD]
Boot Option #5 [USB Device:UEFI: USB, Partition 1]
Boot Option #6 [Network]
Enable/Disable CHASSIS INTRUDE
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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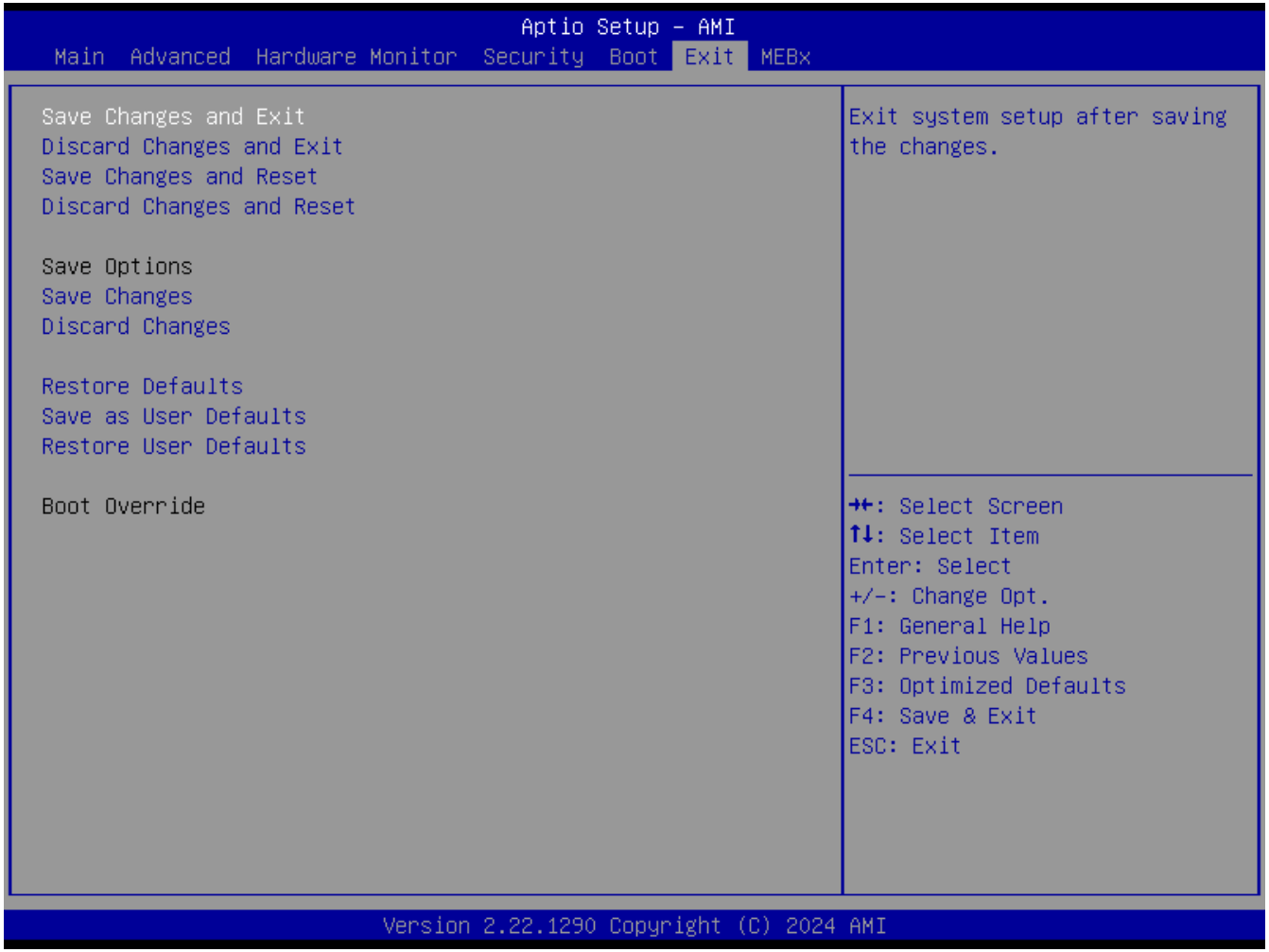
Feature	Description	Options
CHASSIS INTRUDE	Enable/Disable CHASSIS INTRUDE	★Disabled, Enabled
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.	★1
Bootup NumLock State	Select the keyboard NumLock state	★Off, On
Fast Boot	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.	★Disabled Link, Enabled
Boot Option #1~#6	Sets the system boot order	★Hard Disk, NVME, CD/DVD,SD, USB Device, Network, Disabled

