

EAX-H610C

**Intel® 12/13/14th Gen Core™ i9/i7/i5/i3 Processor ATX
Motherboard with Intel® H610 Chipset**

User's Manual



2nd Ed –02 April 2025

FCC Statement



THIS DEVICE COMPLIES WITH PART 15 FCC RULES. OPERATION IS SUBJECT TO THE FOLLOWING TWO CONDITIONS:

- (1) THIS DEVICE MAY NOT CAUSE HARMFUL INTERFERENCE.
- (2) THIS DEVICE MUST ACCEPT ANY INTERFERENCE RECEIVED INCLUDING INTERFERENCE THAT MAY CAUSE UNDESIRE OPERATION.

THIS EQUIPMENT HAS BEEN TESTED AND FOUND TO COMPLY WITH THE LIMITS FOR A CLASS "A" DIGITAL DEVICE, PURSUANT TO PART 15 OF THE FCC RULES.

THESE LIMITS ARE DESIGNED TO PROVIDE REASONABLE PROTECTION AGAINST HARMFUL INTERFERENCE WHEN THE EQUIPMENT IS OPERATED IN A COMMERCIAL ENVIRONMENT. THIS EQUIPMENT GENERATES, USES, AND CAN RADIATE RADIO FREQUENCY ENERGY AND, IF NOT INSTALLED AND USED IN ACCORDANCE WITH THE INSTRUCTION MANUAL, MAY CAUSE HARMFUL INTERFERENCE TO RADIO COMMUNICATIONS.

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Notice

This guide is designed for experienced users to setup the system within the shortest time. For detailed information, please always refer to the electronic user's manual.

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1. Collect all the information about the problem encountered. (For example, CPU type and speed, Avalue's products model name, hardware & BIOS revision number, other hardware and software used, etc.) Note anything abnormal and list any on-screen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information available.
3. If your product is diagnosed as defective, obtain an RMA (return material authorization) number from your dealer. This allows us to process your good return more quickly.
4. Carefully pack the defective product, a complete Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



Always ground yourself to remove any static charge before touching the CPU card. Modern electronic devices are very sensitive to static electric charges. As a safety precaution, use a grounding wrist strap at all times. Place all electronic components in a static-dissipative surface or static-shielded bag when they are not in the chassis.

1.2 Packing List

Before you begin installing your single board, please make sure that the following materials have been shipped:

- 1 x EAX-H610C Motherboard
- 2 x SATA Cables (for 2 x PCIe8 SKU, one additional SATA cable is packed to avoid possible interference)
- 1 x I/O Shield
- 1 x Rubber (for CPU cooler supporting)



If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	By	Comment
1 st	March 2025	Avalue	Initial Release
2 nd	April 2025	Avalue	Update Jumper and Connector List

1.4 Manual Objectives

This manual describes in details Avalue Technology EAX-H610C Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to set up EAX-H610C or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors regarding this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

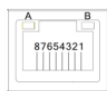
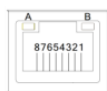
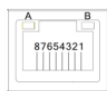
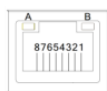
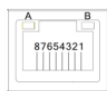
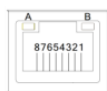
System	
CPU	Intel® 12/13/14th Gen Core™ i9/i7/i5/i3 Processor, supports LGA 1700 CPU Up to 8+4 Core 65W Max
BIOS	AMI uEFI BIOS, 256Mbit SPI Flash ROM
System Chipset	Intel® H610 chipsets
I/O Chip	ITE IT8786E-I (eSPI super IO)
System Memory	2 x U-DIMM Up to 64G DDR4 3200MHz (none ECC)
Watchdog Timer	H/W Reset, 5~255 seconds/5~255 minutes
H/W Status Monitor	CPU temperature monitoring Voltages monitoring CPU fan speed control
TPM	Onboard SLB9670 VQ20 supports TPM 2.0 (By BOM Optional)
iAMT	N/A *Intel® i219V/i226V/H610 PCH does not support Intel AMT 12.0 Not support Intel vPro.
Expansion Slot	
M.2	1 x M.2 Key M, Support PCI-e Gen3 x2, SATA SSD, 2242/2280(Default 2280 and SATA signal)
PCIe	1 x PCI-e Gen4 x16 Slot 2 x PCI-e Gen3 x2 signal by PCI-e x4 Slot *PCI-e_4X_SLOT1 and PCI-e_4X_SLOT2 can support 2 x PCI-e PCI-e Gen3 x2 (default) or 1 x PCI-e Gen3 x4. (BOM and BIOS selectable) 1 x PCI-e Gen3 x4 Slot (Only support PCIe Gen3 x2),PCI-e_4x_SLOT3 *PCI-e Gen3 x2 signal of M.2_PCIESSD_M1 colay with PCI-e_4X_SLOT3. (BOM selectable)
PCI	3 x PCI Slot 1 x PCI CLK 66MHz Enable/Disable Select Jumper (JP14) Default:33MHz
Storage	
M.2	1 x M.2 Key M, Support PCI-e Gen3 x2, SATA SSD, 2242/2280(Default 2280 and SATA signal)
SATA	3 x SATA III
Edge I/O	
COM	1 x RS-232 (COM1 by DB9/ Male connector), support RI/5V/12V by jumper Selection 2x2x3 Pin, pitch 2.54mm jumper select for RI/5V/12V, 0.5A) (JP1) * Pin1 support DCD or 5V@0.5A, default DCD.

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	*Pin9 support RI or 12V@0.5A, default RI. selectable by JP1(2x3 Pin, pitch 2.54mm). Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN9 signal
LAN	1 x Intel® i226V 2.5 Gigabit Ethernet Controller (It only supports 1G The main problem is that the LAN connector uses 1G LAN connector,and there are design limitations in the motherboard space.) 1 x Intel® WGI219V Gigabit Ethernet Controller
USB	4 x USB3.2 Gen1x1, +5VSB/0.9A 2 x USB 2.0, +5V, 0.5A
HDMI	1 x HDMI 1.4b
DVI	1 x DVI-D
VGA	1 x VGA
Audio	3 x 3.5mm Jack (Line-Out + MIC-in + Line-In)
Others	1 x PS/2 Keyboard and Mouse
Onboard I/O	
COM	COM 2/5/6: support RS232 3 x 2 x 5 pin, pitch 2.54mm connector for COM 2/5/6 support RS-232(COM2/5/6) 3 x 2 x 3 pin, pitch 2.54mm jumper select for DCD/5V RI/12V, 0.5A (COM 2 JP2, COM 5 JP5, COM 6 JP6) * PIN1 of COM 2/5/6 can be DCD (default) /5V and Pin8 of COM 2/5/6 can be RI (Default) / 12V, selectable by “COM 2/5/6 VCC5/DCD+VCC12/RI Select Jumper”. COM3/4: support RS232/485 2 x 2 x 5 pin, pitch 2.54mm connector for COM 3/4 support RS-232/485 (COM 3/4) default RS-232 2 x 2 x 3 pin, pitch 2.54mm jumper select for DCD/5V RI/12V, 0.5A (COM 3 JP3, COM 4 JP4) * PIN1 of COM 3/4 can be DCD (default) /5V and Pin8 of COM 3/4 can be RI (Default) / 12V, selectable by “COM 3/4 VCC5/DCD+VCC12/RI Select Jumper”. 4 x 2 x 3 RS-232/RS485 Select(COM 3 JP7 JP8) /(COM 4 JP10 JP11) * COM 3 can be RS-232 (default) / RS-485 selecting by JP7, JP8 Jumper. * COM 3 can be RS-485 selected by jumper and setting BIOS to RTS mode. * COM 4 can be RS-232 (default) / RS-485 selecting by JP10, JP11 Jumper. * COM 4 can be RS485 selecting by jumper and setting BIOS to RTS mode.

	2 x 1 x 3 Pin, pitch 2.54mm jumper select for RS-485 Signal 120Ω Resistive Termination (COM 3 JP9, COM 4 JP12)
USB	2 x 2 x 5 pin, pitch 2.54mm connector for 3 x USB 2.0, +5V, 0.5A (F_USB2_1/F_USB2_2) *One of USB2.0 signal for F_USB2_1 port 1 colay with USB2_1 Type-A connector, support USB2_1 Type A by default.) * F_USB2_1 port 1 disable. Vertical Type A Connector default for 1 x USB 2.0, +5V, 0.5A **USB Wake up by BIOS Setting
GPIO	1 x 2 x 6 pin, pitch 2.54mm connector for GPIO: 8 bits & +5VS Level (J_GPIO1)
CPU/System FAN	1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported (CPU_FAN1) 1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported (SYS_FAN1) 1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported (SYS_FAN2)
Buzzer	Onboard
Front Panel	1 x 2 x 5 pin, pitch 2.54mm connector for front panel (F_PANEL1)
RTC Battery	1 x Horizontal type battery connector (CR2032 Battery)(BAT1)
AT/ATX Selector	1 x 1 x 3 pin pitch 2.54mm jumper select for for AT/ATX (J_AT/ATX1)
Clear CMOS	1 x 1 x 3pin, pitch 2.54mm jumper select for CMOS Clear (CLR_CMOS1)
BIOS SPI	1 x 2 x 6 pin, pitch 2.0mm connector for ESPI (J_ESPI1)
Audio	1 x 2 x 5 pin, pitch 2.54mm connector for front Audio (Mic-in, Line-out) (F_AUDIO1) 1 x 1 x 4 pin, pitch 2.54mm connector for S/PDIF(J_SPDIF1)
Power Input	1 x 2 x 12 pin ATX power connector 1 x 2 x 4 pin ATX 12V power connector
Auxiliary Panel	1 x 1 x 2 pin, pitch 2.54mm connector (J_COPEN1)
Other	1 x 1 x 4 pin, pitch Wafer 1.25mm SMBus (SMBUS1) 1 x 1 x 2 pin, pitch 2.54mm MCU Debug Header (J_DNX1) 1 x 1 x 3 pin, pitch 2.54mm Watch Dog Reset jumper select default setting 2-3pin Function Reset. (JP19) 1 x 1 x 8 pin, pitch 2.54mm Power Monitor Wafer (VOLT1) (Used to check power status) 1 x 1 x 2 pin, pitch Wafer 2.54mm Power On (PSON1) Used to check the status of PSON signals_ 1 x 1 x 2 pin, pitch 2.54mm ME Flash Header (J_ME1) (Default remove)
Display	
Graphic Chipset	Intel® 12/13/14th Gen CPU integrated

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Spec. & Resolution	1 x HDMI 1.4b, max resolution up to 4096x2160@30Hz 1 x DVI-D, max resolution up to 1920x1200@60Hz 1 x VGA, max resolution up to 1920x1200@60Hz																																																																																															
Multiple Display	Yes, triple display																																																																																															
Audio																																																																																																
Audio Codec	Realtek ALC897 Audio codec (no wide Temp. IC)																																																																																															
Ethernet																																																																																																
LAN Chipset	1 x Intel® i226V 2.5 Gigabit Ethernet Controller (But only support 1G The main problem is that the LAN connector uses 1G LAN connector and the motherboard space design limitations. 1 x Intel® WGI219V Gigabit Ethernet Controller																																																																																															
LAN Spec.	LAN1: Intel® I226V 10/100/1000 Base-Tx GbE compatible (But only support 1G The main problem is that the LAN connector uses 1G LAN connector and the motherboard space design limitations. LAN2: Intel® WGI219V 10/100/1000 Base-Tx GbE compatible																																																																																															
LED Indicator	LAN1: Intel® I226V 10/100/1000 Base-Tx GbE compatible (But only support 1G The main problem is that the LAN connector uses 1G LAN connector and the motherboard space design limitations. RJ45_USB2(LAN) (GbE LAN RJ45 Connector2)<table><tr><th>Graphic</th><th>Pin</th><th colspan="2">Definition</th><th>Pin</th><th colspan="2">Definition</th></tr><tr><td rowspan="4"></td><td>1</td><td colspan="2">MDI2_0+</td><td>5</td><td colspan="2">MDI2_2+</td></tr><tr><td>2</td><td colspan="2">MDI2_0-</td><td>6</td><td colspan="2">MDI2_2-</td></tr><tr><td>3</td><td colspan="2">MDI2_1+</td><td>7</td><td colspan="2">MDI2_3+</td></tr><tr><td>4</td><td colspan="2">MDI2_1-</td><td>8</td><td colspan="2">MDI2_3-</td></tr><tr><td>A</td><td rowspan="3">Active LED</td><td colspan="2">ACT: Twinkling Green</td><td rowspan="3">B</td><td rowspan="3">Speed LED</td><td>1000M: Turn Orange</td></tr><tr><td colspan="2">Only LINK: Lights On</td><td>100M: Turn Green</td></tr><tr><td colspan="2">Stop: Lights Off</td><td>10M: Lights Off</td></tr></table> RJ45_USB1(LAN) (GbE LAN RJ45 Connector1)<table><tr><th>Graphic</th><th>Pin</th><th colspan="2">Definition</th><th>Pin</th><th colspan="2">Definition</th></tr><tr><td rowspan="4"></td><td>1</td><td colspan="2">MDI1_0+</td><td>5</td><td colspan="2">MDI1_2+</td></tr><tr><td>2</td><td colspan="2">MDI1_0-</td><td>6</td><td colspan="2">MDI1_2-</td></tr><tr><td>3</td><td colspan="2">MDI1_1+</td><td>7</td><td colspan="2">MDI1_3+</td></tr><tr><td>4</td><td colspan="2">MDI1_1-</td><td>8</td><td colspan="2">MDI1_3-</td></tr><tr><td>A</td><td rowspan="3">Active LED</td><td colspan="2">ACT: Twinkling Green</td><td rowspan="3">B</td><td rowspan="3">Speed LED</td><td>1000M: Turn Orange</td></tr><tr><td colspan="2">Only LINK: Lights On</td><td>100M: Turn Green</td></tr><tr><td colspan="2">Stop: Lights Off</td><td>10M: Lights Off</td></tr></table>						Graphic	Pin	Definition		Pin	Definition			1	MDI2_0+		5	MDI2_2+		2	MDI2_0-		6	MDI2_2-		3	MDI2_1+		7	MDI2_3+		4	MDI2_1-		8	MDI2_3-		A	Active LED	ACT: Twinkling Green		B	Speed LED	1000M: Turn Orange	Only LINK: Lights On		100M: Turn Green	Stop: Lights Off		10M: Lights Off	Graphic	Pin	Definition		Pin	Definition			1	MDI1_0+		5	MDI1_2+		2	MDI1_0-		6	MDI1_2-		3	MDI1_1+		7	MDI1_3+		4	MDI1_1-		8	MDI1_3-		A	Active LED	ACT: Twinkling Green		B	Speed LED	1000M: Turn Orange	Only LINK: Lights On		100M: Turn Green	Stop: Lights Off		10M: Lights Off
Graphic	Pin	Definition		Pin	Definition																																																																																											
	1	MDI2_0+		5	MDI2_2+																																																																																											
	2	MDI2_0-		6	MDI2_2-																																																																																											
	3	MDI2_1+		7	MDI2_3+																																																																																											
	4	MDI2_1-		8	MDI2_3-																																																																																											
A	Active LED	ACT: Twinkling Green		B	Speed LED	1000M: Turn Orange																																																																																										
Only LINK: Lights On		100M: Turn Green																																																																																														
Stop: Lights Off		10M: Lights Off																																																																																														
Graphic	Pin	Definition		Pin	Definition																																																																																											
	1	MDI1_0+		5	MDI1_2+																																																																																											
	2	MDI1_0-		6	MDI1_2-																																																																																											
	3	MDI1_1+		7	MDI1_3+																																																																																											
	4	MDI1_1-		8	MDI1_3-																																																																																											
A	Active LED	ACT: Twinkling Green		B	Speed LED	1000M: Turn Orange																																																																																										
Only LINK: Lights On		100M: Turn Green																																																																																														
Stop: Lights Off		10M: Lights Off																																																																																														
Mechanical & Environmental Specification																																																																																																
Power Requirement	+12V / +5V / 5VSB /+3.3V /-12V																																																																																															
ACPI	Single power ATX Support S0, S3, S4, S5																																																																																															

	**The power indicator blinks when ACPI enters S3 mode
Power Mode	AT / ATX mode Switchable Through Jumper
Operating Temp.	0 ~ 60°C (32 ~ 140°F), 0.5m/s airflow **Note: Intel PTAT suggests** ● Turbo off ● Workload – IA 100% / GT 100% PL2(Power Limit) set as default
Storage Temp.	-40~ +75°C
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W)	12" x 9.6" (304.8mm x 243.84mm)
Weight	1.54lbs (0.7kg)
Vibration Test	Package Vibration Test Reference IEC60068-2-64 Testing procedures Test Fh: Vibration broadband random Test 1. PSD: 0.026G²/Hz, 2.16 Grms 2. Non-operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X,Y and Z axis 5. 30 min. per each axis 6. IEC 60068-2-64 Test: Fh Random Vibration Operation Reference IEC60068-2-64 Testing procedures Test Fh : Vibration broadband random Test 1. PSD: 0.00202023G²/Hz 0.5 Grms 2. Operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X,Y and Z axis 5. 30 minutes per each axis 6. IEC 60068-2-64 Test: Fh Random Vibration Non Operation Reference IEC60068-2-64 Testing procedures Test Fh : Vibration broadband random Test 1. PSD: 0.00202023G²/Hz 0.5 Grm 2. Non Operation mode 3. Test Frequency: 5-500Hz 4. Test Axis: X,Y and Z axis 5. 30 minutes per each axis

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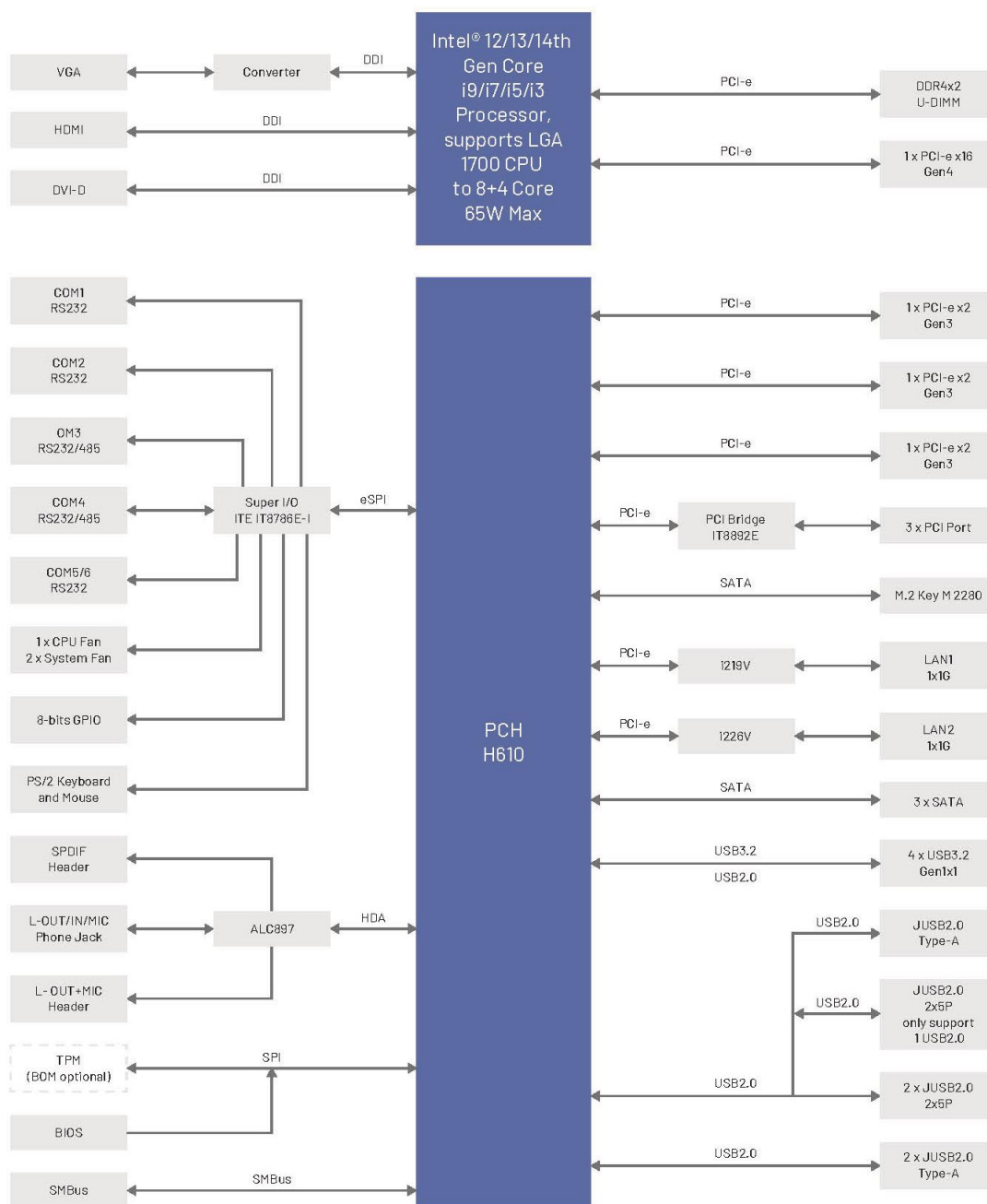
	6. IEC 60068-2-64 Test: Fh
Drop Test	Package Drop Reference ISTA 2A, Method: IEC-60068-2-32 Test: Ed Drop Test 1 One corner, three edges, six faces 2 ISTA 2A, IEC-60068-2-32 Test: Ed
OS Information	BIOS Support: Windows 11 (21H2) or later Windows 10 IoT Enterprise 2021 LTSC Windows 10 (21H2) Linux Kernel 5.17 or later



Note: Specifications are subject to change without notice.

