EAX-R680BP

Intel® 12/13/14th Gen Core™ i9/i7/i5/i3 & Series 2 Processors
ATX Motherboard with Intel® R680E Chipset

User's Manual

1st Ed –05 November 2025

Part No. E2047BP6800R

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 UNDESIRED 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.

OPERATION OF THIS EQUIPMENT IN A RESIDENTIAL AREA IS LIKELY TO CAUSE HARMFUL INTERFERENCE IN WHICH CASE THE USER WILL BE REQUIRED TO CORRECT THE INTERFERENCE AT HIS OWN EXPENSE.

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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Product Warranty

Avalue warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Avalue, or which have been subject to misuse, abuse, accident or improper installation. Avalue assumes no liability under the terms of this warranty as a consequence of such events. Because of Avalue's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If any of Avalue's products is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details. If you think you have a defective product, follow these steps:

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.

Content

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-R680BP Motherboard
- 2 x SATA Cables
- 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
1st	November 2025	Avalue	Initial Release

1.4 Manual Objectives

This manual describes in details Avalue Technology EAX-R680BP 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-R680BP 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	12/13/14th & Series 2 Gen Intel® Core™ i9/i7/i5/i3 Processors, supports LGA1700 CPU Up to 125W Max
BIOS	AMI uEFI BIOS, 256Mbit SPI Flash ROM
System Chipset	Intel® R680E chipsets
I/O Chip	Nuvoton NCT6126D (eSPI super IO)
System Memory	4 x 288-pin DDR5 UDIMM support up to 192GB, 3600~4400MT/s (Depending on configuration), optional ECC support depending on selected CPU *DDR5 UDIMM supports 5600MT/s, but due to the 2DPC design, the maximum speed is limited to 4400MT/s.
Watchdog Timer	H/W Reset, 5~255 seconds/5~255 minutes
H/W Status Monitor	● CPU temperature monitoring ● Voltages monitoring ● CPU fan speed control
RAID	Support RAID 0, 1, 5, 10
TPM	Onboard NuvoTon NPCT760 supports TPM 2.0
iAMT	By CPU (i9/i7/i5)
Other	SATA RAID / M.2 NVME RAID
Expansion Slot	
M.2	2 x M.2 NVMe Key M 2242/2280/22110 (PCIe Gen4x4, no SATA) (M2KM1/2)
PCIe	● 2 x PCIe x16 slot for 1 x PCIe x16 Gen5 or 2 x PCIe x8 Gen5 (PEG1/2) ● 2 x PCIe x4 Gen4 (PCIE1/2) ● 1 x PCIe x4 Gen3 (PCIE3) ● 1 x PCIe x4 slot for 1 x PCIe x2 Gen3 only (from PCH) (PCIE4)
Storage	
M.2	2 x M.2 NVMe Key M 2242/2280/22110 (PCIe Gen4x4, no SATA)
SATA	4 x SATA III (JSATA1/2/3/4)
Edge I/O	
COM	1 x DB9 Connector at IO support RS-232
LAN	2 x dual deck RJ45 for 2 x 2 x 2.5G LAN
USB	2 x 4-deck USB3.2 connector at I/O for 8 port USB3.2 Gen2, +5VSB/0.9A
DP	2 x DP++
HDMI	1 x HDMI 2.1b
Onboard I/O	

COM	**COM1: by DB9 connector at rear IO support RS232** ● DB9 connector for COM1 pin9 RI/5V/12V, 0.9A jumper select (JRI1) **COM2: by onboard pin-header support RS232/422/485 selected by BIOS** ● 1 x 2 x 5 pin, pitch 2.00mm connector for COM2 to support RS232 (COM2) ● 1 x 2 x 3 pin, pitch 2.00mm connector for COM2 pin9 RI/5V/12V, 0.9A jumper select (JRI2) ● 1 x 2 x 3 pin, pitch 2.00mm connector for COM2 to support RS422/485, Pin 5 with +5V, 0.9A (J1RS2) **COM3: support RS232/422/485 selected by BIOS** **COM3~6: support RS232** ● 1 x 2 x 20 pin, pitch 2.00mm connector for COM3~6 support RS232 (4COM1) ● 1 x 2 x 3 pin, pitch 2.00mm connector for COM3 pin9 RI/5V/12V, 0.9A jumper select (JRI3) ● 1 x 2 x 3 pin, pitch 2.00mm connector for COM3 to support RS422/485, Pin 5 with +5V, 0.9A (J1RS3)
USB	● 2 x 2 x 5 pin, pitch 2.54mm connector for 4 x USB 2.0, +5V, 0.5A (JUSB1/4) ● 1 x 1 x 5 pin, pitch 2.54mm connector for 1 x USB 2.0, +5V, 0.5A (JUSB2) ● 1 x USB3.2 Gen1 Vertical Type A, +5V, 0.9A (JUSB3)
GPIO	1 x 2 x 10 pin, pitch 2.00mm connector for GPIO: 16 bits & +5VS Level SMBus (DIO1)
CPU/System FAN	● 1 x 1 x 4 pin, pitch 2.54mm CPU fan connector with smart fan function supported (CPUFAN1) ● 1 x 1 x 4 pin, pitch 2.54mm System fan connector with smart fan function supported (SYSFAN1) ● 1 x 1 x 3 pin, pitch 2.54mm Auxiliary fan connector (AUXFAN1)
Buzzer	1 x 4 pin, pitch 2.54mm connector (PH header) for Speaker Buzzer (JBZ1))
Front Panel	1 x 2 x 5 pin, pitch 2.54mm connector for front panel (JFP1)
RTC Battery	1 x Horizontal type battery connector (CR2450 Battery) 1 x 1 x 2 pin, pitch 1.25mm wafer for external Battery (BAT2)
AT/ATX Selector	● 1 x 1 x 3 pin pitch 2.00mm connector for AT/ATX jumper (JSATX1) ● 1 x 2 x 12 pin ATX power connector ● 1 x 2 x 4 pin ATX 12V power connector
Clear CMOS	1 x 1 x 3pin, pitch 2.54mm connector for CMOS Clear
BIOS SPI	1 x 2 x 4 pin, pitch 2.00mm connector for BIOS SPI (SPI1)
eSPI	1 x 2 x 6 pin, pitch 2.00mm connector for eSPI (JESPI1)
Audio	● 1 x 2 x 5 pin, pitch 2.54mm connector for front Audio (Mic-in, Line-out) (FAUD1) ● 1 x 2 x 6 pin, pitch 2.54mm connector for Audio (5.1-CH Audio) (REAR1)

<table>
<tr><td></td><td>● 1 x 1 x 4 pin, pitch 2.54mm connector for S/PDIF (JSDPIF1)</td></tr>
<tr><td>Auxiliary Panel</td><td>1 x 2 x 10 pin, pitch 2.54mm connector for Auxiliary panel 1 (CASE OPEN) (JAUXP1)
1 x 2 x 4 pin, pitch 2.54mm connector for Auxiliary panel 2 (JAUXP2)</td></tr>
<tr><td>Amp Connector</td><td>1 x 4 pin, pitch wafer 2.00mm connector for 6W 8Ω x 2 Speaker</td></tr>
<tr><td>Other</td><td>● 1 x 2 x 5 pin, pitch 2.54mm pin-header for BIOS ME function configuration (JME1)
● 1 x 5 pin, pitch 2.54mm pin-header for +3.3S Level SMBus (JSMB1)
● 1 x 2 x 3pin, pitch 2.54mm pin-header for power f/w programming (JPC1) (not for user to modify)
● 1 x 1 x 3pin, pitch 2.54mm pin-header for power f/w adjustment (JCFGID1) (not for user to modify)</td></tr>
<tr><td colspan="2">Display</td></tr>
<tr><td>Graphic Chipset</td><td>Intel® Graphics w/ up to 32 EU</td></tr>
<tr><td>Spec. & Resolution</td><td>● 2 x DP++ (DP1.4a): Max: 7680 x 4320@60 Hz
(DP++ Via dongle: 1920 x 1080@60 Hz)
● 1 x HDMI: HDMI 2.1b, max resolution 4096x2160@60Hz, (with HDR)
The above spec. follows Intel CPU, to be updated based on Avalue validation</td></tr>
<tr><td>Multiple Display</td><td>Triple display</td></tr>
<tr><td colspan="2">Audio</td></tr>
<tr><td>Audio Codec</td><td>Realtek ALC888S HD Audio Decoding Controller with 6W Amplifier</td></tr>
<tr><td>Amplifier</td><td>TI TPA3113D2 Class-D 2 x 6W 8Ω Amplifier</td></tr>
<tr><td colspan="2">Ethernet</td></tr>
<tr><td>LAN Chipset</td><td>● 2 x Intel® i226-LM 2.5G Gigabit Controller
● 2 x Intel® i226-V 2.5G Gigabit Controller</td></tr>
<tr><td>LAN Spec.</td><td>● i226-LM: 10/100/1000/2500 Base-Tx GbE compatible
● i226-V: 10/100/1000/2500 Base-Tx GbE compatible</td></tr>
<tr><td>LED Indicator</td><td>
<table>
<tr><th colspan="4">Max. 2.5G LAN Port</th></tr>
<tr><th colspan="2">ACT/LINK</th><th colspan="2">ACT/LINK</th></tr>
<tr><td></td><td></td><td></td><td></td></tr>
<tr><td>Light Off</td><td>Light Off</td><td>Light Off</td><td>Light Off</td></tr>
<tr><td>Solid Yellow</td><td>Solid Yellow</td><td>Solid Yellow</td><td>Solid Yellow</td></tr>
<tr><td>Yellow Flashing</td><td>Yellow Flashing</td><td>Yellow Flashing</td><td>Yellow Flashing</td></tr>
</table>
</td></tr>
<tr><td colspan="2">Mechanical & Environmental Specification</td></tr>
<tr><td>Power Requirement</td><td>+12V / +5V / 5VSB /+3.3V /-12V</td></tr>
<tr><td>ACPI</td><td>Single power ATX Support S0, S3, S4, S5</td></tr>
<tr><td>Power Mode</td><td>AT / ATX mode Switchable Through Jumper</td></tr>
</table>

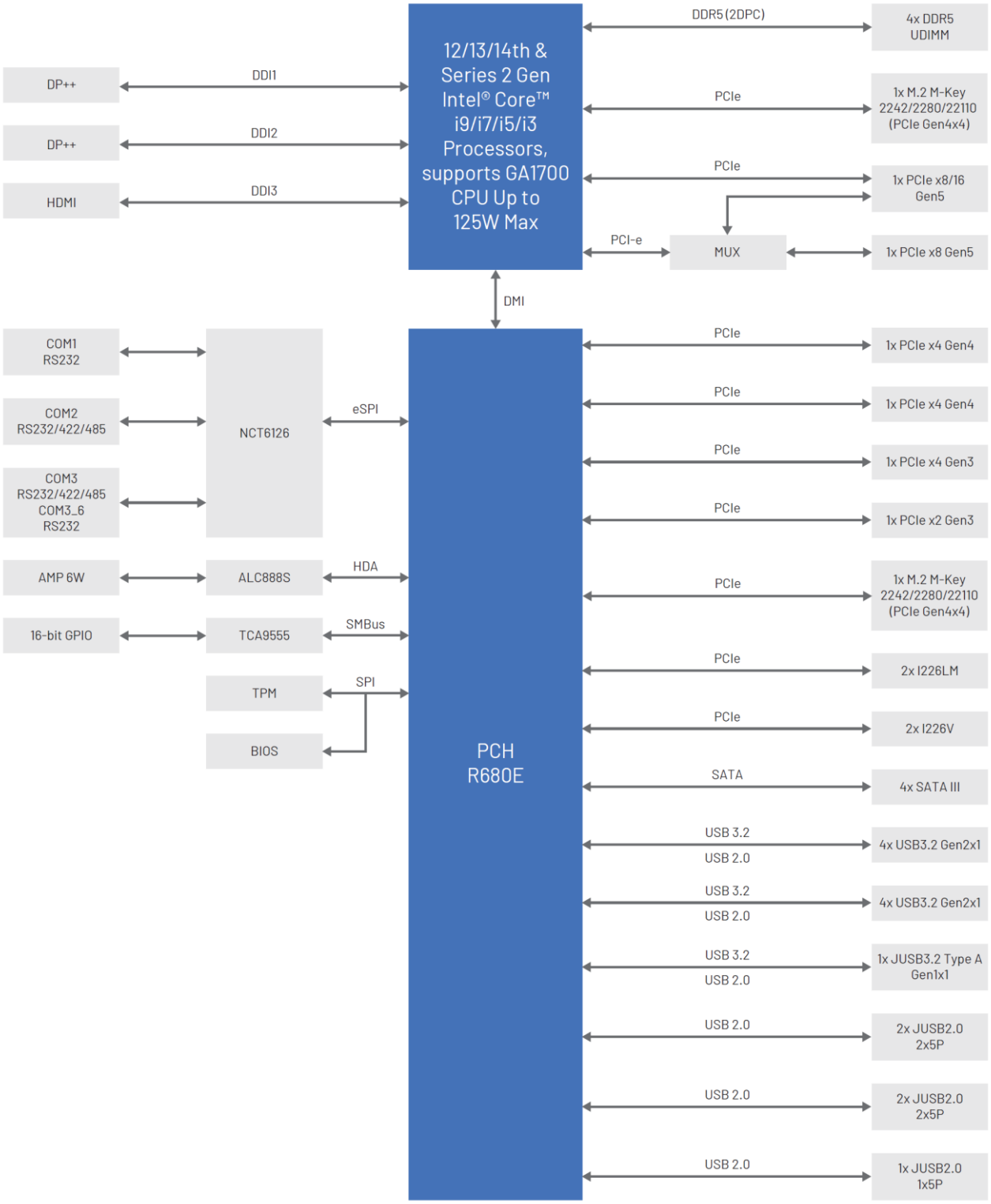
Operating Temp.	0~55°C (32~131°F), 0.5m/s airflow **Note: Intel PTAT suggests** ● Turbo off ● Workload – IA 100% / GT 100% PL2(Power Limit) set as default
Storage Temp.	-40~ +75°C
Operating Humidity	40°C @ 95% Relative Humidity, Non-condensing
Size (L x W)	12" x 9.6" (304.8mm x 243.84mm)
Weight	1.54lbs (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 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	● Win11 LTSC ● Linux ● Windows Server 2025 On Intel® Core™ processors (Series 2), P-core–only SKUs combined with the R680E chipset are supported. Windows Server and hybrid Intel® Core™ processors (Series 2) are not supported.

Note: Specifications are subject to change without notice.

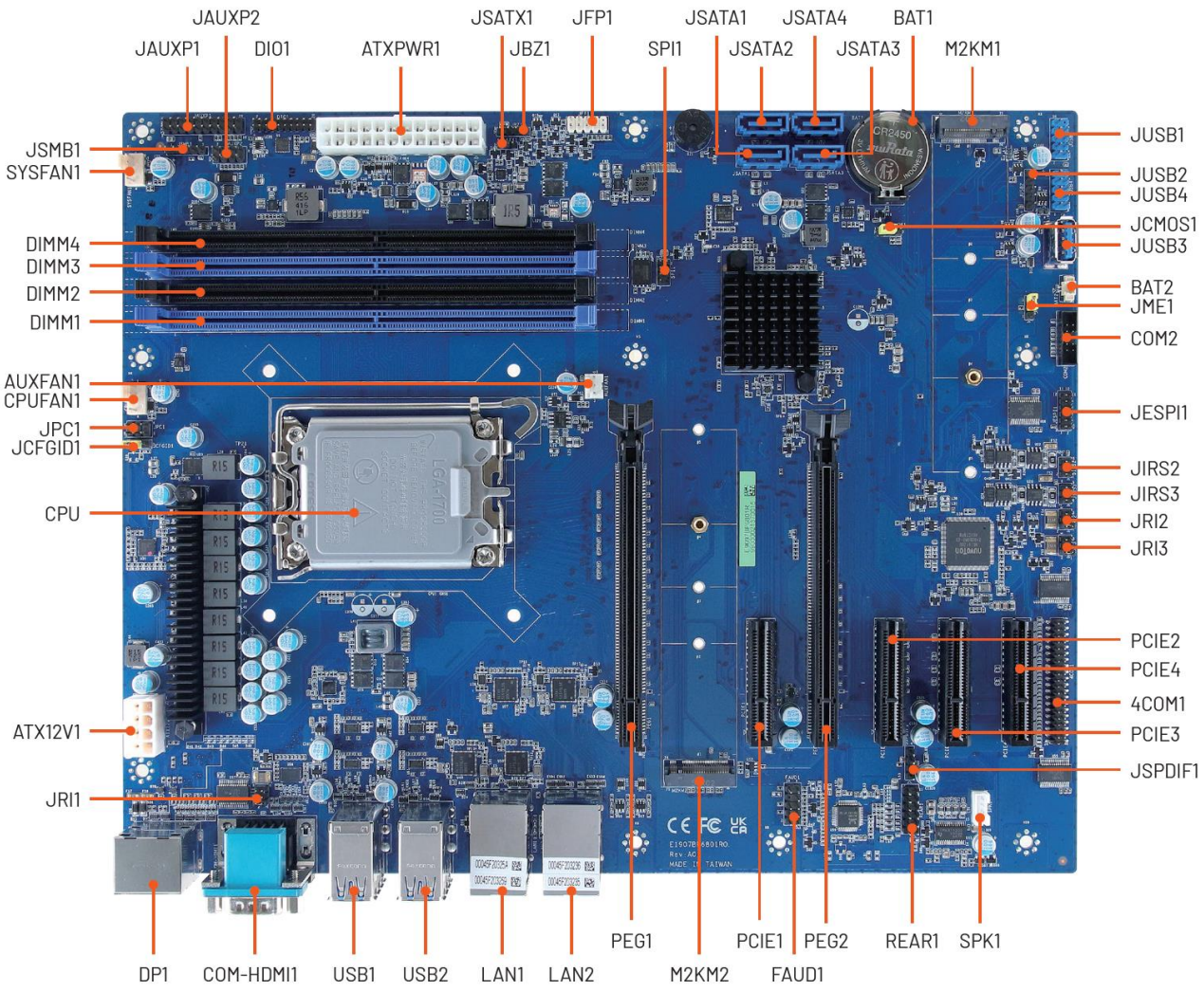
1.6 Architecture Overview—Block Diagram

The following block diagram shows the architecture and main components of EAX-R680BP.



2. Hardware Configuration

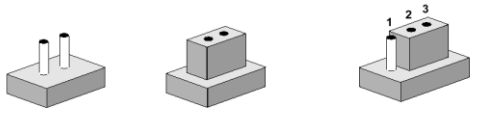
2.1 Product Overview



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.



Open Closed Closed 2-3

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

Open Closed Closed 2-3

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
JRI1/2/3	Serial port 1/2/3 pin9 signal select	3 x 2 header, pitch 2.00mm
JME1	BIOS ME function configuration	3 x 1 header, pitch 2.54mm
JSATX1	AT/ATX Power Mode Select	3 x 1 header, pitch 2.00mm
JCMOS1	Clear CMOS	3 x 1 header, pitch 2.54mm
JCFGID1	CPU TDP (Watts)	3 x 1 header, pitch 2.54mm

Connectors

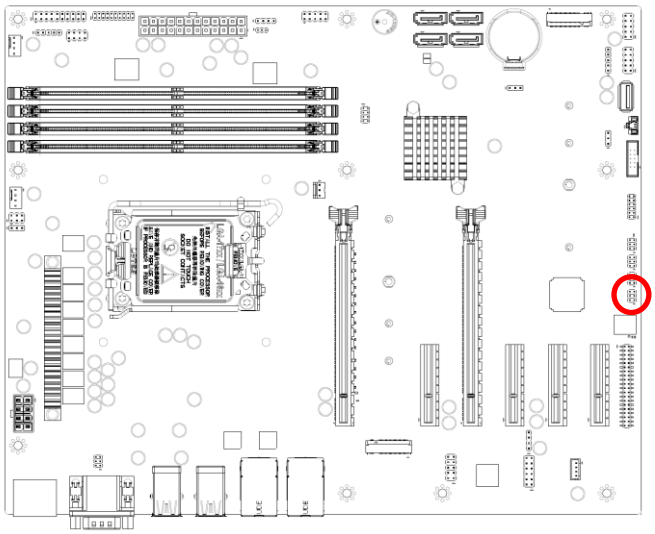
Label	Function	Note
CPUFAN1	CPU fan connector (with smart fan function supported)	4 x 1 wafer, pitch 2.54mm
SYSFAN1	System fan connector (with smart fan function supported)	4 x 1 wafer, pitch 2.54mm
JFP1	Front Panel connector	5 x 2 header, pitch 2.54 mm

DIMM1/2/3/4	288-pin DDR5 UDIMM Slot 1/2/3/4	
JSMB1	SMBus connector	5 x 1 header, pitch 2.54 mm
JAUXP1	Auxiliary Panel connector 1	10 x 2 header, pitch 2.54 mm
JAUXP2	Auxiliary Panel connector 2	4 x 2 header, pitch 2.54 mm
SPI1	BIOS SPI connector	4 x 2 header, pitch 2.00mm
COM2	Serial Port 2 connector	5 x 2 box header, pitch 2.00 mm
4COM1	Serial Port 3/4/5/6 connector	20 x 2 header, pitch 2.00mm
JBZ1	External Speaker connector	4 x 1 header, pitch 2.54 mm
DIO1	General purpose I/O connector	10 x 2 header, pitch 2.00mm
LAN	RJ-45 Ethernet 1/2	
COM-HDMI1	COM1 & HDMI	
USB1/2	8 x USB3.2 connector	
JUSB1	2 x USB2.0 connector	5 x 2 header, pitch 2.54mm
JUSB2	USB2.0 connector	5 x 1 header, pitch 2.54mm
JUSB3	USB3.2 Vertical Type A connector	
JUSB4	2 x USB2.0 connector	5 x 2 header, pitch 2.54mm
J1RS2	COM2 RS422/485	3 x 2 header, pitch 2.00 mm
J1RS3	COM3 RS422/485	3 x 2 header, pitch 2.00 mm
PCIE1/2	2 x PCIe x4 Gen4 slot	
PCIE3	PCIe x4 Gen3 slot	
PCIE4	PCIe x2 Gen3 slot	
M2KM1/2	M.2 Key M 2242/2280/22110 connector 1/2	
BAT1	RTC Battery connector 1	For CR2450
BAT2	RTC Battery connector 2	2 x 1 wafer, pitch 1.25mm
AUXFAN1	Auxiliary Fan connector	3 x 1 wafer, pitch 2.54mm
ATXPWR1	ATX Power connector	12 x 2 wafer, pitch 4.20mm
ATX12V1	ATX Power connector	2 x 4 wafer, pitch 4.20mm
JSATA1/2/3/4	Serial ATA connector 1/2/3/4	
CPU1	CPU socket	
DP1	2 x DP++ connector	
PEG1/2	PCI-e x16 slots 1/2	
JPC1	power F/W programming	3 x 2 header, pitch 2.54 mm
SPK1	Speaker connector	4 x 1 wafer, pitch 2.00mm
JSPDIF1	S/PDIF connector	4 x 1 header, pitch 2.54mm
FAUD1	AUDIO connector	5 x 2 header, pitch 2.54mm

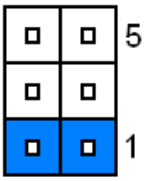
JESPI1	ESPI Debug connector	6 x 2 header, pitch 2.00 mm
REAR1	Mic & Line-in connector	6 x 2 header, pitch 2.54mm

2.3 Setting Jumpers & Connectors

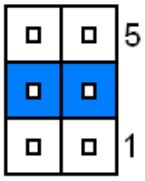
2.3.1 Serial port 3 pin9 signal select (JRI3)



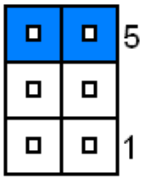
Ring*



+5V

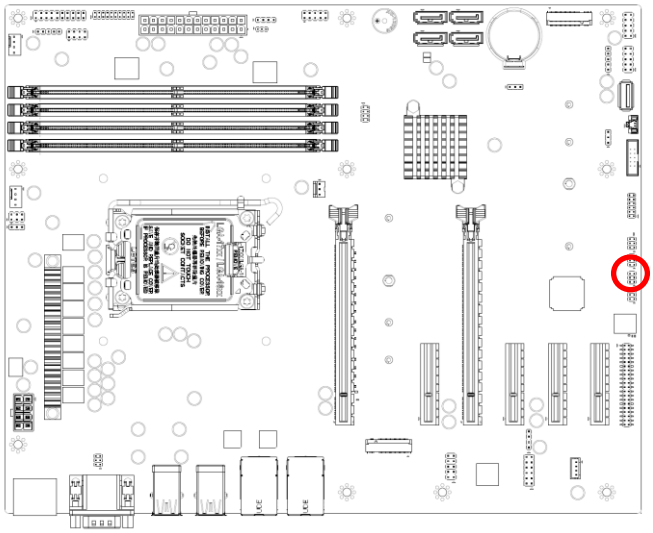


+12V

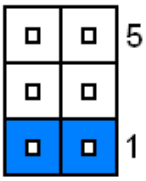


*** Default**

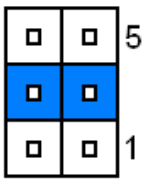
2.3.2 Serial port 2 pin9 signal select (JRI2)



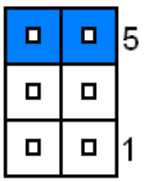
Ring*



+5V

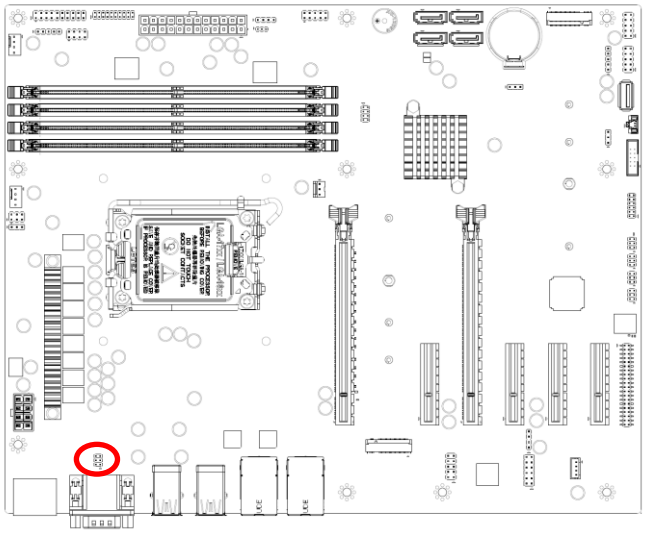


+12V

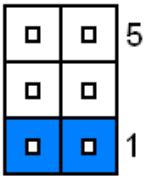


*** Default**

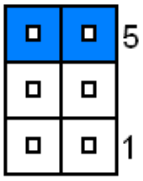
2.3.3 Serial port 1 pin9 signal select (JRI1)