7.2.6 Exit


Aptio Setup - AMI
Main Advanced Hardware Monitor Security Boot Exit MEBx
Save Changes and Exit
Discard Changes and Exit
Save Changes and Reset
Discard Changes and Reset
Save Options
Save Changes
Discard Changes
Restore Defaults
Save as User Defaults
Restore User Defaults
Boot Override
Exit system setup after saving the changes.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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Feature	Description	Options
Save Changes and Exit	Exit system setup after saving the changes.	
Discard Changes and Exit	Exit system setup without saving any changes.	
Save Changes and Reset	Reset the system after saving the changes.	
Discard Changes and Reset	Rest system setup without saving any changes.	
Save Changes	Save Changes done so far to any of the setup options.	
Discard Changes	Discard Changes done so far to any of the setup options.	
Restore Defaults	Restore/Load Default values for all the setup options.	
Save as Use Defaults	Save the changes done so far as User Defaults	
Restore User Defaults	Restore the User Defaults to all the setup options.	

7.2.7 MEBx

Feature	Description	Options
Intel® ME Password	MEBx Login.	

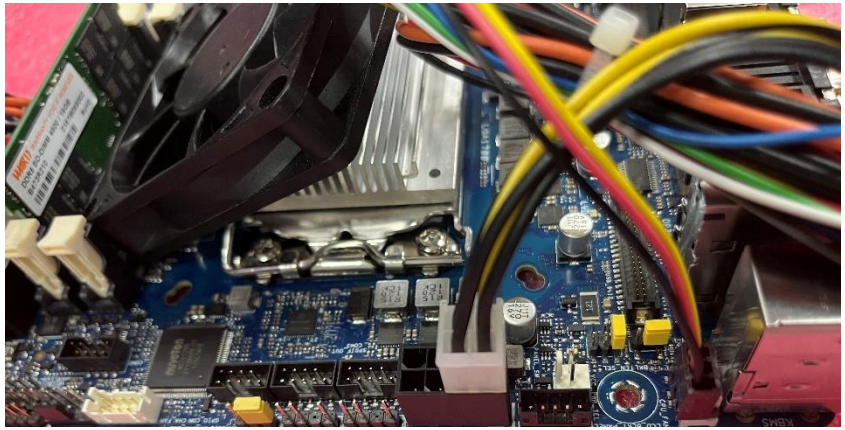
8 Troubleshooting

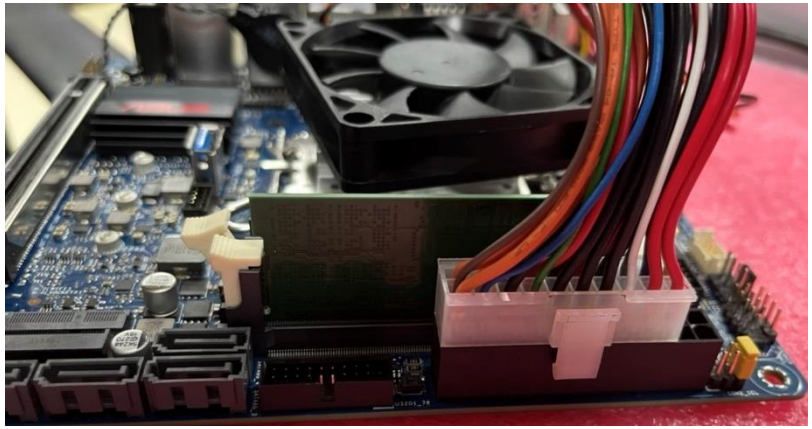
This section provides a few useful tips to quickly get WADE-8213-Q670E running with success. This section will primarily focus on system integration issues, in terms of BIOS setting, and OS diagnostics.