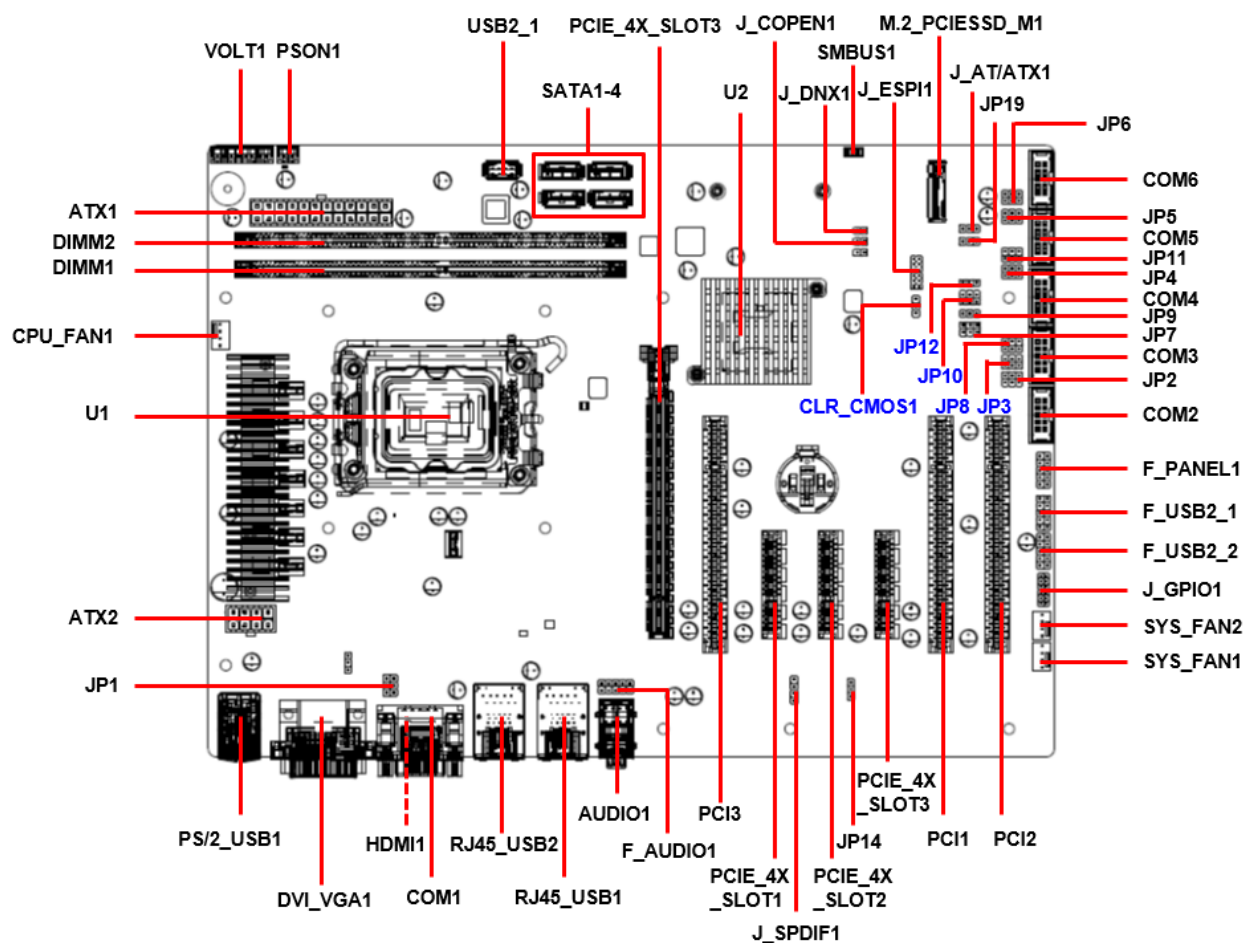
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EAX-H610C.



2. Hardware Configuration

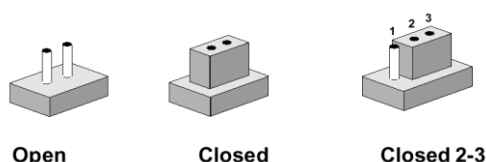
2.1 Product Overview



2.2 Jumper and Connector List

You can configure your board to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch.

It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip. To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2, and 3. In this case, you would connect either two pins.



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



A pair of needle-nose pliers may be helpful when working with jumpers.

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any changes.

The following tables list the function of each of the board's jumpers and connectors.

Jumpers

Label	Function	Note
JP1	COM1 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP2	COM2 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP3	COM3 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP7/8	COM3 RS232/RS485 Select Jumper1/2	3 x 2 header, pitch 2.54mm
JP9	COM3 RS485 Signal 120Ω Resistive Termination Select Jumper	3 x 1 header, pitch 2.54mm
JP10/11	COM4 RS232/RS485 Select Jumper1/2	3 x 2 header, pitch 2.54mm
JP12	COM4 RS485 Signal 120Ω Resistive Termination Select Jumper	3 x 1 header, pitch 2.54mm
JP4	COM4 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP5	COM5 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP6	COM6 DCD/5V+ RI/12V Select Jumper	3 x 2 header, pitch 2.54mm
JP19	Watch Dog Reset Enable/Disable Select	3 x 1 header, pitch 2.54mm

	Jumper	
J_AT/ATX1	AT or ATX Select Jumper	3 x 1 header, pitch 2.54mm
CLR_CMOS1	CMOS Clear Select Jumper	3 x 1 header, pitch 2.54mm
JP14	PCI CLK 66MHz Disable/ Enable Select Jumper	3 x 1 header, pitch 2.54mm

Connectors

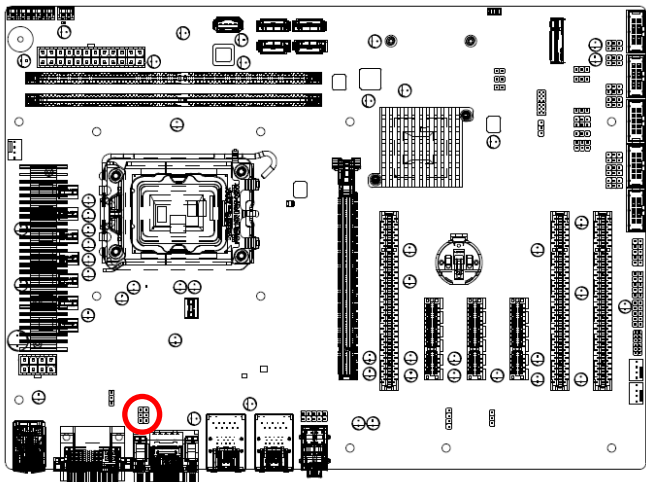
Label	Function	Note
U1	CPU	
U2	Chipset	
DIMM1	DDR4 CHA DIMM Slot	
DIMM2	DDR4 CHB DIMM Slot	
ATX1	ATX 24P Power Input Connector	
ATX2	ATX 8P CPU Power Input Connector	
DVI_VGA1	VGA DB15 Connector DVI-I 24+4P/F Connector (Support DVI-D)	
HDMI1	HDMI TYPE-A Connector	
AUDIO1	Line-Out + MIC + Line-In 3.5mm Jack	
F_AUDIO1	Front Audio Header	5 x 2 header, pitch 2.54mm
J_SPDIF1	SPDIF Out Header	4 x 1 header, pitch 2.54mm
SATA1-4	SATA3.0 Connector1-4	
M.2_PCIESSD_M1	M.2 Key-M Slot (PCIE 2x/SATA, Support PCIE 2x NVMe/SATA SSD, 2242/2280)	
PCIE_4X_SLOT1/2/3	PCIE4X Slot1/2/3	
RJ45_USB1/2	GbE LAN RJ45 Connector1/2 Dual USB3.0 TYPE-A Connector	
PS/2_USB1	Dual USB2.0 TYPE-A Connector PS/2 Connector (keyboard & mouse)	
USB2_1	USB2.0 Internal Vertical TYPE-A Connector	
F_USB2_1/2	Front Dual-USB2.0 Header	5 x 2 header, pitch 2.54mm
COM2-6	COM2-6 Headers	5 x 2 header, pitch 2.54mm
SYS_FAN1/2	System FAN1/2 Wafer	4 x 1 wafer, pitch 2.54mm
CPU_FAN1	CPU Fan Wafer	4 x 1 wafer, pitch 2.54mm
F_PANEL1	Front Panel Header	5 x 2 header, pitch 2.54mm

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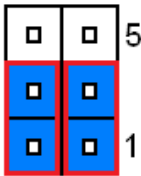
PS0N1	Power On Wafer	2 x 1 wafer, pitch 2.54mm
SMBUS1	SMBus Wafer	4 x 1 wafer, pitch 1.25mm
J_ESPI1	ESPI Header	6 x 2 header, pitch 2.00mm
J_GPIO1	GPIO Header	6 x 2 header, pitch 2.00mm
J_DNX1	DNX Force Reload Disable/Enable Select Jumper	2 x 1 header, pitch 2.54mm
J_COPEN1	Case Open Header	2 x 1 header, pitch 2.54mm
VOLT1	Power Monitor Wafer	8 x 1 wafer, pitch 2.54mm

2.3 Setting Jumpers & Connectors

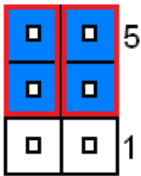
2.3.1 COM1 DCD/5V+ RI/12V Select Jumper (JP1)



PIN1=VCC5
PIN9=VCC12



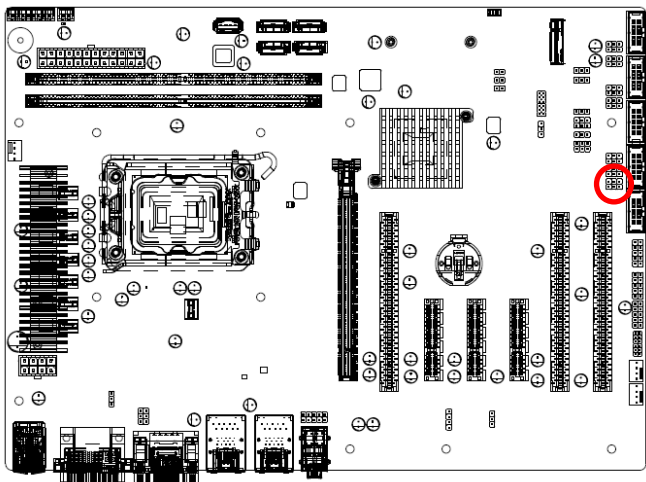
PIN1=DCD*
PIN9=RING*



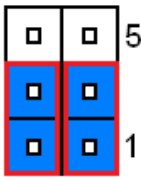
* Default

Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN9 signal.

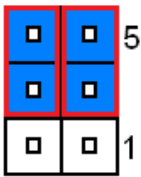
2.3.2 COM2 DCD/5V+ RI/12V Select Jumper (JP2)



PIN1=VCC5
PIN8=VCC12



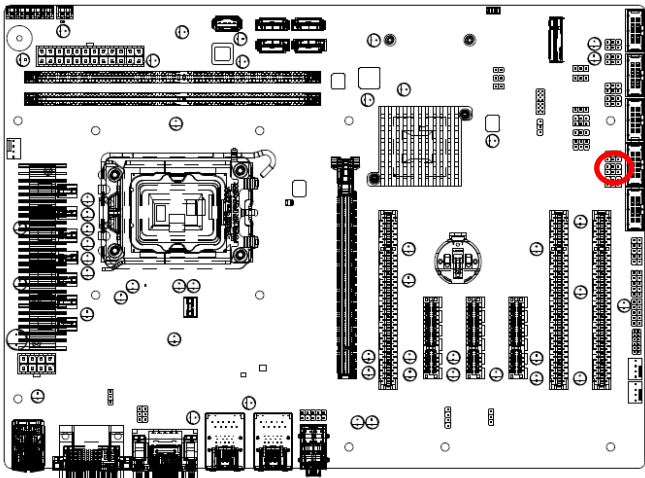
PIN1=DCD*
PIN8=RING*



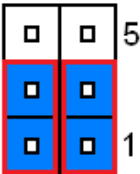
* Default

Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

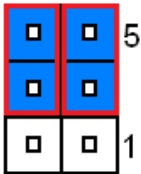
2.3.3 COM3 DCD/5V+ RI/12V Select Jumper (JP3)



PIN1=VCC5
PIN8=VCC12



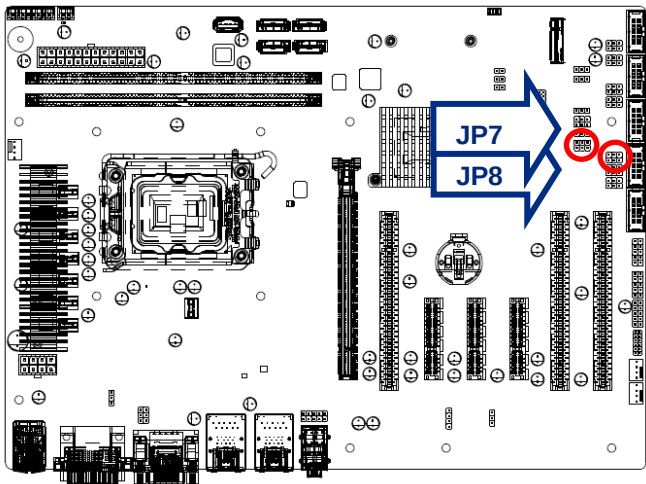
PIN1=DCD*
PIN8=RING*



* Default

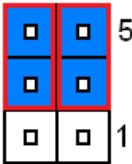
Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

2.3.4 COM3 RS232/RS485 Select Jumper1/2 (JP7/8)

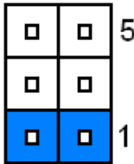


RS232*

JP8

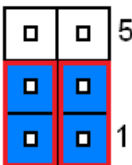


JP7

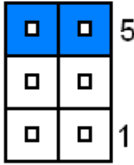


RS485

JP8



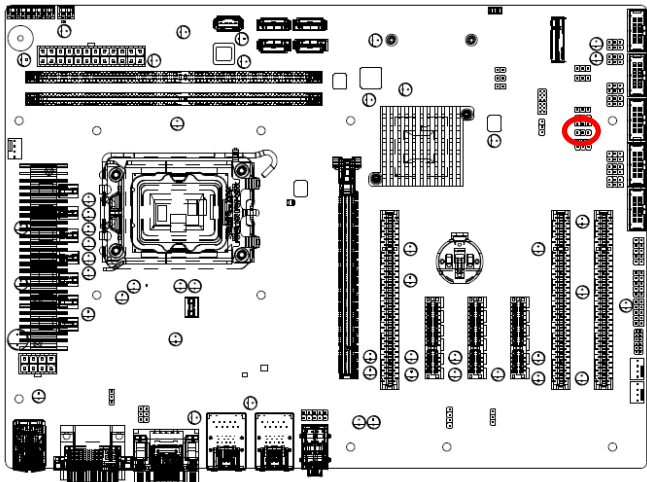
JP7



* Default

Note:
RS232:PIN1:DCD/VCC5 , PIN3:RXD
RS485:PIN1:R485- , PIN3: R485+

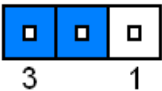
2.3.5 COM3 RS485 Signal 120Ω Resistive Termination Select Jumper (JP9)



Disable*

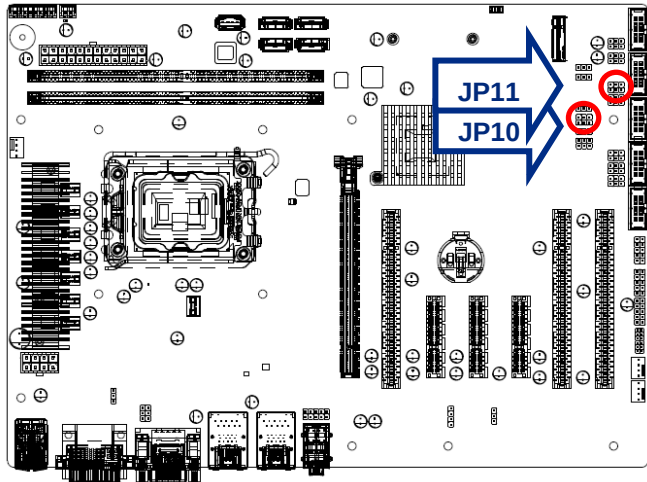


Enable

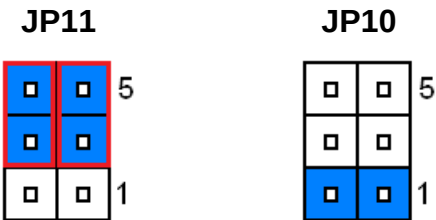


* Default

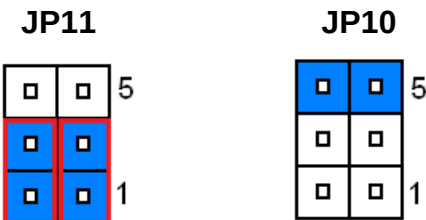
2.3.6 COM4 RS232/RS485 Select Jumper1/2 (JP10/11)



RS232*



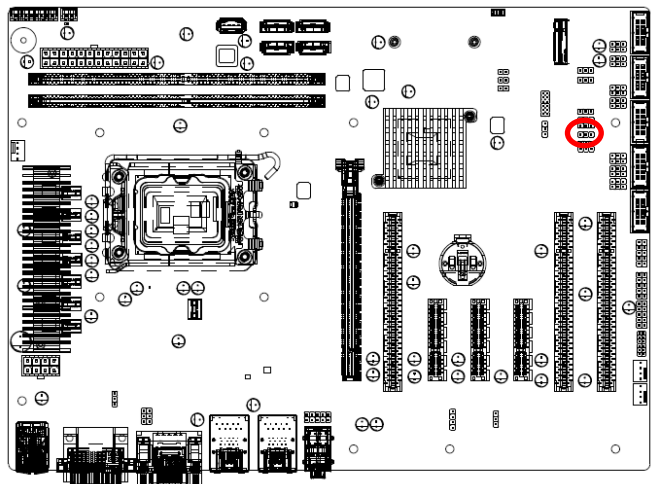
RS485



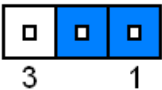
* Default

Note:
RS232: PIN1:DCD/VCC5 , PIN3:RXD
RS485: PIN1:R485- , PIN3: R485+

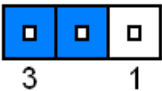
2.3.7 COM4 RS485 Signal 120Ω Resistive Termination Select Jumper (JP12)



Disable*

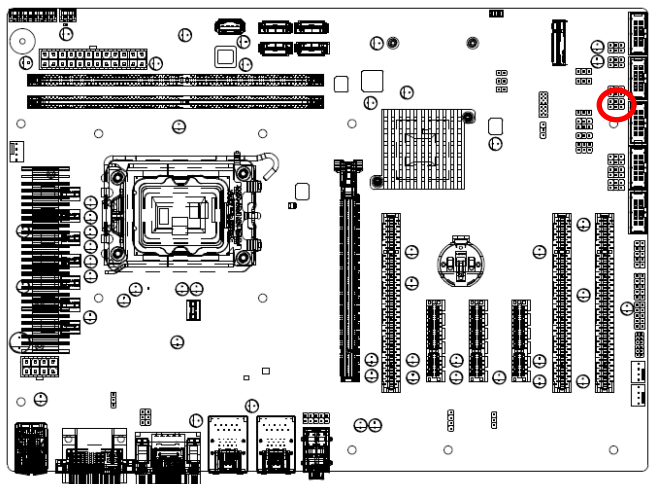


Enable



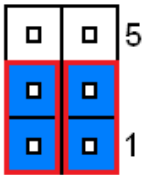
* Default

2.3.8 COM4 DCD/5V+ RI/12V Select Jumper (JP4)



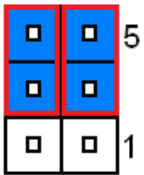
PIN1=VCC5

PIN8=VCC12



PIN1=DCD*

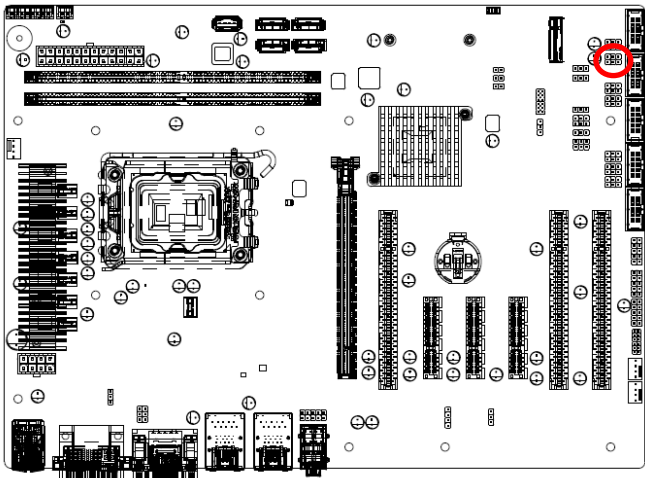
PIN8=RING*



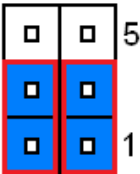
* Default

Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

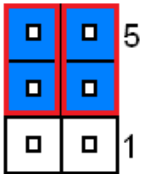
2.3.9 COM5 DCD/5V+ RI/12V Select Jumper (JP5)



PIN1=VCC5
PIN8=VCC12

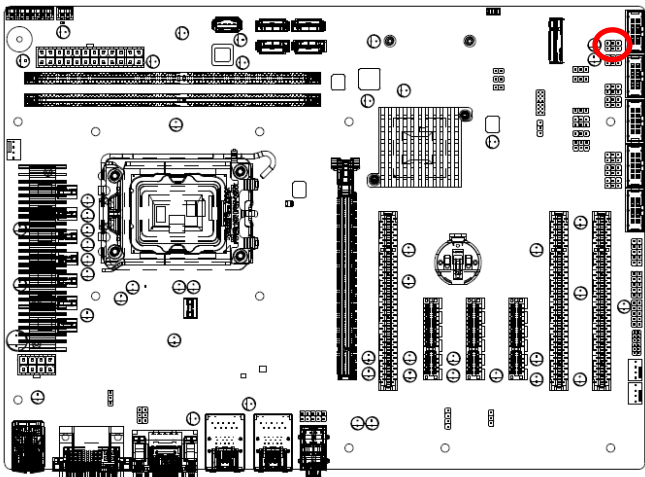


PIN1=DCD*
PIN8=RING*

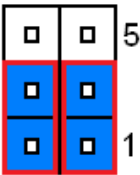


*** Default**
Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

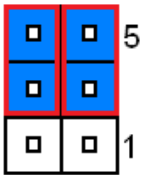
2.3.10 COM6 DCD/5V+ RI/12V Select Jumper (JP6)



PIN1=VCC5
PIN8=VCC12

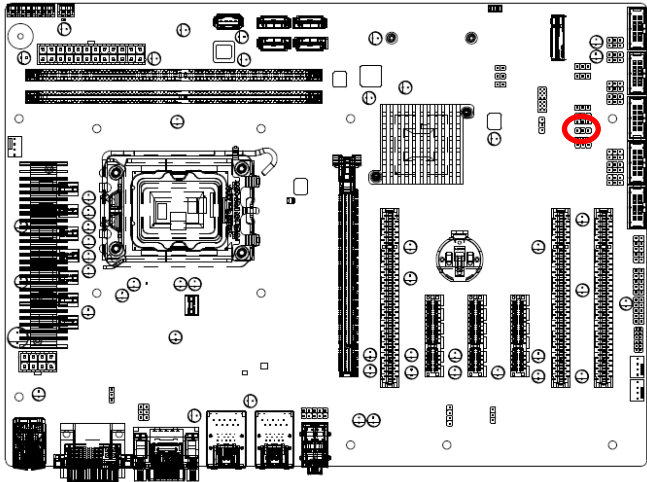


PIN1=DCD*
PIN8=RING*



*** Default**
Note: Jumper 1-3/3-5 select the PIN1 signal. Jumper 2-4/4-6 select the PIN8 signal.

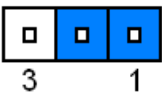
2.3.11 Watch Dog Reset Enable/Disable Select Jumper (JP19)