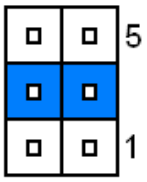
Ring*



+12V

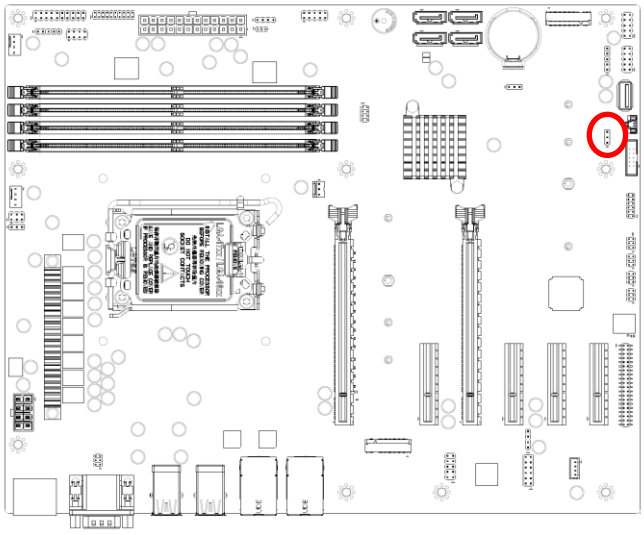


+5V

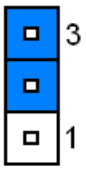


*** Default**

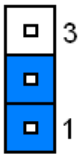
2.3.4 BIOS ME function configuration (JME1)



Enable ME *

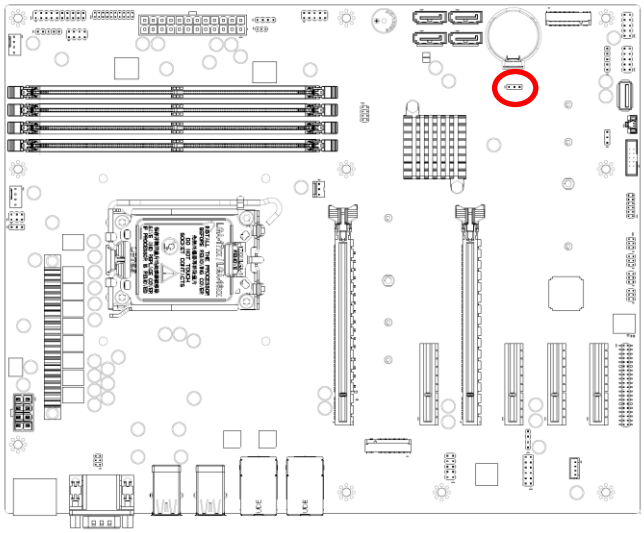


Disable ME

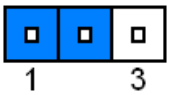


*** Default**

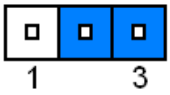
2.3.5 Clear CMOS (JCMOS1)



Protect*

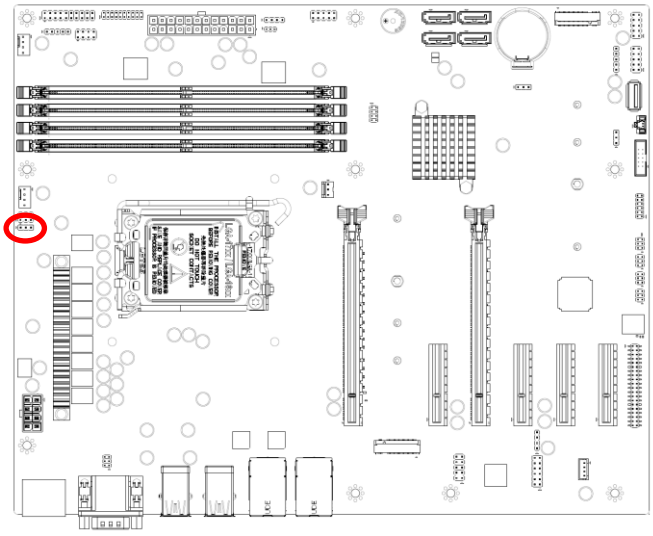


Clear CMOS

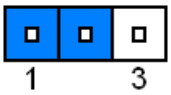


*** Default**

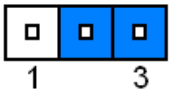
2.3.6 CPU TDP (Watts) (JCFGID1) **The original setting is not allowed to be changed by user**



Config ID0*



Config ID1

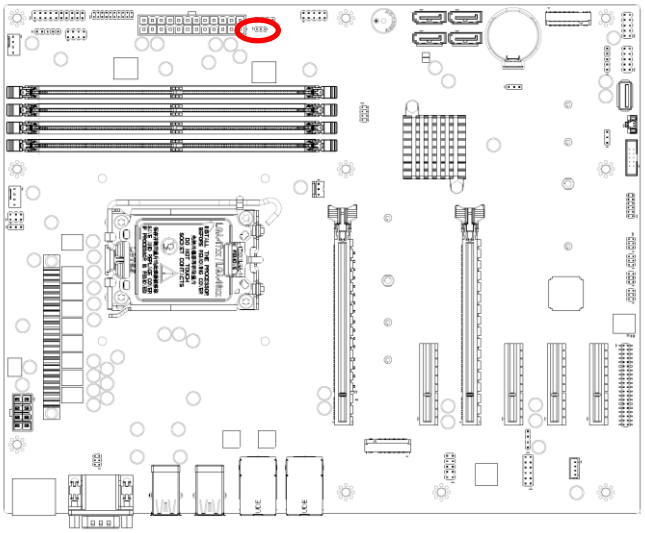


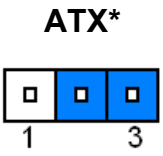
*** Default**

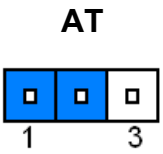
Note: Config ID0: JCFGID (1-2), default.

Config ID1: JCFGID (2-3), for CPU power F/W adjustment.

2.3.7 AT/ATX Power Mode Select (JSATX1)

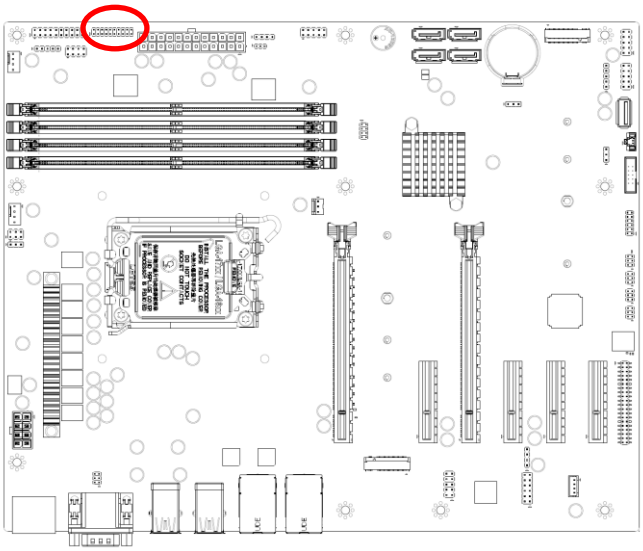


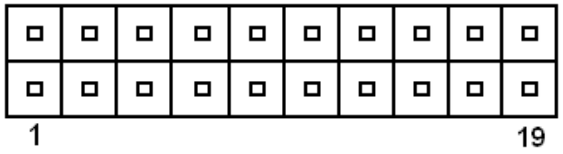




*** Default**

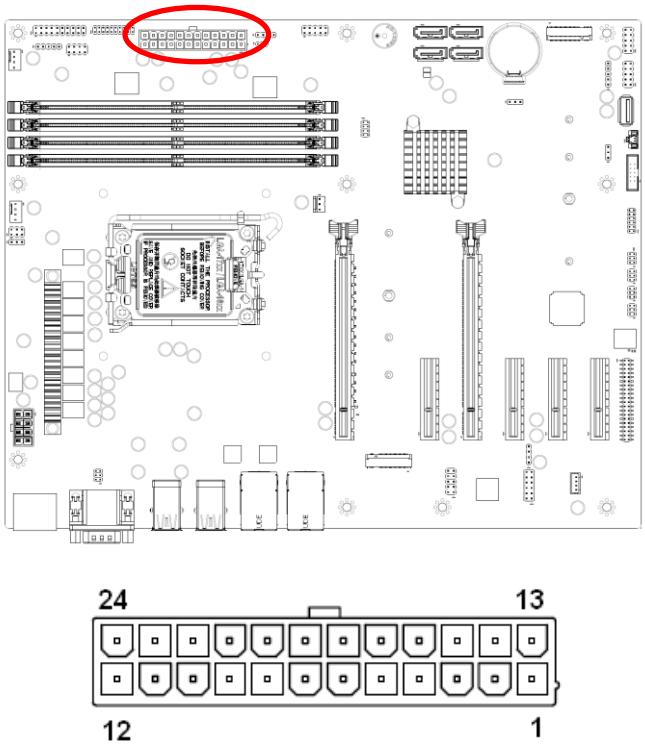
2.3.8 General purpose I/O connector (DIO1)





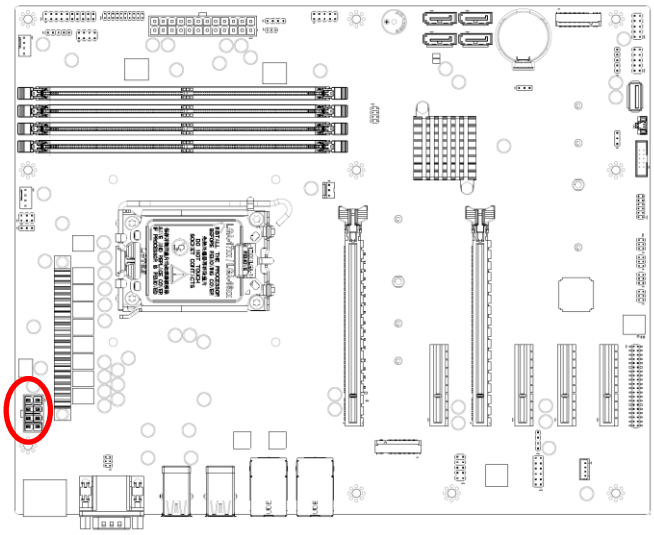
Signal	PIN	PIN	Signal
DI0	1	2	DO0
DI1	3	4	DO1
DI2	5	6	DO2
DI3	7	8	DO3
DI4	9	10	DO4
DI5	11	12	DO5
DI6	13	14	DO6
DI7	15	16	DO7
5V_SMB_CLK	17	18	5V_SMB_DATA
GND	19	20	+5V

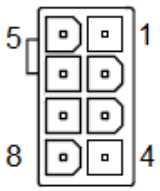
2.3.9 ATX Power connector (ATXPWR1)



Signal	PIN	PIN	Signal
+3.3V	13	1	+3.3V
NC	14	2	+3.3V
GND	15	3	GND
ATX_PSON#	16	4	+5V
GND	17	5	GND
GND	18	6	+5V
GND	19	7	GND
NC	20	8	ATX24_PWROK
+5V	21	9	+5VSB
+5V	22	10	+12V
+5V	23	11	+12V
GND	24	12	+3.3V

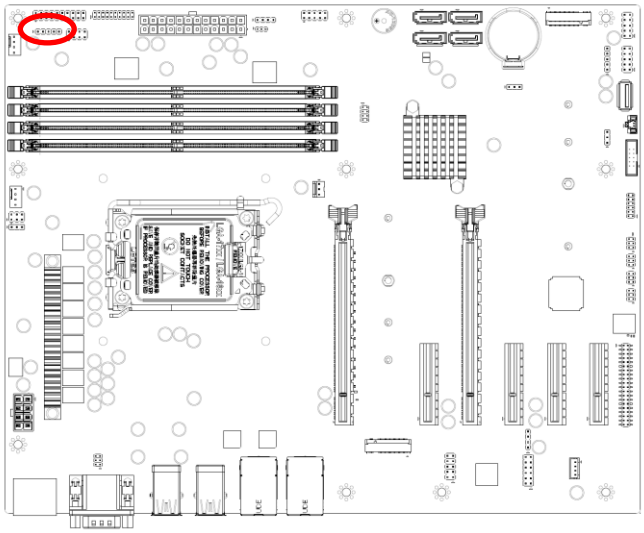
2.3.10 Power connector (ATX12V1)

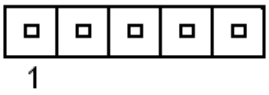




Signal	PIN	PIN	Signal
+12V	5	1	GND
+12V	6	2	GND
+12V	7	3	GND
+12V	8	4	ATX_2X4_DET

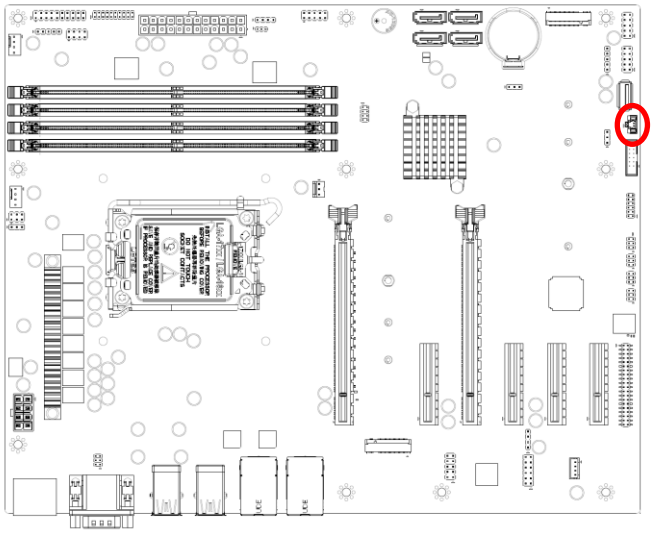
2.3.11 SMBus connector (JSMB1)

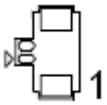




Signal	PIN
SMB_CLK	1
SMB_DATA	2
SMB_ALERT#	3
GND	4
+3.3V	5

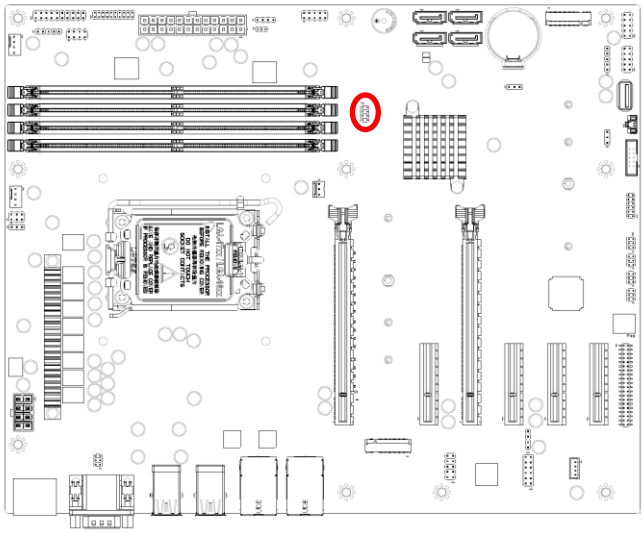
2.3.12 RTC Battery connector (BAT2)

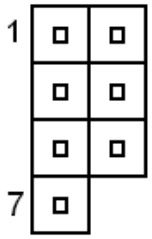




Signal	PIN
GND	2
VDD_RTC	1

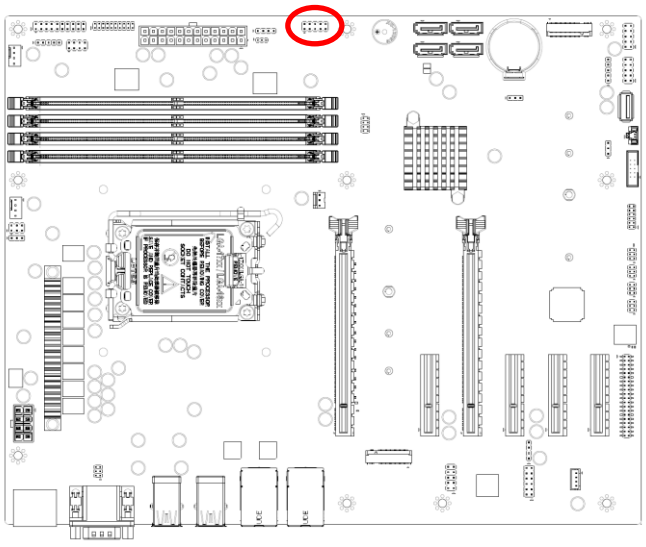
2.3.13 BIOS SPI connector (SPI1)

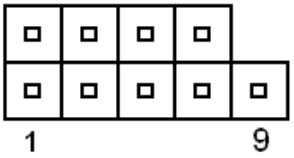




Signal	PIN	PIN	Signal
+3.3V	1	2	GND
CS0#	3	4	CLK
MISO	5	6	MOSI
HOLD#	7		

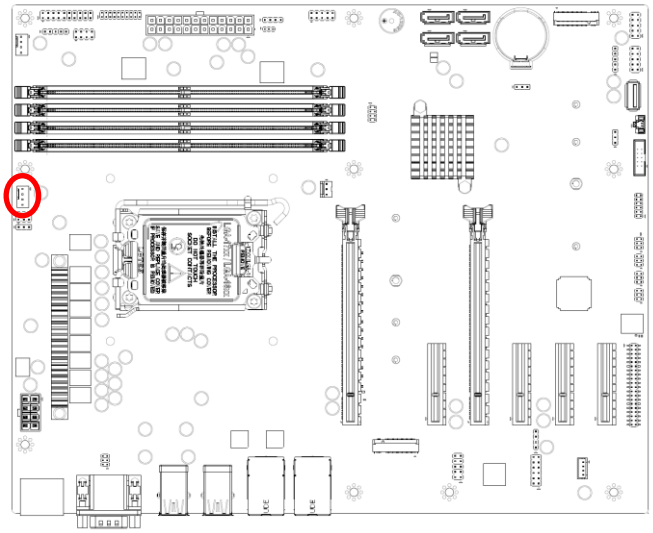
2.3.14 Front Panel connector (JFP1)

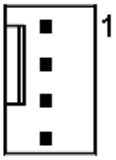




Funtion	Signal	PIN	PIN	Signal	Funtion
HDD LED	HDD_LED+	1	2	PWR_LED+	Power LED
	HDD_LED-	3	4	PWR_LED-	
Reset button	SYS_RST#	5	6	PWRBTN#	Power button
	GND	7	8	GND	
	NC	9			

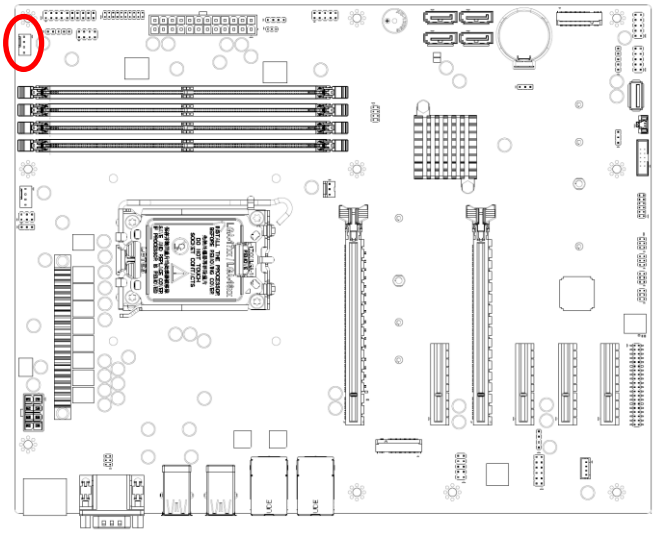
2.3.15 CPU fan connector (CPUFAN1)

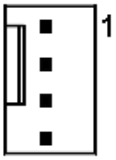




Signal	PIN
GND	1
+12V	2
TACH	3
PWM	4

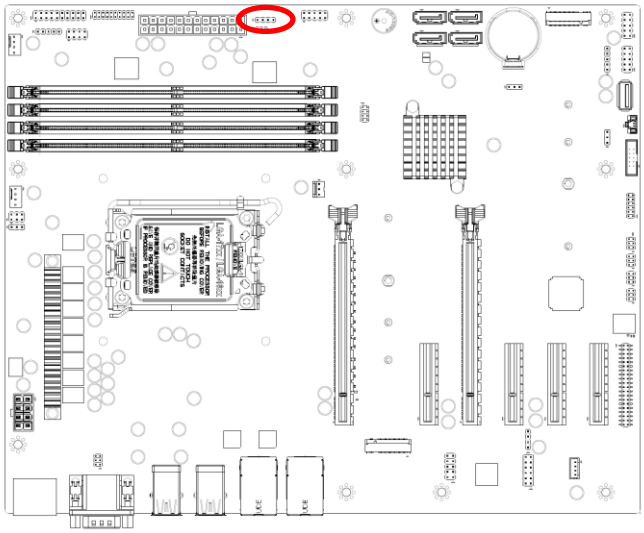
2.3.16 System fan connector (SYSFAN1)

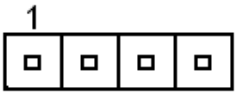




Signal	PIN
GND	1
+12V	2
TACH	3
PWM	4

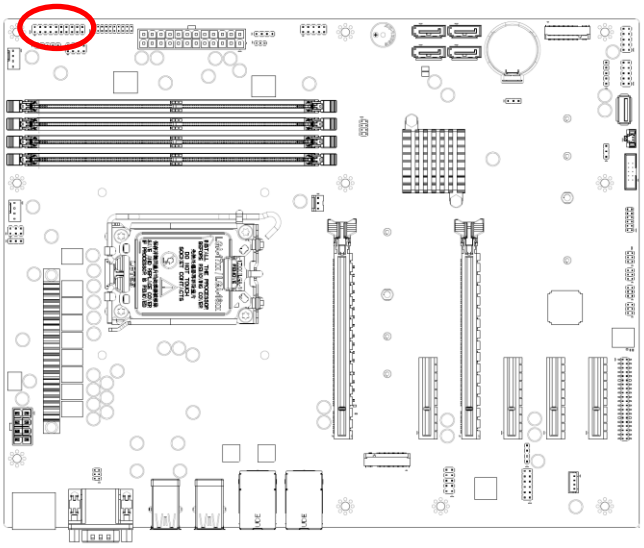
2.3.17 External Speaker connector (JBZ1)

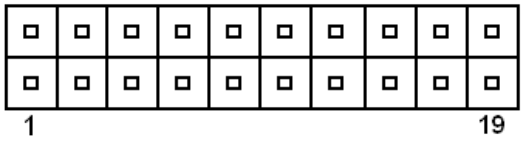




Signal	PIN
+5V	1
NC	2
NC	3
GND	4

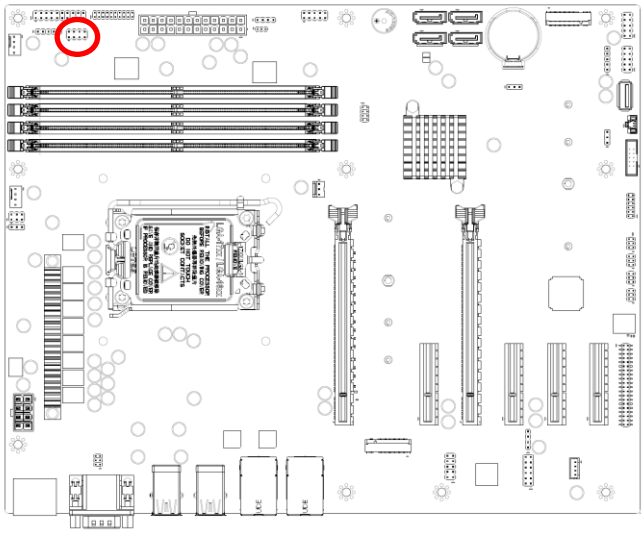
2.3.18 Auxiliary Panel connector (JAUXP1)

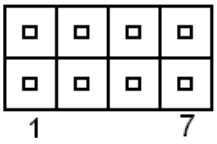




Signal	PIN	PIN	Signal
+5V	1	2	NC
NC	3	4	SMB_CLK
CASEOPEN#	5	6	NC
GND	7	8	GND
+5V	9	10	SMB_DATA
ERROR_LED#	11	12	+5V
FRONT_LAN1_ACT	13	14	FRONT_LAN1_ LINK100_1000#
GND	15	16	FRONT_LAN1_ LINK2500#
FRONT_LAN2_ACT	17	18	FRONT_LAN2_ LINK100_1000#
GND	19	20	FRONT_LAN2_ LINK2500#

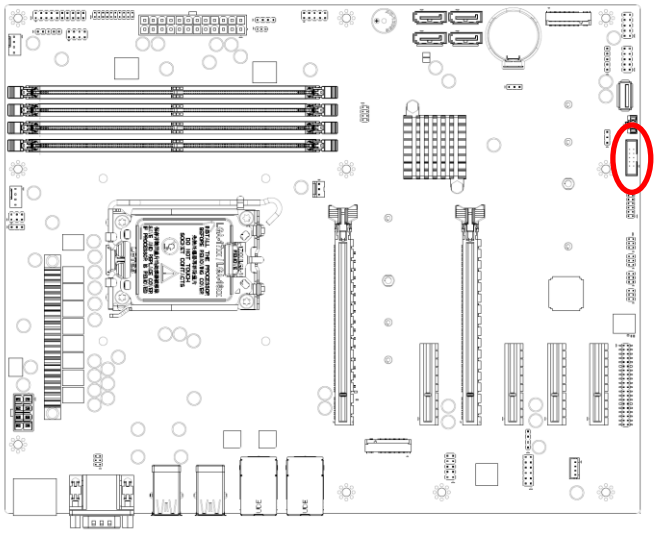
2.3.19 Auxiliary Panel connector (JAUXP2)

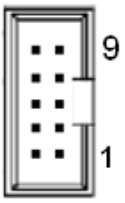




Signal	PIN	PIN	Signal
GND	1	2	GND
FRONT_LAN4_ACT	3	4	FRONT_LAN3_ACT
FRONT_LAN4_ LINK100_1000#	5	6	FRONT_LAN3_ LINK100_1000#
FRONT_LAN4_ LINK_2500#	7	8	FRONT_LAN3A_ LINK_2500#

2.3.20 Serial port 2 connector (COM2)



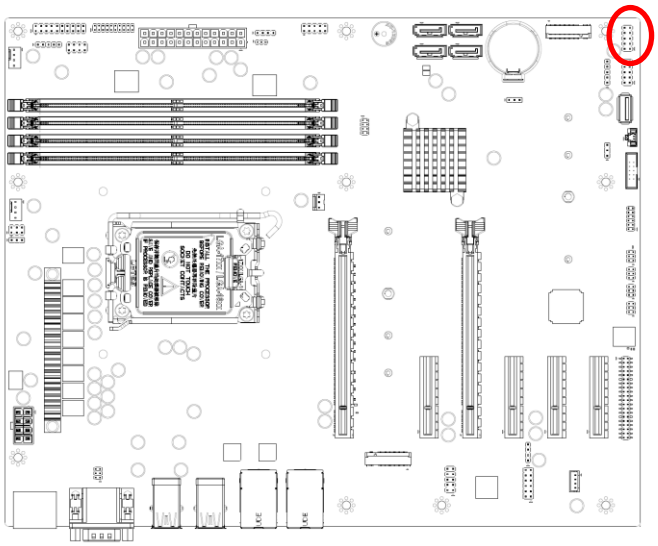


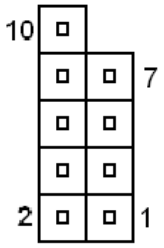
Signal	PIN	PIN	Signal
NC	10	9	RI#
CTS#	8	7	RTS#
DSR#	6	5	GND
DTR#	4	3	TXD
RXD	2	1	DCD#

Note:

PIN 9 can be selected to RI / 5V / 12V by jumper (JRI2).

