GENE-MTH6

3.5" Subcompact Board

User's Manual 1st Ed

Last Updated: December 9, 2024

Copyright Notice

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Packing List

Before setting up your product, please make sure the following items have been shipped:

Item	Quantity
GENE-MTH6	1

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

About this Document

This User's Manual contains all the essential information, such as detailed descriptions and explanations on the product's hardware and software features (if any), its specifications, dimensions, jumper/connector settings/definitions, and driver installation instructions (if any), to facilitate users in setting up their product.

Users may refer to the product page at AAEON.com for the latest version of this document.

Safety Precautions

Please read the following safety instructions carefully. It is advised that you keep this manual for future references

1. All cautions and warnings on the device should be noted.
2. Make sure the power source matches the power rating of the device.
3. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
4. Always completely disconnect the power before working on the system's hardware.
5. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
6. If the device is not to be used for a long time, disconnect it from the power supply to avoid damage by transient over-voltage.
7. Always disconnect this device from any AC supply before cleaning.
8. While cleaning, use a damp cloth instead of liquid or spray detergents.
9. Make sure the device is installed near a power outlet and is easily accessible.
10. Keep this device away from humidity.
11. Place the device on a solid surface during installation to prevent falls
12. Do not cover the openings on the device to ensure optimal heat dissipation.
13. Watch out for high temperatures when the system is running.
14. Do not touch the heat sink or heat spreader when the system is running
15. Never pour any liquid into the openings. This could cause fire or electric shock.
16. As most electronic components are sensitive to static electrical charge, be sure to ground yourself to prevent static charge when installing the internal components. Use a grounding wrist strap and contain all electronic components in any static-shielded containers.

17. If any of the following situations arises, please the contact our service personnel:
    i. Damaged power cord or plug
    ii. Liquid intrusion to the device
    iii. Exposure to moisture
    iv. Device is not working as expected or in a manner as described in this manual
    v. The device is dropped or damaged
    vi. Any obvious signs of damage displayed on the device
18. DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.

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, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

There is a danger of explosion if the battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions and your local government's recycling or disposal directives.

Attention:

Il y a un risque d'explosion si la batterie est remplacée de façon incorrecte.
Ne la remplacer qu'avec le même modèle ou équivalent recommandé par le constructeur.
Recycler les batteries usées en accord avec les instructions du fabricant et les directives gouvernementales de recyclage.

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	X	X	O	O	O	O
外部信号连接器及线材	X	X	O	O	O	O

O：表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。

X：表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products

AAEON Main Board/ Daughter Board/ Backplane

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	X	X	O	O	O	O
Wires & Connectors for External Connections	X	X	O	O	O	O

O：The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Core™ Ultra Processors: Intel® Core™ Ultra 7 Processor 155H (16C/22T, up to 4.8 GHz, 28W) Intel® Core™ Ultra 5 Processor 125H (14C/18T, up to 4.5 GHz, 28W) Intel® Core™ Ultra 7 Processor 155U (12C/14T, up to 4.8 GHz, 15W) Intel® Core™ Ultra 5 Processor 125U (12C/14T, up to 4.3 GHz, 15W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 5600, Dual-Channel SODIMM x 2, up to 96GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAH
Dimensions	5.75" x 4" (146mm x 101.7mm)
Weight	0.88 lb. (0.4Kg)
OS Support	Windows® 10 (64-bit) Windows® 11 (64-bit) Linux Ubuntu 22.04.3 (kernel 6.2.0-26-generic)

Power

Power Requirement	+9V ~ 36V (Optional: +12V), ERP support
Power Supply Type	AT/ATX, support 3pin ATX
Connector	Phoenix 2-pin Connector (Colay 4 pin connector)
Power Consumption	Intel® Core™ Ultra 7, DDR5 32GB x 2, 5.78A @+12V (Typical) Intel® Core™ Ultra 7, DDR5 32GB x 1, 8.42A @+12V (Max)