Reset*

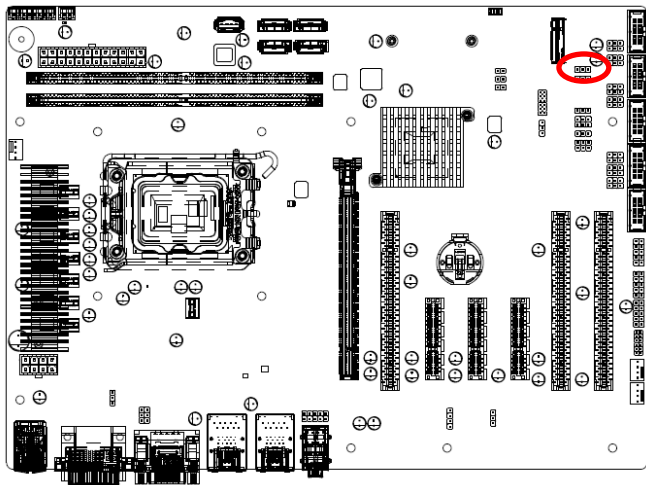


Normal

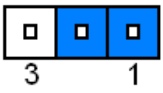


* Default

2.3.12 AT or ATX Select Jumper (J_AT/ATX1)



ATX*

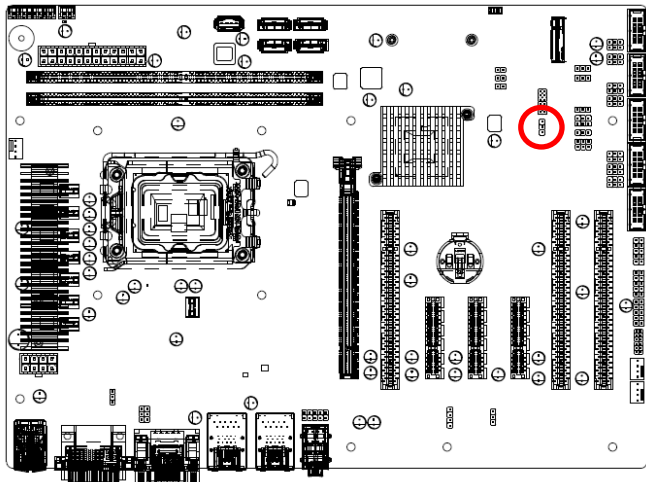


AT

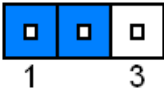


* Default

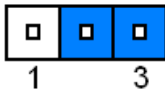
2.3.13 CMOS Clear Select Jumper (CLR_CMOS1)



Protect*

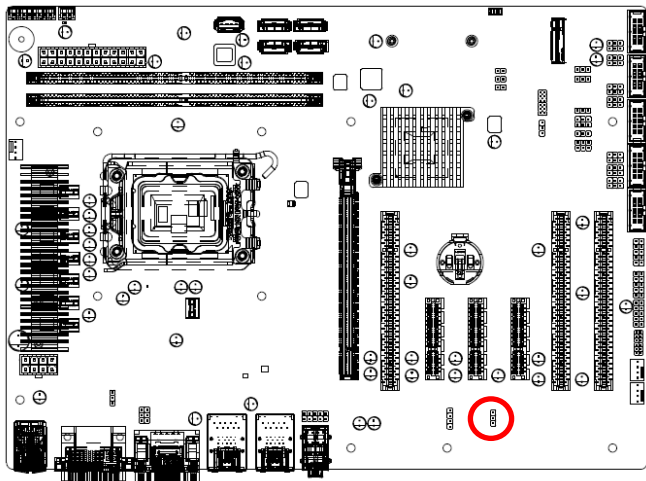


Clear CMOS

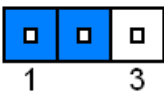


* Default

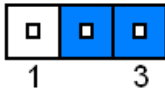
2.3.14 PCI CLK 66MHz Disable/ Enable Select Jumper (JP14)



Disable PCI CLK 66MHz*



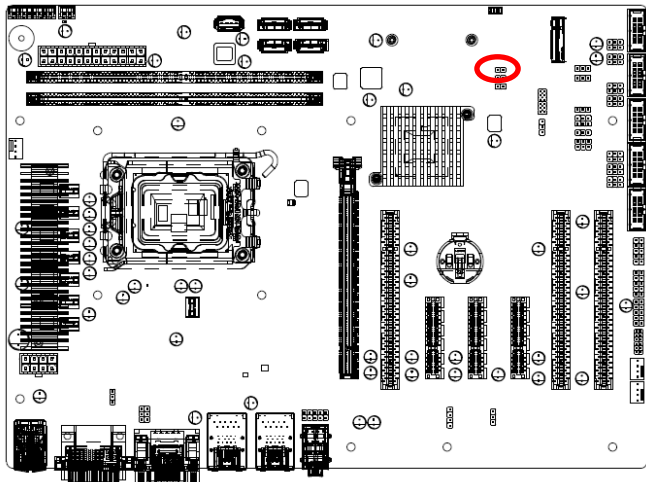
Enable PCI CLK 66MHz



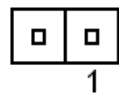
* Default

Note: Default=33MHz

2.3.15 DNX Force Reload Disable/Enable Select Jumper (J_DNX1)



Disable*

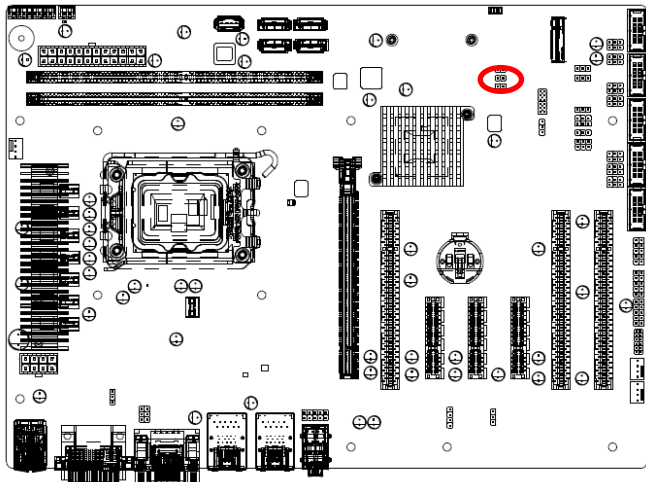


Enable

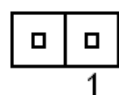


* Default

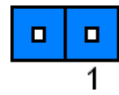
2.3.16 Case Open Header (J_COPEN1)



Normal*

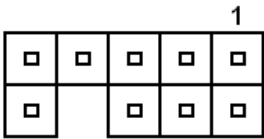
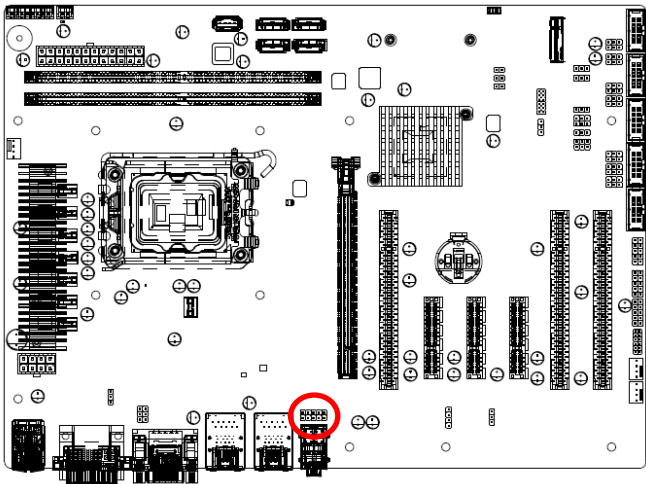


Active Case Open



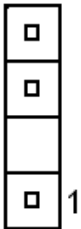
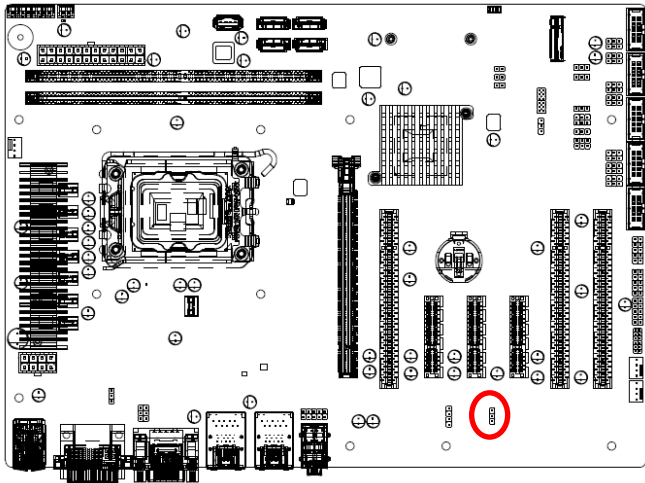
* Default

2.3.17 Auxiliary Panel connector (F_AUDIO1)



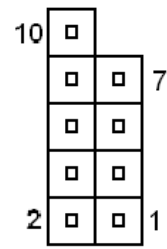
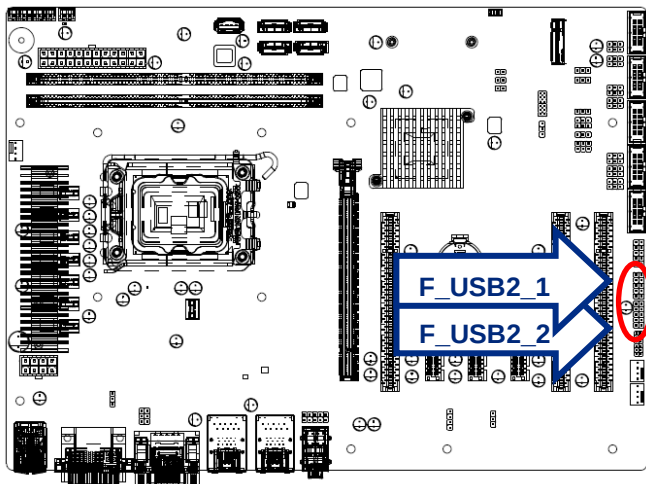
Signal	PIN	PIN	Signal
MIC_IN_L	1	2	GND
MIC_IN_R	3	4	VCC3.3
LINE_OUT_R	5	6	MIC_RET
GND	7	8	
LINE_OUT_L	9	10	LINE_OUT_RET

2.3.18 SPDIF Out Header (J_SPDIF1)



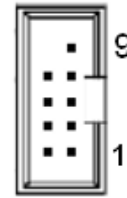
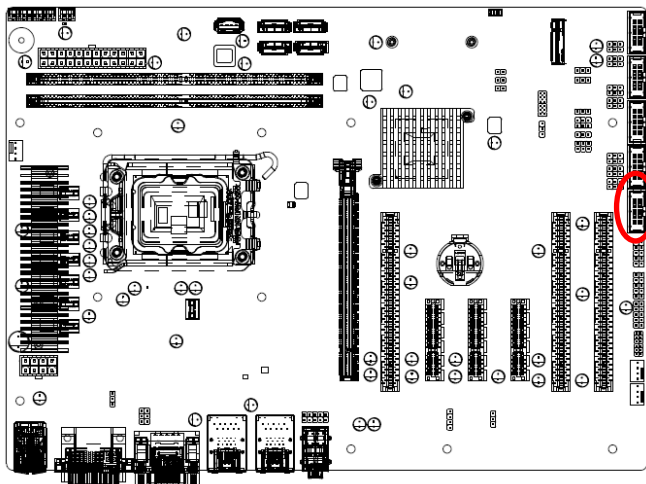
Signal	PIN
GND	4
SPDIF_OUT	3
VCC5	1

2.3.19 Front Dual-USB2.0 Header (F_USB1_1/F_USB2_2)



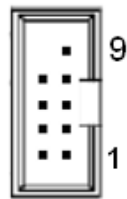
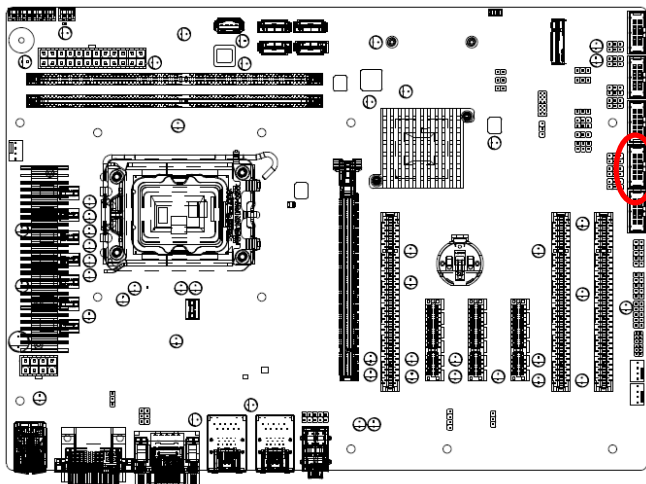
Signal	PIN	PIN	Signal
NC	10		
GND	8	7	GND
USB2.0_2+	6	5	USB2.0_1+
USB2.0_2-	4	3	USB2.0_1-
VCC5	2	1	VCC5

2.3.20 COM2-6 Headers (COM2)



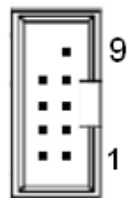
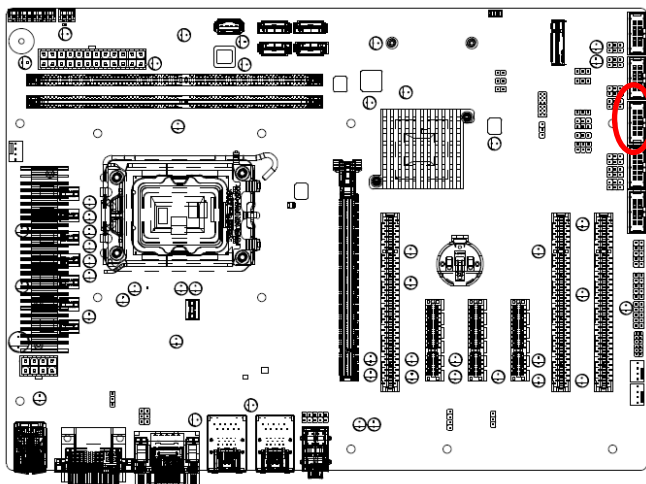
Signal	PIN	PIN	Signal
		9	GND
PIN8	8	7	DTR
CTS	6	5	TXD
RTS	4	3	RXD
DSR	2	1	PIN1

2.3.21 COM2-6 Headers (COM3)



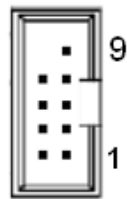
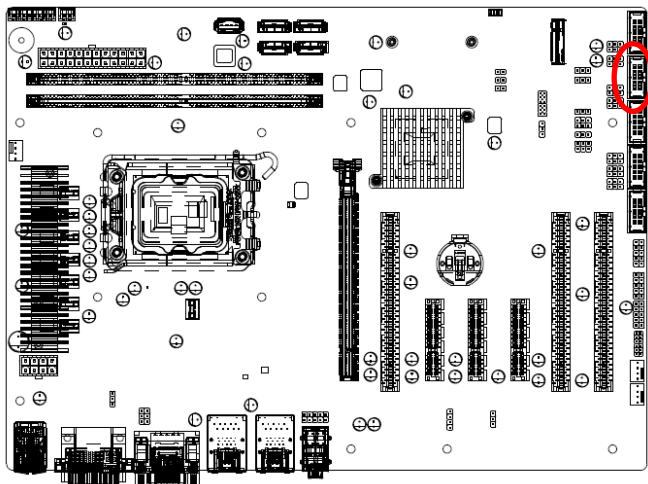
Signal	PIN	PIN	Signal
		9	GND
PIN8	8	7	DTR
CTS	6	5	TXD
RTS	4	3	PIN3
DSR	2	1	PIN1

2.3.22 COM2-6 Headers (COM4)



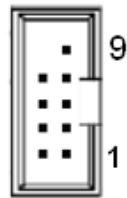
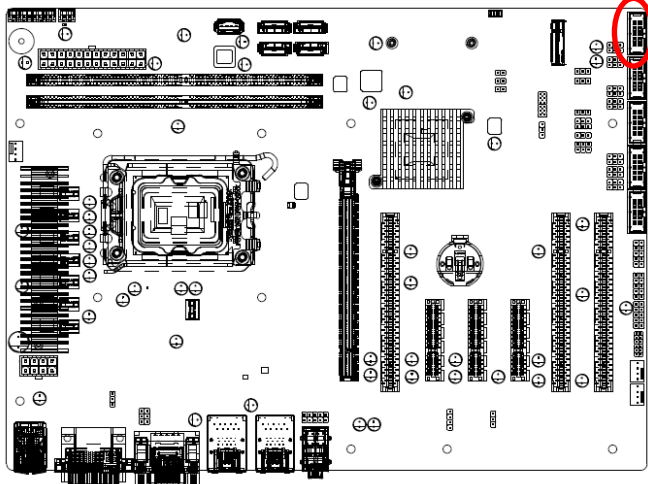
Signal	PIN	PIN	Signal
		9	GND
PIN8	8	7	DTR
CTS	6	5	TXD
RTS	4	3	PIN3
DSR	2	1	PIN1

2.3.23 COM2-6 Headers (COM5)



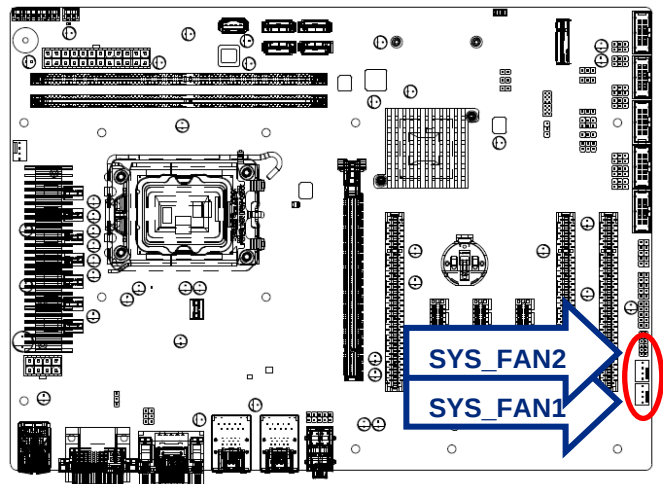
Signal	PIN	PIN	Signal
		9	GND
PIN8	8	7	DTR
CTS	6	5	TXD
RTS	4	3	RXD
DSR	2	1	PIN1

2.3.24 COM2-6 Headers (COM6)



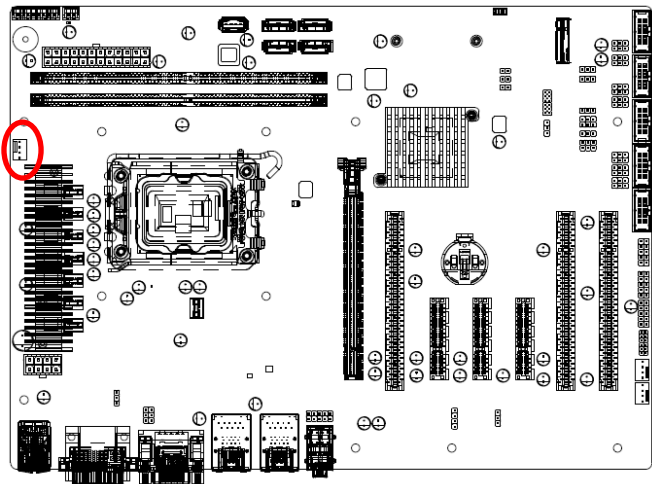
Signal	PIN	PIN	Signal
		9	GND
PIN8	8	7	DTR
CTS	6	5	TXD
RTS	4	3	RXD
DSR	2	1	PIN1

2.3.25 System FAN1/2 Wafer (SYS_FAN1/2)



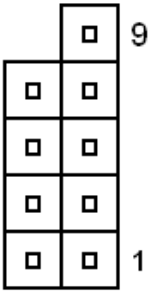
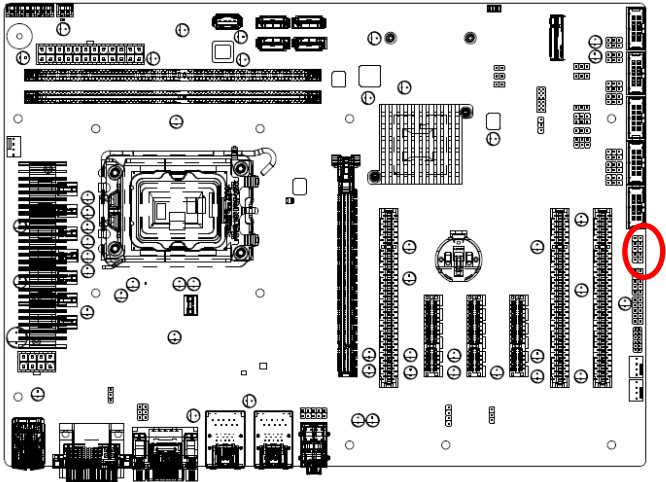
Signal	PIN
FAN Speed Control	4
FAN Speed Detection	3
VCC12	2
GND	1

2.3.26 CPU Fan Wafer (CPU_FAN1)



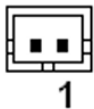
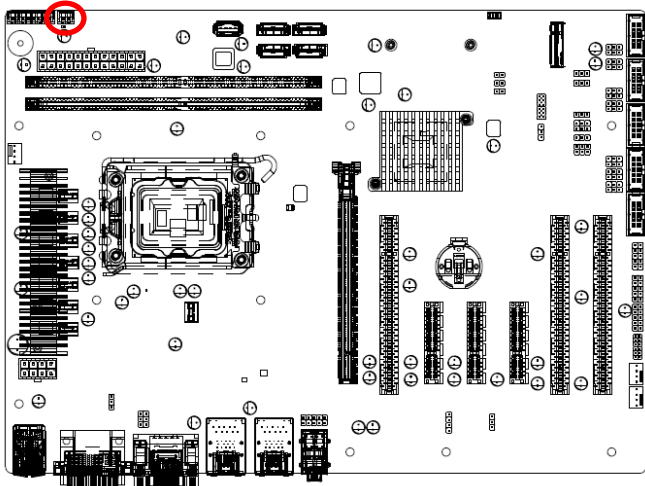
PIN	Signal
1	GND
2	VCC12
3	FAN Speed Detection
4	FAN Speed Control