8.1 Hardware Quick Installation

ATX Power Setting

Unlike other Single board computer, WADE-8213-Q670E supports ATX only. Therefore, there is no other setting that needs to be set up. However, there are only two connectors that must be connected—8-pin EATX12V & 24-pin EATXPW on the WADE-8213-Q670E board.

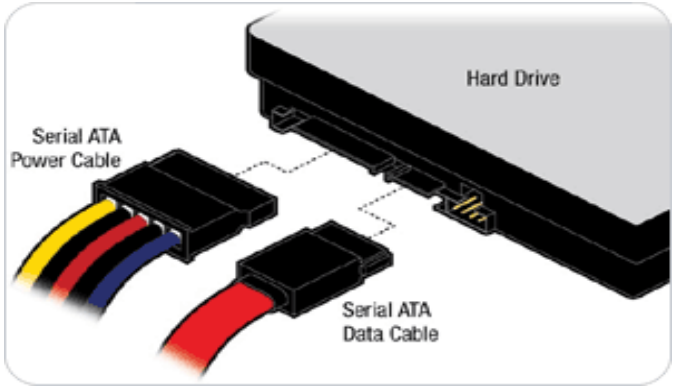




Serial ATA

Unlike IDE bus, each Serial ATA channel can only connect to one SATA hard disk at a time;

The installation of Serial ATA is simpler and easier than IDE, because SATA hard disk doesn't require setting up Master and Slave, which can reduce mistake of hardware installation.



WADE-8213-Q670E can support four SATA interface (SATAIII, 6.0Gb/s) on board. It has SATA ports on board.

8.2 BIOS Setting

It is assumed that users have correctly adopted modules and connected all the devices cables required before turning on ATX power. DDR5 SO-DIMM Memory, keyboard, mouse, SATA hard disk, DP connector, power cable of the device, ATX accessories are good examples that deserve attention. With no assurance of properly and correctly accommodating these modules and devices, it is very possible to encounter system failures that result in malfunction of any device.

To make sure that you have a successful start with WADE-8213-Q670E, it is recommended, when going with the boot-up sequence, to hit "delete " or " Esc" key and enter the BIOS setup menu to tune up a stable BIOS configuration so that you can wake up your system far well.

Loading the default optimal setting

When prompted with the main setup menu, please scroll down to “Restore Defaults”, press “Enter” and select “Yes” to load default optimal BIOS setup. This will force your BIOS setting back to the initial factory configurations. It is recommended to do this so you can be sure the system is running with the BIOS setting that Portwell has highly endorsed. As a matter of fact, users can load the default BIOS setting at any time when system appears to be unstable in boot up sequence.

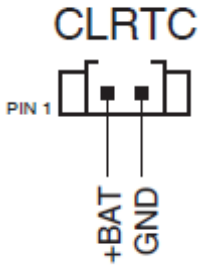
8.3 FAQ

Information & Support

Question: I forgot my password of system BIOS, what am I supposed to do?

Answer: You can switch off your power supply then find the 2-pin CLRTC on the WADE-8213 board .Then Use a metal object such as a screwdriver to short the two pins and wait 5 seconds to clean your password then to switch on your power supply.