Display

Controller	Intel® Arc™ Graphics
LVDS/eDP	LVDS x 1, Dual-Channel 18/24-bit, up to 1920 x 1080 eDP 1.4b HBR3 x 1, up to 3840 x 2160 @60Hz
Display Interface	HDMI 2.1 x 1, up to 8K x 4K @60Hz or 4K x 2K @120Hz DP 2.0 x 1, up to 7680 x 4320 @60Hz 30bpp (supports DP++)
Multiple Display	Up to 4 Simultaneous Displays

Audio

Codec	Realtek ALC897
Audio Interface	Line-in/Line-out/Mic (Audio function not available on WiTAS SKUs)
Speaker	—

External I/O

Ethernet	Intel® Ethernet Controller I226, 2.5GbE RJ-45 x 2
	Intel® Ethernet Connection I219, 1GbE RJ-45 x 1

Note: vPro only supported with Intel® Core™ Ultra 7 Processor 165U/165H, Intel® Core™ Ultra 5 Processor 135U/135H), LAN 2 & LAN 3 support PXE

USB	USB 3.2 Gen 2 x 2 Port
Serial Port	—
Video	HDMI 2.1 x 1
	DP 2.0++ x 1

Internal I/O

USB	USB 2.0 x 4
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI)
	COM 3, COM 4 (RS-232)
Video	LVDS x 1
	Inverter x 1 (12V/2A)
	eDP x 1
SATA	SATA 6Gb/s x 1
	+5V SATA Power Connector x 1
Audio	Audio Header x 1 (Optional, audio function not available on WiTAS SKUs)
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)
Touch	—
Fan	4-wire Smart Fan x 1
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset

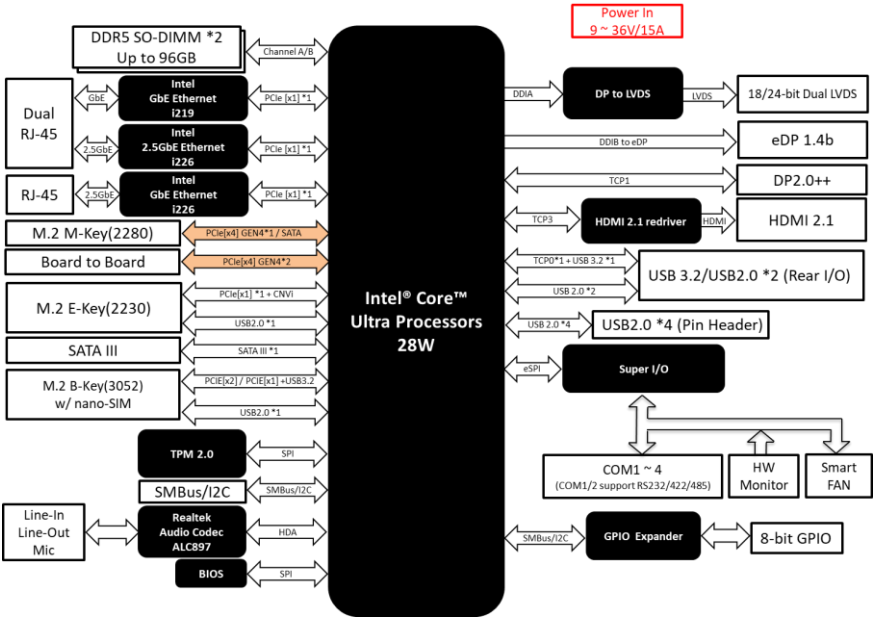
Expansion

Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA) Default： PCIe 4.0 [x4] (selected by BOM) M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.2/PCIe 3.0 [x2]) Default: PCIe 3.0 [x1] (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0), supports Wi-Fi 6E CNVi (RAID 0, RAID 1 support on PCIe storage)
Others	FPC2 x 1 (PCIe Gen 4 [x4] x 2, RAID 0/1 support) PER-SB2B A0.1

Environmental

Operating Temp.	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Temp.	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	753,493
EMC	CE/FCC Class A