2.3.27 Front Panel Header (F_PANEL1)



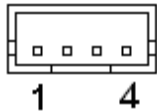
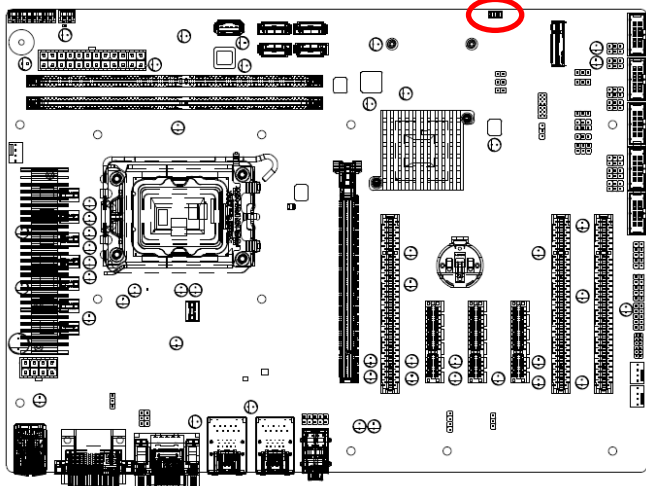
Description	Signal	PIN	PIN	Signal	Description
HDD LED	HDD_LED+	1	2	PWR_LED+	Power
	HDD_LED-	3	4	PWR_LED-	LED
Reset button	RESET+	5	6	Power+	Power
	RESET-	7	8	Power-	button
	NC	9			

2.3.28 Power On Wafer (PSON1)



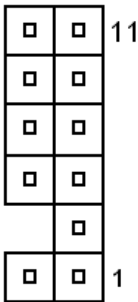
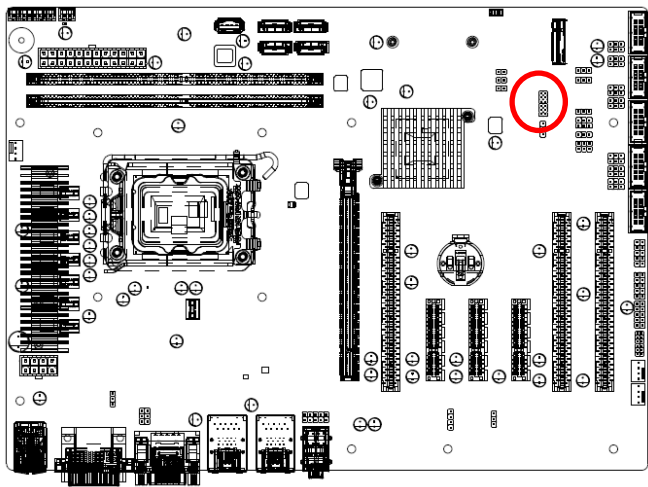
Signal	PIN
PSON_N	1
GND	2

2.3.29 SMBus Wafer (SMBUS1)



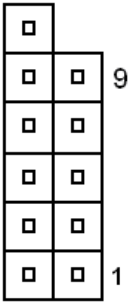
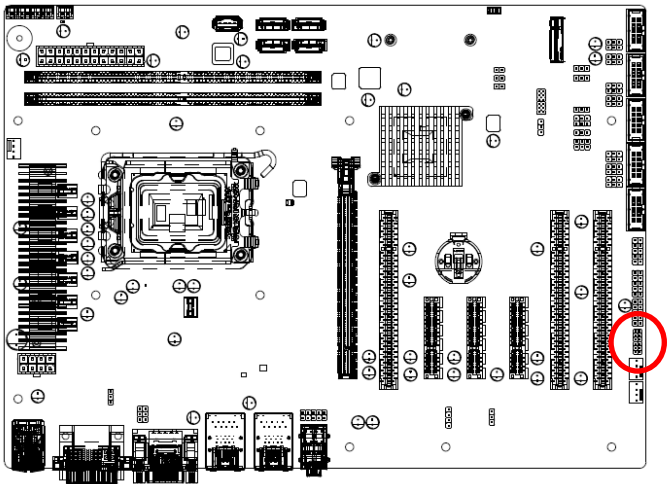
Signal	PIN
GND	1
SMB_DATA	2
SMB_CLK	3
VCC5	4

2.3.30 ESPI Header (J_ESPI1)



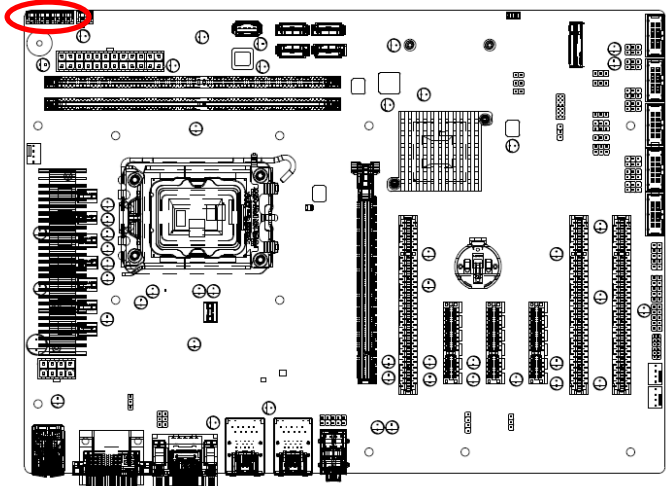
Signal	PIN	PIN	Signal
PLT_RST_N	12	11	ESPI_ALERT0_N
VCC3.3S	10	9	ESPI_CS0
GND	8	7	ESPI_IO3
ESPI_CLK	6	5	ESPI_IO2
		3	ESPI_IO1
VCC3.3_Dual	2	1	ESPI_IO0

2.3.31 GPIO Header (J_GPIO1)



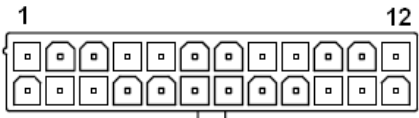
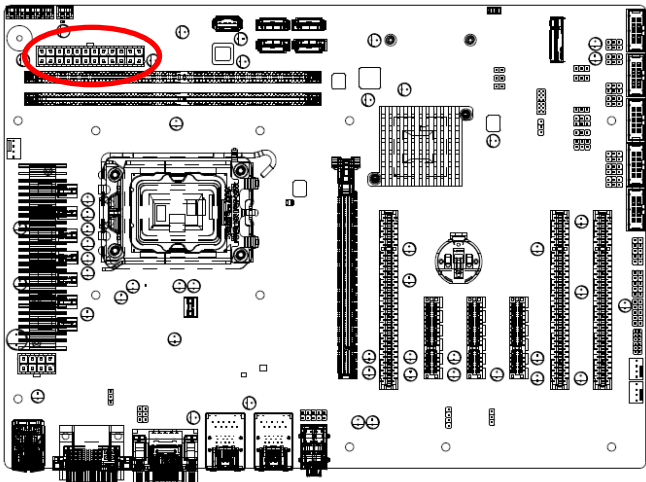
Signal	PIN	PIN	Signal
N/C	12		
VCC5	10	9	SIO_GPO77
SIO_GPO76	8	7	SIO_GPO75
SIO_GPO74	6	5	GND
SIO_GPI73	4	3	SIO_GPI72
SIO_GPI71	2	1	SIO_GPI70

2.3.32 Power Monitor Wafer (VOLT1)



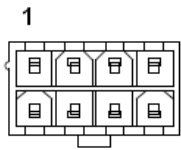
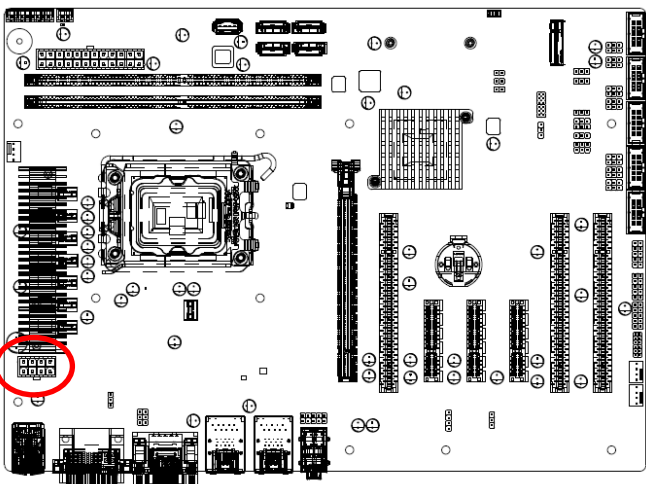
Signal	PIN
VCC5A	1
GND	2
GND	3
VCC5PS	4
VCC5S	5
VCC3.3S	6
VCC12_N	7
VCC12S	8

2.3.33 ATX 24P Power Input Connector (ATX1)



Signal	PIN	PIN	Signal
VCC3P3S	1	13	VCC3P3S
VCC3P3S	2	14	VCC12_N
GND	3	15	GND
VCC5S	4	16	PSON_N
GND	5	17	GND
VCC5S	6	18	GND
GND	7	19	GND
ATX_PWRGD_R	8	20	VCC5N_PS
VCC5A	9	21	VCC5S
VCC12S	10	22	VCC5S
VCC12S	11	23	VCC5S
VCC3P3S	12	24	GND

2.3.34 ATX 8P CPU Power Input Connector (ATX2)



Signal	PIN	PIN	Signal
+V12S_CPU	5	1	GND
+V12S_CPU	6	2	GND
+V12S_CPU	7	3	GND
+V12S_CPU	8	4	GND

3.BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMI BIOS™ is immediately activated when you first power on the computer. The BIOS reads the system information contained in the NVRAM and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing or <F2> immediately after switching the system on, or

By pressing the or <F2> key when the following message appears briefly at the left-top of the screen during the POST (Power On Self Test).

Press or <F2> to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into NVRAM Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

Use the left and right arrow keys to choose the menu you want to be in.



Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A “➤” pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc> or the F1 key again.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMI BIOS supports an override to the NVRAM settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override.

3.6 BIOS setup

Once you enter the Aptio Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations in your computer and set the system clock.



3.6.1.1 System Language

This option allows choosing the system default language.

3.6.1.2 System Date

Use the system date option to set the system date. Manually enter the mm-dd-yyyy.

3.6.1.3 System Time

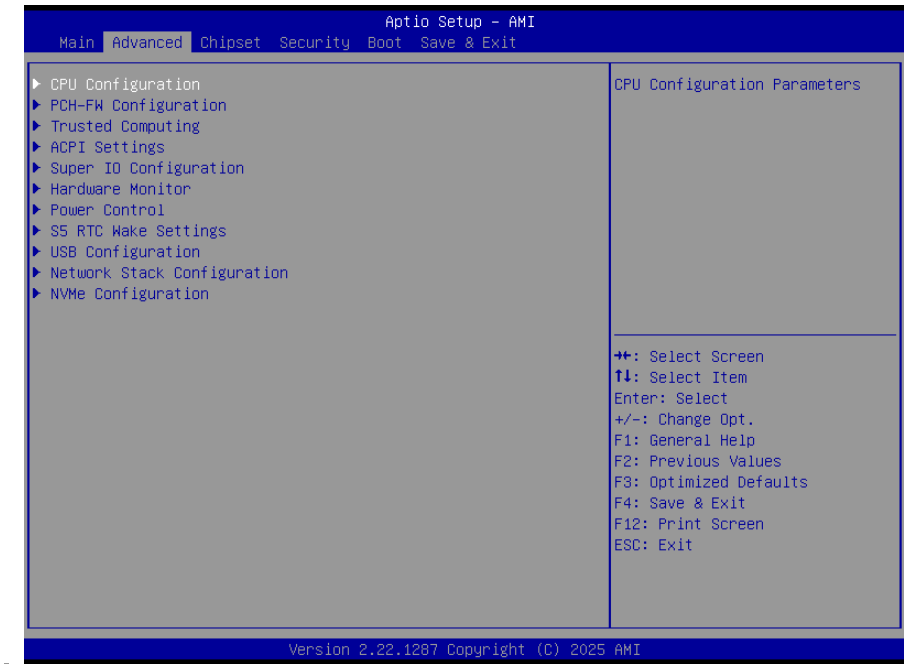
Use the system time option to set the system time. Manually enter the hours, minutes and seconds.



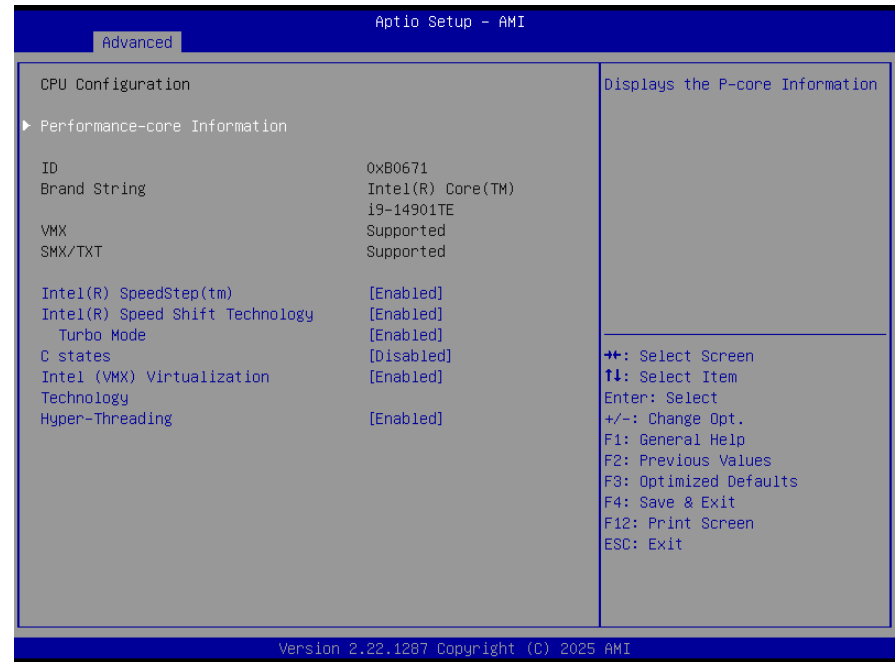
Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.
Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6.2 Advanced Menu

This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



3.6.2.1 CPU Configuration

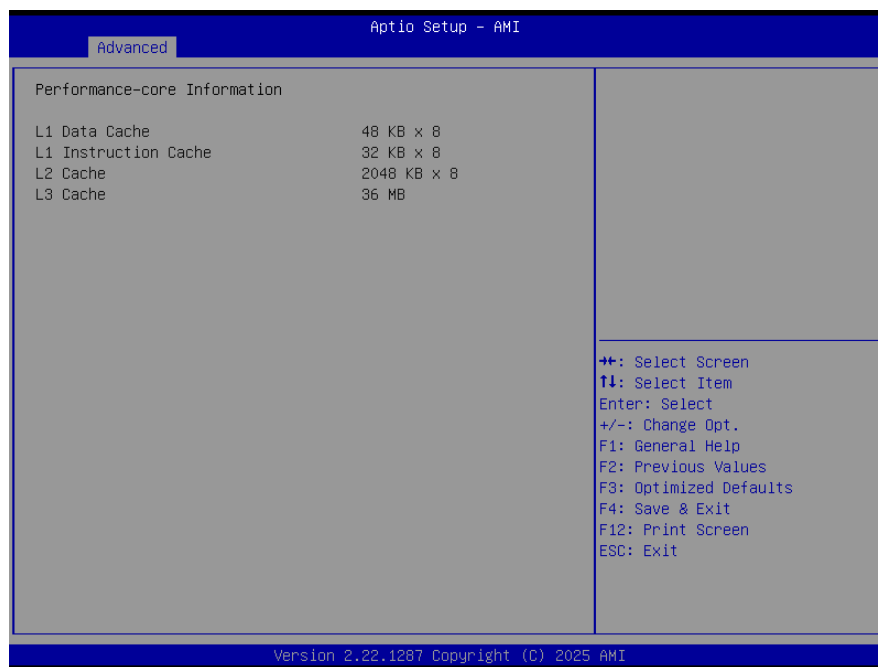


Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled[Default],	Allows more than two frequency ranges to be supported.

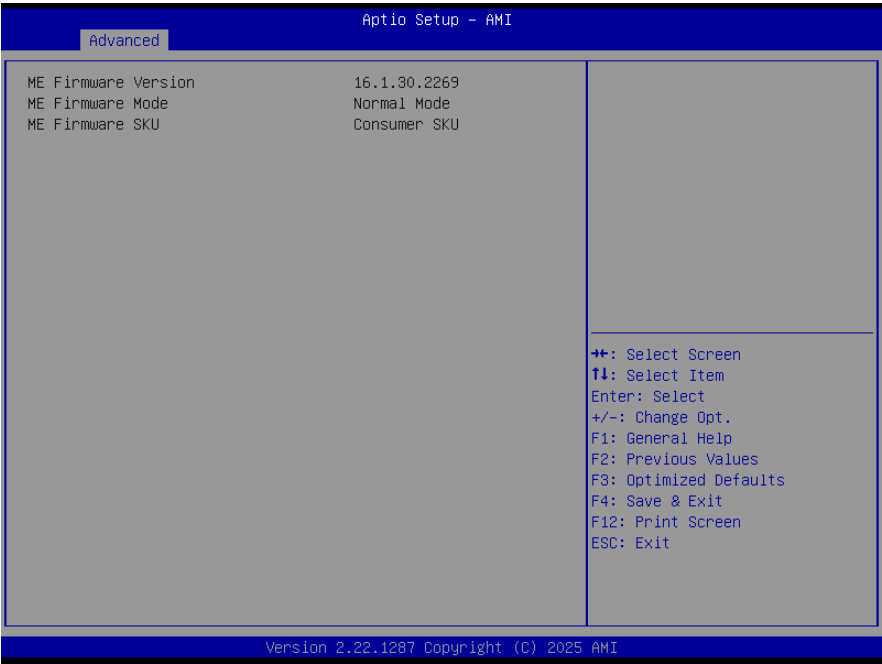
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Intel(R) Speed Shift Technology	Disabled Enabled[Default],	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states.
Turbo Mode	Disabled Enabled[Default],	Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.
C states	Disabled[Default], Enabled	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.
Intel (VMX) Virtualization Technology	Disabled Enabled[Default],	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Hyper-Threading	Disabled Enabled[Default],	Enable or Disable Hyper-Threading Technology.

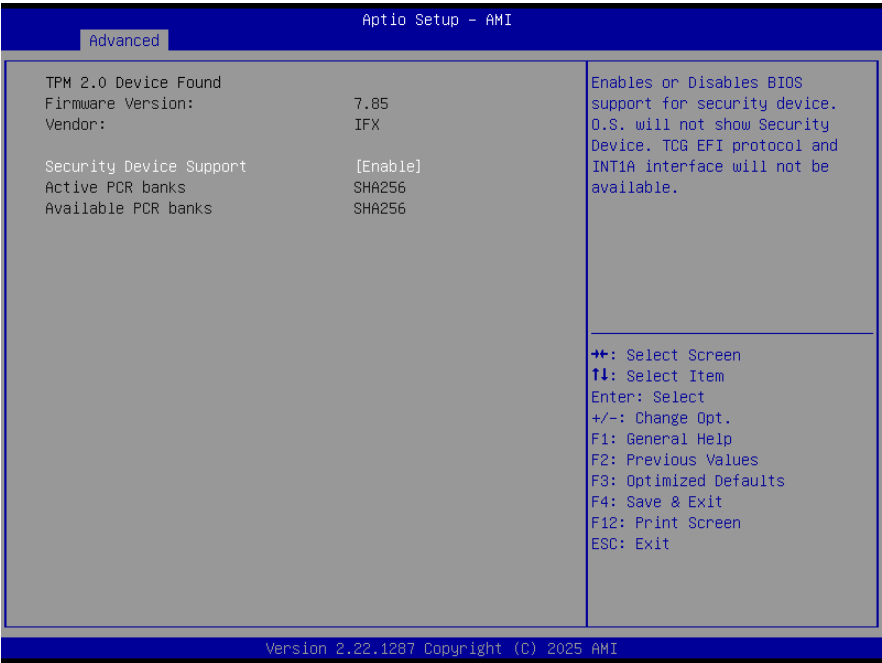
3.6.2.1.1 Performance-core Information



3.6.2.2 PCH-FW Configuration

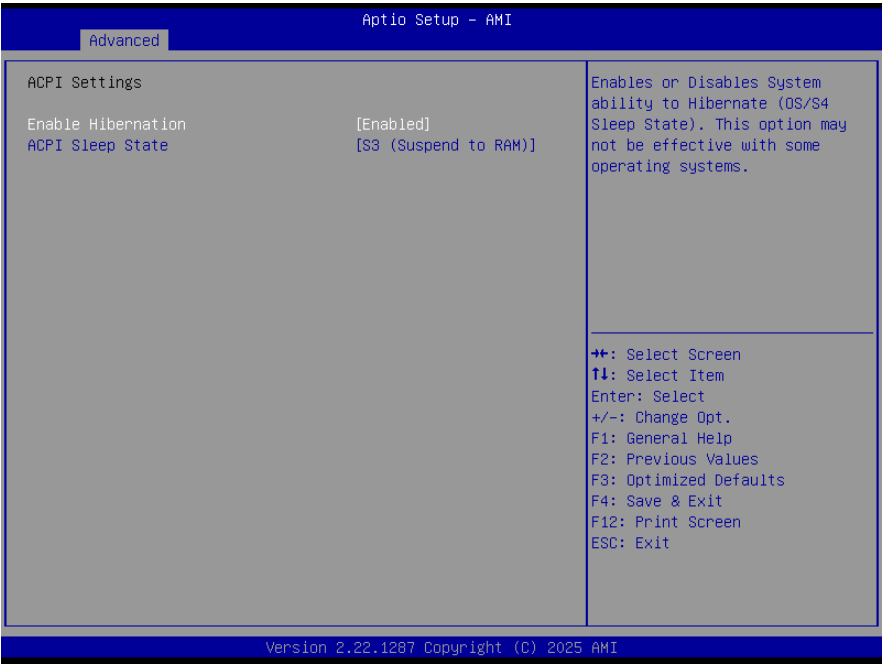


3.6.2.3 Trusted Computing



Item	Options	Description
Security Device Support	Disabled Enabled[Default],	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not available.