Clear CMOS header (2-pin CLRTC)：CMOS Setting

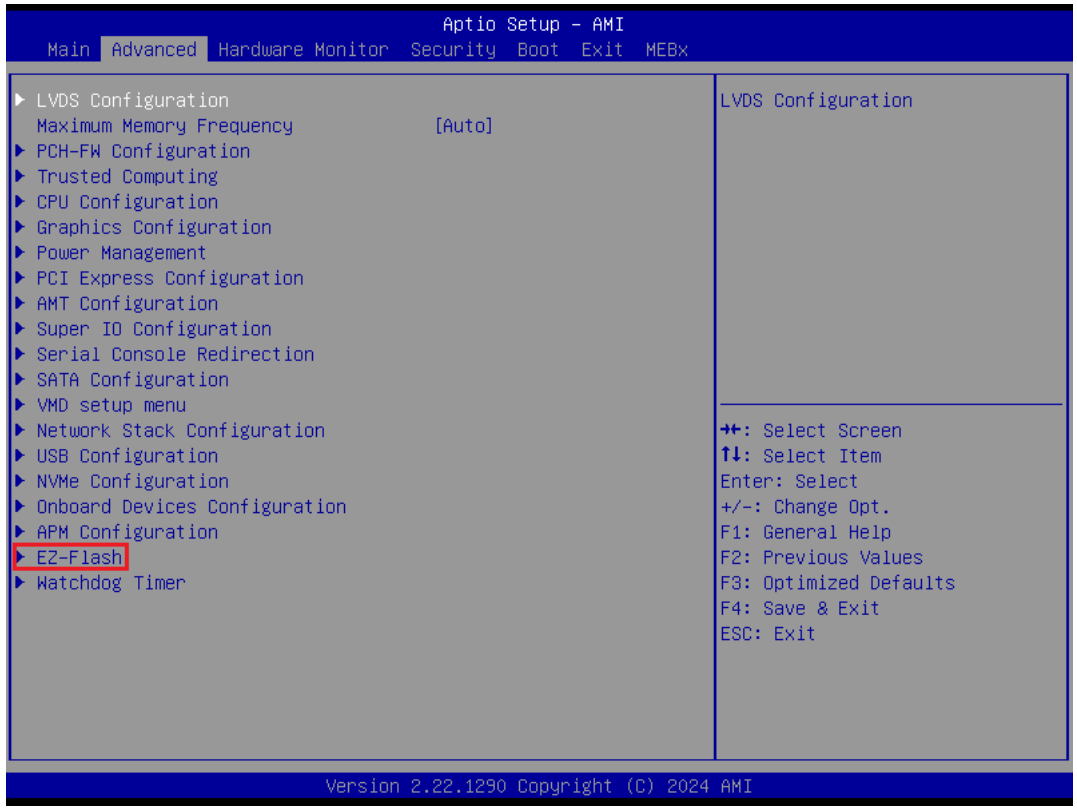


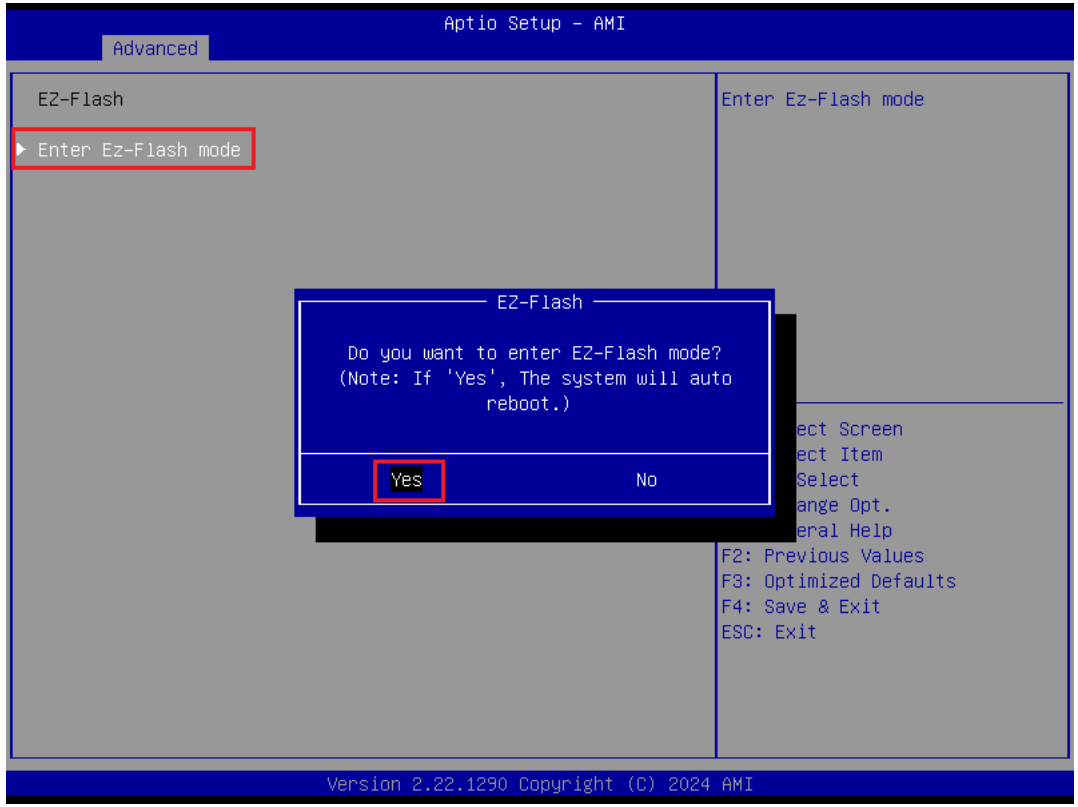
Question: How to update the BIOS file of WADE-8213-Q670E?

Answer: 1. Please visit web site of Portwell download center as below hyperlink

https://www.portwell.com.tw/support-center/download-center/

2. Select "Search download" and type the keyword "WADE-8213".
3. Find the "BIOS "page and download the ROM file and unzip file to USB flash drive (FAT 32 / 16 format).
4. Boot into BIOS and switch to "Advanced" page then select" EZ-Flash".