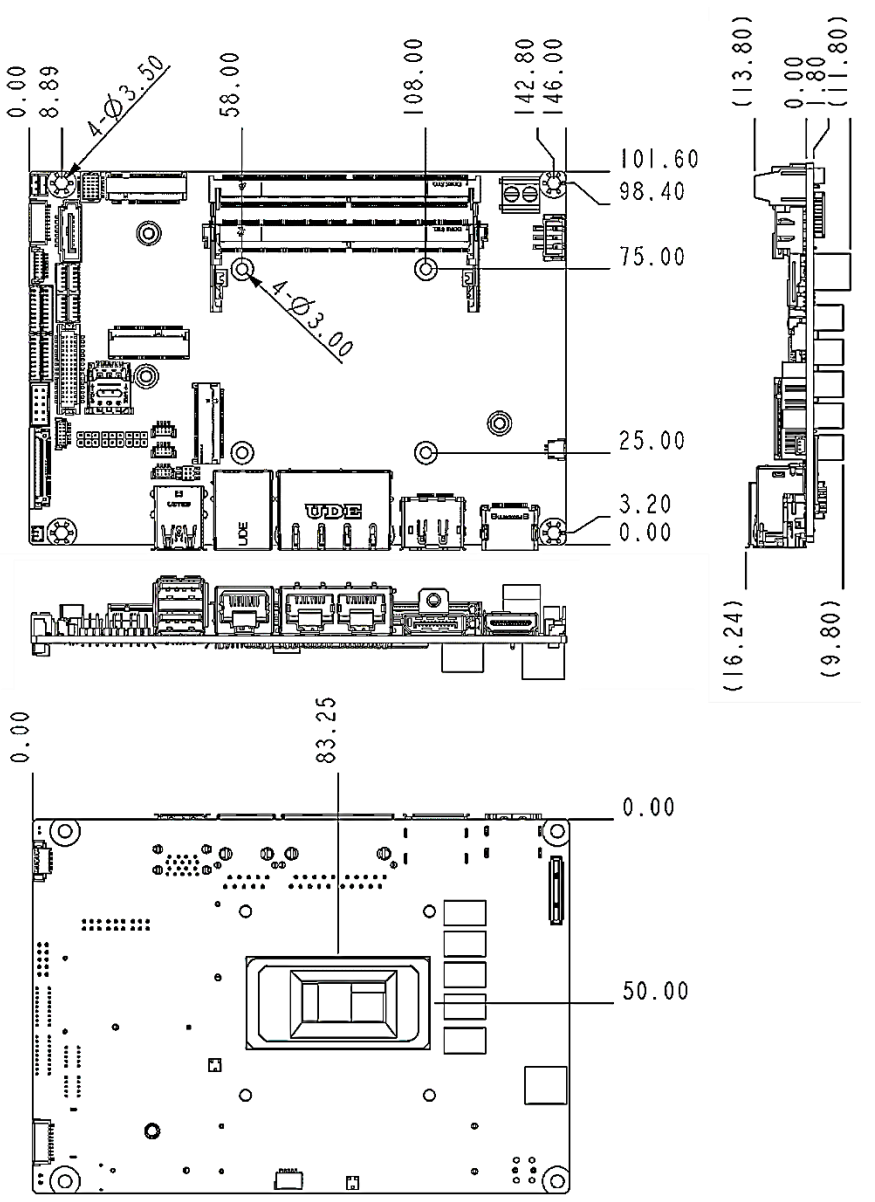
1.2 Block Diagram



Chapter 2

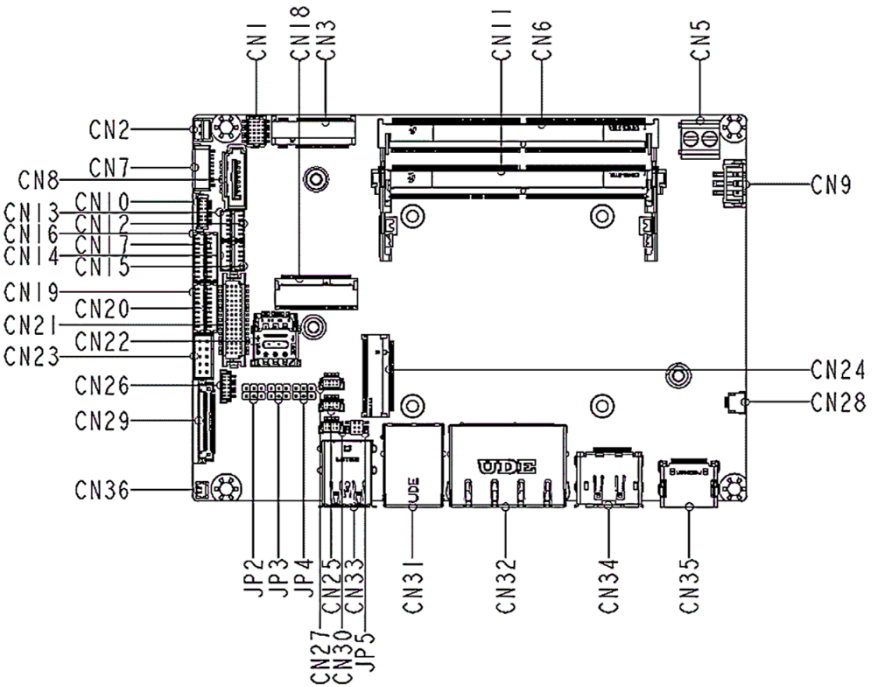
Hardware Information

2.1 Dimensions

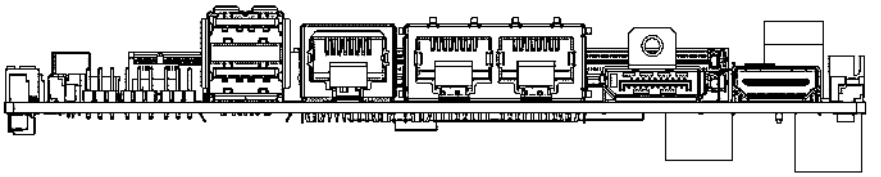


2.2 Jumpers and Connectors

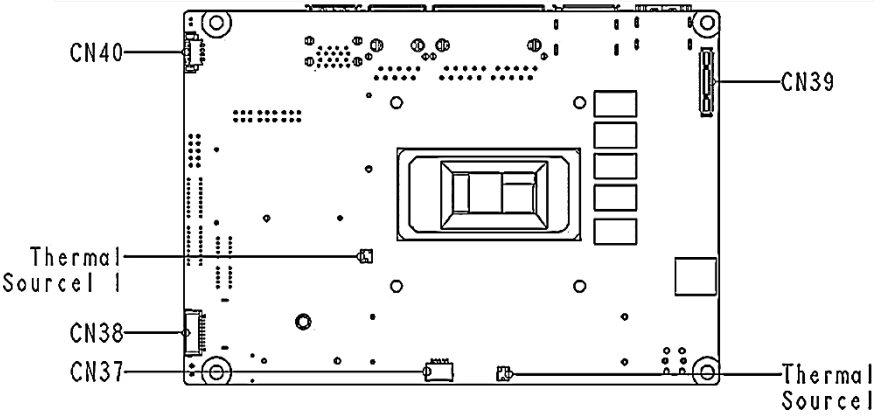
Top View



Front I/O View



Bottom View

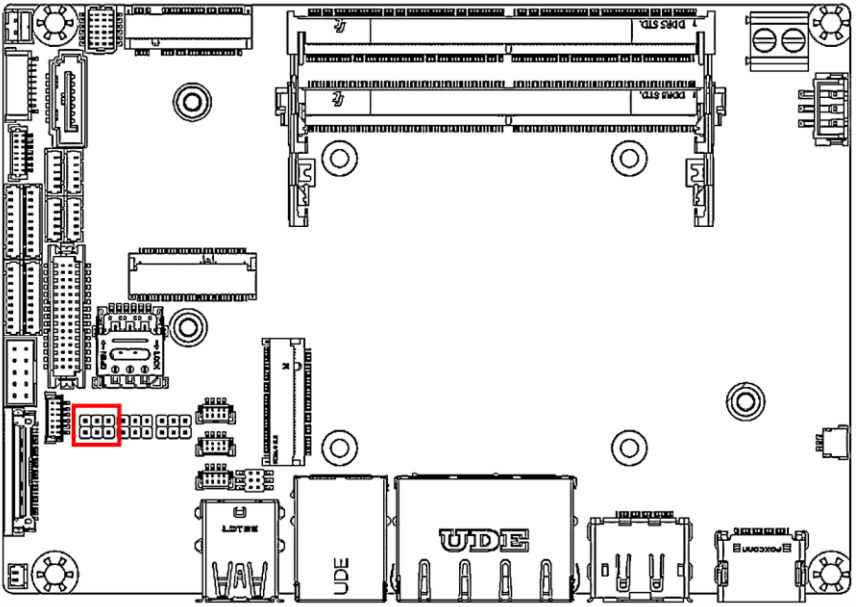