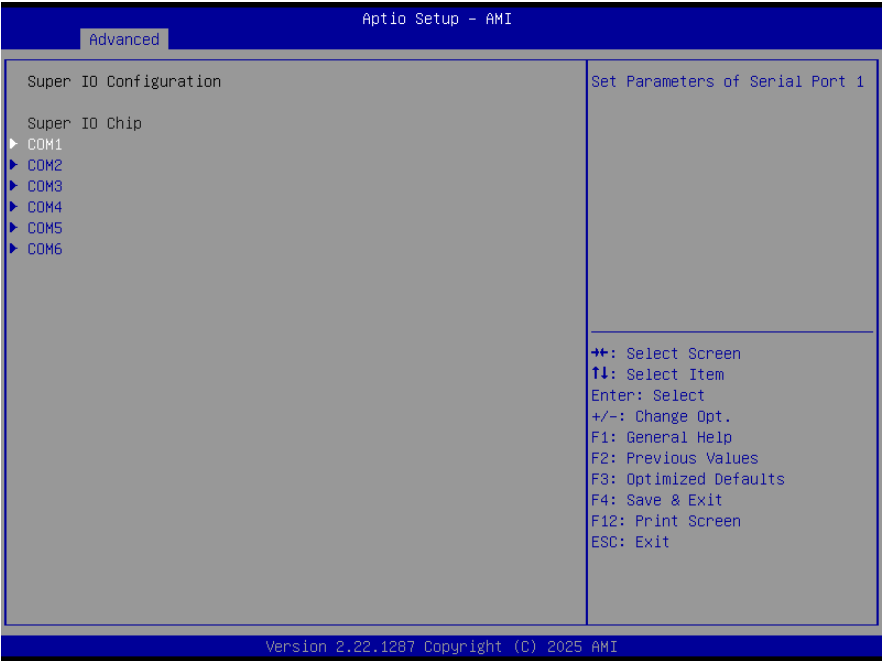
3.6.2.4 ACPI Settings



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

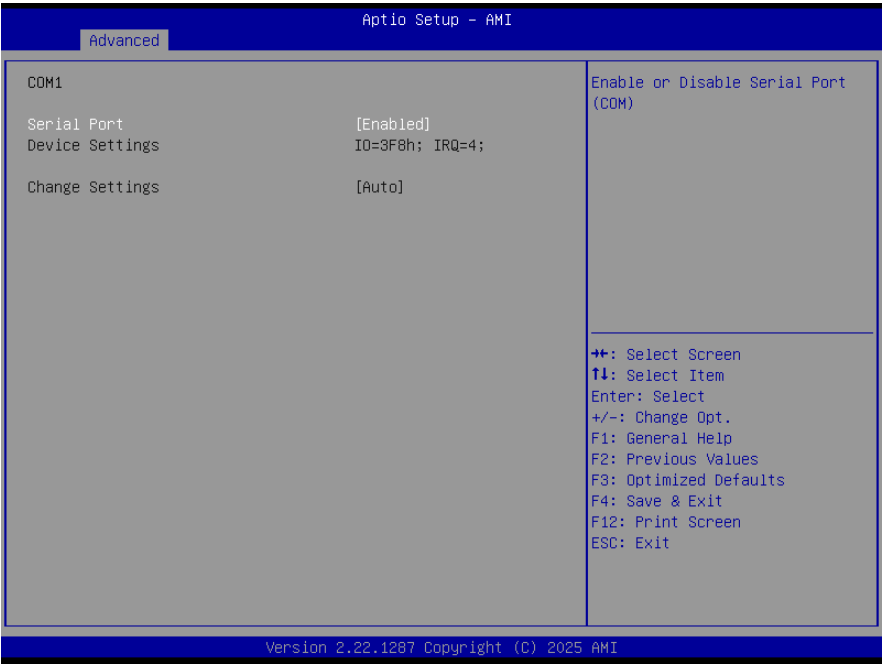
3.6.2.5 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.5.1~ 3.6.2.5.6 for more information.



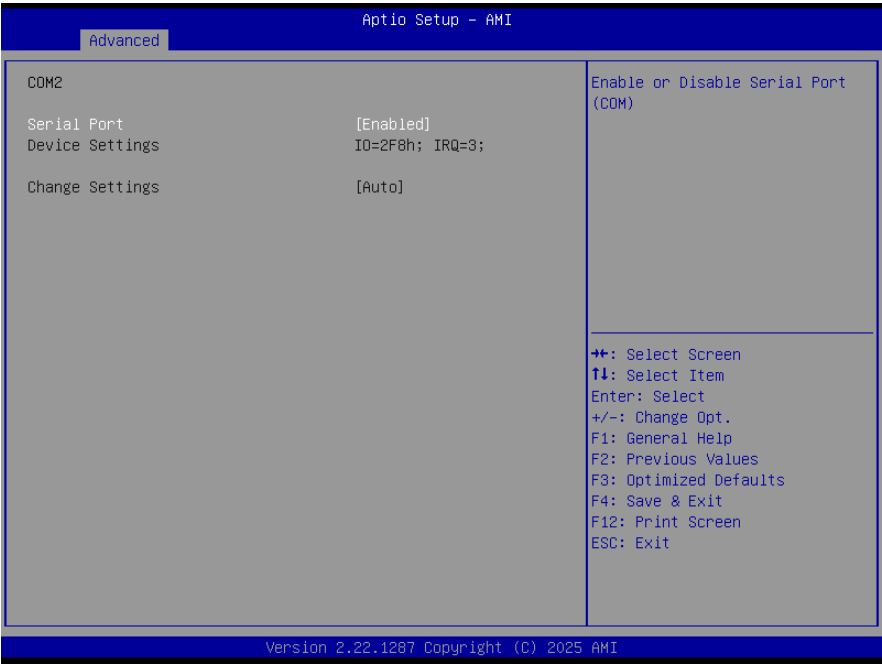
Item	Description
COM1	Set Parameters of Serial Port 1 (COM1).
COM2	Set Parameters of Serial Port 2 (COM2).
COM3	Set Parameters of Serial Port 3 (COM3).
COM4	Set Parameters of Serial Port 4 (COM4).
COM5	Set Parameters of Serial Port 5 (COM5).
COM6	Set Parameters of Serial Port 6 (COM6).

3.6.2.5.1 Serial Port 1 Configuration



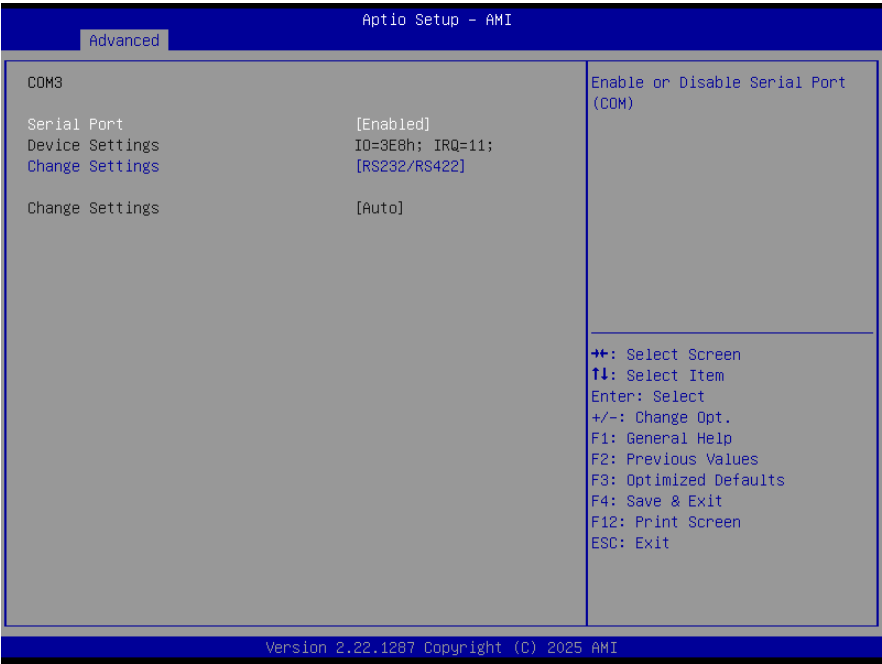
Item	Option	Description
Serial Port	Disabled Enabled [Default] ,	Enable or Disable Serial Port (COM).

3.6.2.5.2 Serial Port 2 Configuration



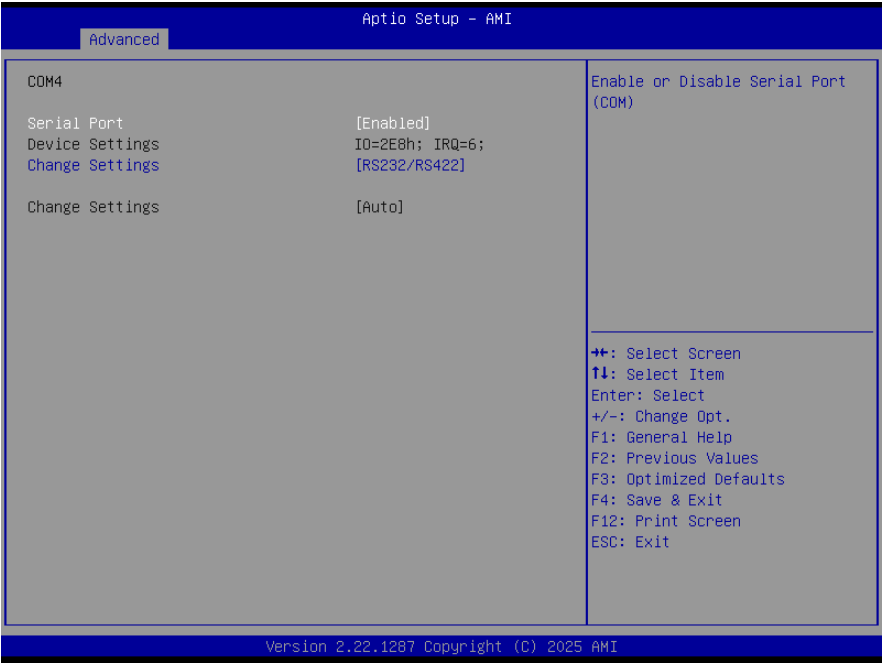
Item	Option	Description
Serial Port	Disabled Enabled [Default] ,	Enable or Disable Serial Port (COM).

3.6.2.5.3 Serial Port 3 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM).
Change Settings	RS232/RS422[Default] RS485 DE#/RE	Select an optimal settings for Super IO Device

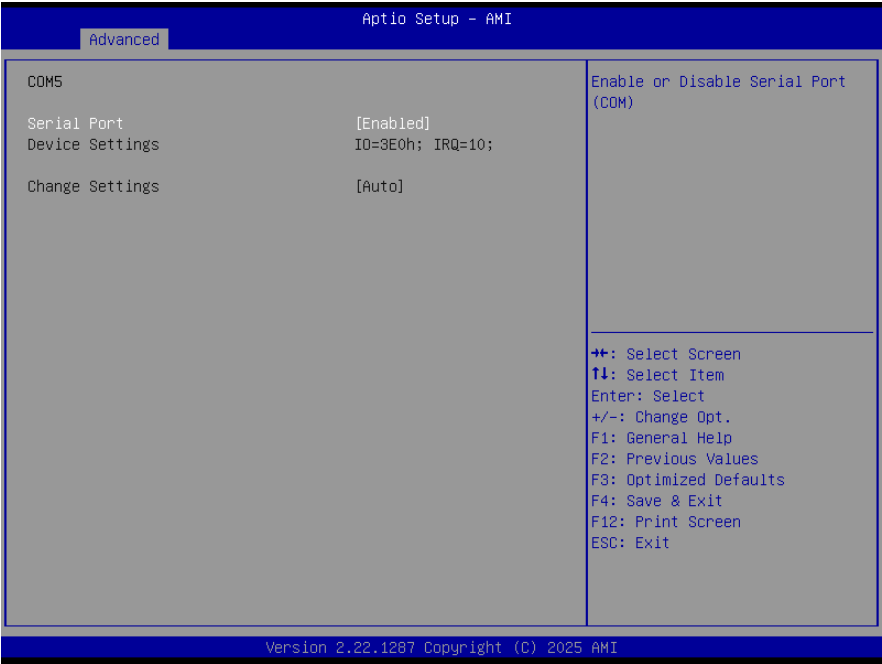
3.6.2.5.4 Serial Port 4 Configuration



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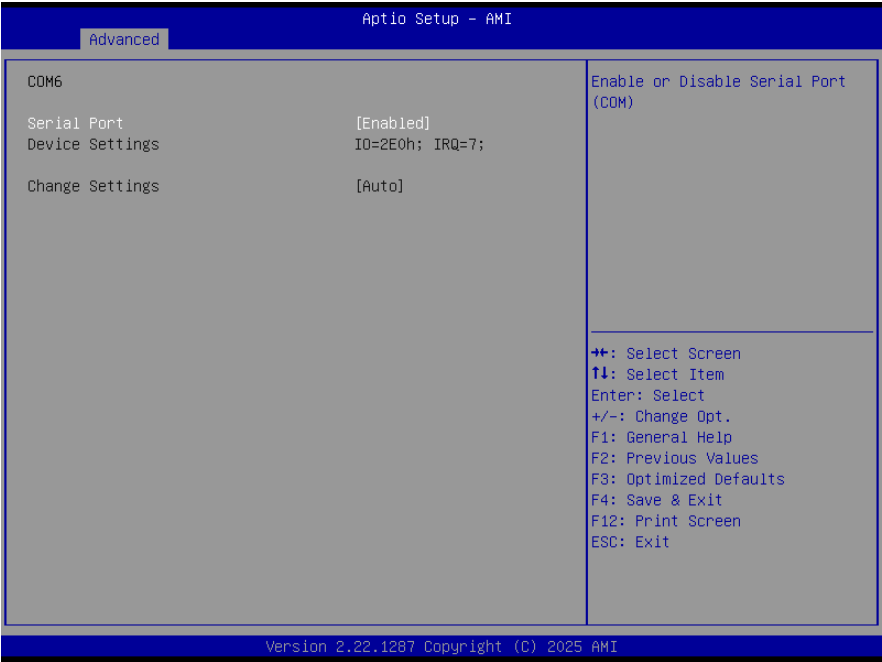
Item	Option	Description
Serial Port	Disabled Enabled [Default] ,	Enable or Disable Serial Port (COM).
Change Settings	RS232 [Default] RS422 RS485	Select an optimal settings for Super IO Device

3.6.2.5.5 Serial Port 5 Configuration



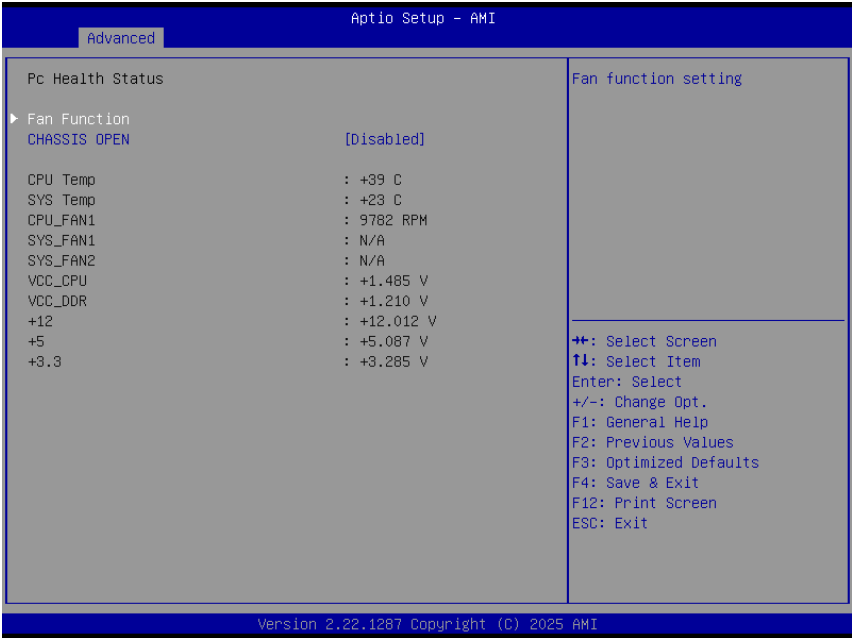
Item	Option	Description
Serial Port	Disabled Enabled [Default] ,	Enable or Disable Serial Port (COM).

3.6.2.5.6 Serial Port 6 Configuration



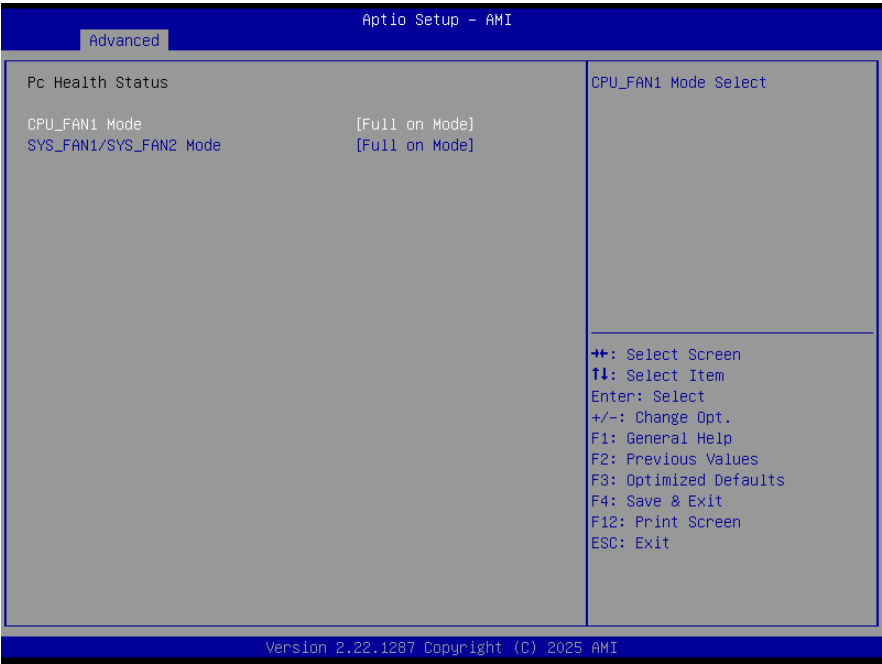
Item	Option	Description
Serial Port	Disabled Enabled [Default] ,	Enable or Disable Serial Port (COM).

3.6.2.6 Hardware Monitor



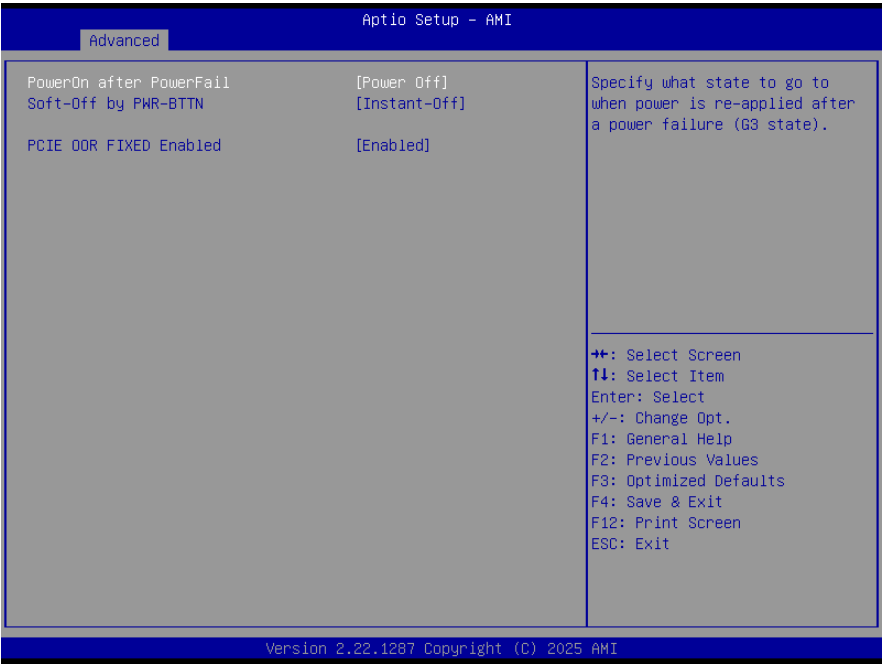
Item	Option	Description
CHASSIS OPEN	Disabled [Default] , Enabled	Sound the alarm if chasis opened; Stopped while closed.

3.6.2.6.1 Fan Function



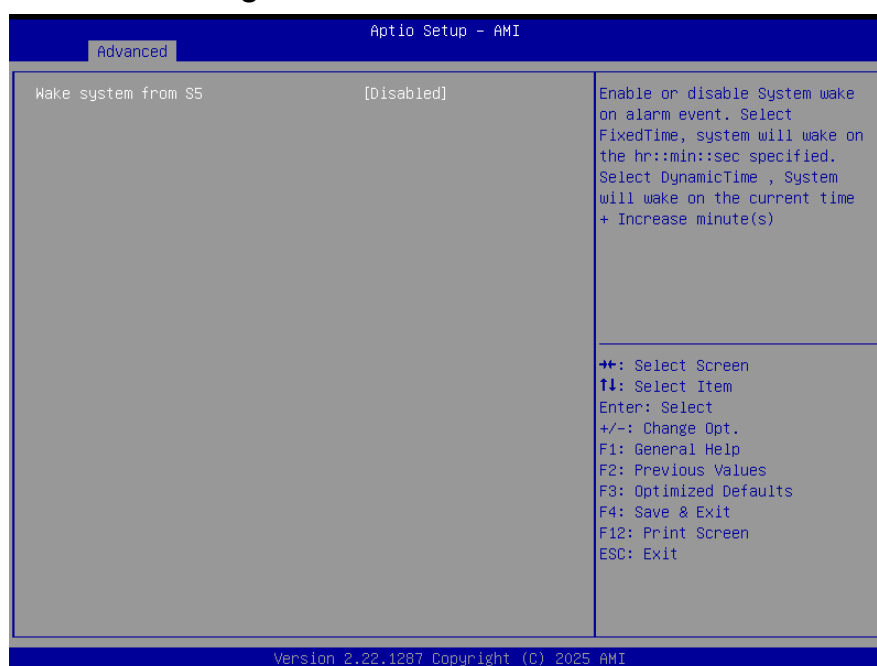
Item	Option	Description
CPU Fan1 Mode	Full on Mode[Default], Automatic Mode Manual Mode	CPU Fan1 Mode Select
SYS_FAN1/SYS_FAN2 Mode	Full on Mode[Default], Automatic Mode Manual Mode	SYS_FAN1/SYS_FAN2 Mode Select

3.6.2.7 Power Control



Item	Option	Description
PowerOn after PowerFail	Power On Power Off[Default], Last State	Specify what state to go to when power is re-applied after a power failure (G3 state).
Soft-Off by PWR-BTTN	Instant-Off[Default], Delay 4 sec.	SYS_FAN1/SYS_FAN2 Mode Select
PCIE OOR FIXED Enabled	Enabled[Default], Disabled	PCIE OOR FIXED

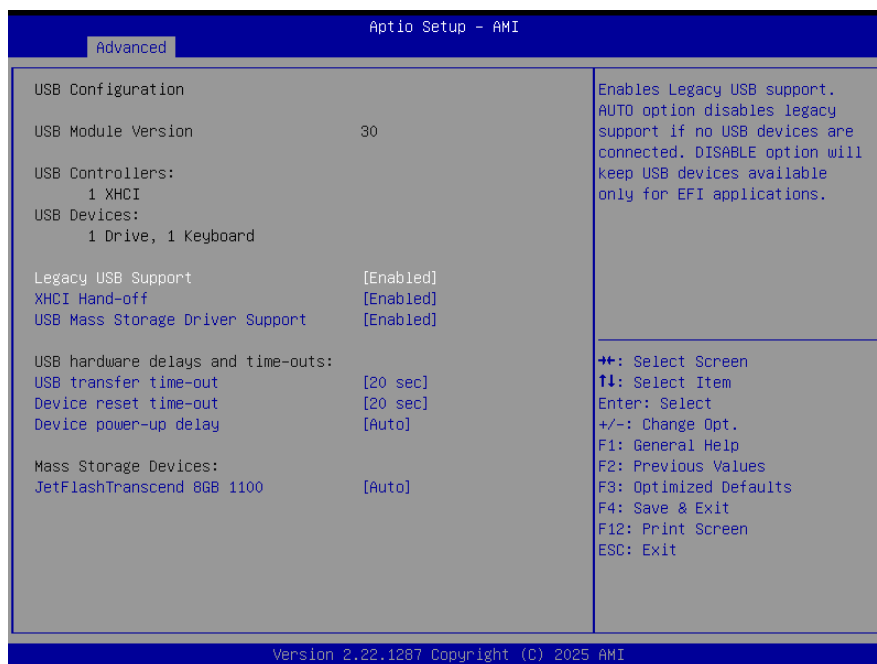
3.6.2.8 S5 RTC Wake Settings



Item	Options	Description
Wake system from S5	Disabled[Default], Fixed Time	Enable or disable System wake on alarm event. Select FixedTime, system will wake on the hr::min::sec specified. Select Dynamic Time, System will wake on the current time + Increase minute(s).