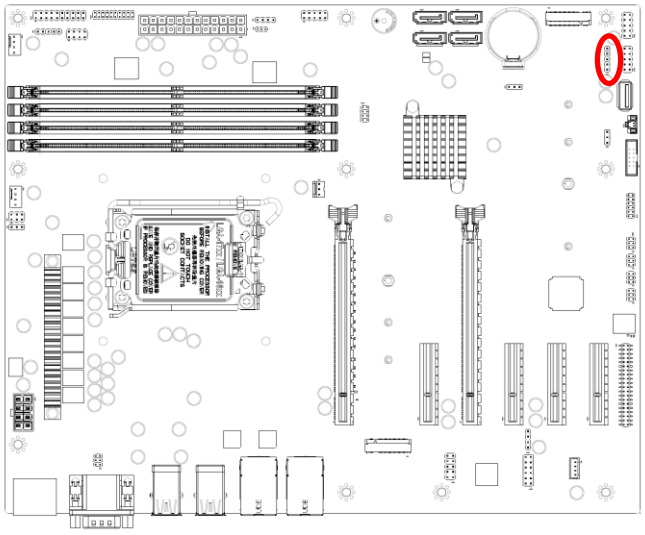
2.3.21 USB2.0 connector (JUSB1)

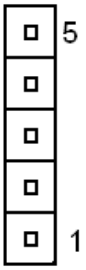




Signal	PIN	PIN	Signal
NC	10		
GND	8	7	GND
DATA+	6	5	DATA+
DATA-	4	3	DATA-
+5V	2	1	+5V

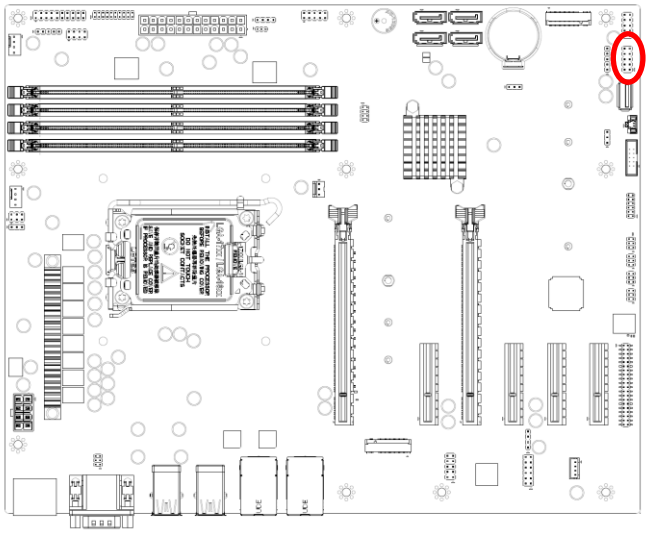
2.3.22 USB2.0 connector (JUSB2)

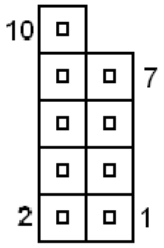




Signal	PIN
NC	5
GND	4
DATA+	3
DATA-	2
+5V	1

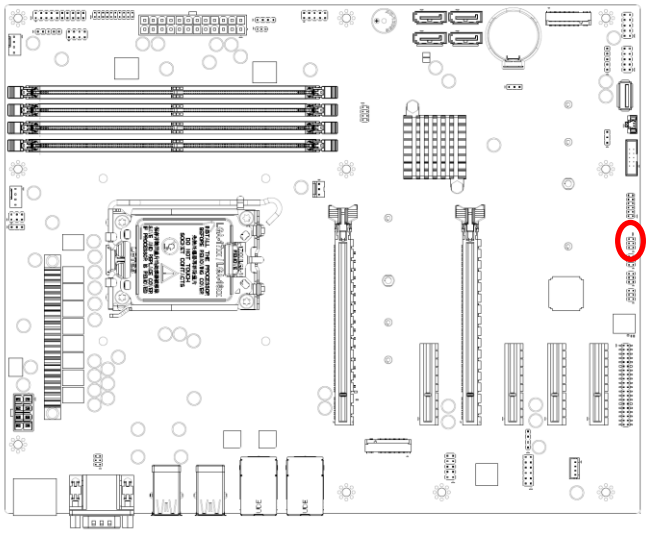
2.3.23 USB2.0 connector (JUSB4)

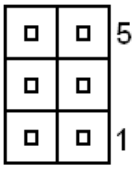




Signal	PIN	PIN	Signal
NC	10		
GND	8	7	GND
DATA+	6	5	DATA+
DATA-	4	3	DATA-
+5V	2	1	+5V

2.3.24 COM2 RS422/485 (J1RS2)





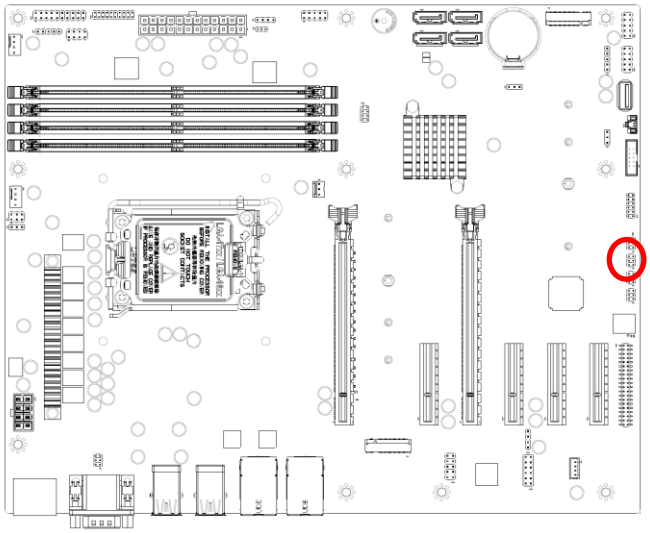
RS422

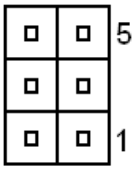
Signal	PIN	PIN	Signal
GND	6	5	+5V
RX-	4	3	RX+
TX+	2	1	TX-

RS485

Signal	PIN	PIN	Signal
GND	6	5	+5V
NC	4	3	NC
DATA+	2	1	DATA -

2.3.25 COM3 RS422/485 (J1RS3)





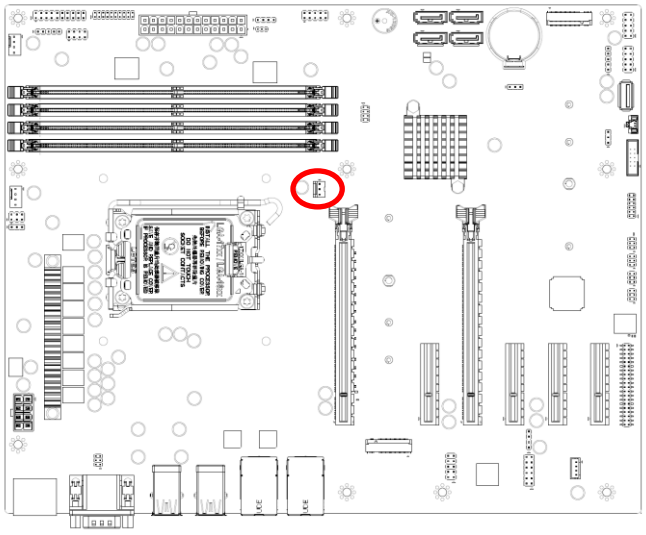
RS422

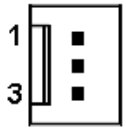
Signal	PIN	PIN	Signal
GND	6	5	+5V
RX-	4	3	RX+
TX+	2	1	TX-

RS485

Signal	PIN	PIN	Signal
GND	6	5	+5V
NC	4	3	NC
DATA+	2	1	DATA -

2.3.26 Auxiliary Fan connector (AUXFAN1)

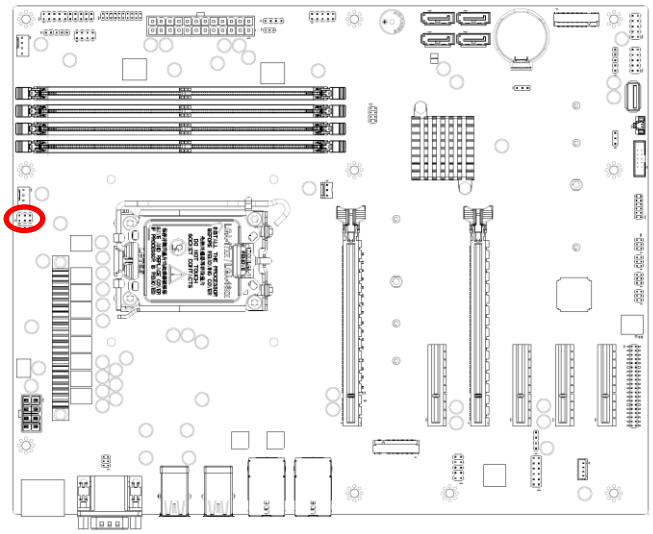


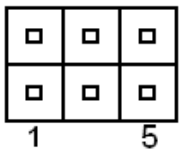


Signal	PIN
GND	1
+12V	2
TACH	3

2.3.27 power F/W programming (JPC1)

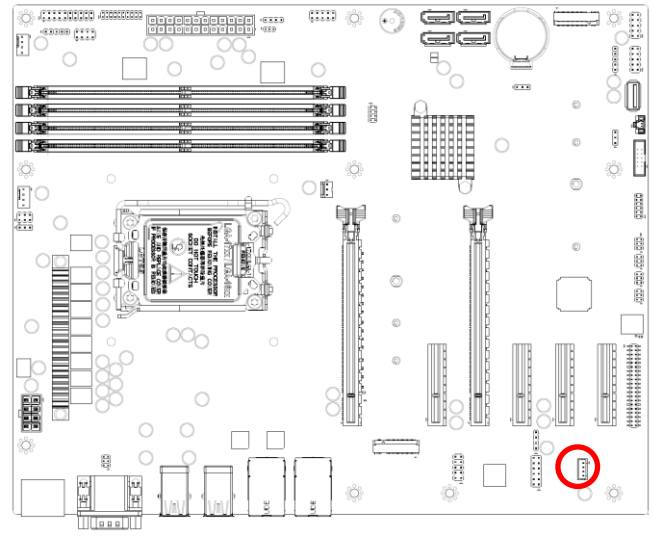
The original setting is not allowed to be changed by user





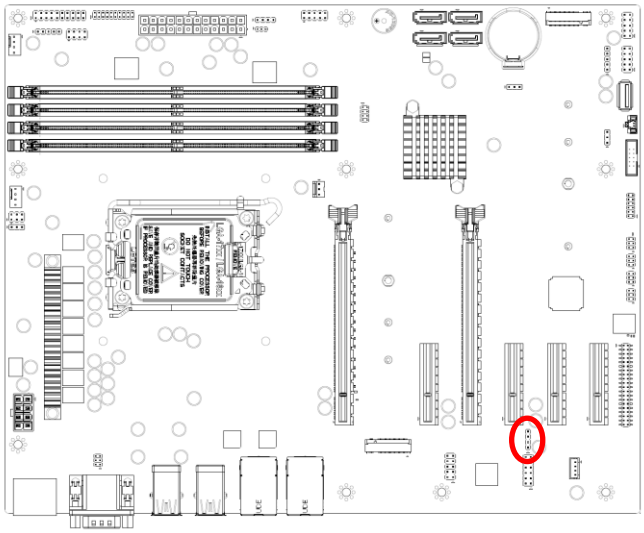
Signal	PIN	PIN	Signal
nPMALERT	1	2	PMSDA
GND	3	4	PMSCL
NC	5	6	+3.3V

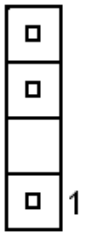
2.3.28 Speaker connector (SPK1)



Signal	PIN
LSPK+	1
LSPK-	2
RSPK+	3
RSPK-	4

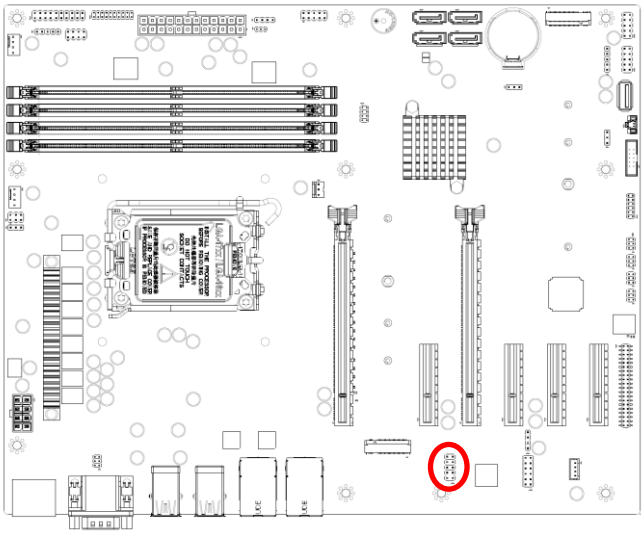
2.3.29 S/PDIF connector (JSPDIF1)

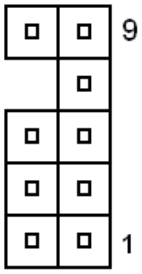




Signal	PIN
GND	4
SPDIF_OUT	3
+5V	1

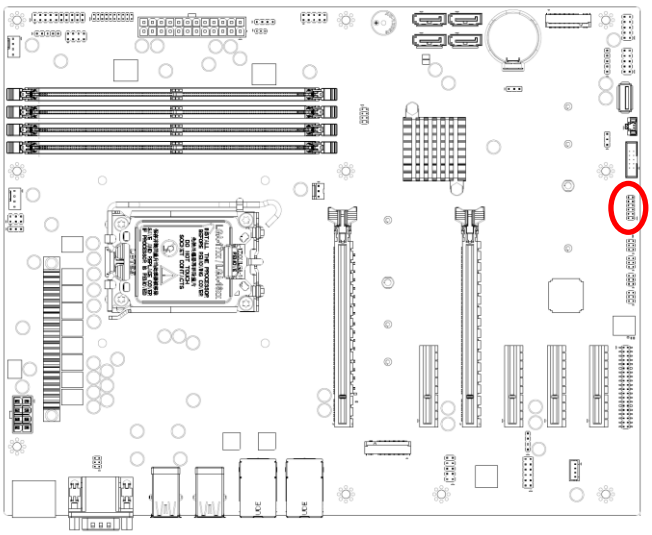
2.3.30 AUDIO connector (FAUD1)

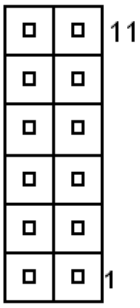




Signal	PIN	PIN	Signal
LINE2_JD	20	9	LINE2_L
		7	SENSE_B_JD3
MIC2_JD	6	5	LINE2_R
AUD_FRONT_DET	4	3	MIC2_R
GND	2	1	MIC2_L

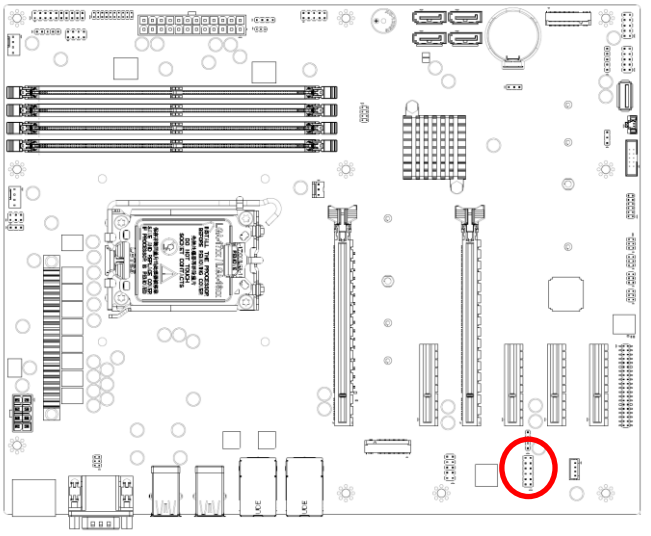
2.3.31 ESPI Debug connector (JESPI1)

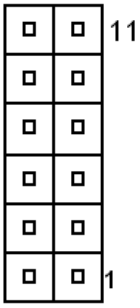




Signal	PIN	PIN	Signal
ESPI_ALERT#	12	11	ESPI_RST#
GND	10	9	ESPI_CS1#
ESPI_DEG_CLK	8	7	ESPI_IO3
ESPI_CS#	6	5	ESPI_IO2
PLT_RST#_BUF	4	3	ESPI_IO1
+3.3V	2	1	ESPI_IO0

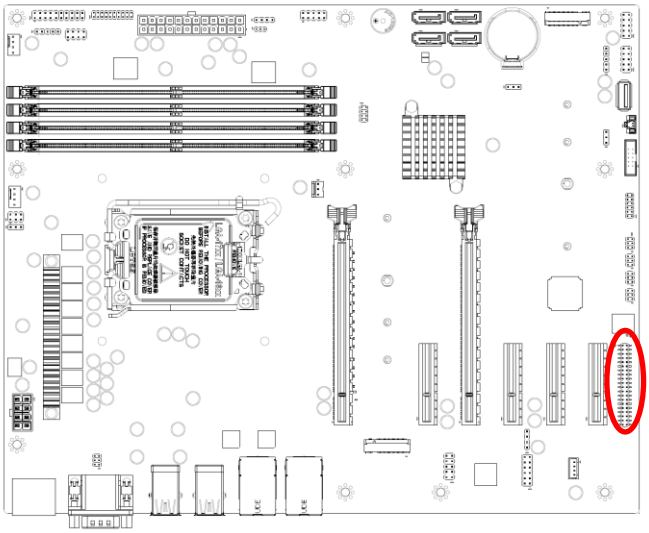
2.3.32 Mic & Line-in connector (REAR1)

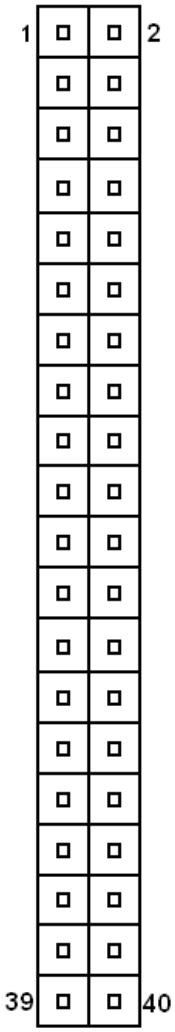




Signal	PIN	PIN	Signal
GND	12	11	MIC1_JD
LINE1_JD	10	9	AMP_DIS_JD
MIC1_LIN	8	7	MIC1_RIN
LINE1_LIN	6	5	LINE1_RIN
GND	4	3	GND
FRONT_LIN	2	1	FRONT_RIN

2.3.33 Serial port 3-6 connector (4COM1)



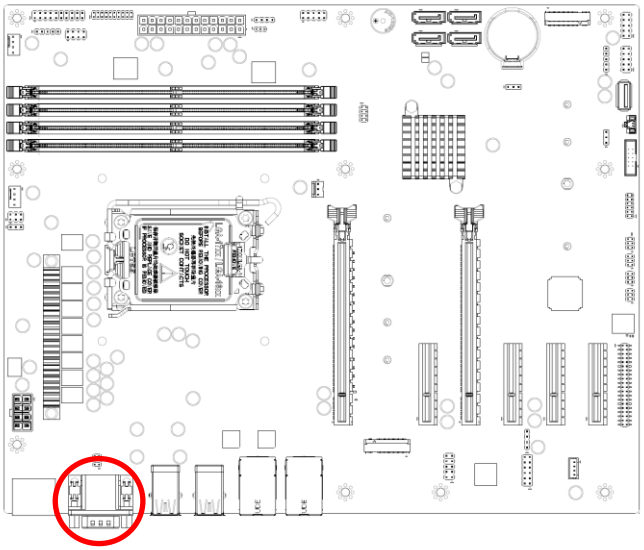


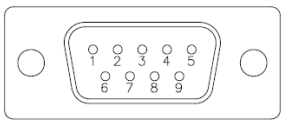
Signal	PIN	PIN	Signal
DCD3#	1	2	RXD3
TXD3	3	4	DTR3#
GND	5	6	DSR3#
RTS3#	7	8	CTS3#
RI3#	9	10	NC
DCD4#	11	12	RXD4
TXD4	13	14	DTR4#
GND	15	16	DSR4#
RTS4#	17	18	CTS4#
NRI4#	19	20	NC
DCD5#	21	22	RXD5
TXD5	23	24	DTR5#
GND	25	26	DSR5#
RTS5#	27	28	CTS5#
RI5#	29	30	NC
DCD6#	31	32	RXD6
TXD6	33	34	DTR6#
GND	35	36	DSR6#
RTS6#	37	38	CTS6#
RI6#	39	40	NC

Note:

COM3 PIN 9 can be selected to RI / 5V / 12V by jumper (JRI3).

2.3.34 Serial port 1 connector (COM1)





Signal	PIN	PIN	Signal
DCD#	1	2	RXD
TXD	3	4	DTR#
GND	5	6	DSR#
RTS#	7	8	CTS#
RI#	9	10	NC

Note:

Note: PIN 9 can be selected to RI / 5V / 12V by jumper (JRI1).

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

Press <Del> 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.

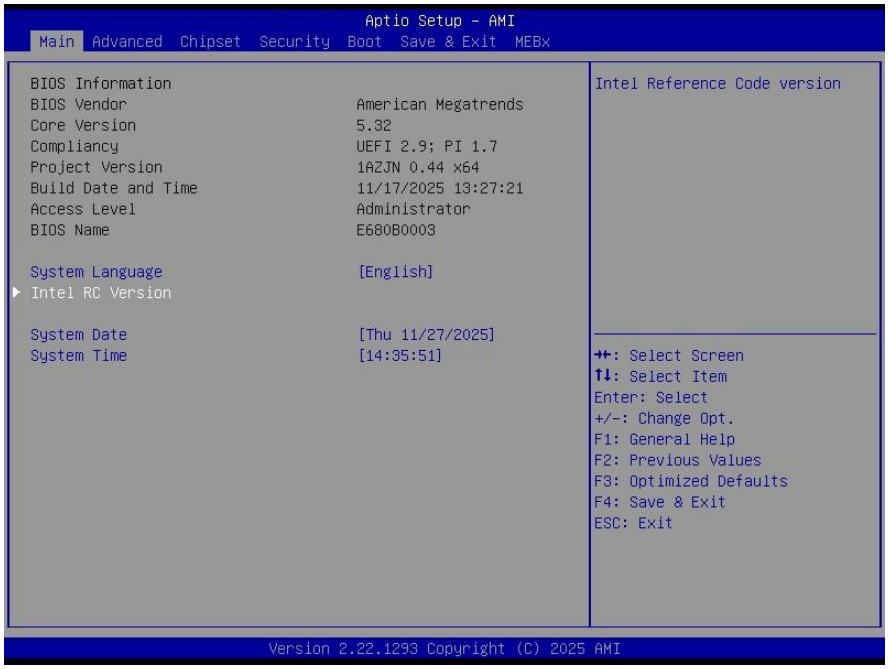
The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both BIOS Vendor and your systems manufacturer to provide the absolute maximum performance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

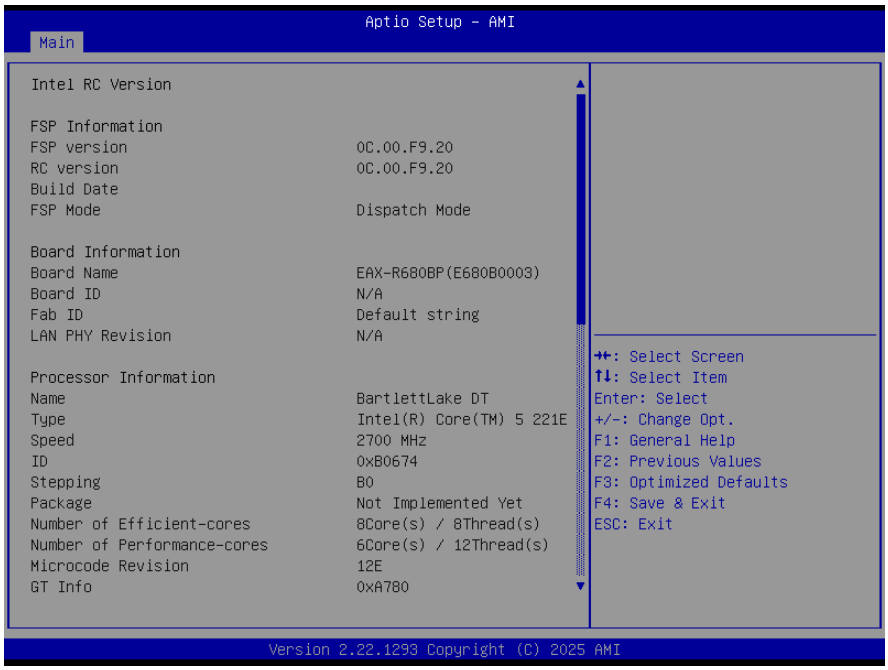
3.6 BIOS setup

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.

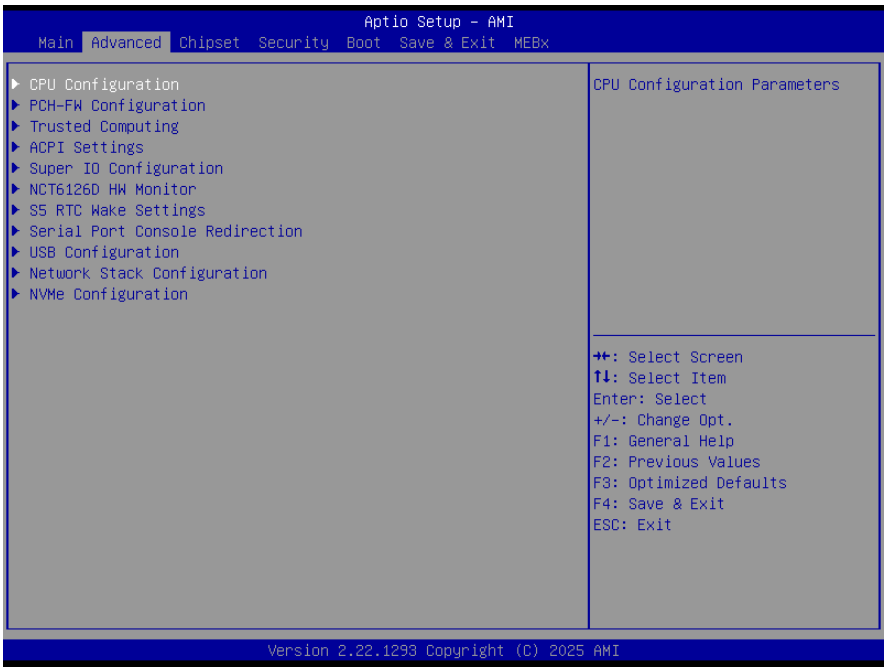
3.6.1.3 System Time

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) to download the latest product and BIOS information.