Aptio Setup – AMI
Advanced
EZ-Flash
Enter Ez-Flash mode
Enter Ez-Flash mode
EZ-Flash
Do you want to enter EZ-Flash mode?
(Note: If 'Yes', The system will auto reboot.)
Yes
No
ect Screen
ect Item
Select
ange Opt.
eral Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
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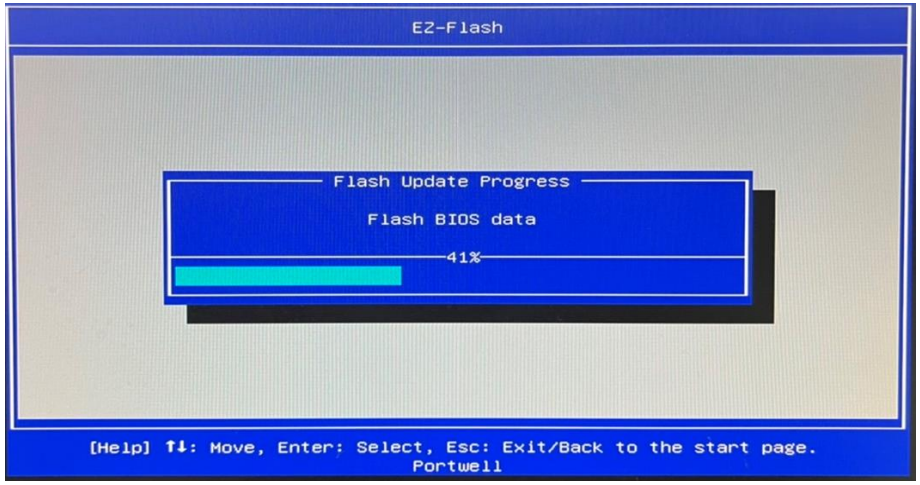
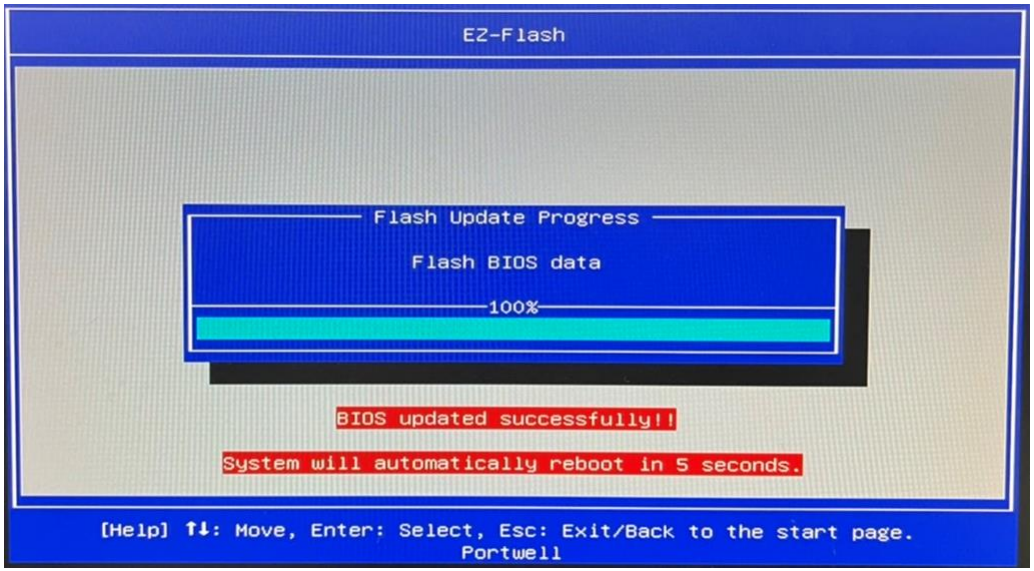
5. Enter EZ-Flash mode, Select the USB Drive and Click the BIOS file then start updating BIOS.



6. When you see the “BIOS updated successfully” message, which means the BIOS update processes finished.

Please cut the AC power of and **wait for 10 seconds** before powering on.



Question: What are the display options while using WADE-8213-Q670E board?

Answer: The WADE-8213-Q670E supports DP, HDMI, eDP/LVDS display output.

Note:

Please visit our Download Center to get the Catalog, User manual, BIOS, and Driver files.

https://www.portwell.com.tw/support-center/download-center/

If you have other additional technical information or request which is not covered in this manual, please fill in the technical request form as below hyperlink.

https://www.portwell.com.tw/support-center/technical-request/

We will do our best to provide a suggestion or solution for you.

Thanks

9 Portwell Software Service

1. If you have customized requirements of BIOS, you can contact person of our company or branch.
2. If you have requirements of WDT, GPIO APP, you can contact our headquarter or branch, and we can render you assistance on developing.

Portwell Worldwide:	
Portwell, Inc.	E-mail: info@portwell.com.tw
Shanghai Portwell	E-mail: info@portwell.com.cn
Portwell Japan, Inc	E-mail: info@portwell.co.jp
American Portwell Technology	E-mail: info@portwell.com
European Portwell Technology	E-mail: info@portwell.eu
Portwell UK Ltd.	E-mail: info@portwell.co.uk
Portwell Deutschland GmbH	E-mail: info@portwell.eu
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10 Industry Specifications

10.1 Industry Specifications

The list below provides links to industry specifications that apply to Portwell modules.

Low Pin Count Interface Specification, Revision 1.0 (LPC) http://www.intel.com/design/chipsets/industry/lpc.htm
Universal Serial Bus (USB) Specification, Revision 2.0 http://www.usb.org/home
PCI Specification, Revision 2.3 https://www.pcisig.com/specifications
Serial ATA Specification, Revision 3.0 http://www.serialata.org/
PCI Express Base Specification, Revision 2.0 https://www.pcisig.com/specifications