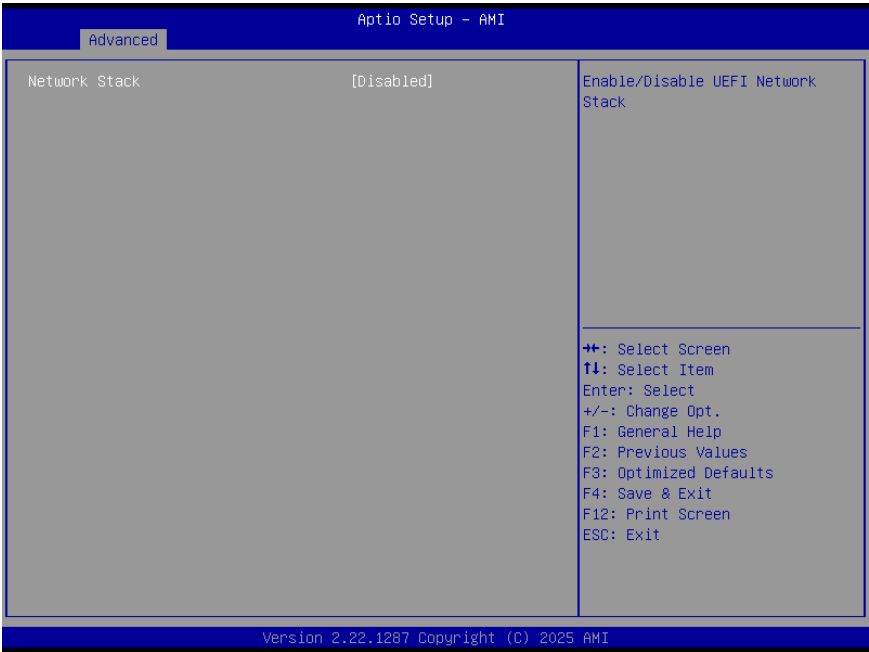
3.6.2.9 USB Configuration

The USB Configuration menu helps read USB information and configures USB settings.



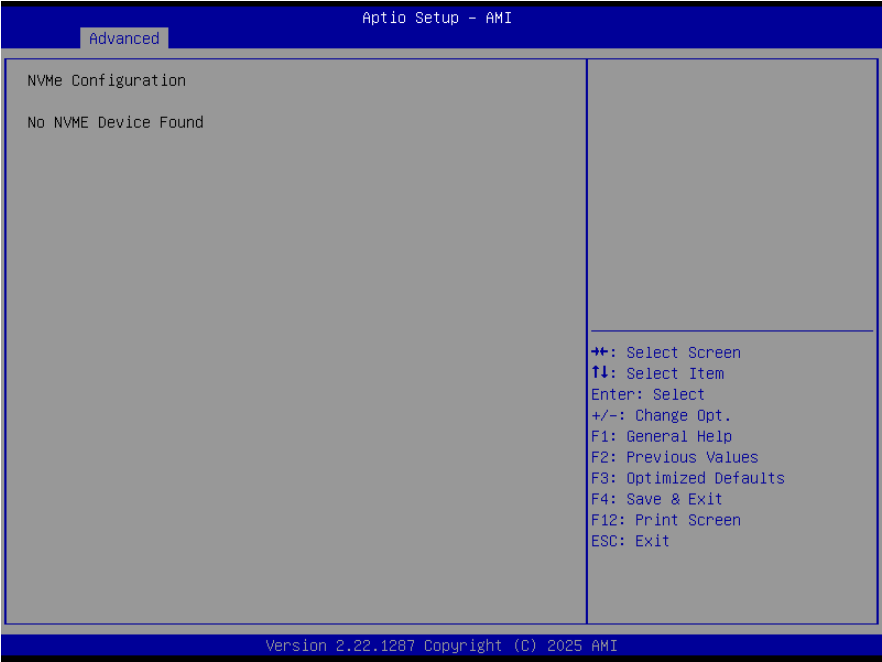
Item	Options	Description
USB Support	Disabled Enabled[Default],	USB Support Parameters
XHCI Hand-off	Disabled Enabled[Default],	This is a workaround for OSES without XHCI ownership change should be claimed by XHCI drive.
USB Mass Storage Driver Support	Disabled Enabled[Default],	Enable/Disable USB Mass Storage Driver Support.
USB transfer time-out	1 sec 5 sec 10 sec 20 sec[Default]	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec[Default] 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto[Default] Manual	Maximum time the device will take before it properly reports itself to the Host Controller. 'Auto' uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.
Mass Storage Devices	Auto[Default] Floppy Forced FDD Hard Disk CD-ROM	Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

3.6.2.10 Network Stack Configuration



Item	Options	Description
Network Stack	Disabled [Default] , Enabled	Enable/Disable UEFI Network Stack.

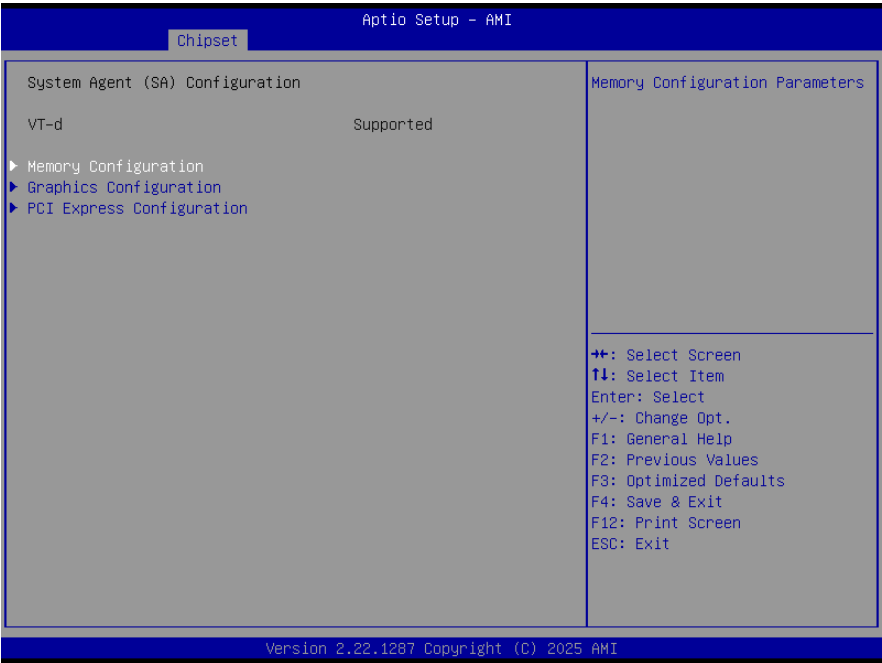
3.6.2.11 NVMe Configuration



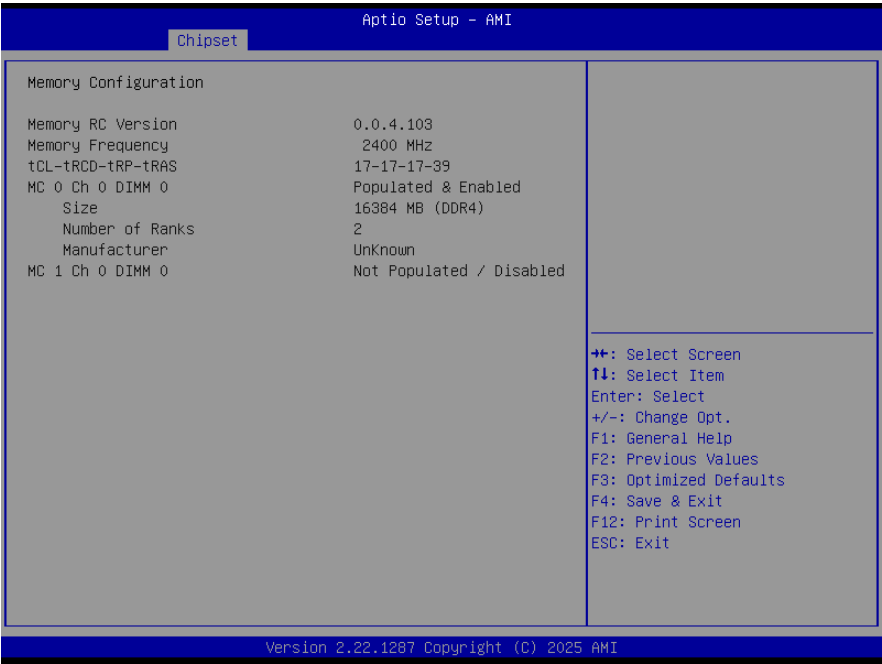
3.6.3 Chipset



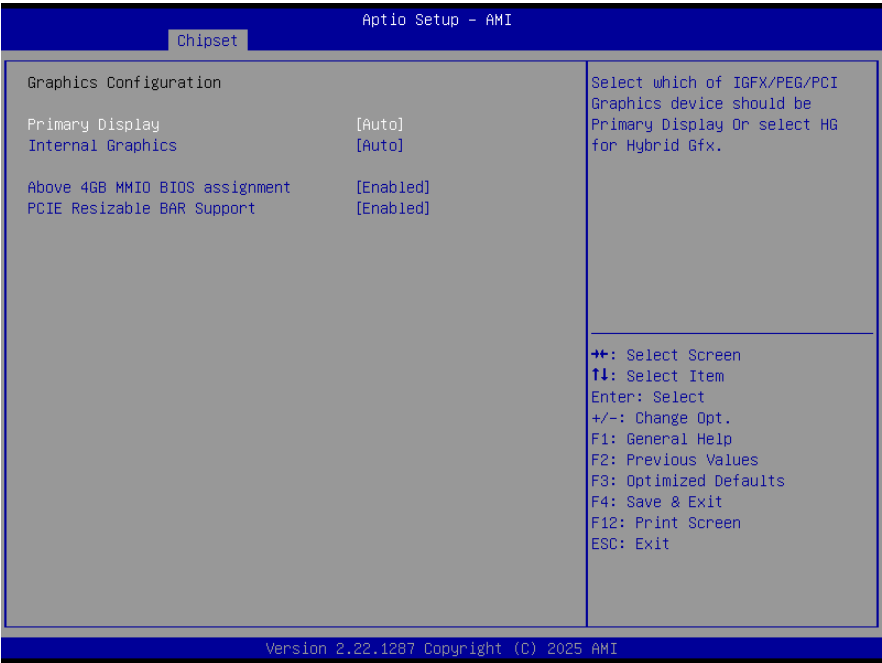
3.6.3.1 System Agent (SA) Configuration



3.6.3.1.1 Memory Configuration



3.6.3.1.2 Graphics Configuration

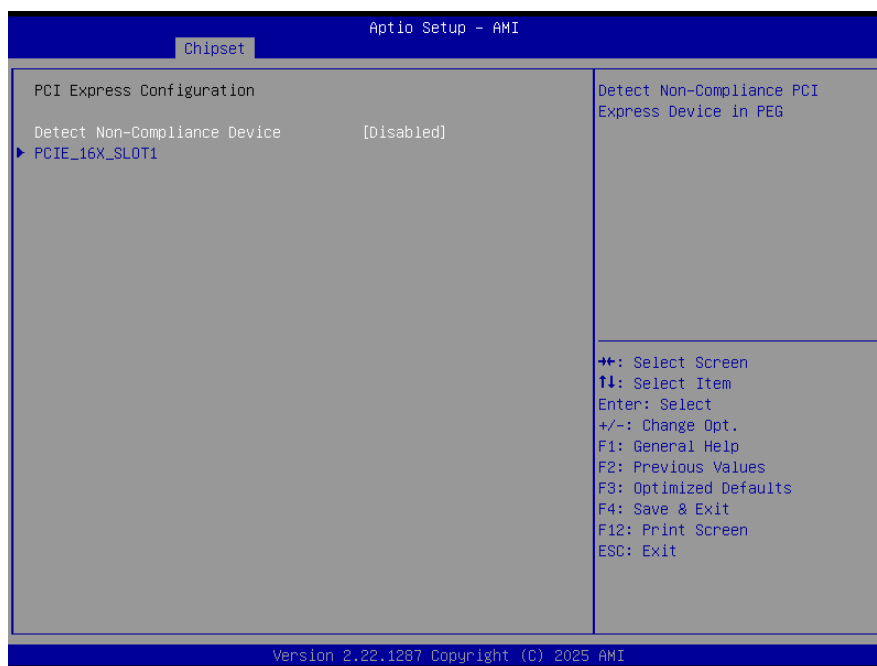


Item	Option	Description
Primary Display	Auto[Default] IGFX PEG Slot PCH PCI HG	Select which of IGFX/PEG/PCI Graphics device should be Primary Display Or select HG for Hybrid Gtx.

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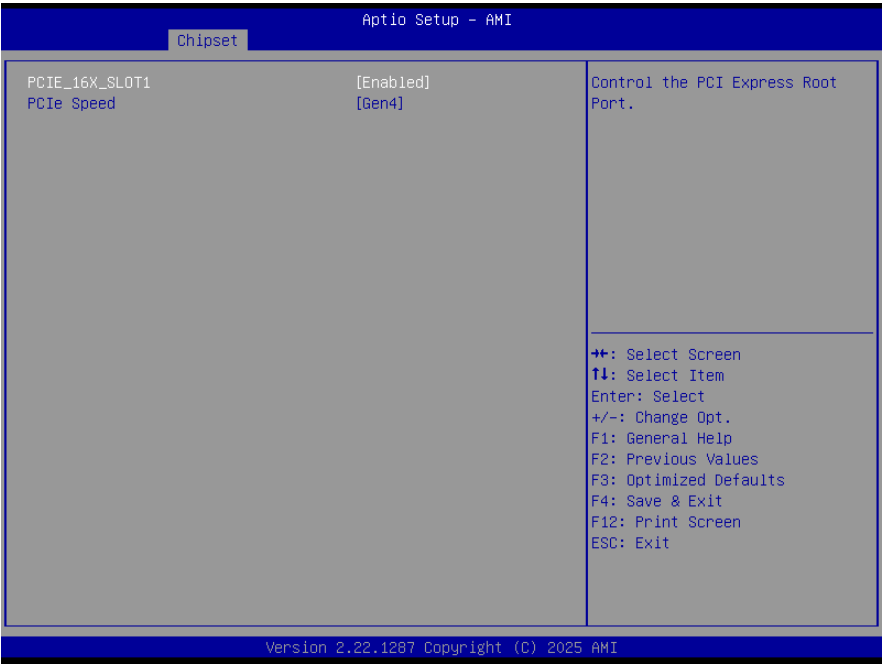
Internal Graphics	Auto[Default] Disabled Enabled	Keep IGFX enabled based on the setup options.
Above 4GB MMIO BIOS assignment	Enabled[Default] Disabled	Enable/Disable above 4GB MemoryMappedIO BIOS assignment This is enabled automatically when Aperture Size is set to 2048MB.
PCIe Resizable BAR Support	Enabled[Default] Disabled	Enable/Disable PCIe Resizable BAR Support

3.6.3.1.3 PCI Express Configuration



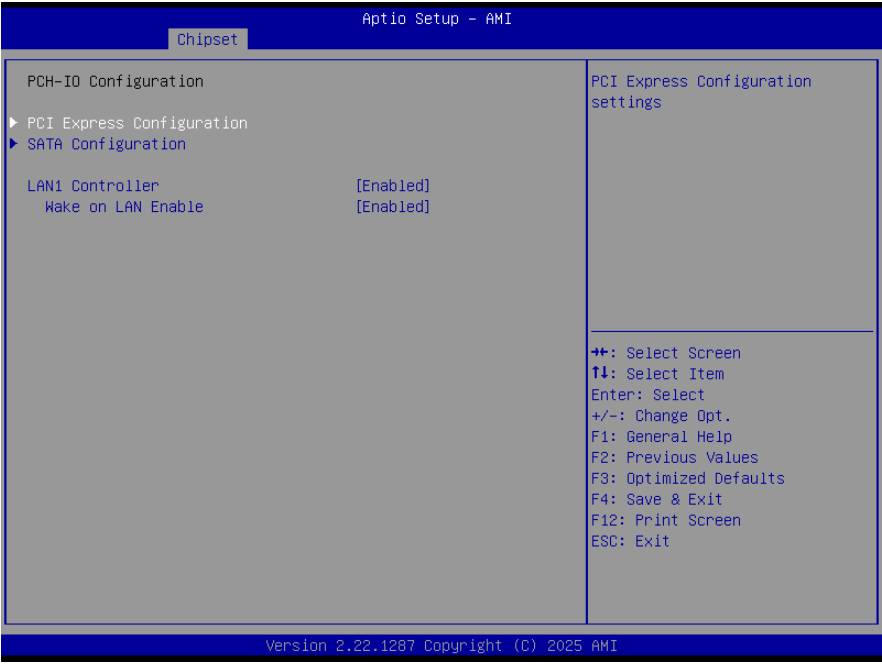
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default] Enabled	Detect Non-Compliance PCI Express Device in PEG

3.6.3.1.3.1 PCIE_16X_SLOT1



Item	Option	Description
PCIE_16X_SLOT1	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
PCIe Speed	Auto/Gen1/ Gen2/Gen3/ Gen4 [Default] /Gen5	Configure PCIe Speed

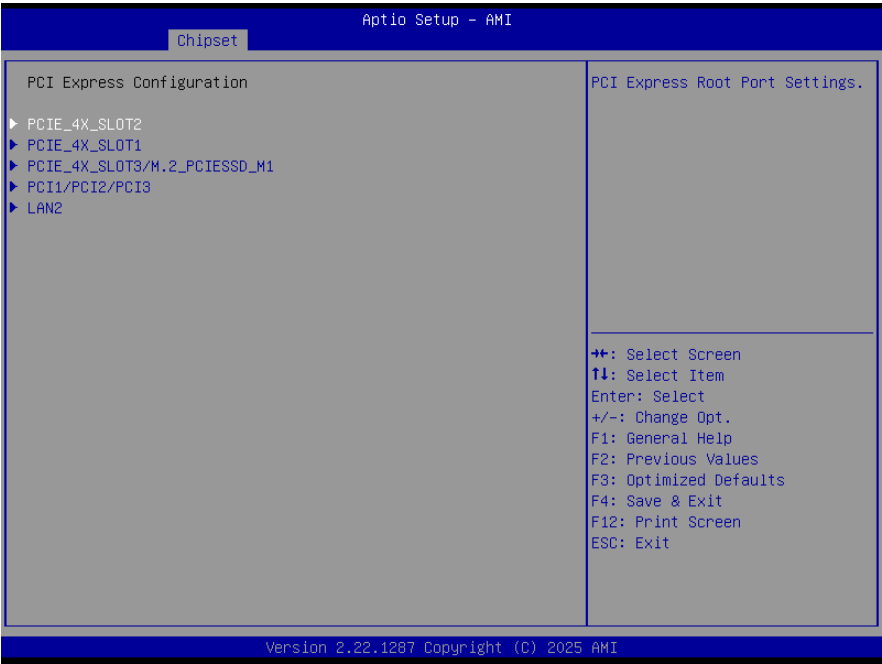
3.6.3.2 PCH-IO Configuration



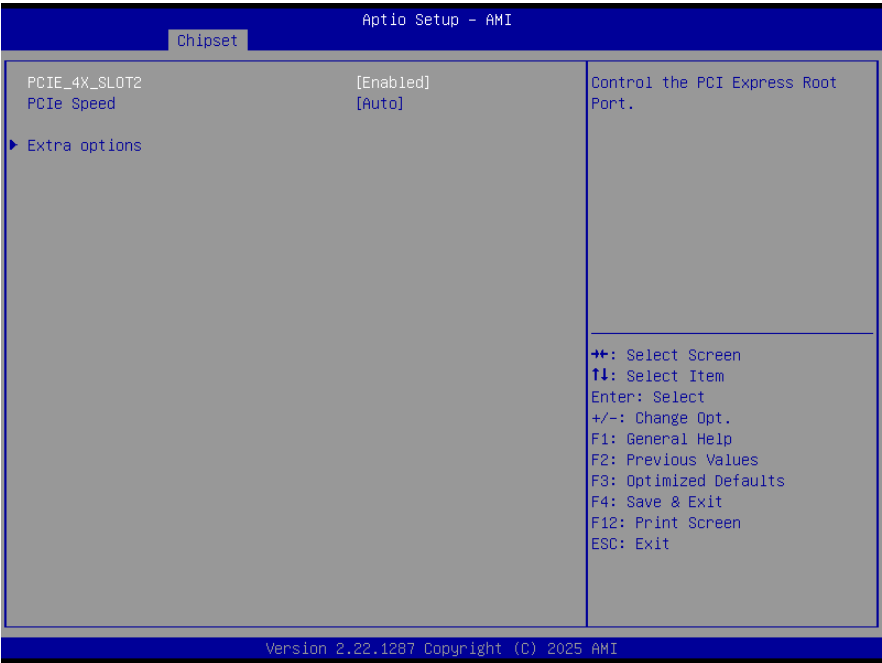
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Item	Option	Description
LAN1 Controller	Enabled[Default], Disabled	Enable/Disable onboard NIC
Wake on LAN Enable	Enabled[Default], Disabled	Enable/Disable integrated LAN to wake the system.