3.6.2 Advanced Menu

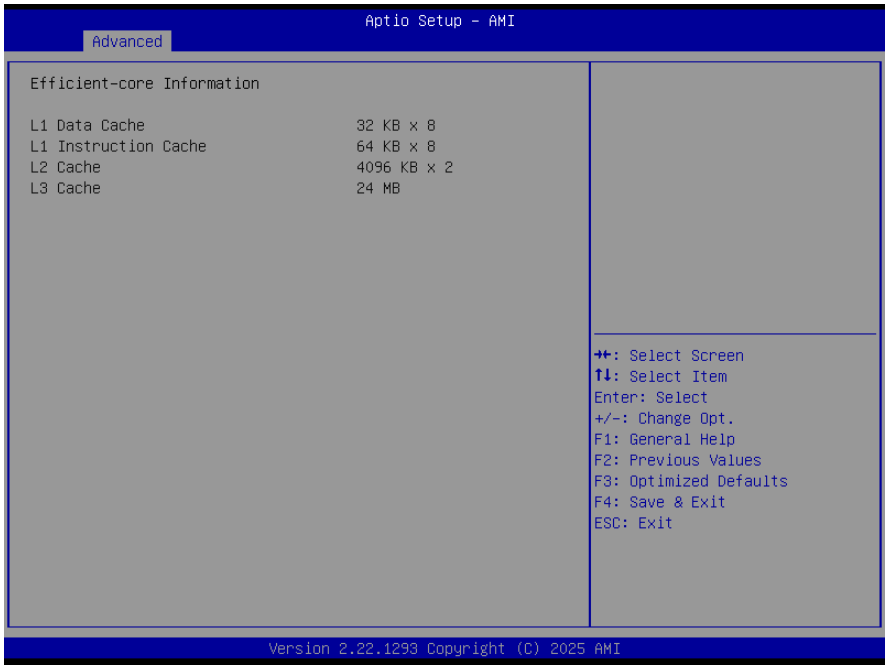
This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



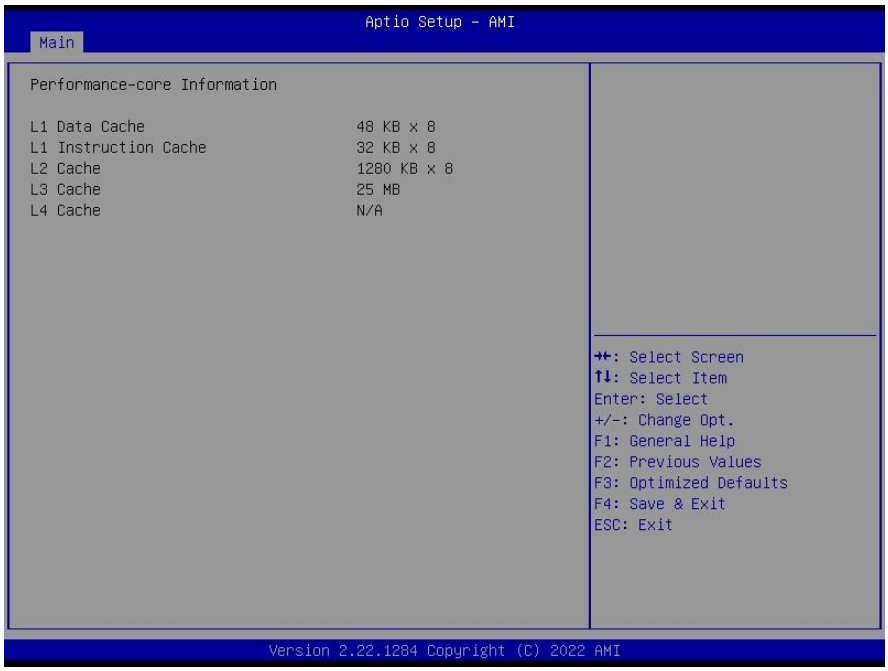
3.6.2.1 CPU Configuration

Item	Options	Description
Intel (VMX) Virtualization Technology	Disabled Enabled**[Default]**,	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Active Performance-cores	All**[Default]**, /7/6/5/4/3/2/1	Number of P-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.
Active Efficient-cores	All**[Default]**, 15/14/13/12/11/10/9/8 /7/6/5/4/3/2/1/0	Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores.
Hyper-Threading	Disabled Enabled**[Default]**,	Enable or Disable Hyper-Threading Technology.

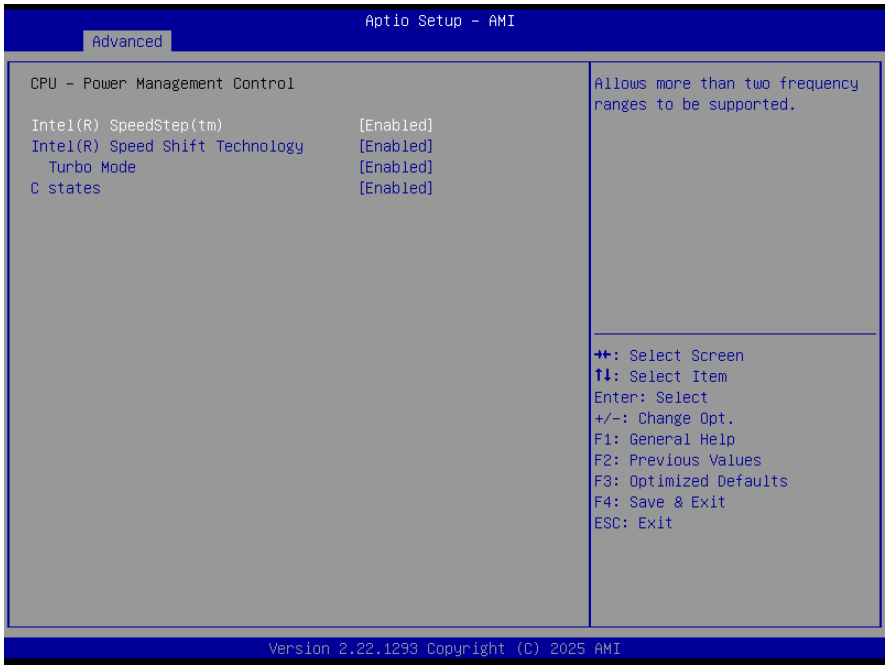
3.6.2.1.1 Efficient-core Information



3.6.2.1.2 Performance-core Information

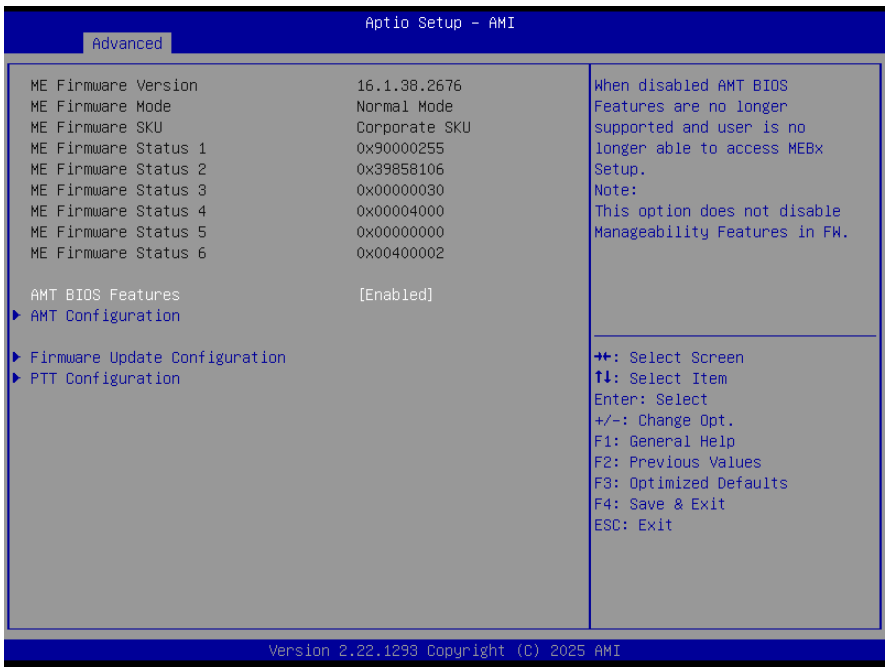


3.6.2.1.3 CPU - Power Management Control



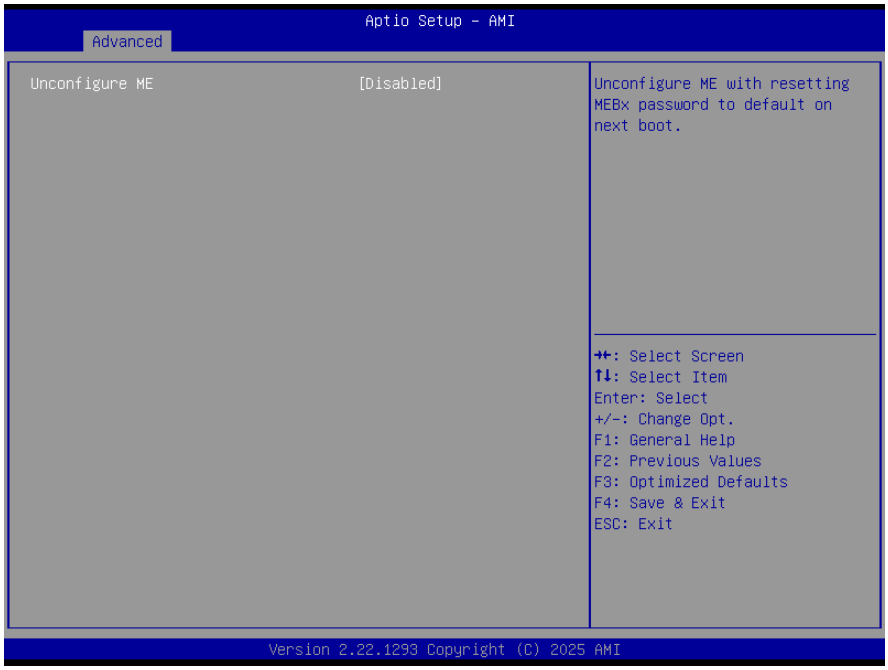
Item	Options	Description
Intel(R) SpeedStep(tm)	Disabled Enabled**[Default]**,	Allows more than two frequency ranges to be supported.
Intel(R) Speed Shift Technology	Disabled Enabled**[Default]**,	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow 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 Enabled**[Default]**,	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized.

3.6.2.2 PCH-FW Configuration



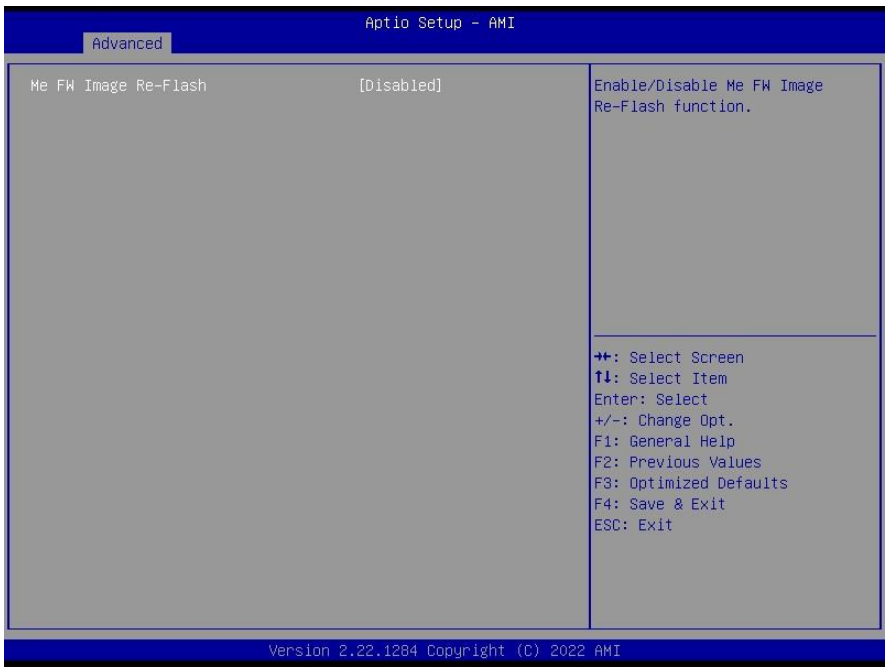
Item	Options	Description
AMT BIOS Features	Disabled Enabled**[Default]**,	When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW.

3.6.2.3 AMT Configuration



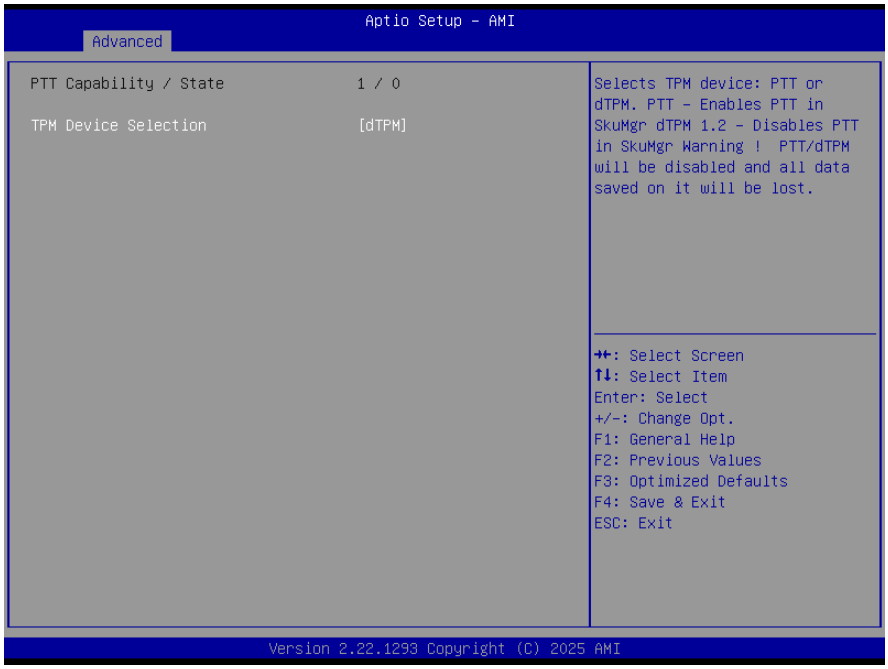
Item	Description
Unconfigure ME	Unconfigure ME with resetting MEBx password to default on next boot.

3.6.2.3.1 Firmware Update Configuration



Item	Option	Description
Me FW Image Re-Flash	Disabled**[Default]**, Enabled	Enable/Disable Me FW Image Re-Flash function.

3.6.2.3.2 PTT Configuration

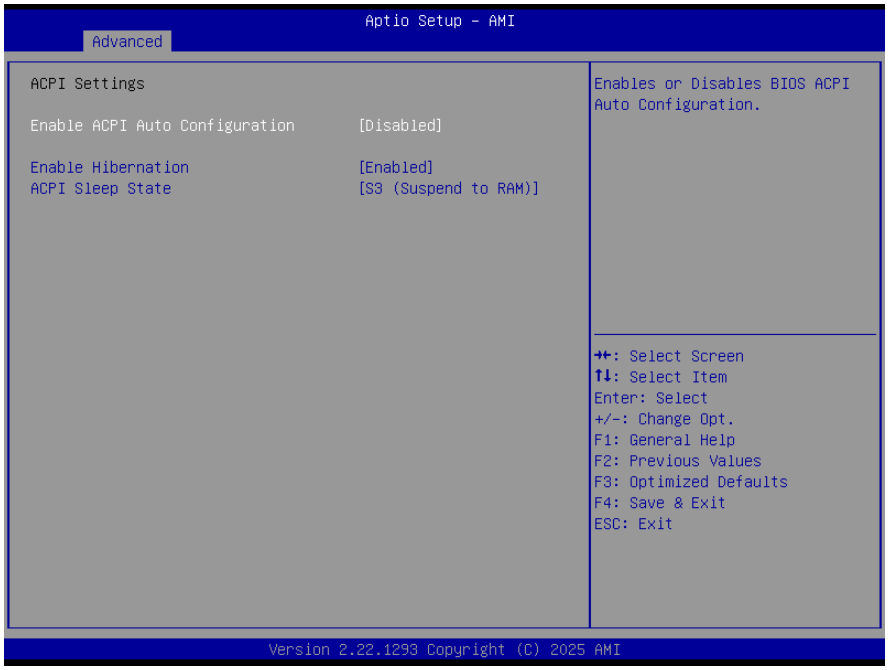


Item	Option	Description
TPM Device Selection	dTPM**[Default]**, PTT	Selects TPM device: PTT or dTPM. PTT - Enables PTT in SkuMgr dTPM 1.2 - Disables PTT in SkuMgr Warning ! PTT/dTPM will be disabled and all data saved on it will be lost.

3.6.2.4 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.

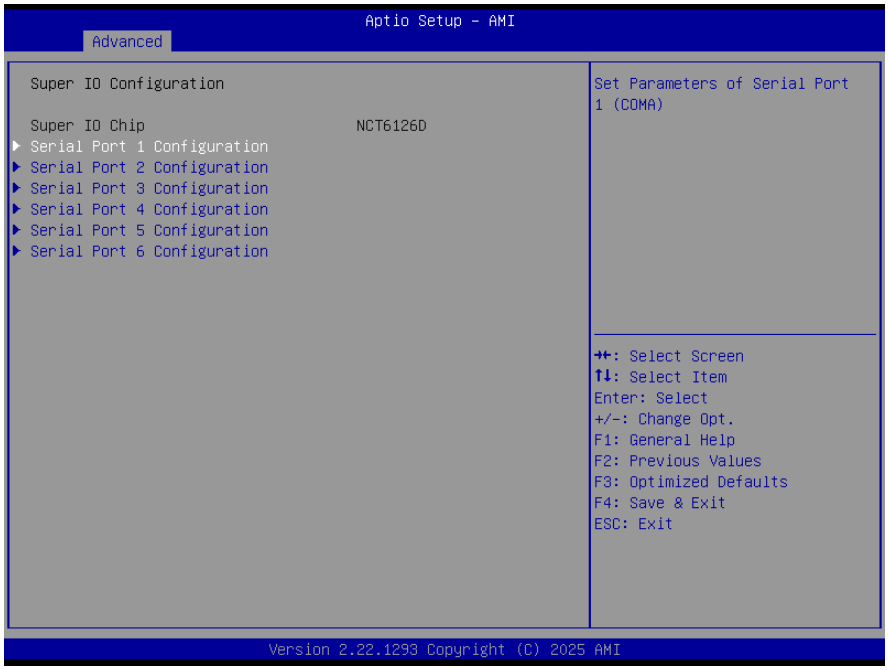
3.6.2.5 ACPI Settings



Item	Options	Description
Enable ACPI Auto Configuration	Disabled**[Default]**, Enabled	Enables or Disables BIOS ACPI Auto Configuration.
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.

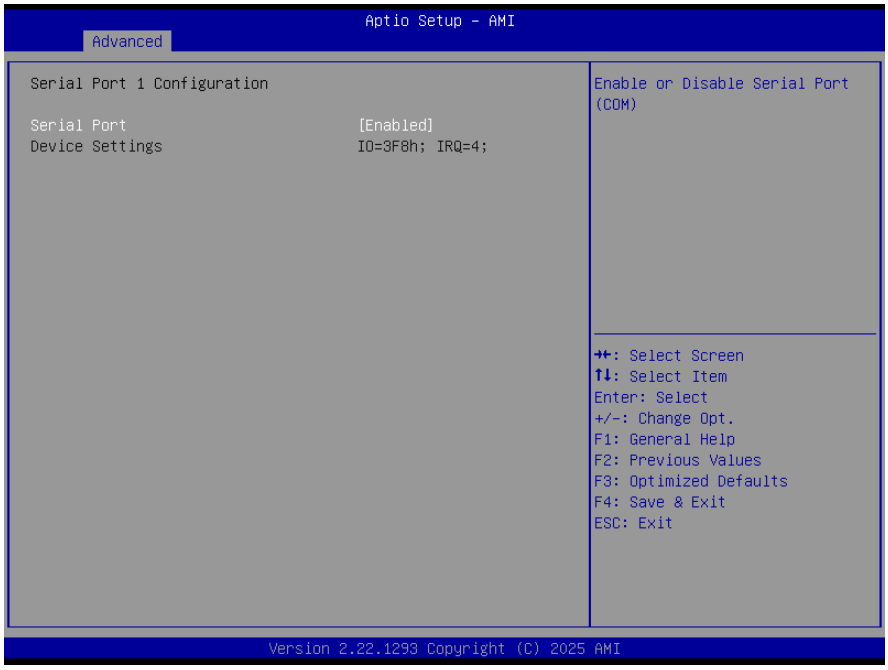
3.6.2.6 Super IO Configuration

You can use this item to set up or change the Super IO configuration for serial ports. Please refer to 3.6.2.6.1~ 3.6.2.6.6 for more information.



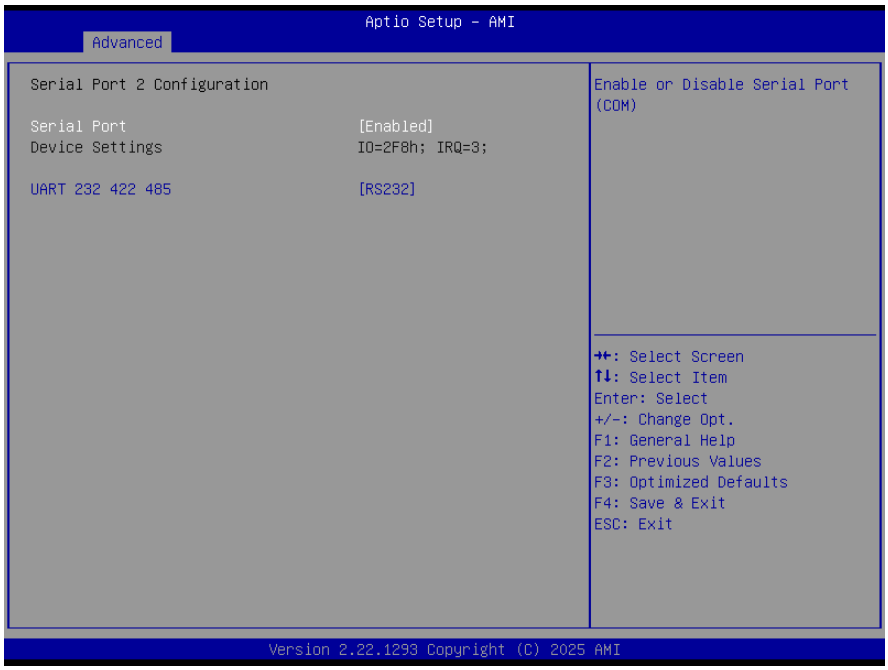
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Set Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Set Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Set Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Set Parameters of Serial Port 6 (COMF).

3.6.2.6.1 Serial Port 1 Configuration



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

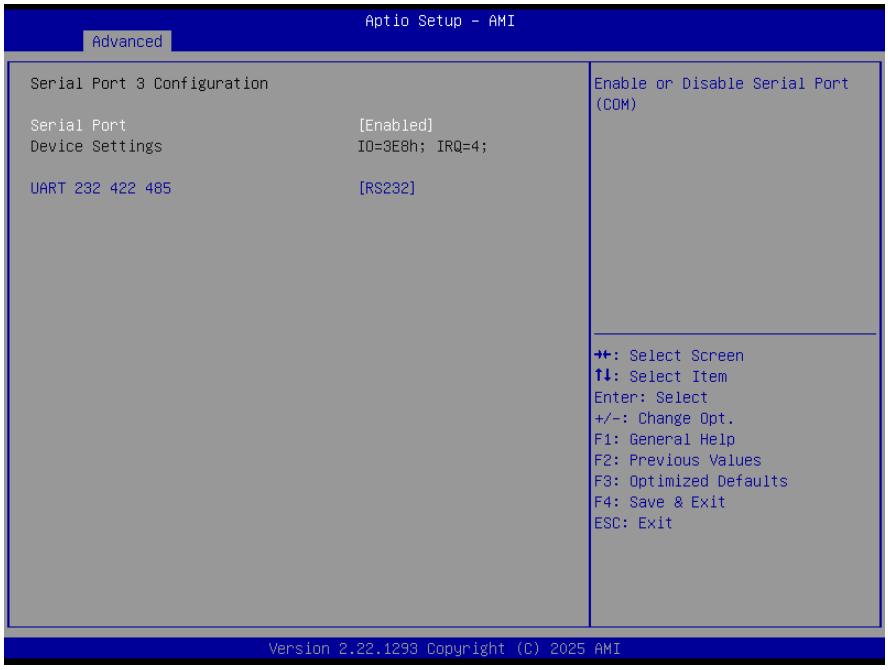
3.6.2.6.2 Serial Port 2 Configuration



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

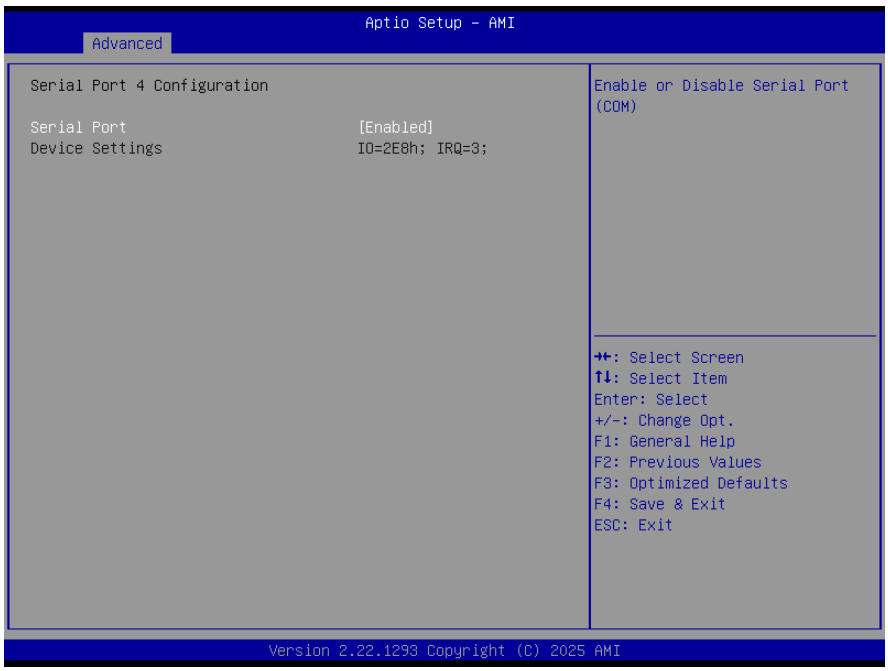
UART 232 422 485	RS232**[Default]** RS422 RS485	Set COM Port as RS232, RS422 or RS485 mode.