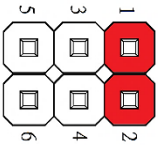
2.3 List of Jumpers

Please refer to the table below for all of the board's jumpers that you can configure for your application

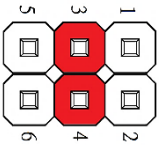
Label	Function
JP2	COM 1 Pin 9 Function Selection
JP3	COM 2 Pin 9 Function Selection
JP4	LVDS Operating Voltage Selection
	LVDS Backlight Inverter Voltage Selection
JP5	Clear CMOS Jumper
	Auto Power Button Enable/Disable Selection

2.3.1 COM 1 Pin 9 Function Selection (JP2)

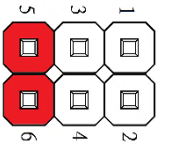




+12V

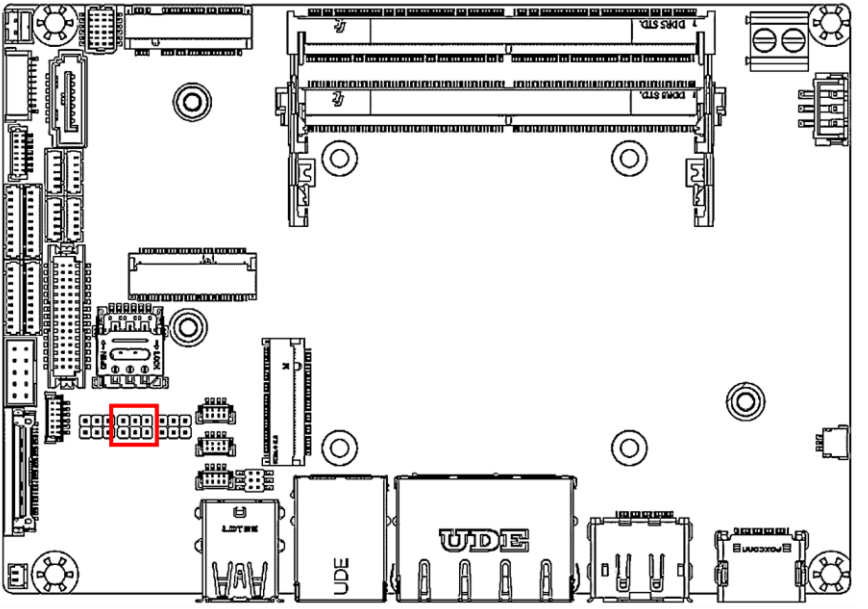


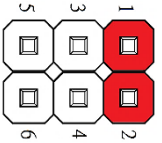
Ring (Default)