3.6.3.2.1 PCI Express Configuration

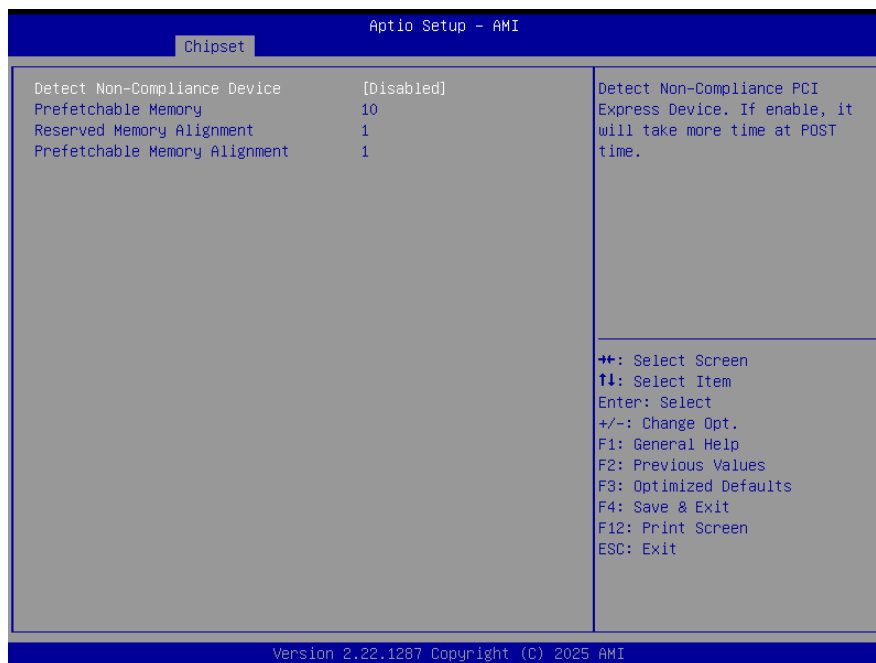


3.6.3.2.1.1 PCIE_4X_SLOT2



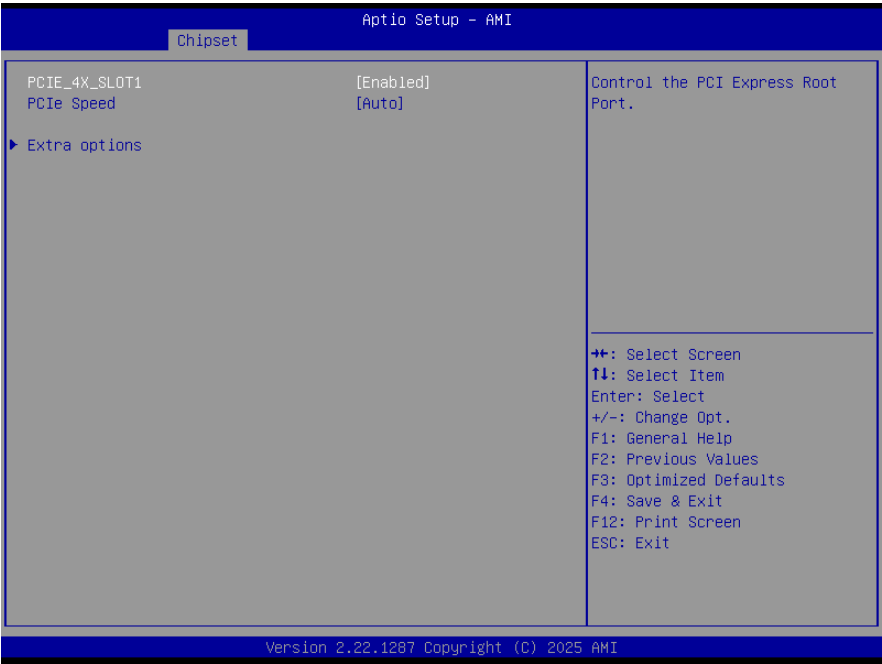
Item	Option	Description
PCIE_4X_SLOT2	Disabled Enabled[Default],	Control the PCI Express Root Port.
PCIe Speed	Auto[Default] /Gen1/Gen2 /Gen3/Gen4	Configure PCIe Speed

3.6.3.2.1.1.1 Extra options



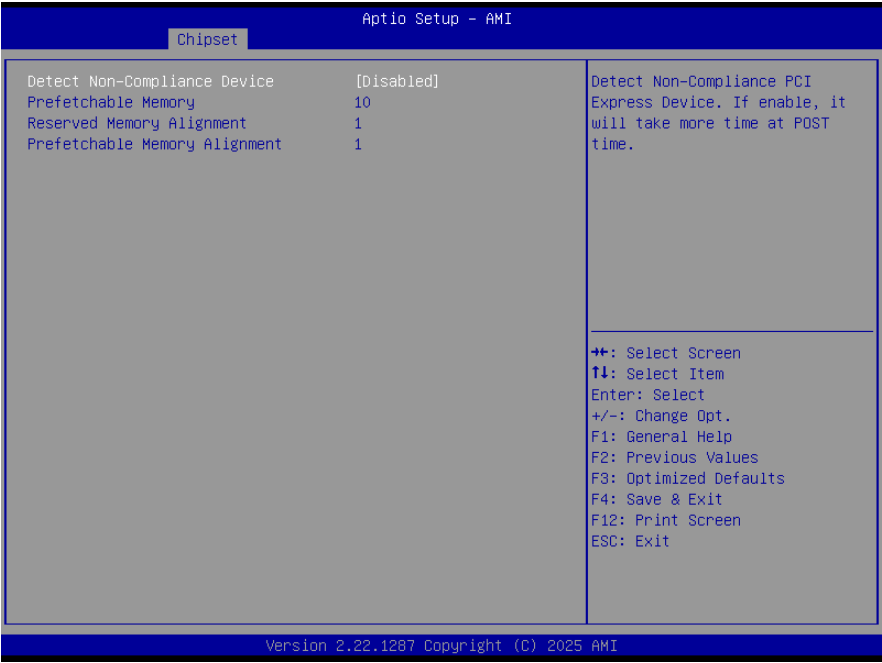
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default], Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.2 PCIE_4X_SLOT1



Item	Option	Description
PCIE_4X_SLOT1	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
PCIe Speed	Auto [Default] /Gen1/Gen2 /Gen3/Gen4	Configure PCIe Speed

3.6.3.2.1.2.1 Extra options



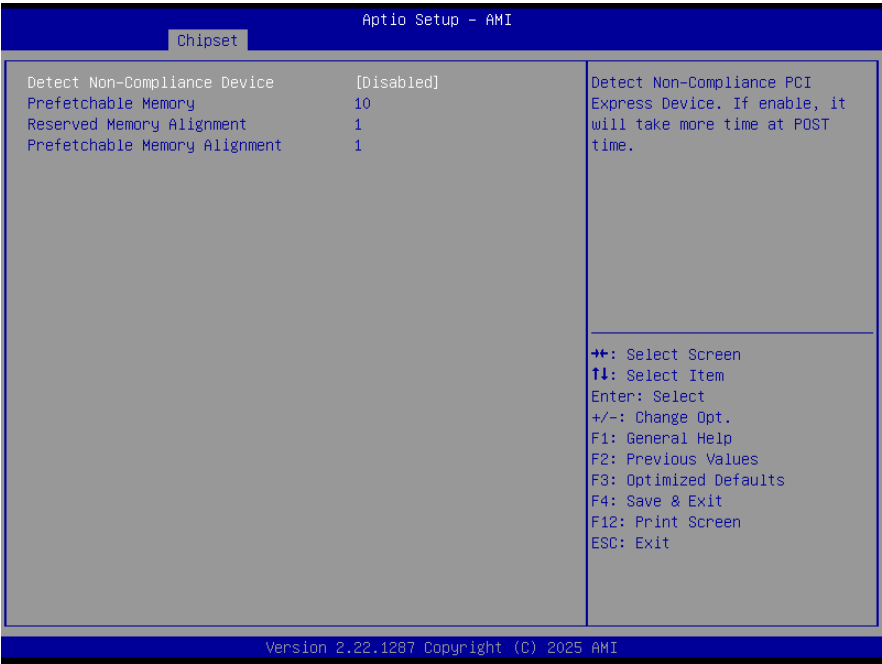
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default], Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.3 PCIE_4X_SLOT3/M.2_PCIESSD_M1



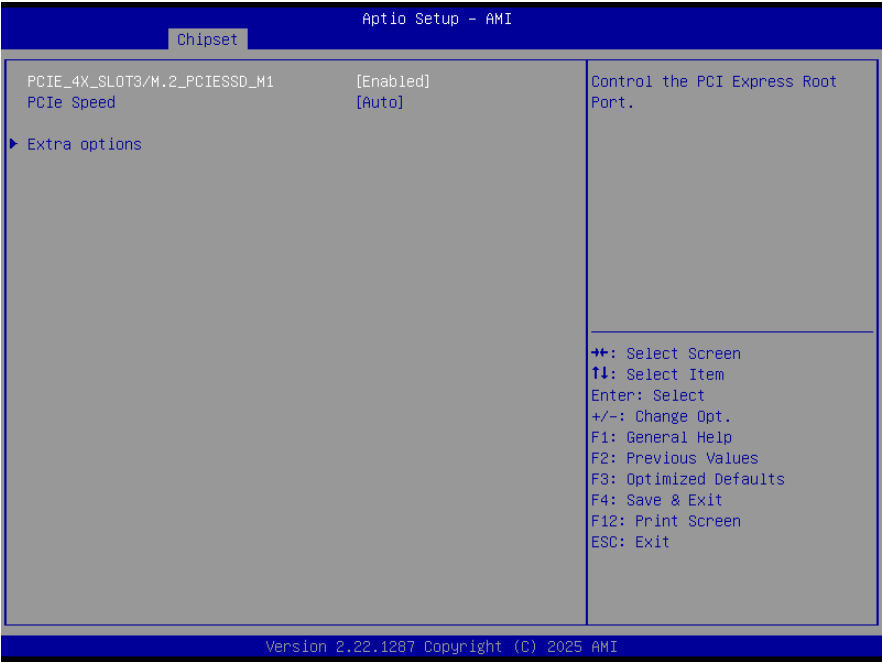
Item	Option	Description
PCIE_4X_SLOT3/ M.2_PCIESSD_M1	Disabled Enabled[Default],	Control the PCI Express Root Port.
PCIe Speed	Auto[Default] /Gen1/Gen2 /Gen3/Gen4	Configure PCIe Speed

3.6.3.2.1.3.1 Extra options



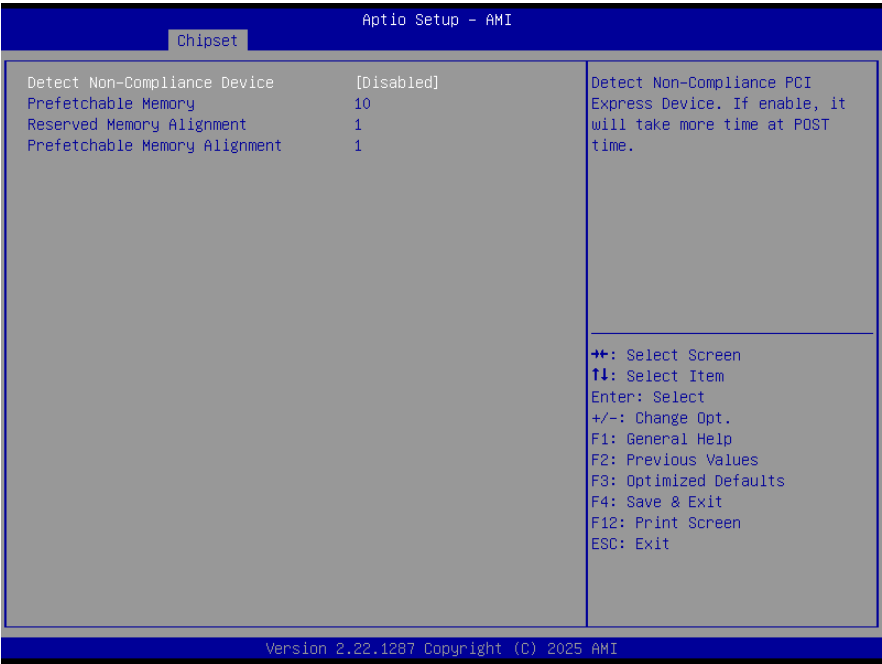
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default], Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.4 PCI1/PCI2/PCI3



Item	Option	Description
PCI1/PCI2/PCI3	Disabled Enabled [Default] ,	Control the PCI Express Root Port.
PCIe Speed	Auto [Default] /Gen1/Gen2 /Gen3/Gen4	Configure PCIe Speed

3.6.3.2.1.4.1 Extra options



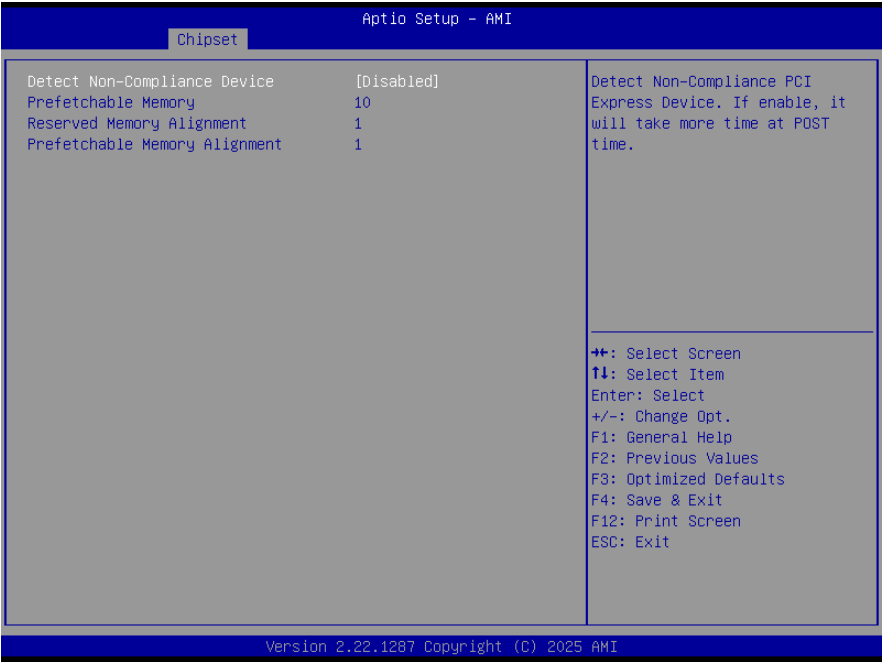
Item	Option	Description
Detect Non-Compliance Device	Disabled[Default], Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

3.6.3.2.1.5 LAN2



Item	Option	Description
LAN2	Disabled Enabled[Default],	Control the PCI Express Root Port.
PCIe Speed	Auto[Default] /Gen1/Gen2 /Gen3/Gen4	Configure PCIe Speed

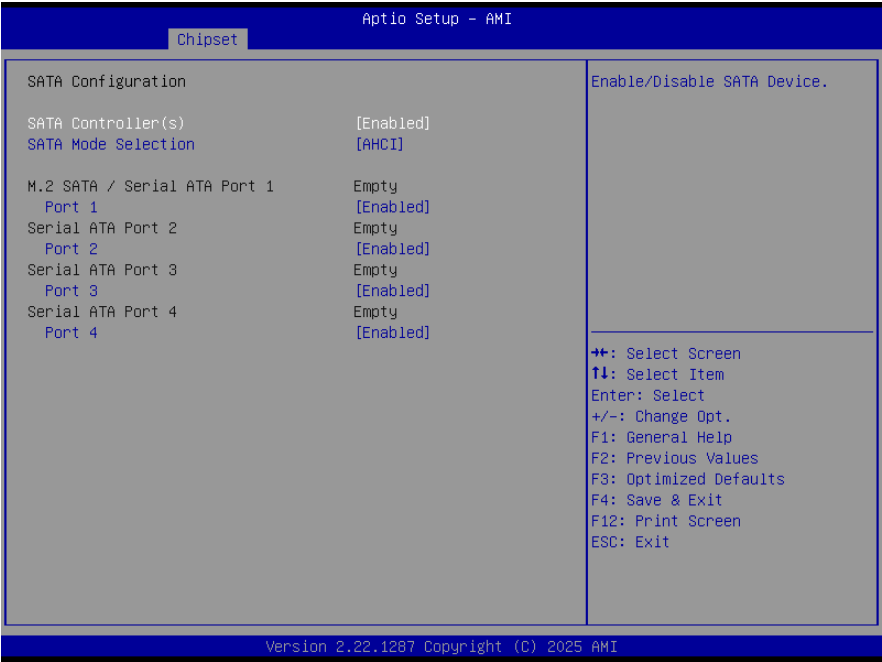
3.6.3.2.1.5.1 Extra options



Item	Option	Description
Detect Non-Compliance Device	Disabled[Default], Enabled	Detect Non-Compliance PCI Express Device. If enable, it will take more time at POST time.
Prefetchable Memory	10	Prefetchable Memory Range for this Root Bridge.
Reserved Memory Alignment	1	Reserved Memory Alignment (0-31 bits)
Prefetchable Memory Alignment	1	Prefetchable Memory Alignment (0-31 bits)

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3.6.3.2.2 SATA Configuration



Item	Options	Description
SATA Configuration(S)	Enabled[Default], Disabled	Enable/Disable SATA Device.
SATA Mode Selection	AHCI	Determines how SATA controller(s) operate.
SATA Port	Disabled Enabled[Default],	Enable or Disable SATA Port

3.6.4 Security



Item	Description
Administrator Password	Set Administrator Password
User Password	Set User Password

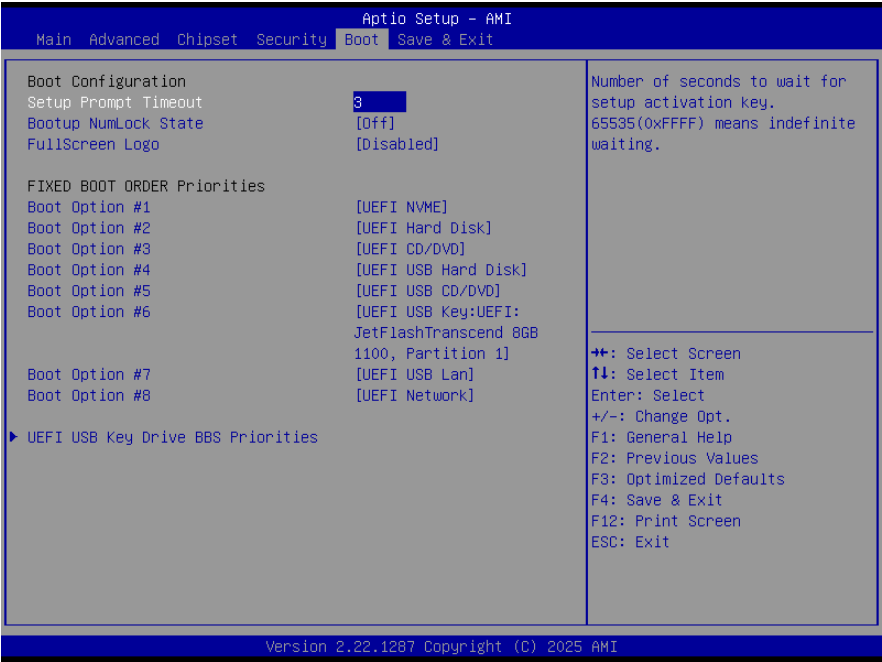
3.6.4.1 Secure Boot



Item	Option	Description
Secure Boot	Disabled Enabled[Default],	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
Secure Boot Mode	Standard[Default], Custom	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

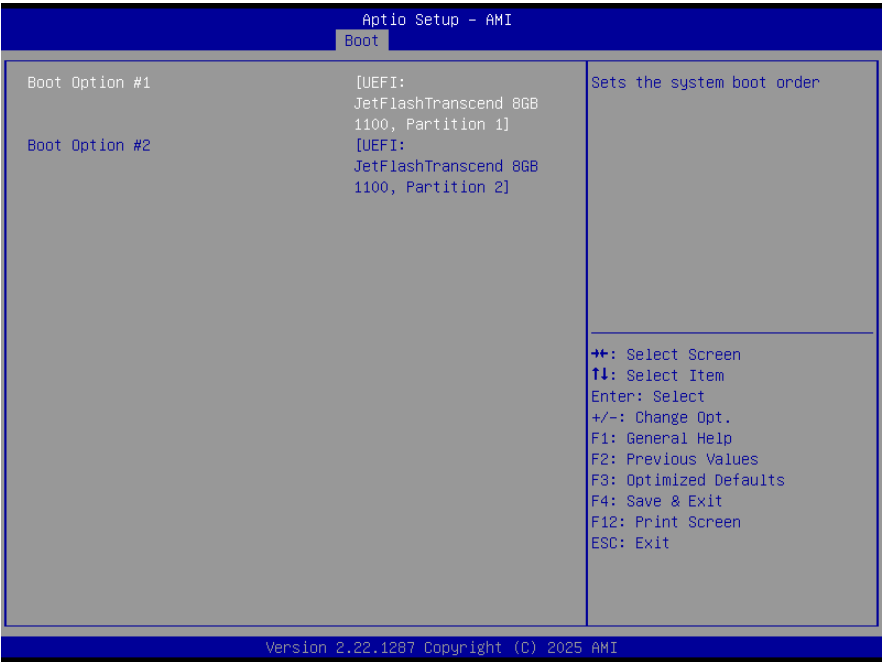
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3.6.5 Boot

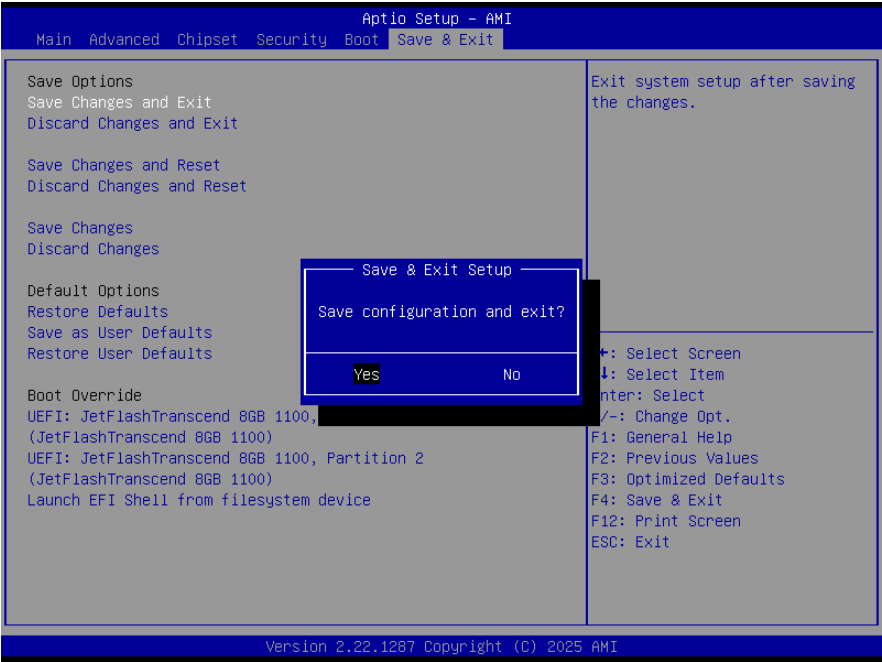
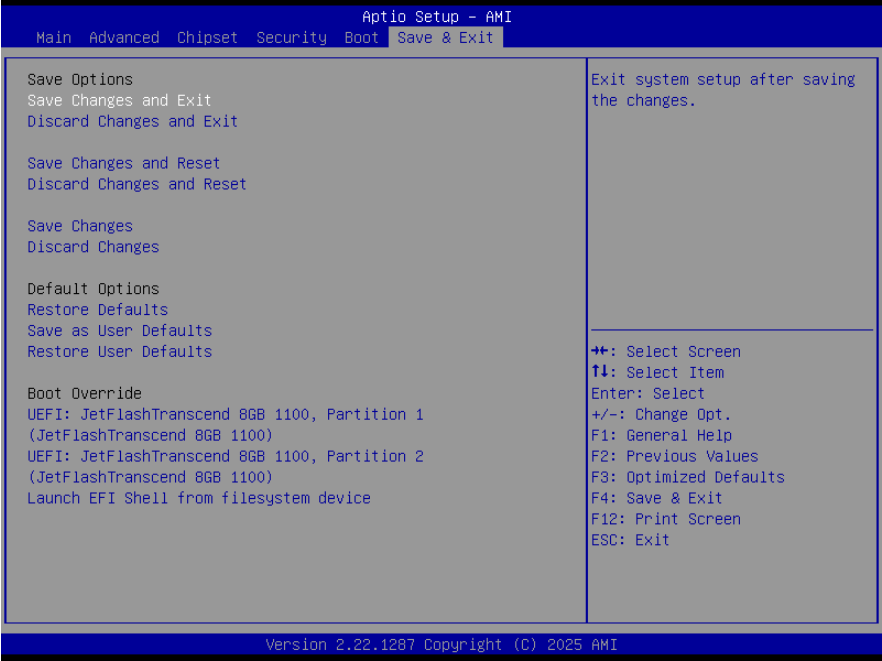


Item	Option	Description
Setup Prompt Timeout	3	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On Off[Default]	Select the keyboard NumLock state.
Quiet Boot	Disabled[Default] Enabled	Enable or disable Quiet Boot option.
Boot Option	Sets the system boot order	

3.6.5.1 UEFI NVME Drive BBS Priorities



3.6.6 Save & Exit



3.6.6.1 Save Changes and Reset

Reset the system after saving the changes.