3.6.2.6.3 Serial Port 3 Configuration



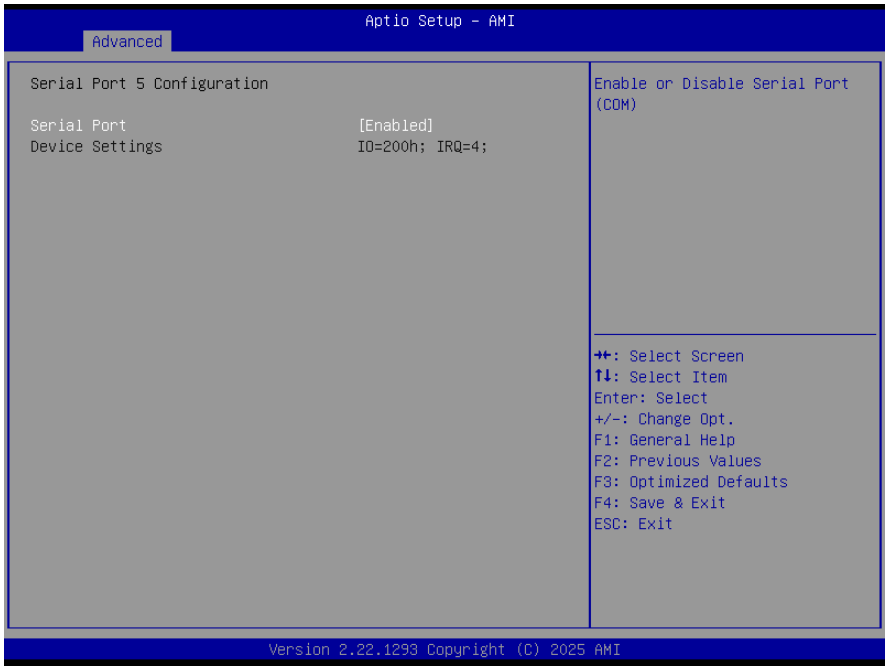
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).
UART 232 422 485	RS232**[Default]** RS422 RS485	Set COM Port as RS232, RS422 or RS485 mode.

3.6.2.6.4 Serial Port 4 Configuration



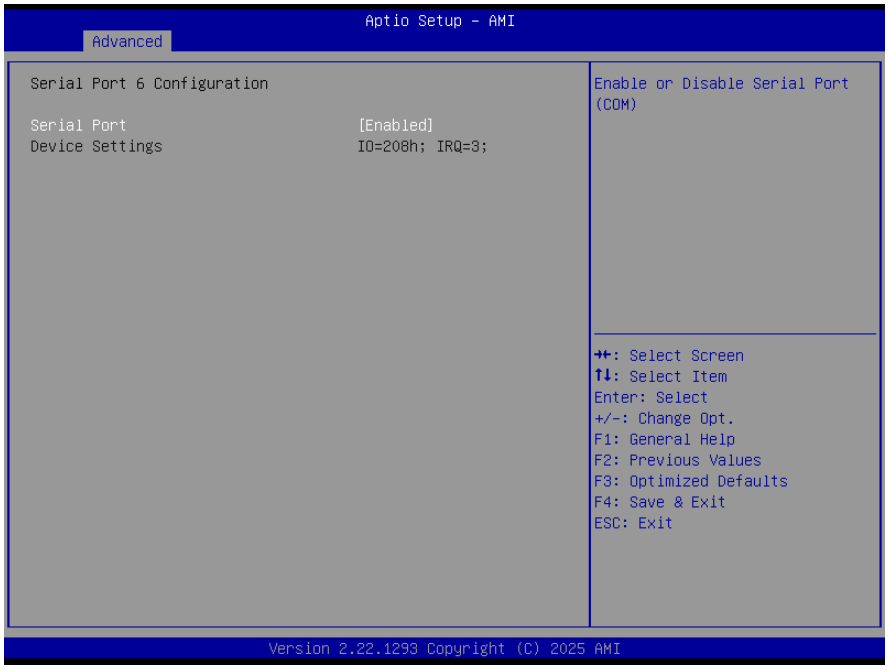
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.6.5 Serial Port 5 Configuration



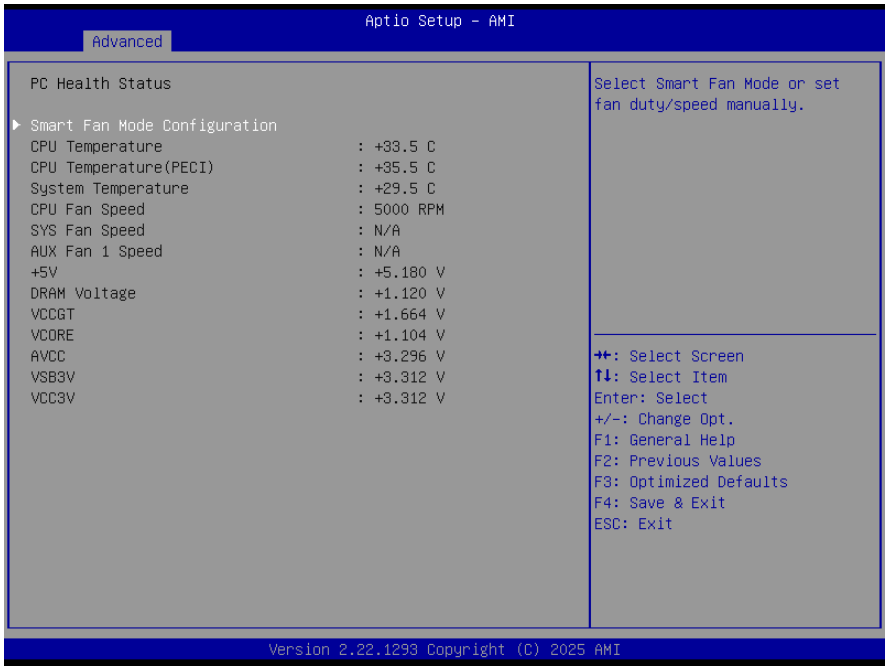
Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.6.6 Serial Port 6 Configuration

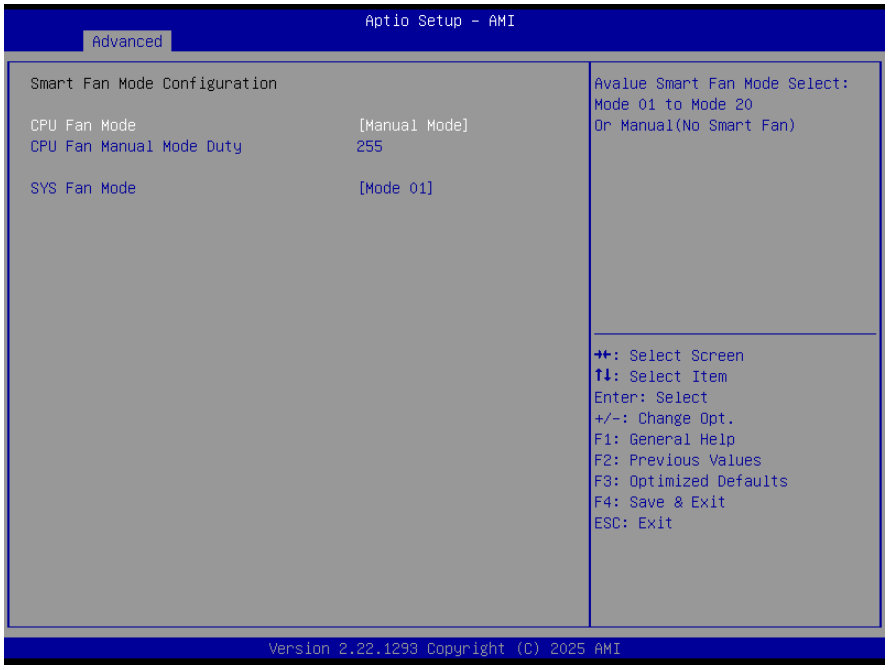


Item	Option	Description
Serial Port	Disabled Enabled**[Default]**,	Enable or Disable Serial Port (COM).

3.6.2.7 CT6126D HW Monitor

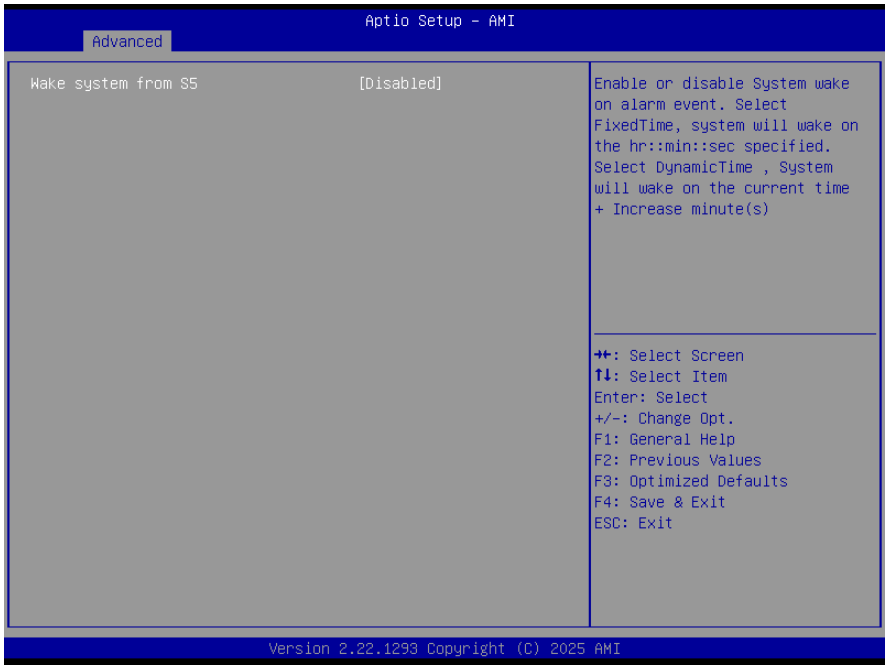


3.6.2.7.1 Smart Fan Configuration



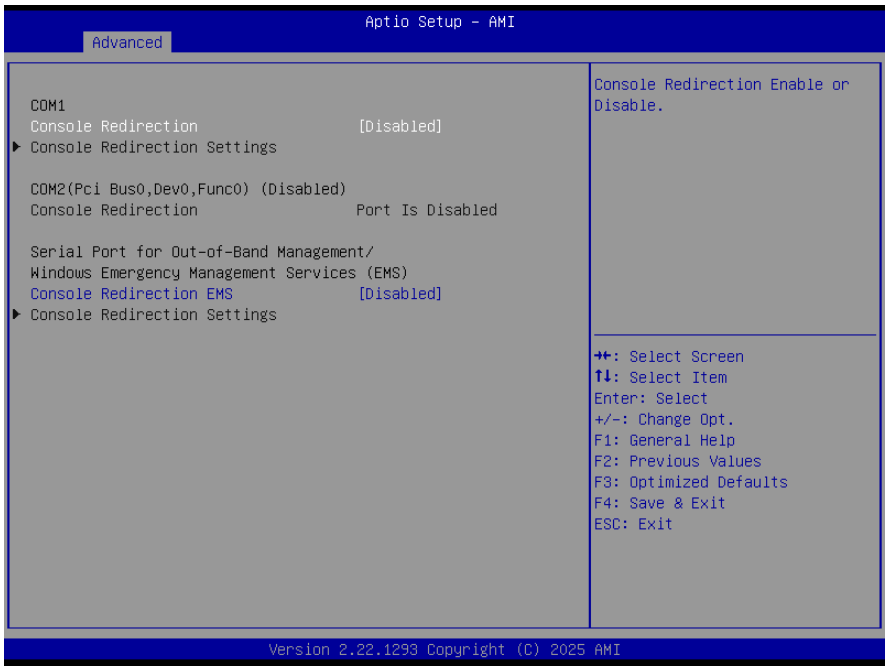
Item	Option	Description
CPU Fan Mode	Manual Mode**[Default]**, /Mode 01/Mode 02 /Mode 03/Mode 04 /Mode 05/Mode 06 /Mode 07/Mode 08 /Mode 09/Mode 10 /Mode 11/Mode 12 /Mode 13/Mode 14 /Mode 15/Mode 16 /Mode 17/Mode 18 /Mode 19/Mode 20	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual (No Smart Fan)
CPU Fan Manual Mode Duty	255	Set Fan Duty Manually(1~255).
SYS FAN Mode	Manual Mode /Mode 01**[Default]**, /Mode 02/Mode 03 /Mode 04/Mode 05 /Mode 06/Mode 07 /Mode 08/Mode 09 /Mode 10/Mode 11 /Mode 12/Mode 13 /Mode 14/Mode 15 /Mode 16/Mode 17 /Mode 18/Mode 19 /Mode 20	Avalue Smart Fan Mode Select: Mode 01 to Mode 20 Or Manual (No Smart Fan)

3.6.2.8 S5 RTC Wake Settings



Item	Options	Description
Wake system from S5	Disabled**[Default]**, Fixed Time Dynamic 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).

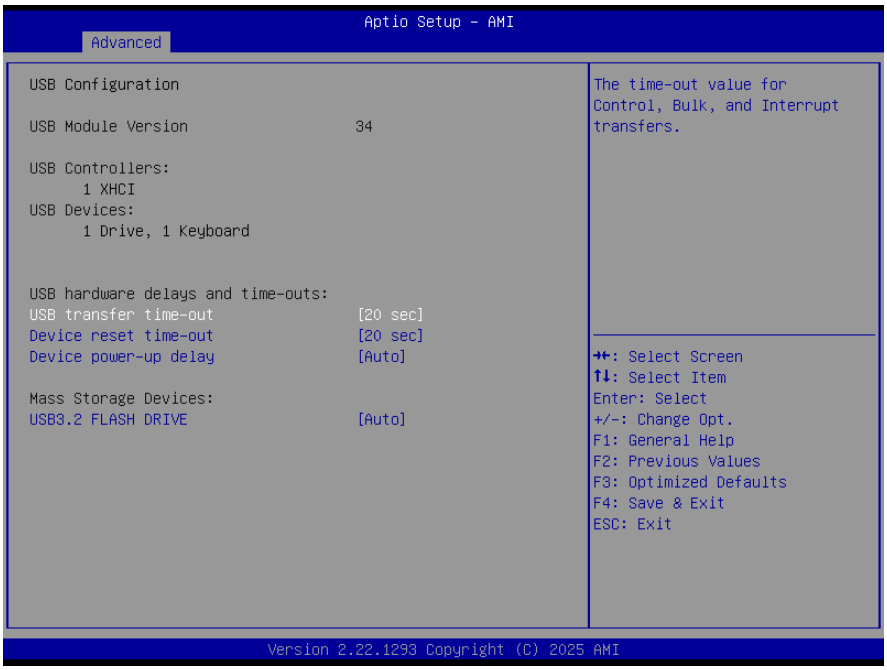
3.6.2.9 Serial Port Console Redirection



Item	Options	Description
Console Redirection	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.
Console Redirection EMS	Disabled**[Default]**, Enabled	Console Redirection Enable or Disable.

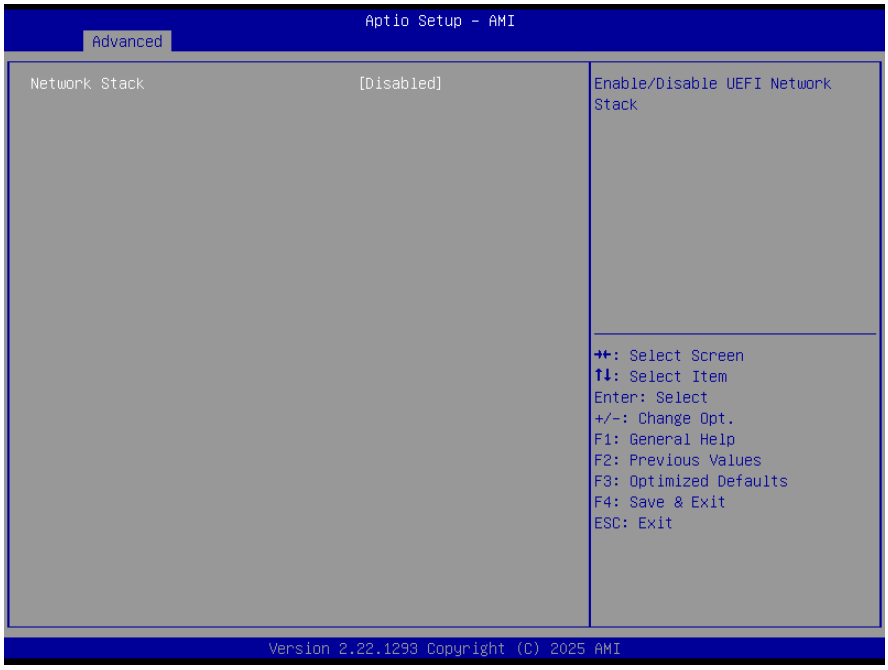
3.6.2.10 USB Configuration

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



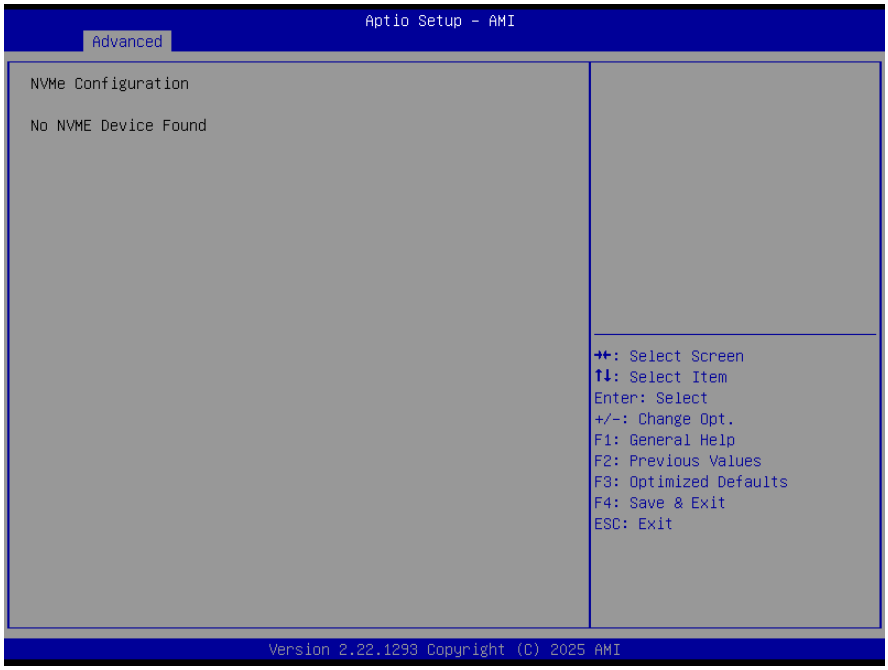
Item	Options	Description
USB transfer time-out	1 sec 5 sec 10 sec 20 sec**[Default]**	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 sec 20 sec**[Default]** 30 sec 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	Auto**[Default]** 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 form 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.

3.6.2.11 Network Stack Configuration

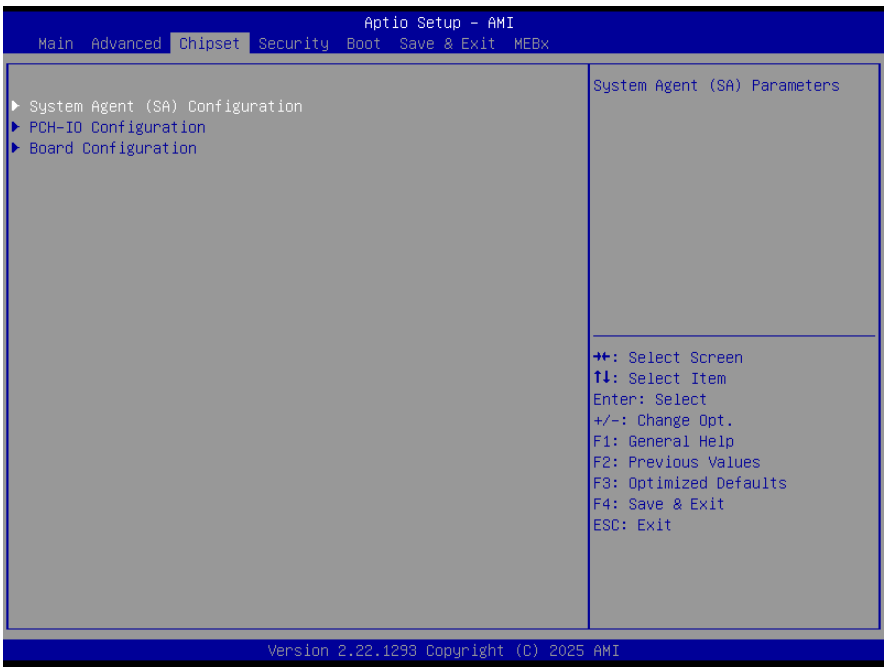


Item	Options	Description
Network Stack	Disabled**[Default]**, Enabled	Enable/Disable UEFI Network Stack.

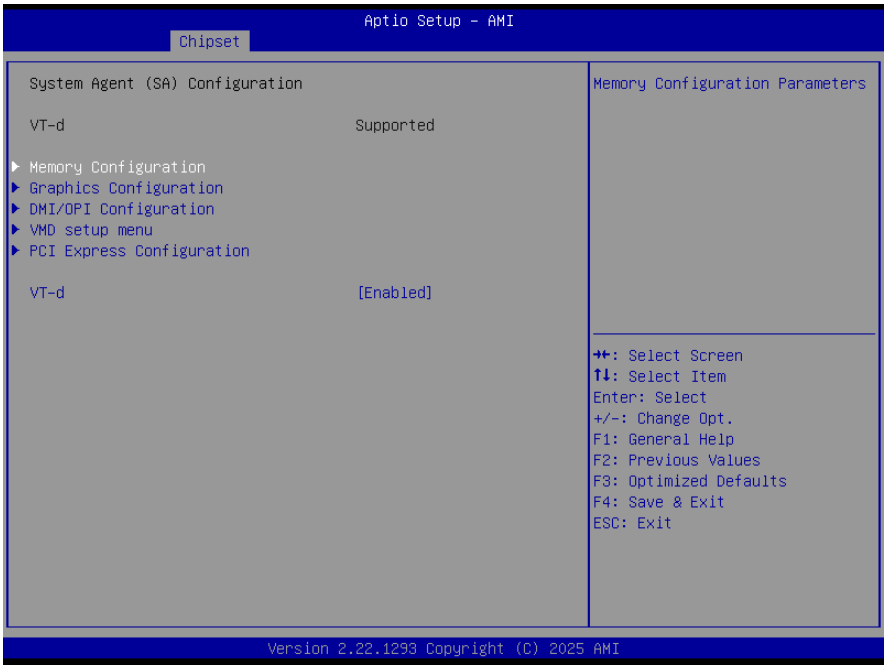
3.6.2.12 NVMe Configuration



3.6.3 Chipset

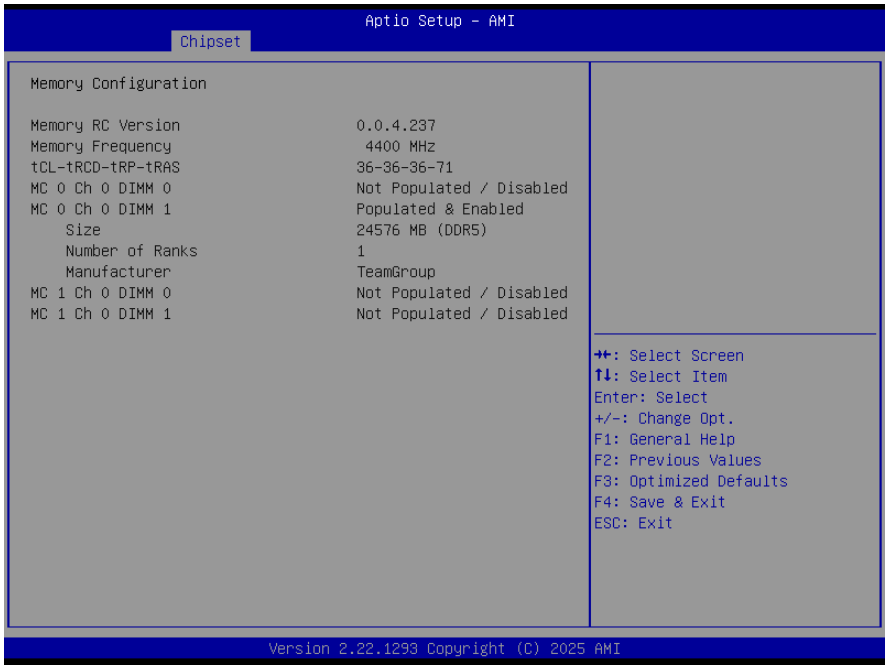


3.6.3.1 System Agent (SA) Configuration



Item	Option	Description
VT-d	Disabled Enabled**[Default]**	VT-d capability

3.6.3.1.1 Memory Configuration

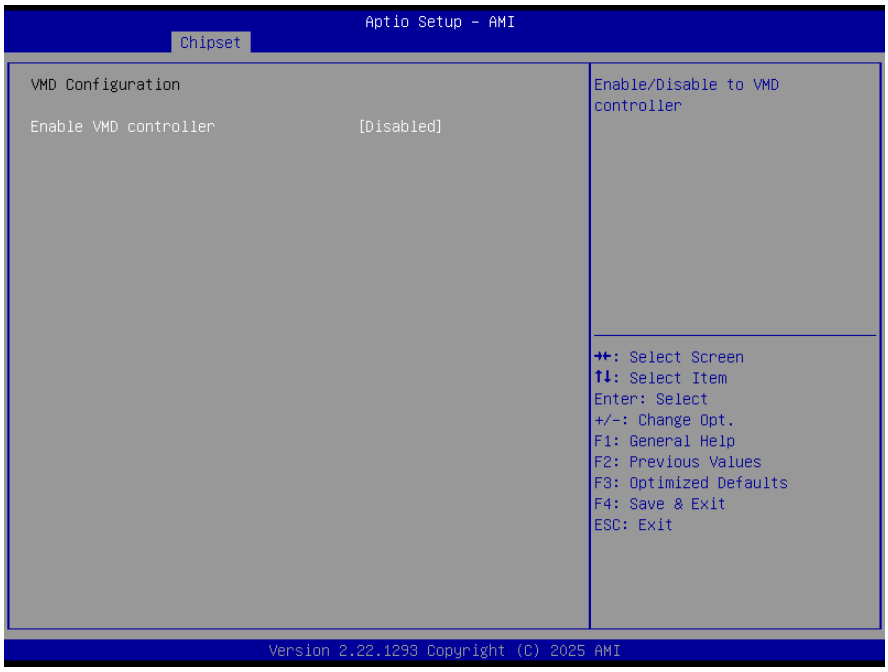


3.6.3.1.2 Graphics Configuration

Item	Option	Description
Primary Display	Auto**[Default]** IGFX PEG/PCIE	Select which of IGFX/PEG Graphics device should be Primary Display.
GTT Size	2MB 4MB 8MB**[Default]**	Select the GTT Size