3.6.6.2 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

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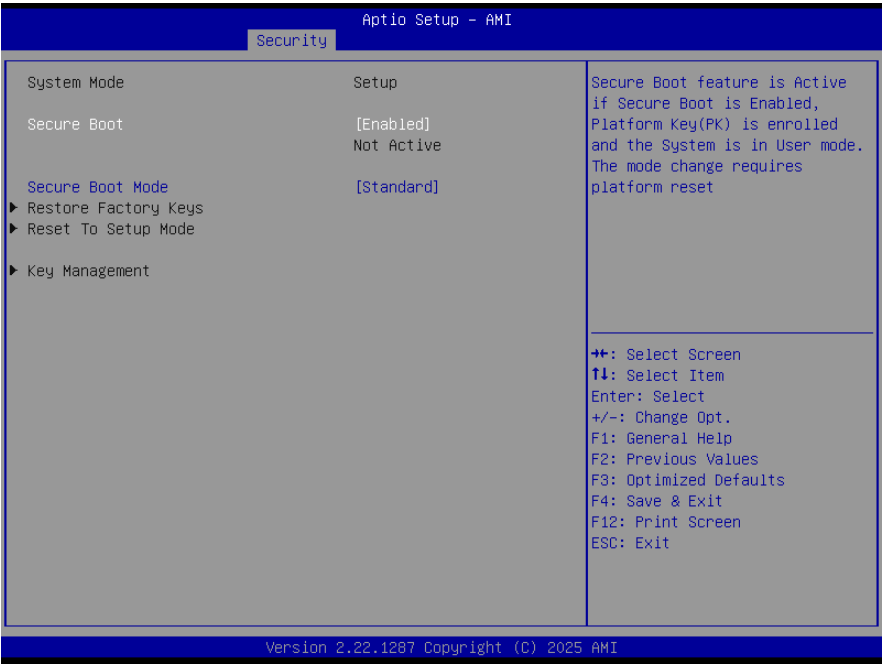
3.6.6.3 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

3.6.6.4 Launch EFI Shell from filesystem device

Attempts to Launch EFI Shell application (Shellx64.efi) from one of the available filesystem devices.

3.6.7 MEBx



Item	Description
Intel(R) ME Password	MEBx Login

4. Drivers Installation



Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

4.1 Install Chipset Driver

All drivers can be found on the Avalue Official Website:

<http://www.avalue.com>



Note: The installation procedures and screen shots in this section are based on Windows 10 operation system. If the warning message appears while the installation process, click Continue to go on.



Step1. Click Next.



Step 3. Click Install.



Step 2. Click Accept.



Step 4. Complete setup.

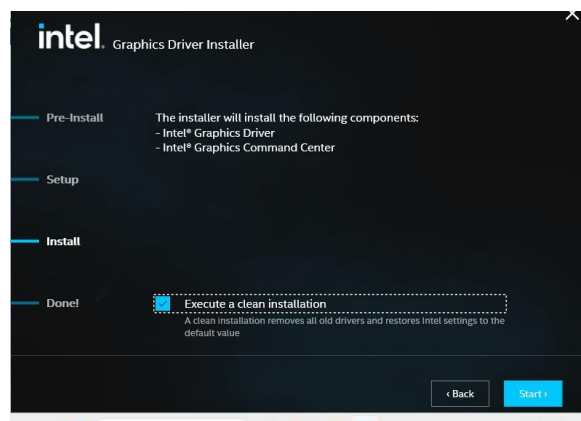
4.2 Install Graphics Driver

All drivers can be found on the Avalue Official Website:

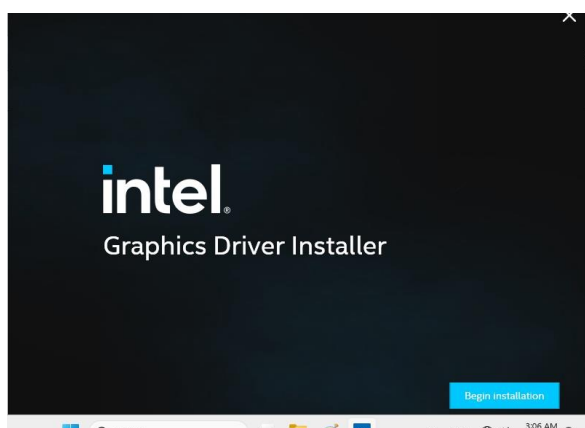
<http://www.avalue.com>



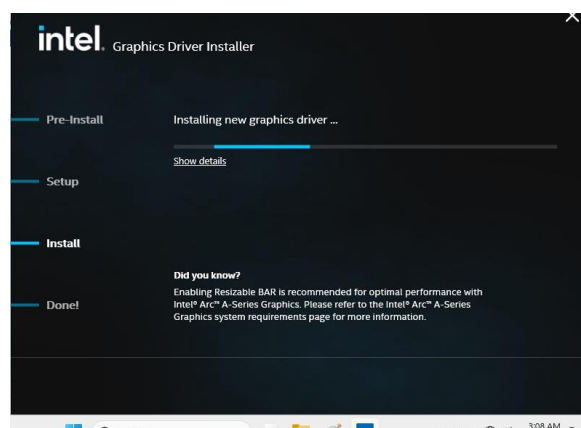
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



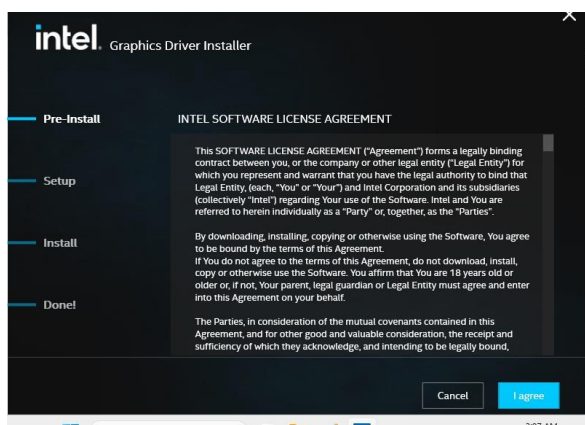
Step 3. Click Start.



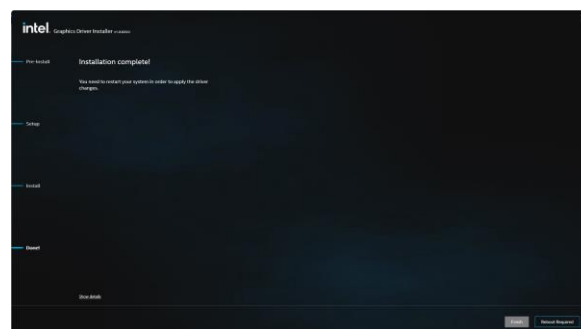
Step 1. Click Begin installation.



Step 4. Click Finish to complete setup.



Step 2. Click I agree.



Step 5. Click Finish to complete setup.

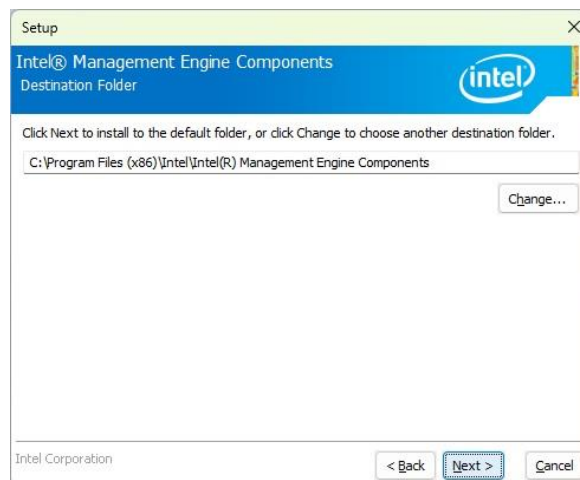
4.3 Install ME Driver

All drivers can be found on the Avalue Official Website:

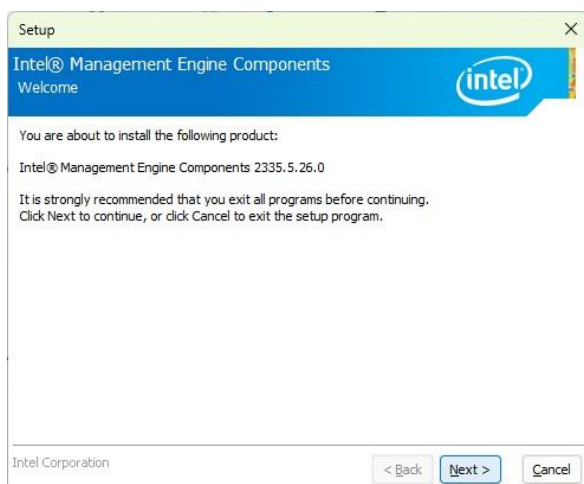
<http://www.avalue.com>



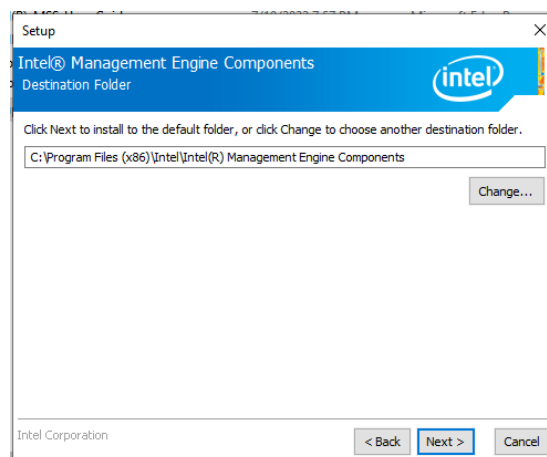
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 3. Click Next



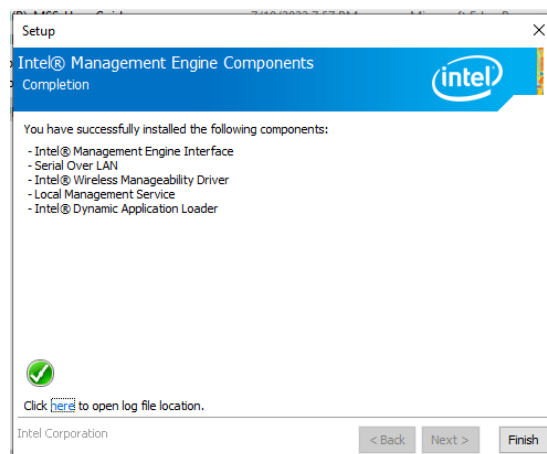
Step 1. Click Next to continue setup.



Step 4. Click Next



Step 2. Click Next.



Step 5. Click Finish to complete the setup

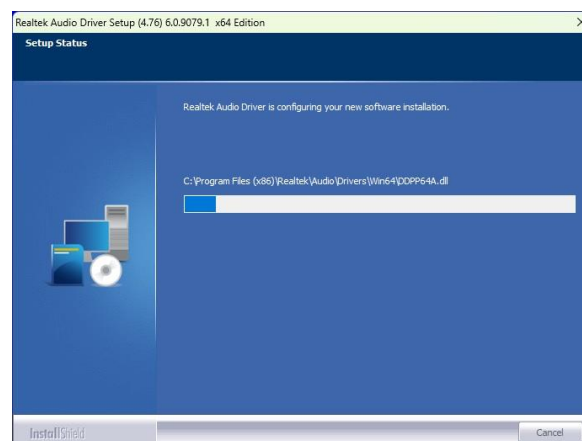
4.4 Install Audio Driver (For Realtek ALC897 HD Audio)

All drivers can be found on the Avalue Official Website:

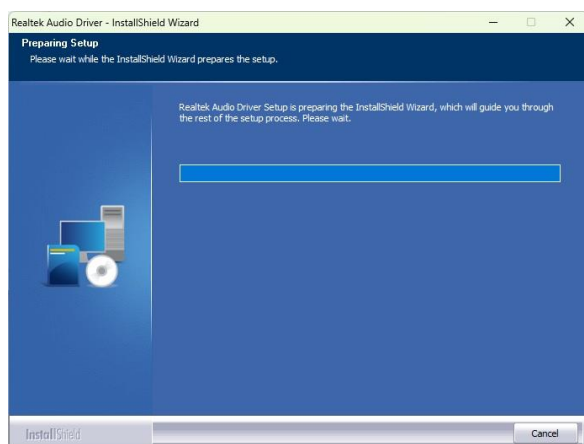
<http://www.avalue.com>



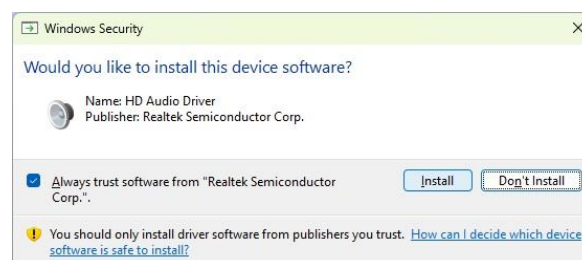
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



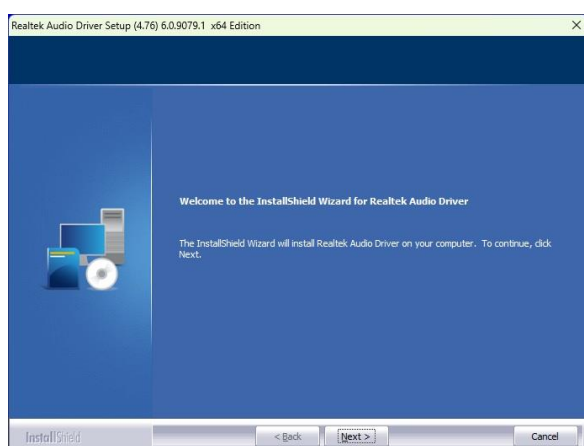
Step 3. Click Next



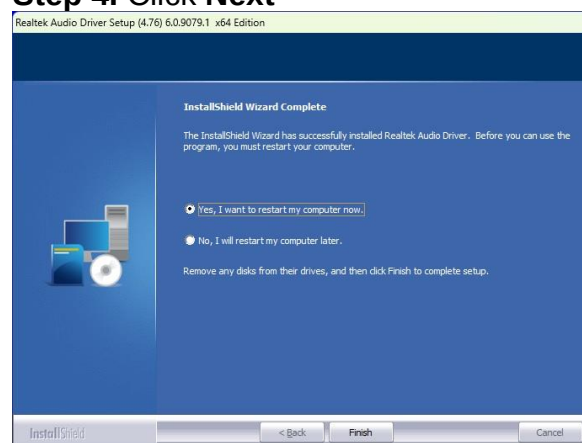
Step 1. Click Next to Install.



Step 4. Click Next



Step 2. Select Finish to complete Installation.



Step 5. Click Finish to complete the setup

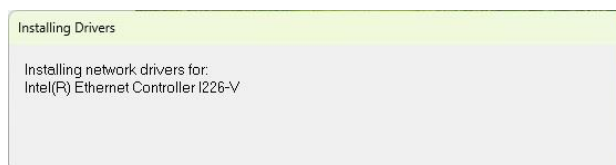
4.5 Install LAN Driver

All drivers can be found on the Avalue Official Website:

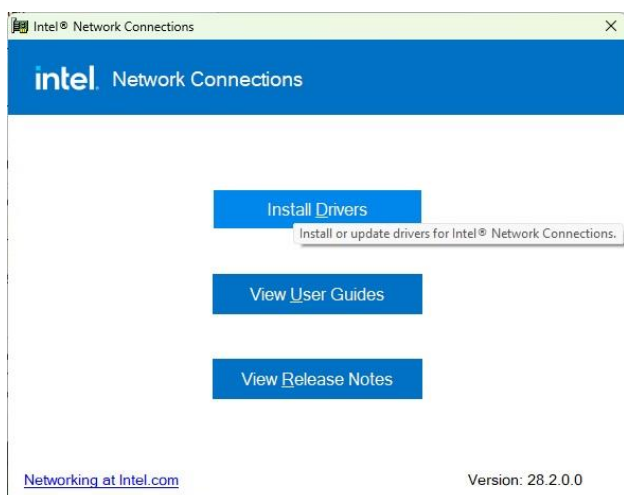
<http://www.avalue.com>



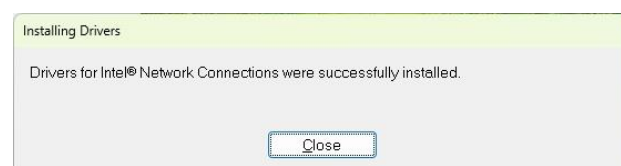
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



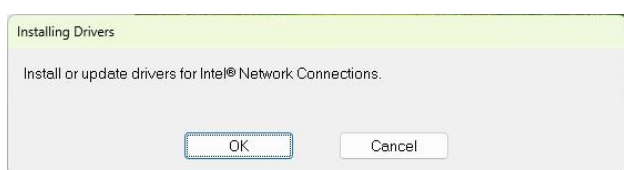
Step 3. Click Next.



Step 1. Click Install Drivers and Software.



Step 4. Complete setup.



Step 2. Click Next.

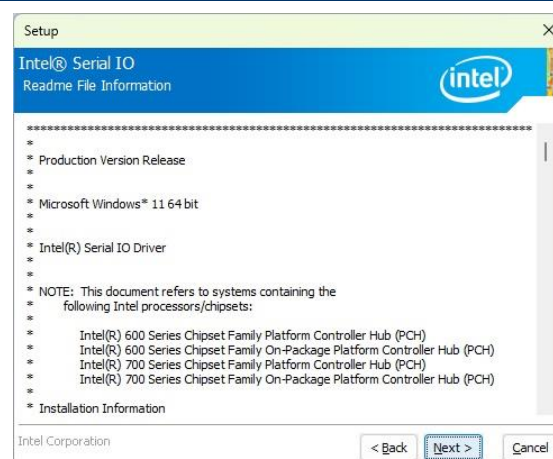
4.6 Install Serial IO Driver

All drivers can be found on the Avalue Official Website:

<http://www.avalue.com>



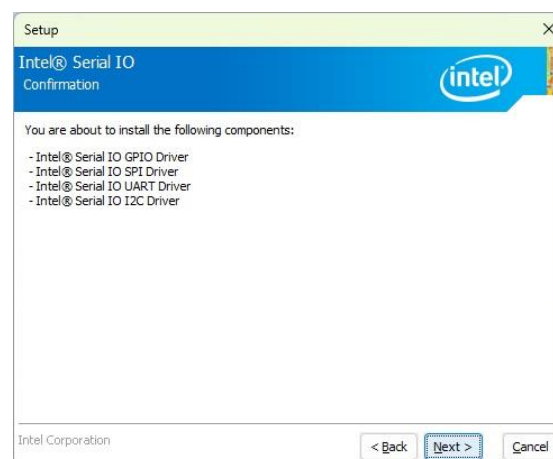
Note: The installation procedures and screen shots in this section are based on Windows 10 operation system.



Step 3. Click Next.



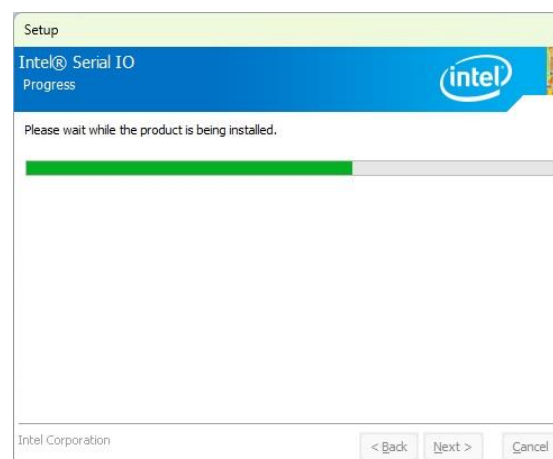
Step 1. Click Next to continue installation.



Step 4. Click Next.



Step 2. Click Next.



Step 5.

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Step 6. Click **Finish** to complete setup.

5. Mechanical Drawing

5.1 Mechanical Drawing