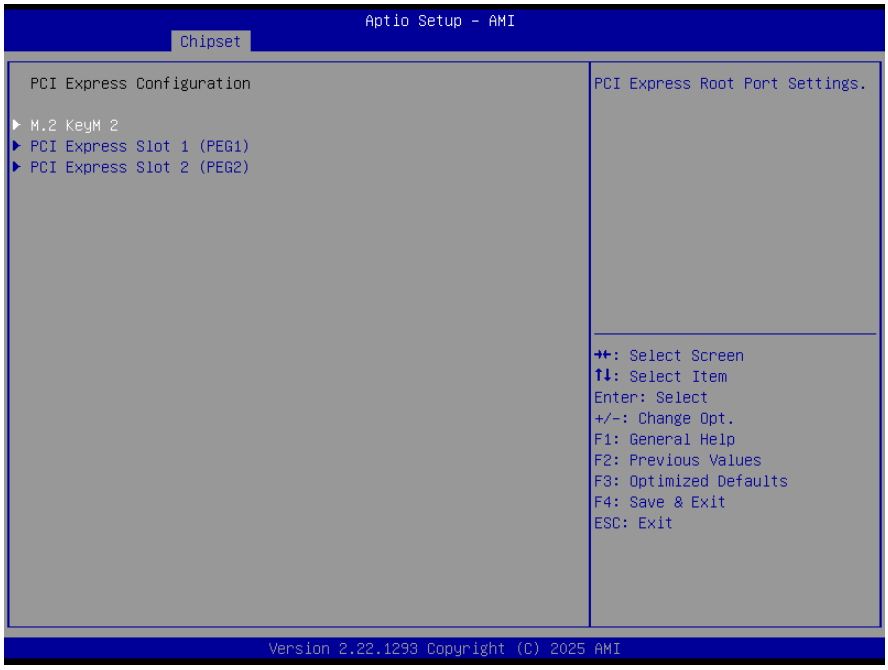
3.6.3.1.3 DMI/OPI Configuration

3.6.3.1.4 VMD Configuration

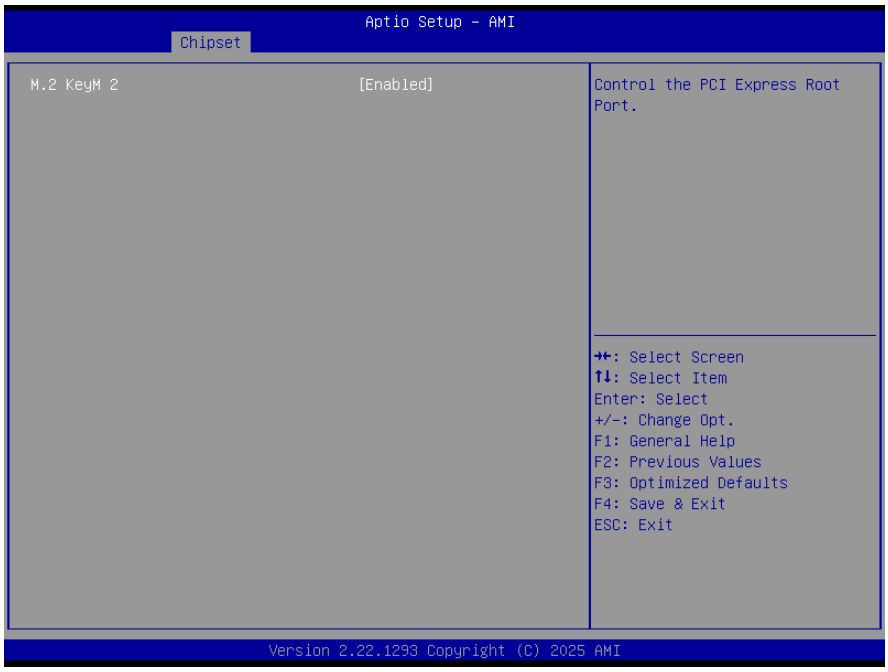


Item	Option	Description
Enable VMD controller	Disabled**[Default]** Enabled	Enable/Disable Intel(R) RST VMD controller

3.6.3.1.5 PCI Express Configuration

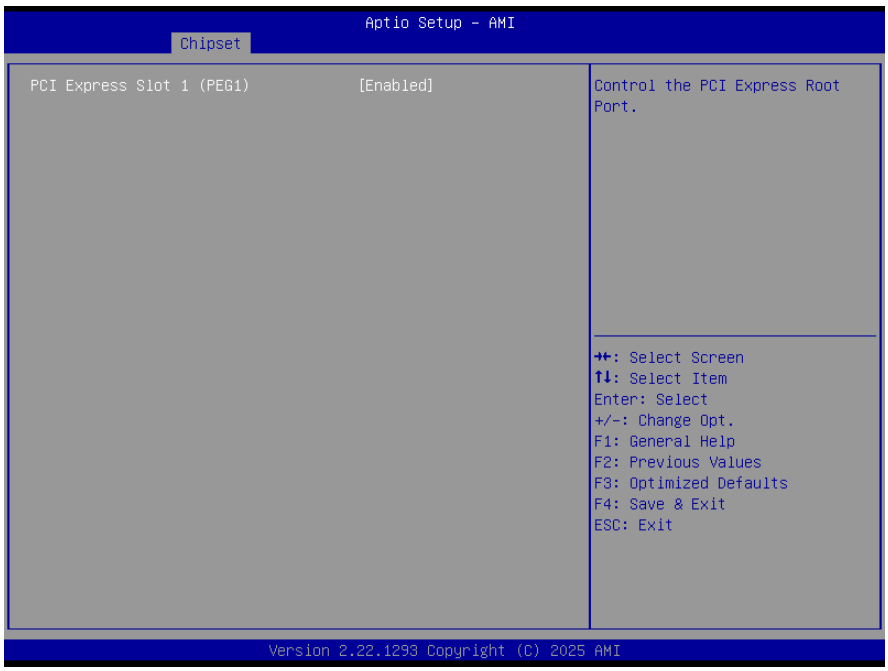


3.6.3.1.5.1 M.2 KeyM 2



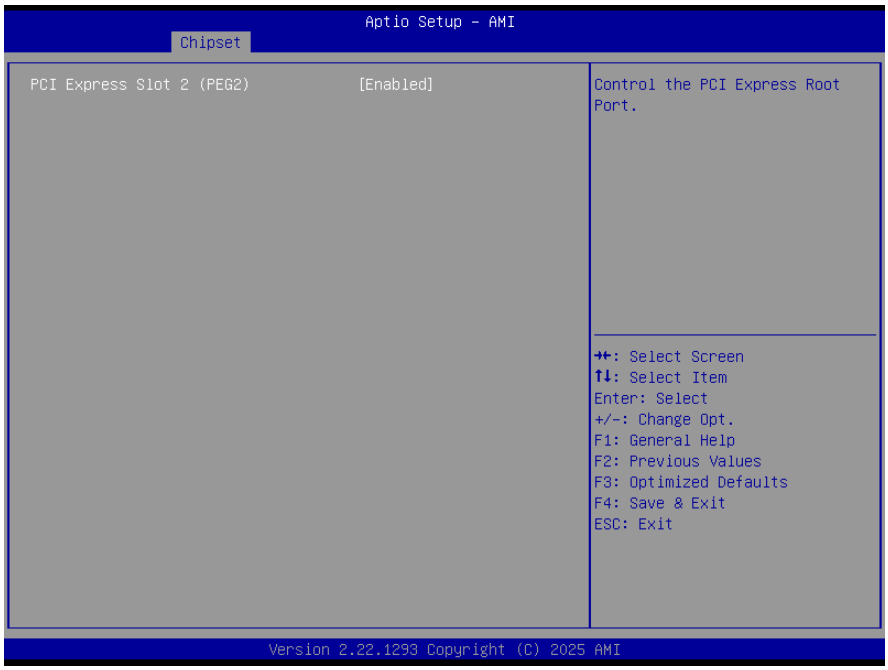
Item	Option	Description
M.2 KeyM 2	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.

3.6.3.1.5.2 PCI Express Slot 1 (PEG1)



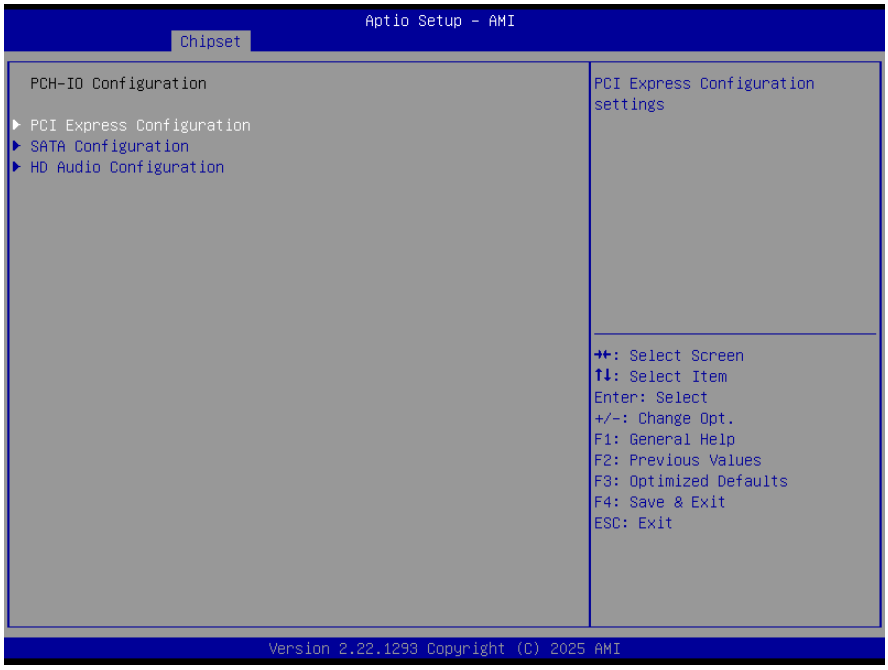
Item	Option	Description
PCI Express Slot 1 (PEG1)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.

3.6.3.1.5.3 PCI Express Slot 2 (PEG2)

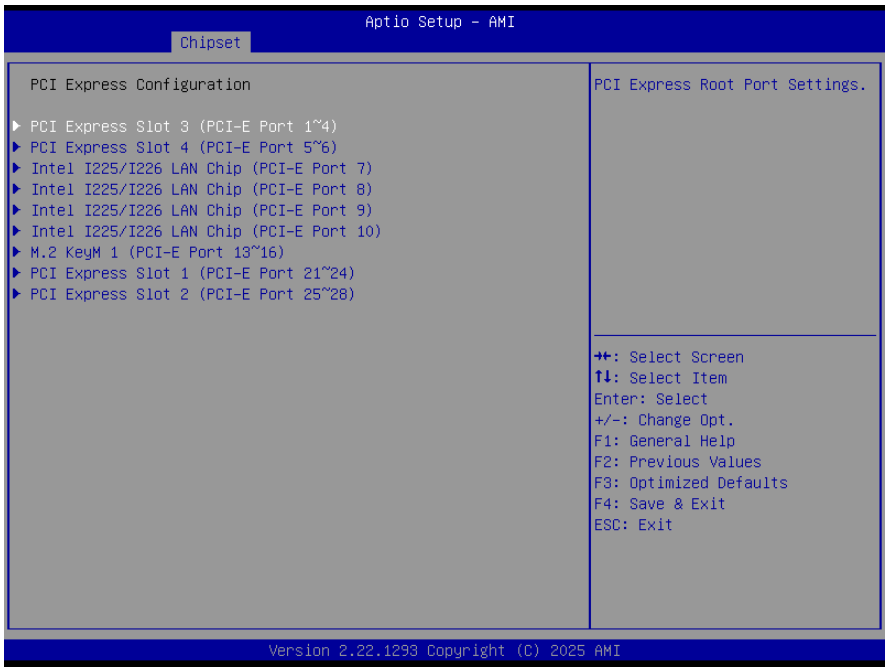


Item	Option	Description
PCI Express Slot 2 (PEG2)	Disabled Enabled**[Default]**,	Control the PCI Express Root Port.

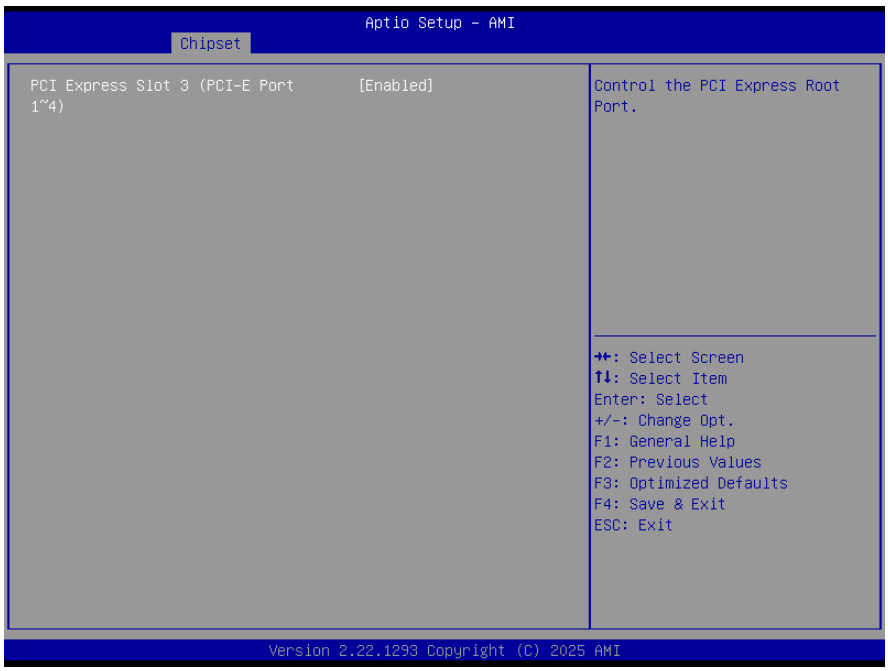
3.6.3.2 PCH-IO Configuration



3.6.3.2.1 PCI Express Configuration

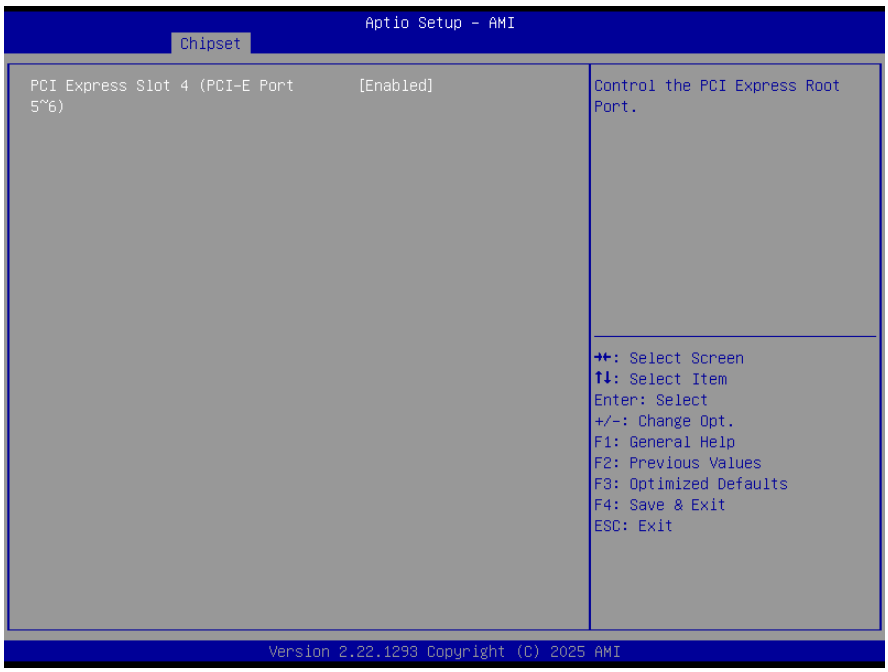


3.6.3.2.1.1 PCI Express Slot 3 (PCI-E Port 1~4)



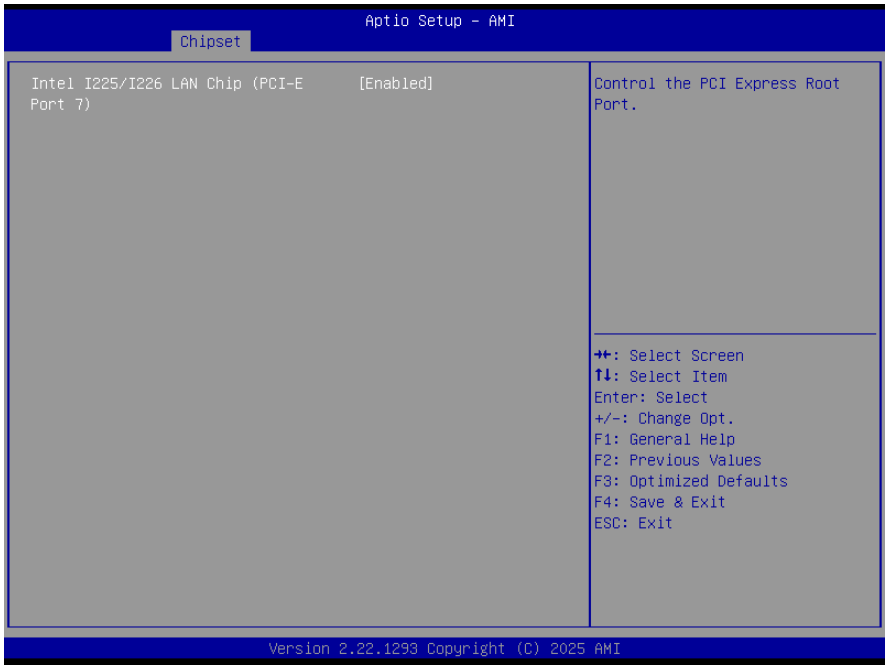
Item	Option	Description
PCI Express Slot 3 (PCI-E Port 1~4)	Disabled Enabled**[Default]**,	PCI Express Slot 3 (PCI-E Port 1~4)

3.6.3.2.1.2 PCI Express Slot 4 (PCI-E Port 5~6)



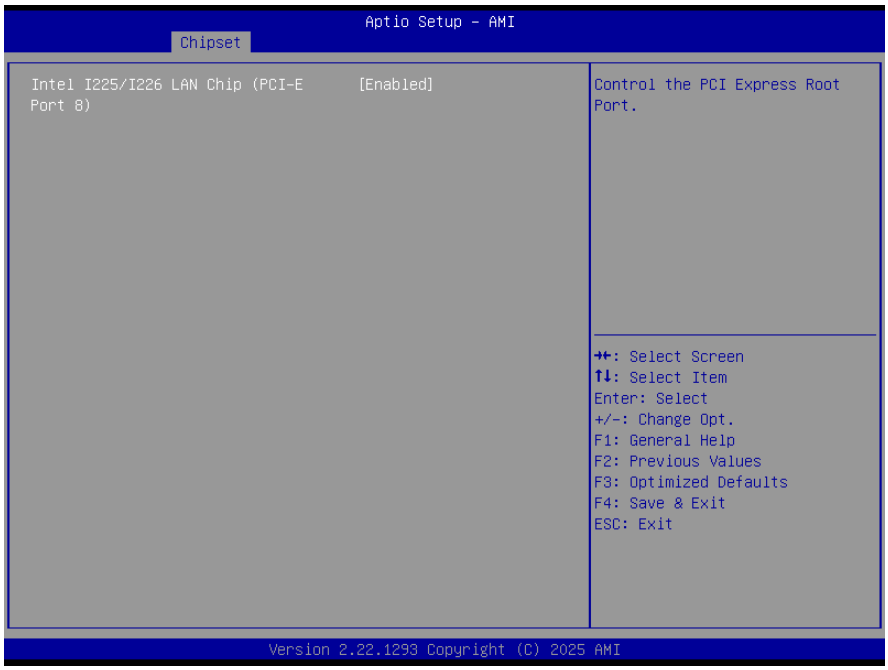
Item	Option	Description
PCI Express Slot 4 (PCI-E Port 5~6)	Disabled Enabled**[Default]**,	PCI Express Slot 4 (PCI-E Port 5~6)

3.6.3.2.1.3 Intel I225/I226 LAN Chip (PCI-E Port 7)



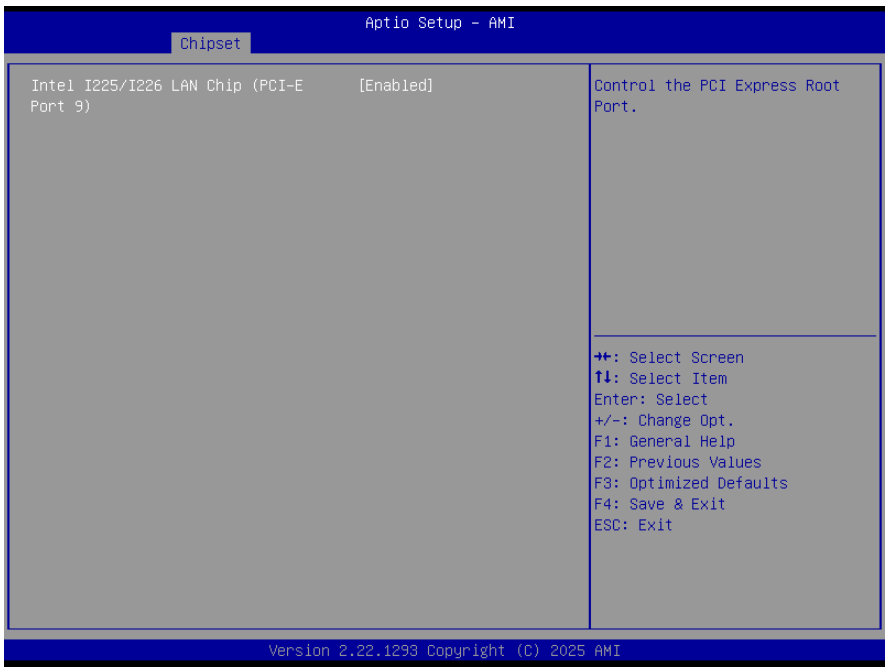
Item	Option	Description
Intel I225/I226 LAN Chip (PCI-E Port 7)	Disabled Enabled**[Default]**,	Intel I225/I226 LAN Chip (PCI-E Port 7)

3.6.3.2.1.4 Intel I225/I226 LAN Chip (PCI-E Port 8)



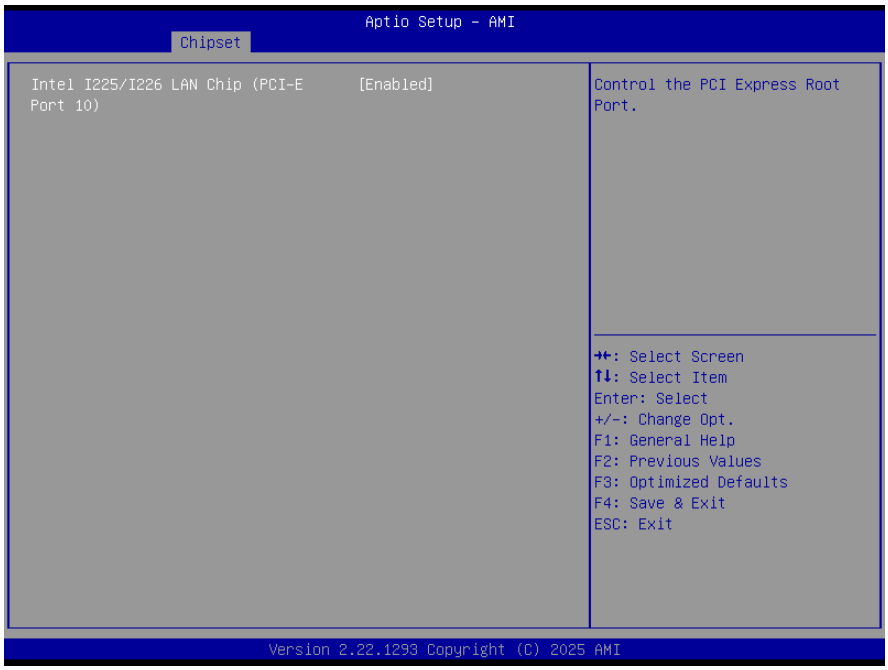
Item	Option	Description
Intel I225/I226 LAN Chip (PCI-E Port 8)	Disabled Enabled**[Default]**,	Intel I225/I226 LAN Chip (PCI-E Port 8)

3.6.3.2.1.5 Intel I225/I226 LAN Chip (PCI-E Port 9)



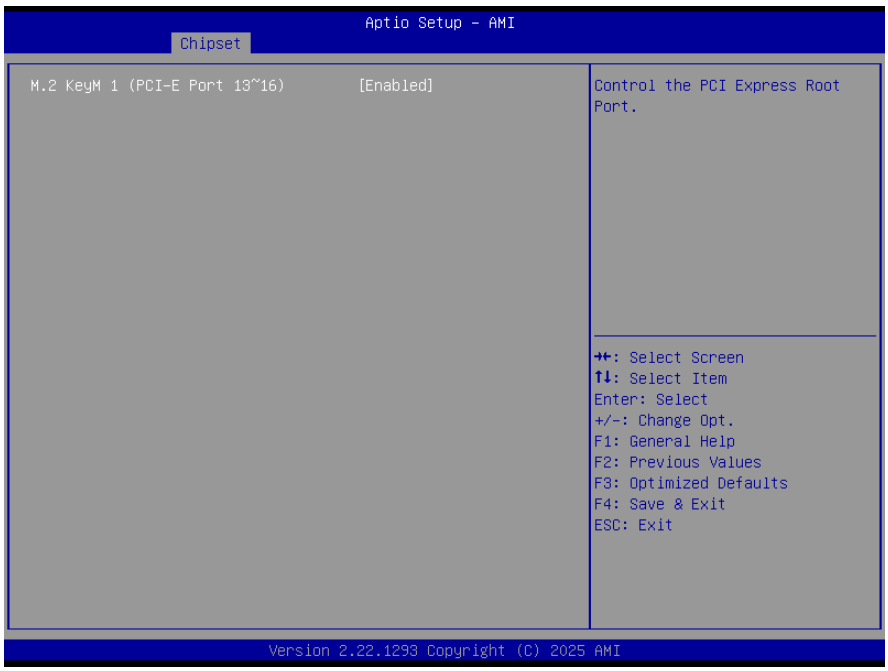
Item	Option	Description
Intel I225/I226 LAN Chip (PCI-E Port 9)	Disabled Enabled**[Default]**,	Intel I225/I226 LAN Chip (PCI-E Port 9)

3.6.3.2.1.6 Intel I225/I226 LAN Chip (PCI-E Port 10)



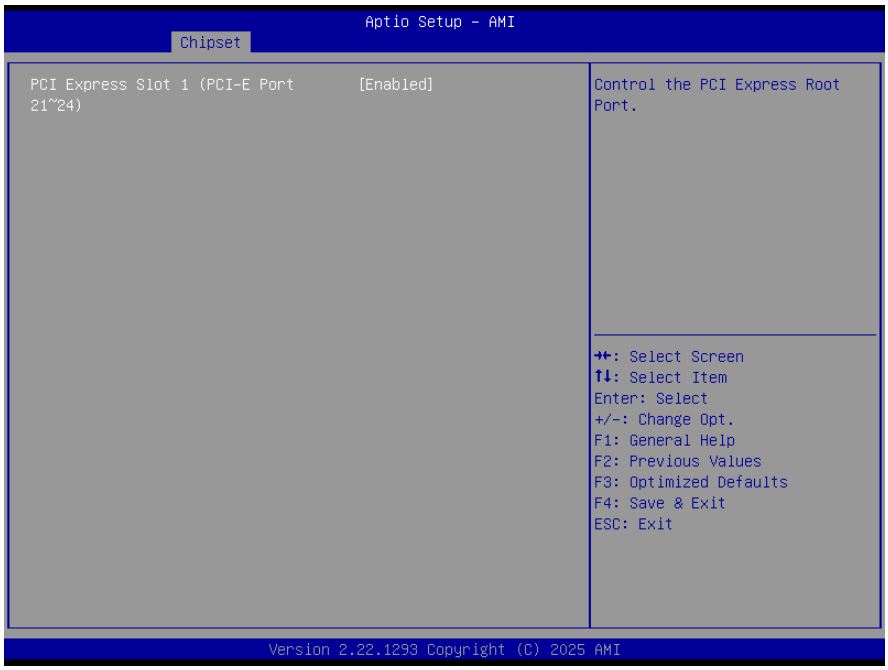
Item	Option	Description
Intel I225/I226 LAN Chip (PCI-E Port 10)	Disabled Enabled**[Default]**,	Intel I225/I226 LAN Chip (PCI-E Port 10)

3.6.3.2.1.7 M.2 KeyM 1 (PCI-E Port 13~16)



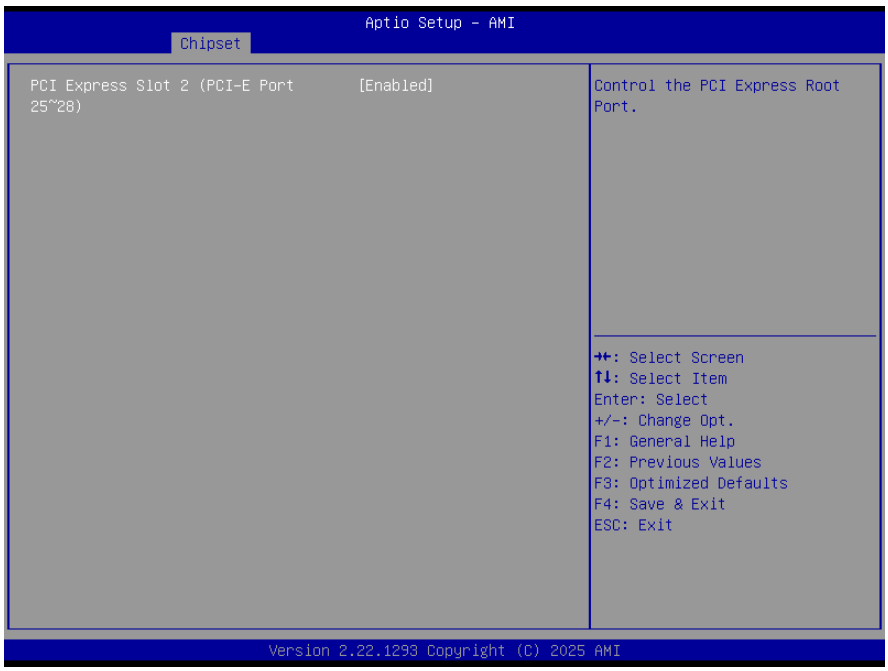
Item	Option	Description
M.2 KeyM 1 (PCI-E Port 13~16)	Default Enabled**[Default]**,	M.2 KeyM 1 (PCI-E Port 13~16)

3.6.3.2.1.8 PCI Express Slot 1 (PCI-E Port 21~24)



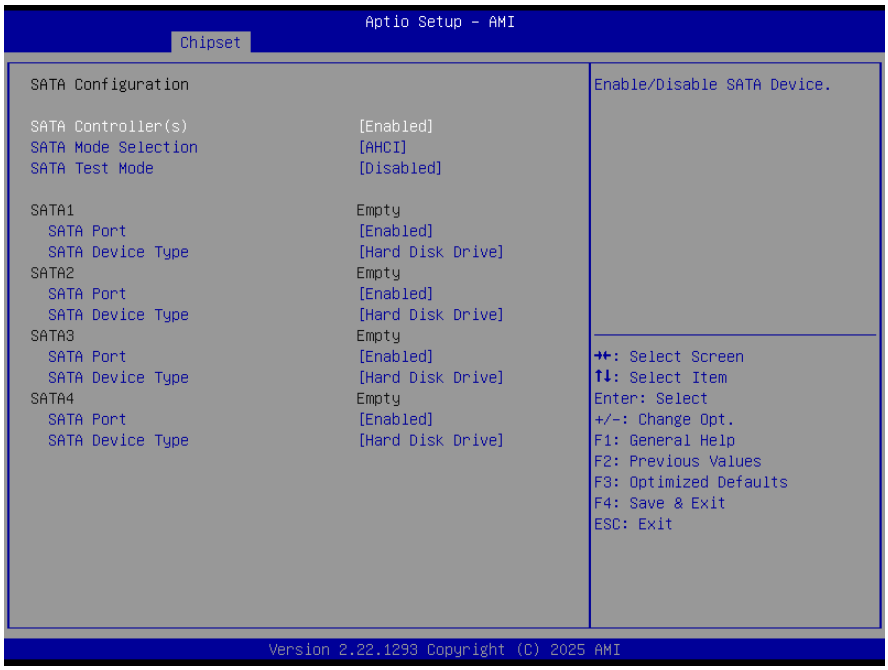
Item	Option	Description
PCI Express Slot 1 (PCI-E Port 21~24)	Disabled Enabled**[Default]**,	PCI Express Slot 1 (PCI-E Port 21~24)

3.6.3.2.1.9 PCI Express Slot 2 (PCI-E Port 25~28)



Item	Option	Description
PCI Express Slot 2 (PCI-E Port 25~28)	Disabled Enabled**[Default]**,	PCI Express Slot 2 (PCI-E Port 25~28)

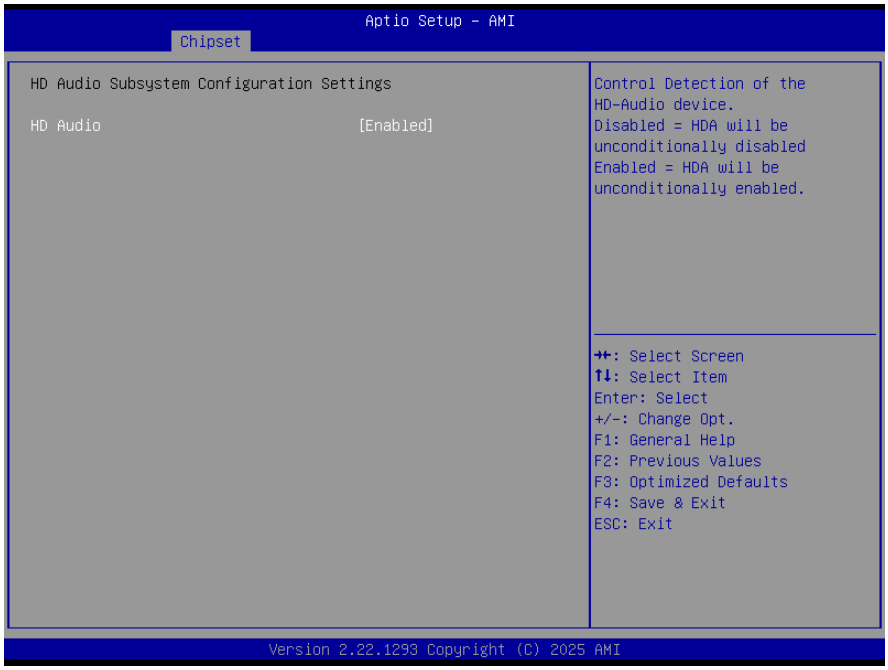
3.6.3.2.2 SATA Configuration



Item	Options	Description
SATA Configuration(S)	Enabled**[Default]**, Disabled	Enable/Disable SATA Device.

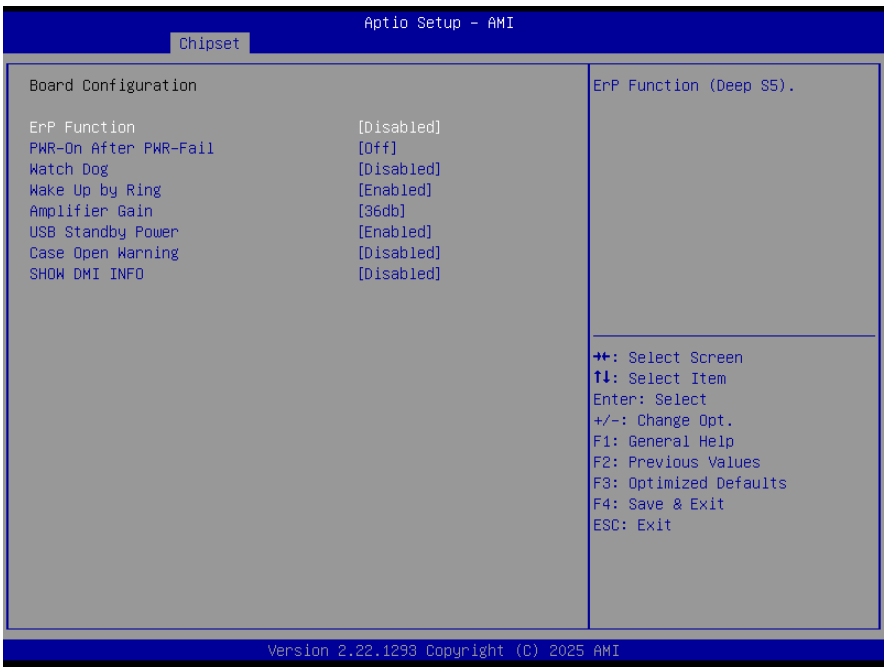
SATA Mode Selection	AHCI	Determines how SATA controller(s) operate.
SATA Test Mode	Enabled Disabled**[Default]**,	Test Mode Enable/Disable (Loop Back).
SATA Port	Disabled Enabled**[Default]**,	Enable or Disable SATA Port
SATA Device Type	Hard Disk Drive**[Default]**, Solid State Drive	Identify the SATA port is connected to Solid State Drive or Hard Disk Drive

3.6.3.2.3 HD Audio Configuration



Item	Options	Description
HD Audio	Disabled Enabled**[Default]**,	Control Detection of HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled.

3.6.3.3 Board Configuration

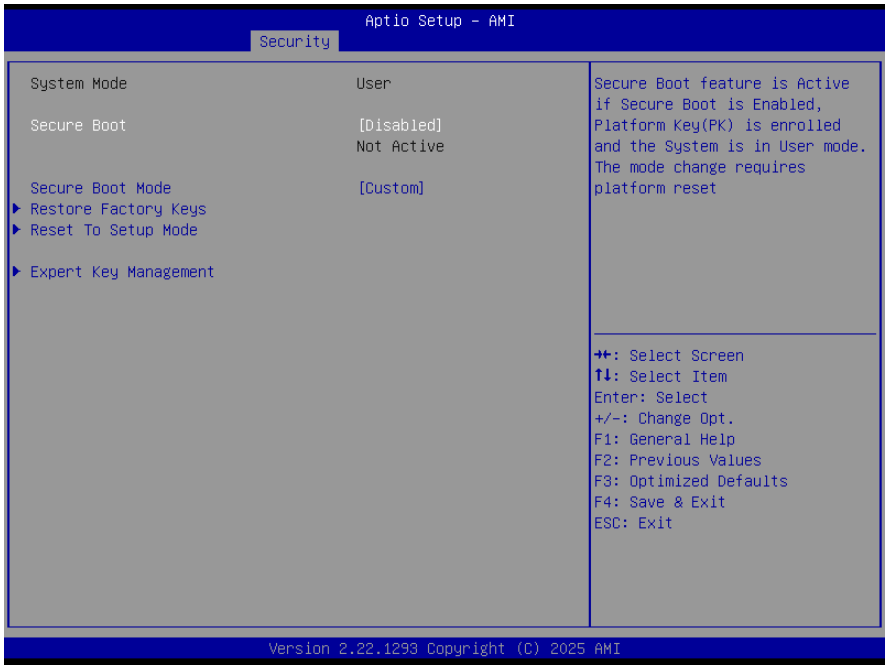


Item	Option	Description
ErP Function	Disabled**[Default]**, Enabled	ErP Function (Deep S5).
PWR-On After PWR-Fail	Off**[Default]**, On Last state	AC loss resume.
Watch Dog	Disabled**[Default]**, 30 sec 40 sec 50 sec 1 min 2 min 10 min 30 min	Select WatchDog.
Wake Up by Ring	Disabled Enabled**[Default]**,	Wake Up by Ring from S3/S4/S5
Amplifier Gain	36db	Amplifier Gain
USB Standby Power	Disabled Enabled**[Default]**,	Enable/Disable USB Standby Power during S3/S4/S5
Case Open Warning	Disabled**[Default]**, Enabled	Enable/Disable Case Open Warning.
SHOW DMI INFO	Disabled**[Default]**, Enabled	SHOW DMI INFO

3.6.4 Security

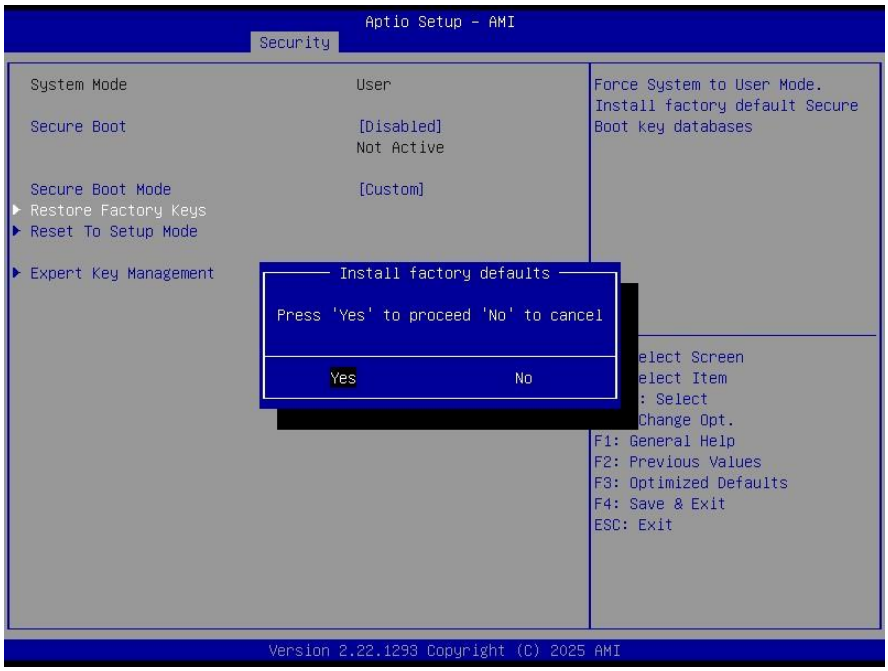
Item	Description
Administrator Password	Set Administrator Password
User Password	Set User Password

3.6.4.1 Secure Boot

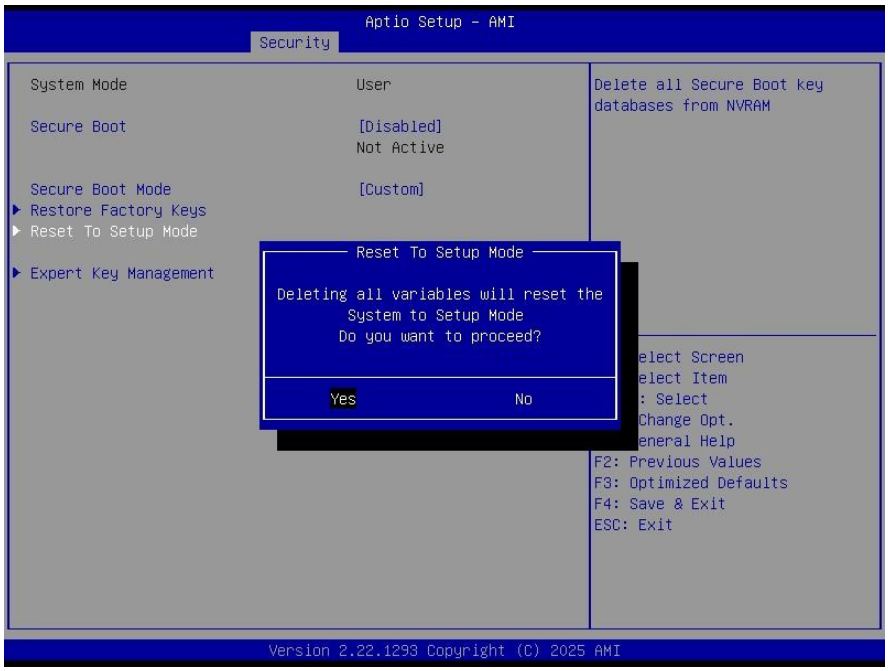


Item	Option	Description
Secure Boot	Disabled Enabled**[Default]**,	Secure Boot feature is Active if Secure Boot is Enabled, Platform Key(PK) is enrolled and the System is in User mode. The mode change requires platform reset
Secure Boot Mode	Standard Custom**[Default]**,	Secure Boot mode options: Standard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

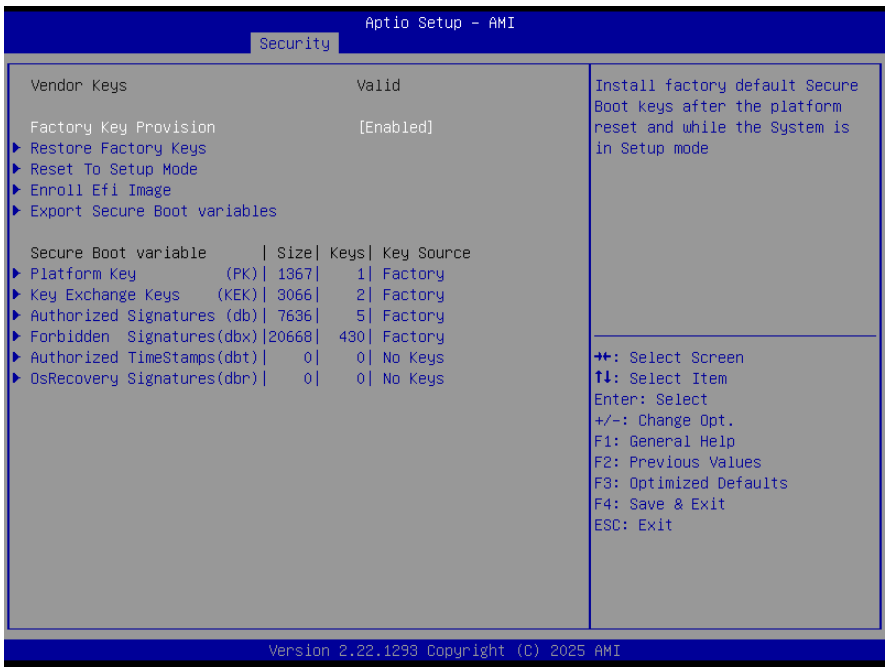
3.6.4.1.1 Restore Factory Keys



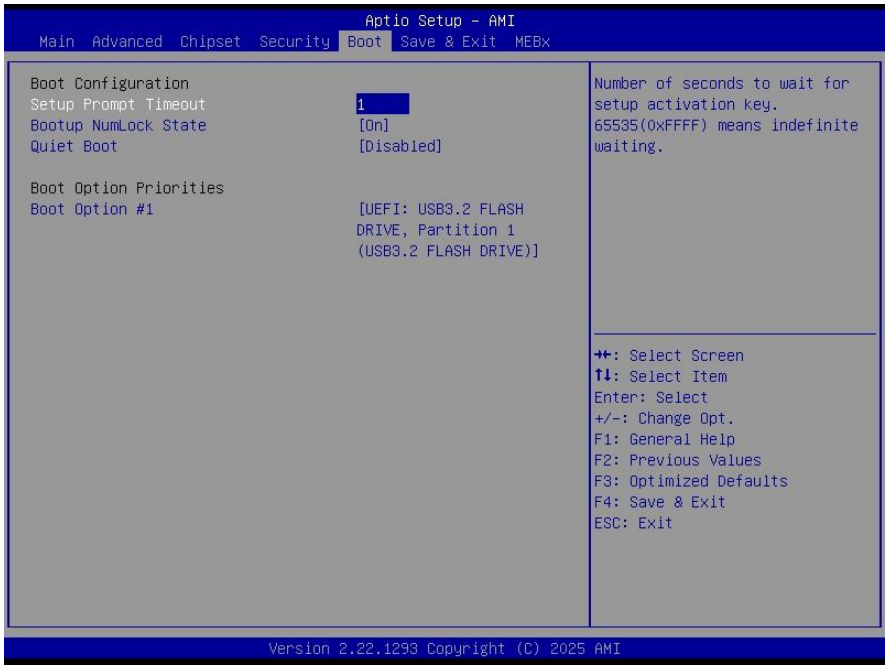
3.6.4.1.2 Reset To Setup Mode



3.6.4.1.3 Expert Key Management

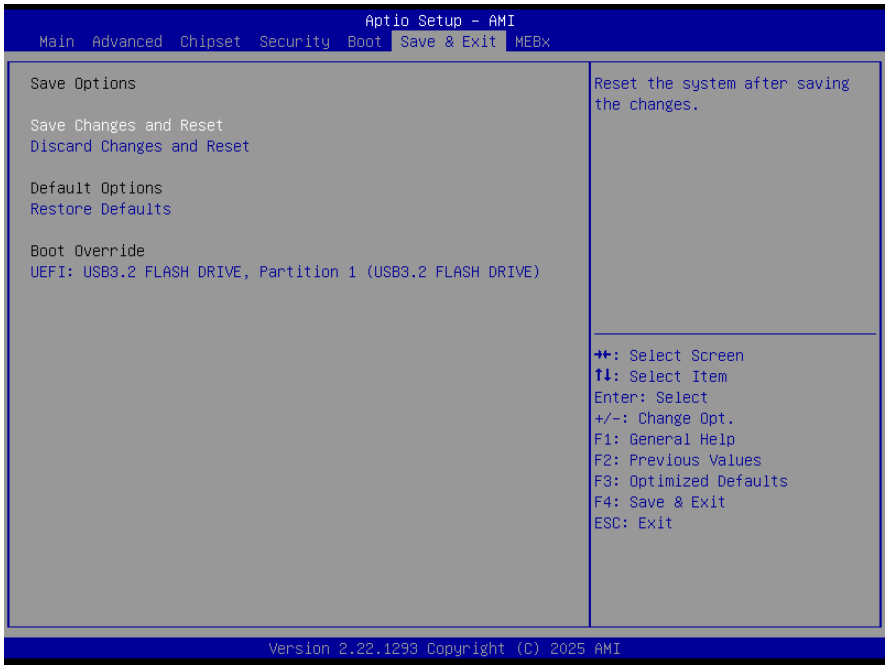


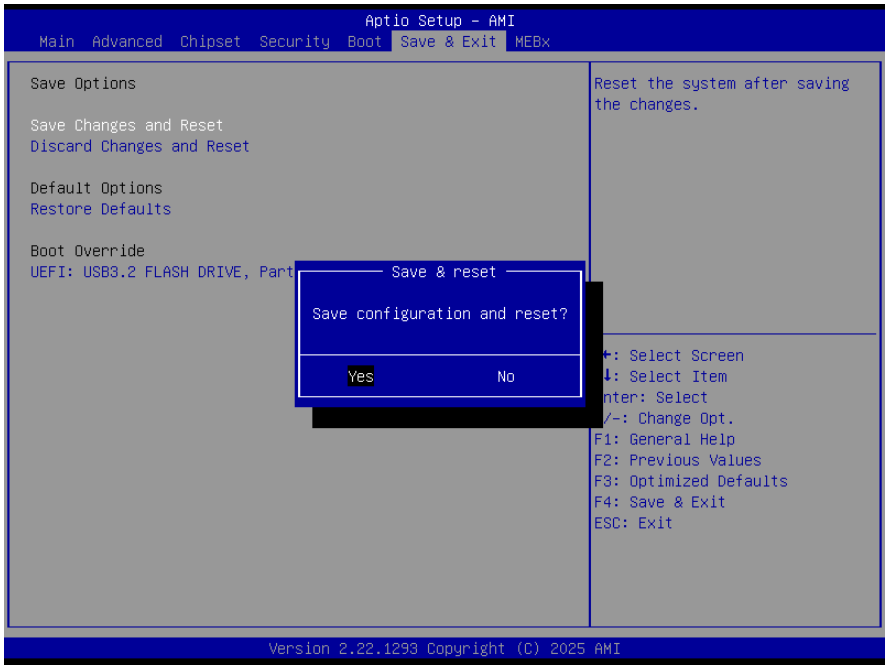
3.6.5 Boot



Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On**[Default]** Off	Select the keyboard NumLock state.
Quiet Boot	Disabled**[Default]** Enabled	Enable or disable Quiet Boot option.
Boot Option	Sets the system boot order	

3.6.6 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.

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

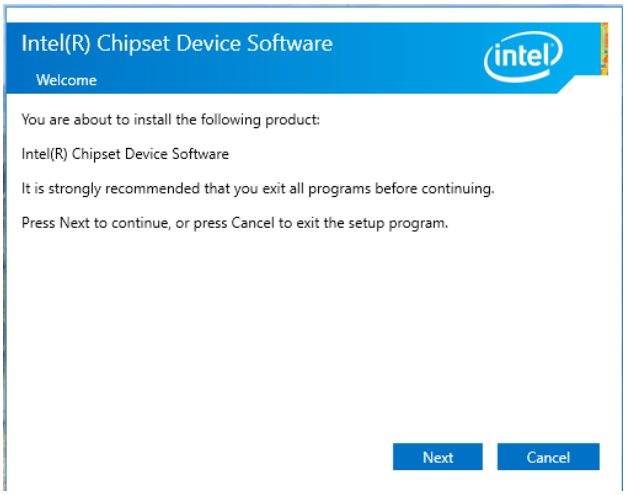
Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

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 11 operation system. If the warning message appears while the installation process, click Continue to go on.



Step1. Click **Next**.

Step 2. Click **Accept**.

Step 3. Click **Finish**.

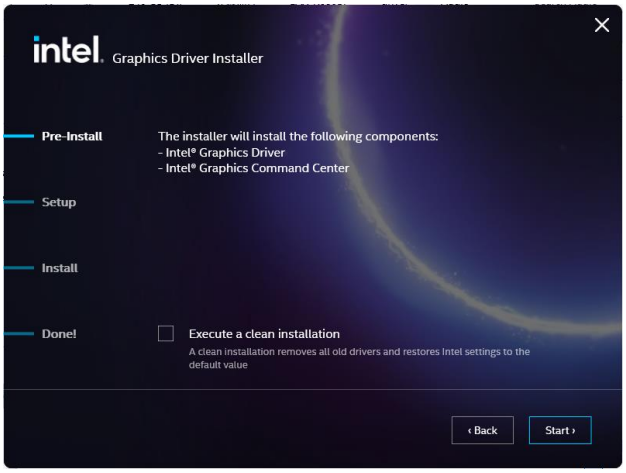
4.2 Install Graphics Driver

All drivers can be found on the Avalue Official Website:

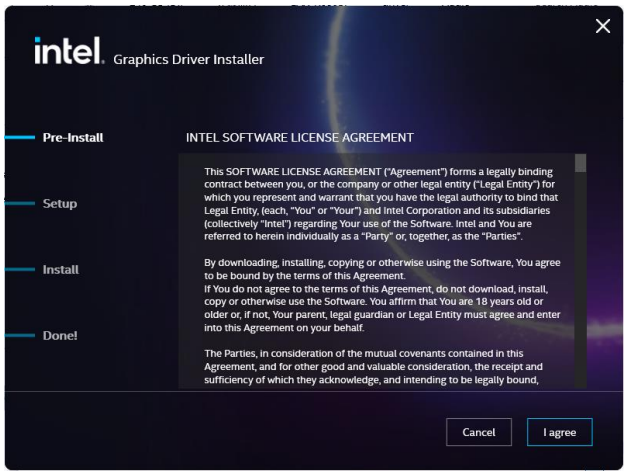
http://www.avalue.com

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.

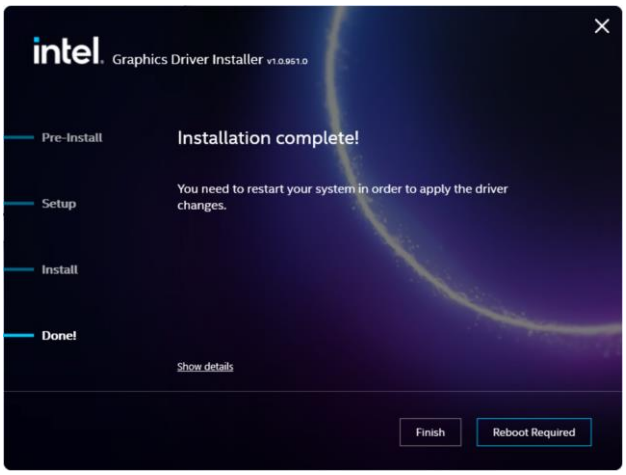
Step 1. Click **Begin installation**.



Step 3. Click **Start**.



Step 2. Click **I agree**.



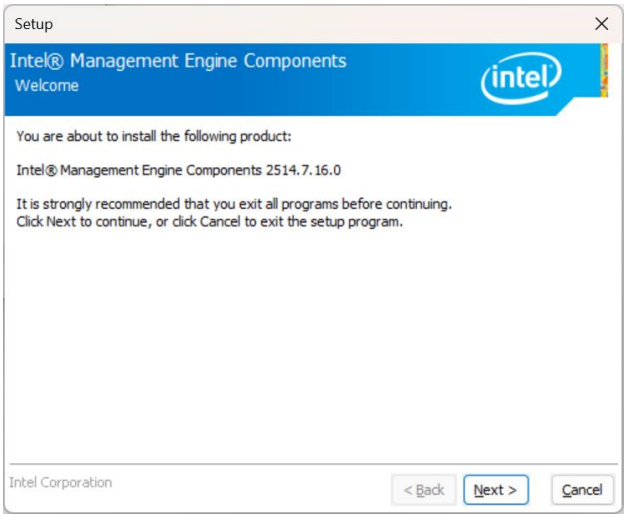
Step 4. Click **Finish** to complete setup.

4.3 Install ME Driver

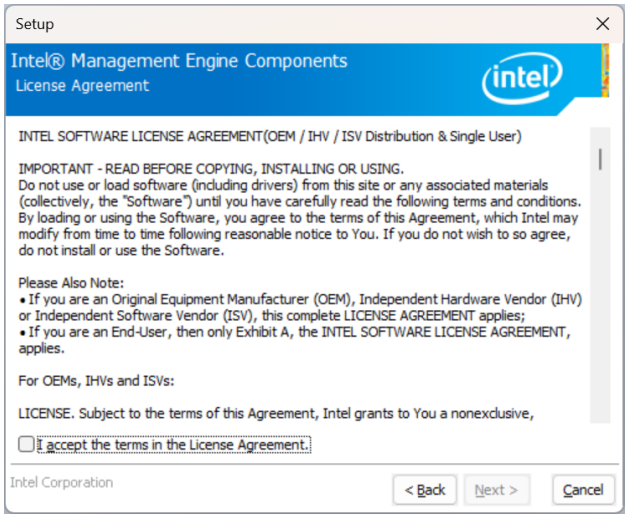
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

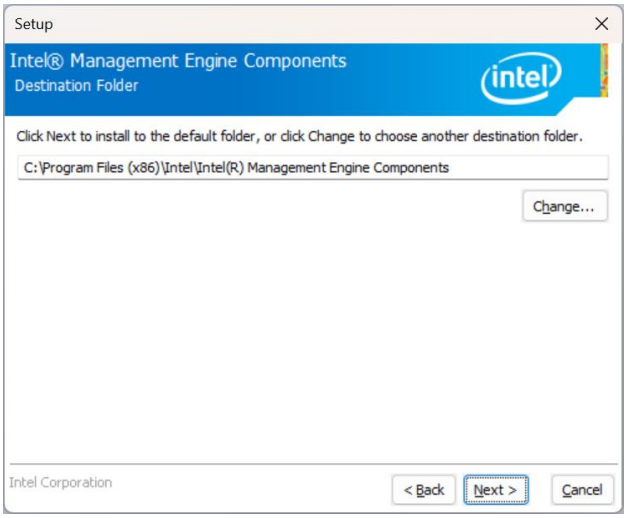
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



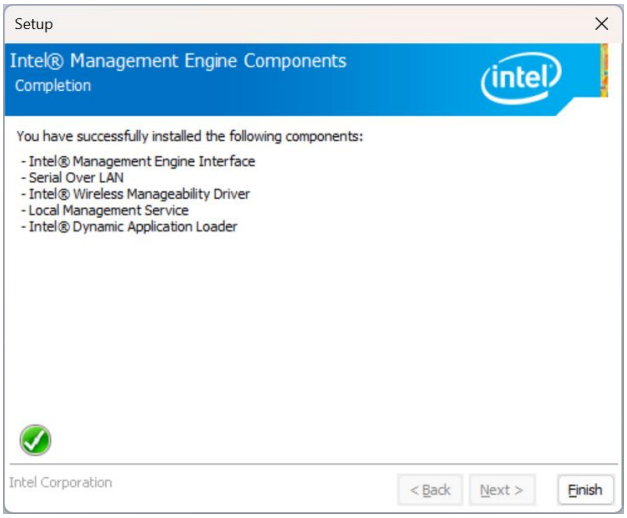
Step 1. Click **Next** to continue setup.



Step 2. Click **Next**.



Step 3. Click **Next**



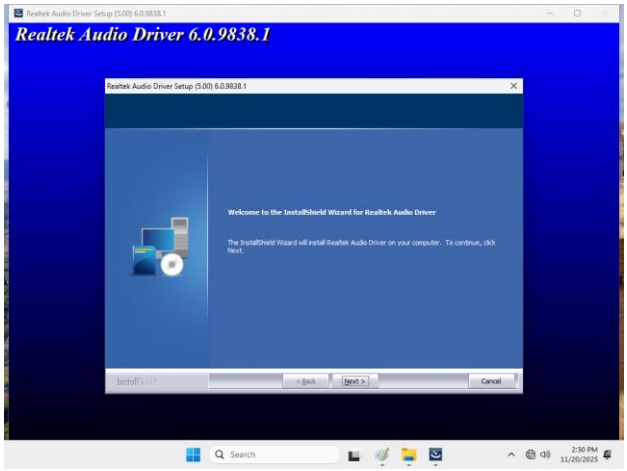
Step 4. Click **Finish** to complete the setup

4.4 Install Audio Driver (For Realtek ALC888S HD Audio)

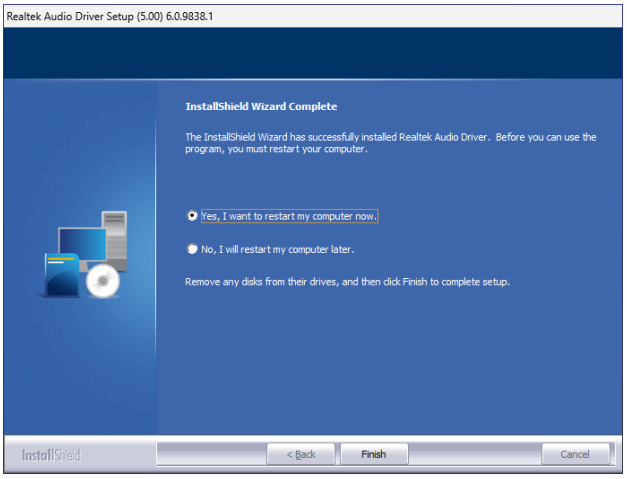
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click **Next** to Install.



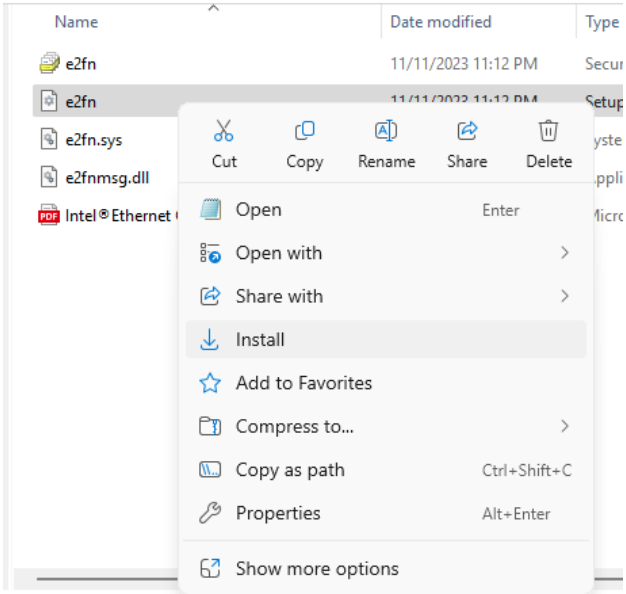
Step 2. Select **Finish** to complete Installation.

4.5 Install LAN Driver

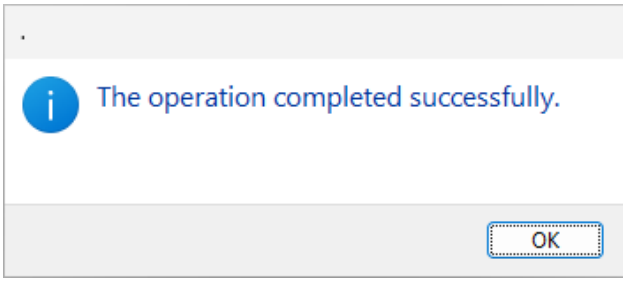
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click **Install Drivers and Software.**



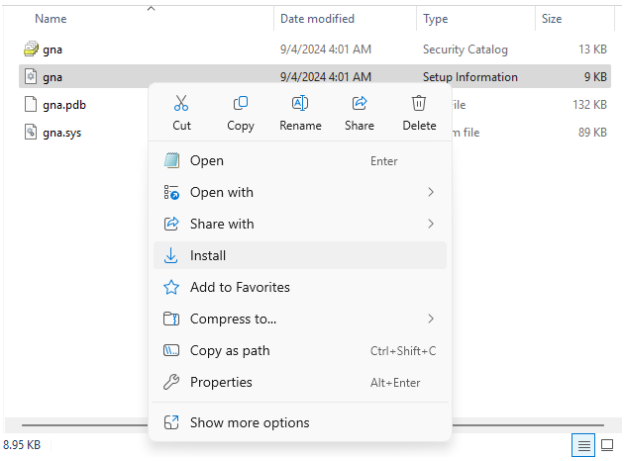
Step 2. Click **OK**.

4.6 Install GNA Driver

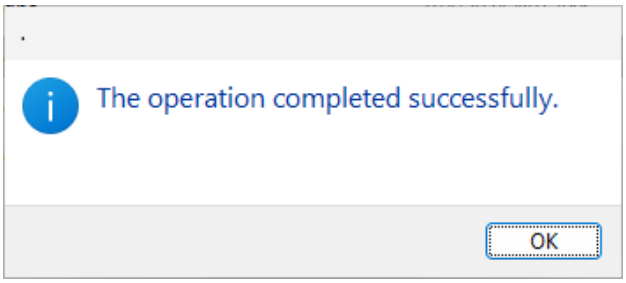
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click **Install Drivers and Software.**



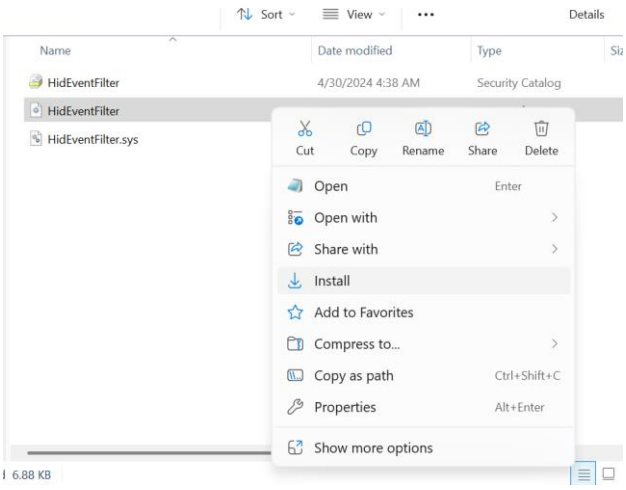
Step 2. Click **OK**.

4.7 Install HID Driver

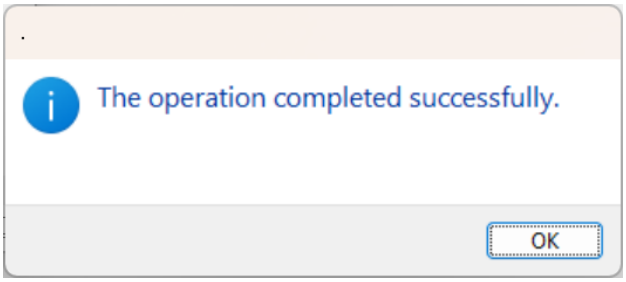
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



Step 1. Click **Install Drivers and Software.**



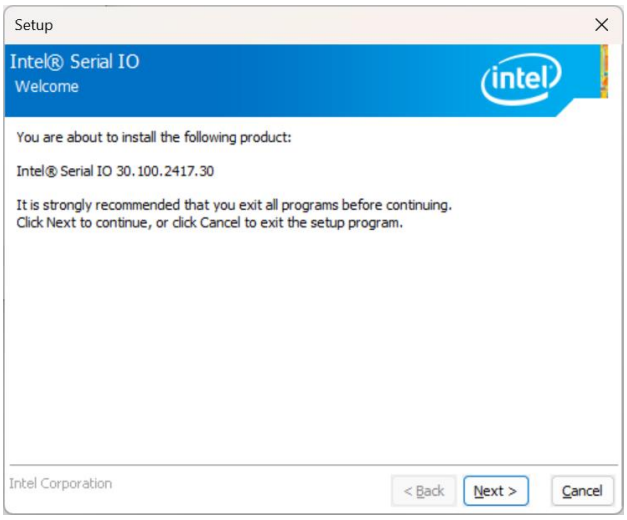
Step 2. Click **OK**.

4.8 Install SIO Driver

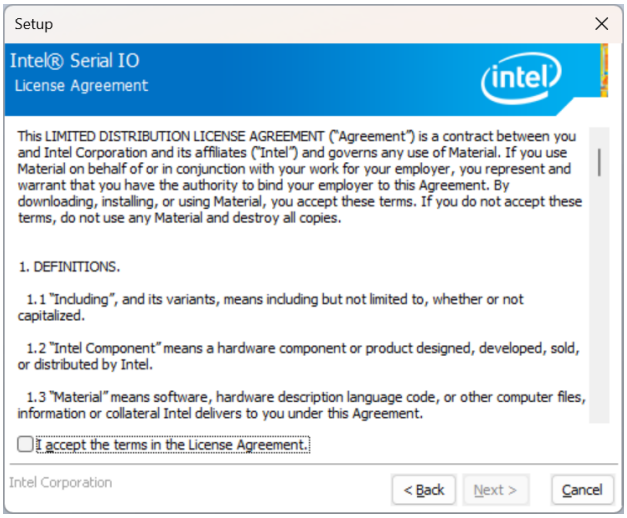
All drivers can be found on the Avalue Official Website:

http://www.avalue.com

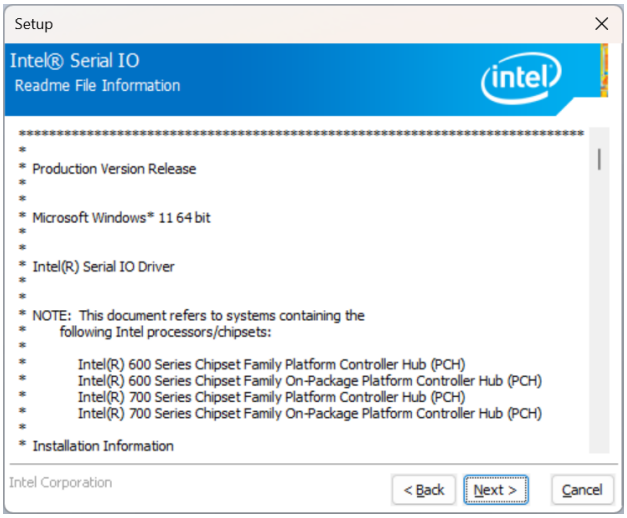
Note: The installation procedures and screen shots in this section are based on Windows 11 operation system.



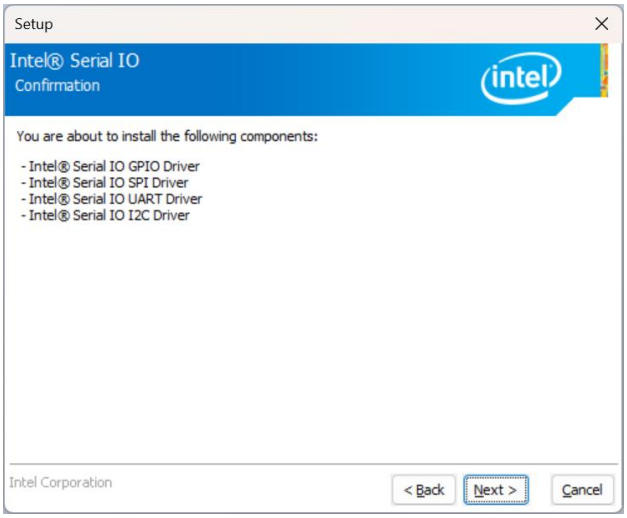
Step 1. Click **Next** to continue setup.



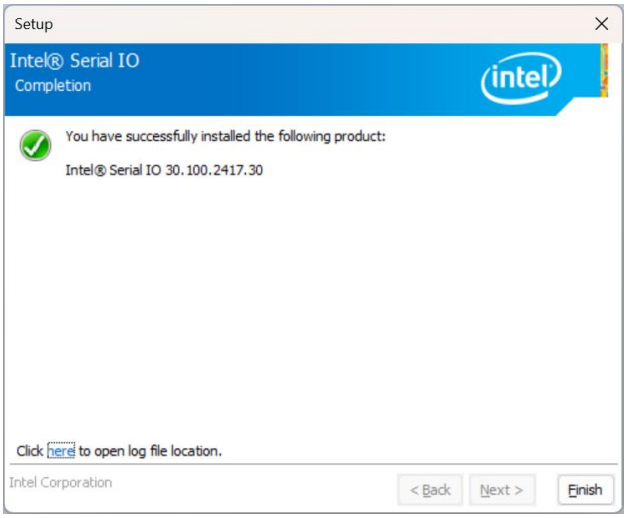
Step 2. Click **Next**.



Step 3. Click **Next**



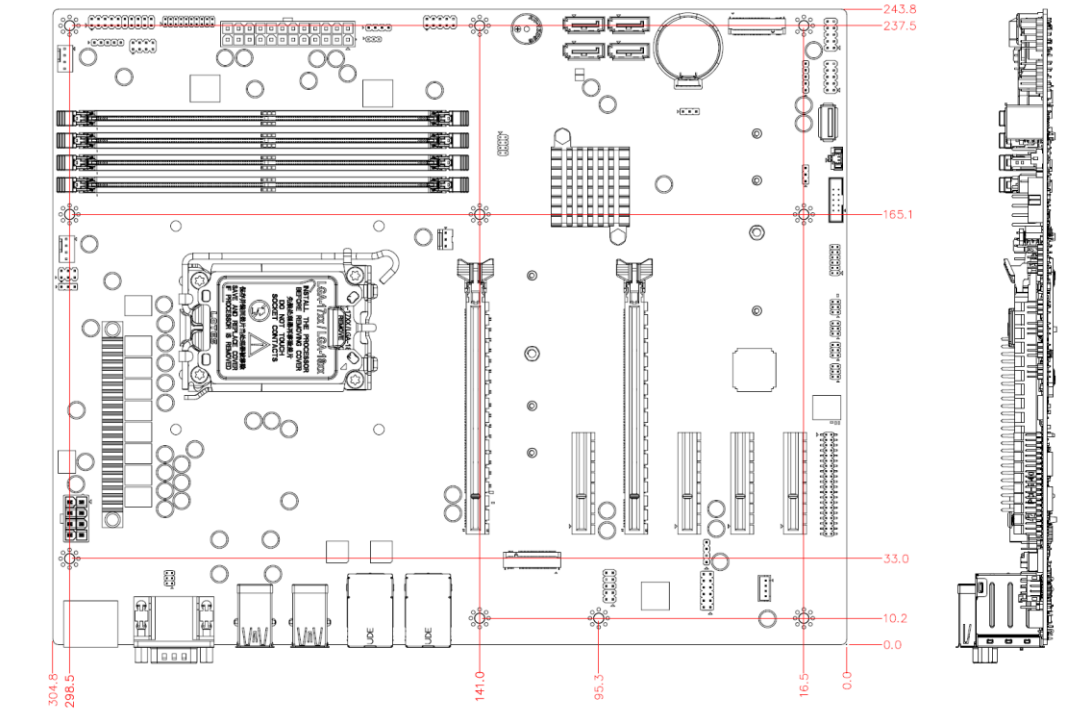
Step 4. Click **Next**

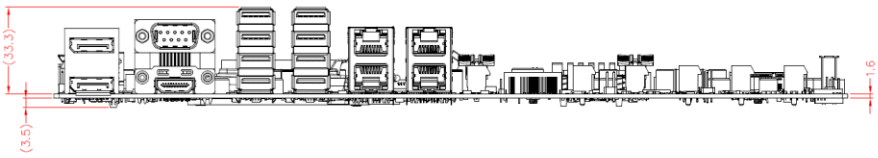


Step 5. Click **Finish** to complete the setup

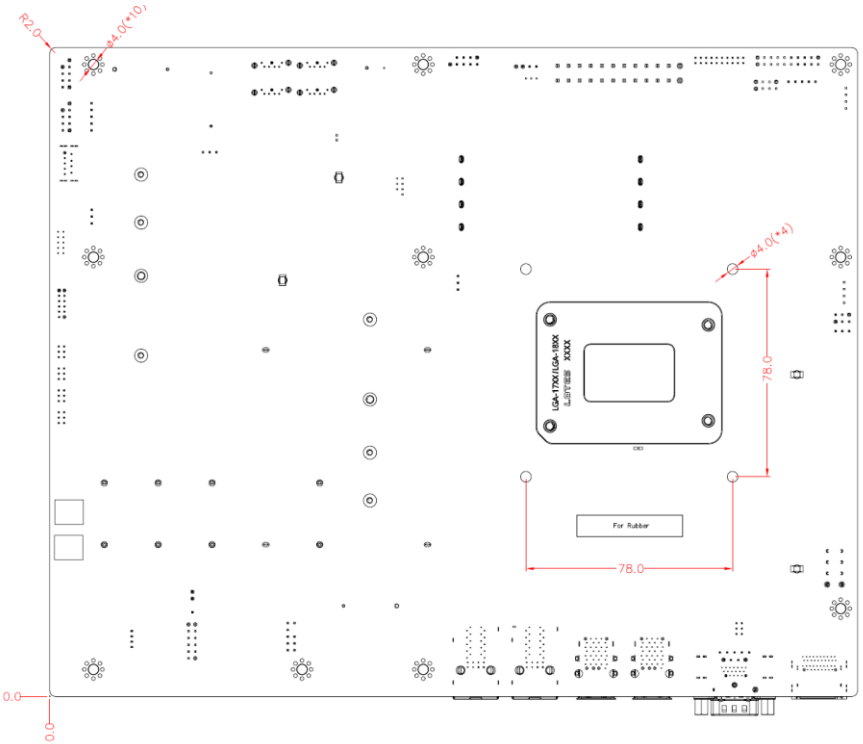
5. Mechanical Drawing

5.1 Mechanical Drawing



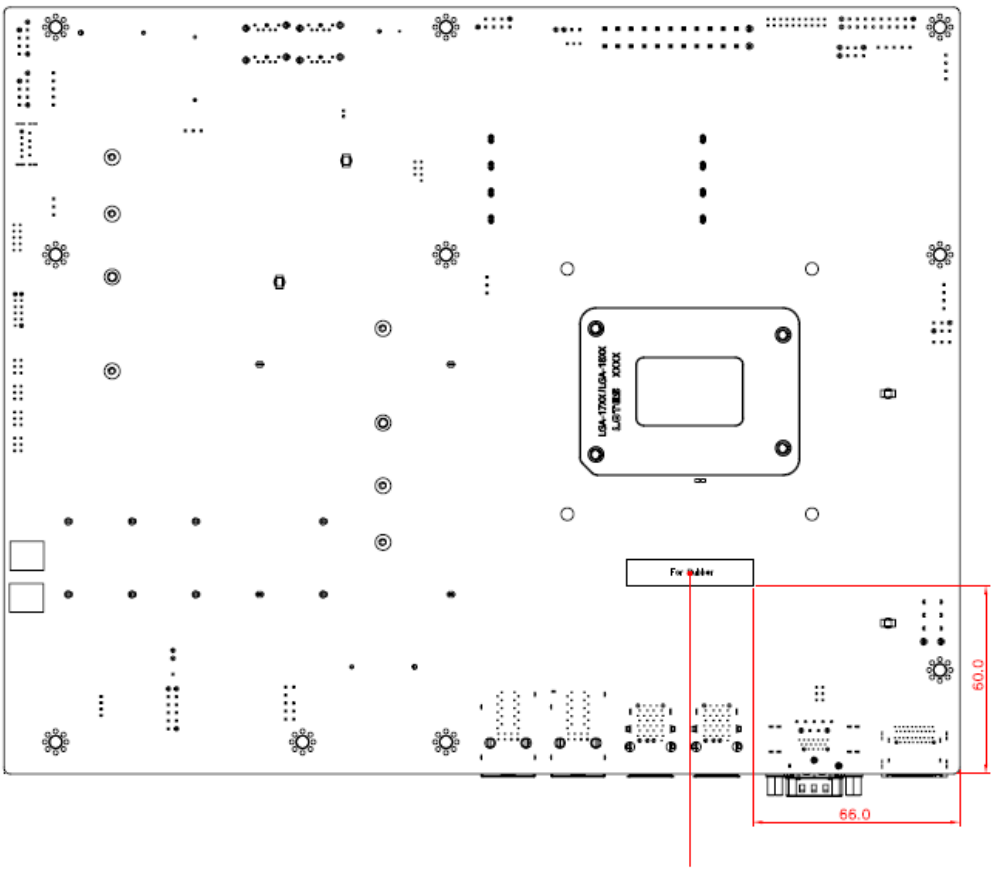


Unit: mm



Unit: mm

5.2 Recommended Rubber Location



5.3 Recommended CPU cooler airflow direction