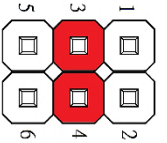
+5V

2.3.2 COM 2 Pin 9 Function Selection (JP3)

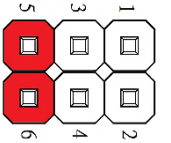




+12V

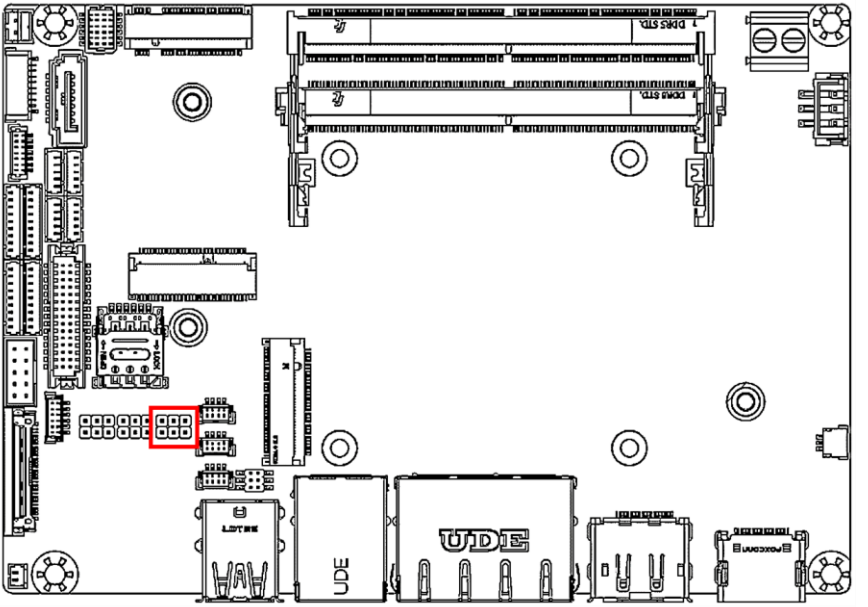


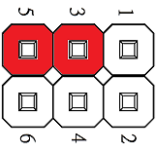
Ring (Default)



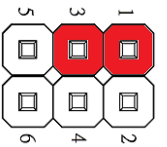
+5V

2.3.3 LVDS Backlight Inverter Voltage Selection (JP4)



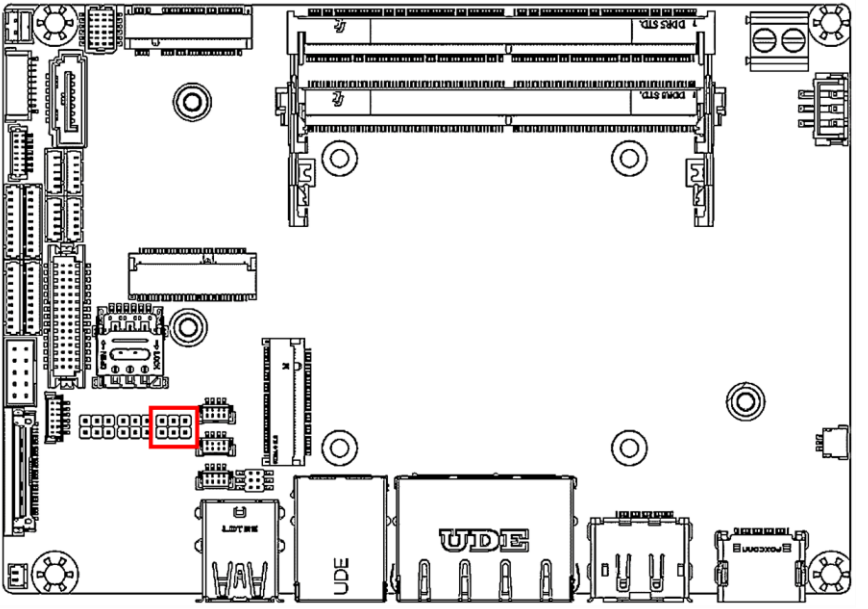


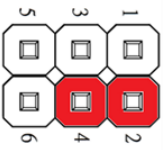
+5V (Default)



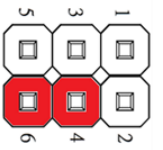
+12V

2.3.4 LVDS Operating Voltage Selection (JP4)



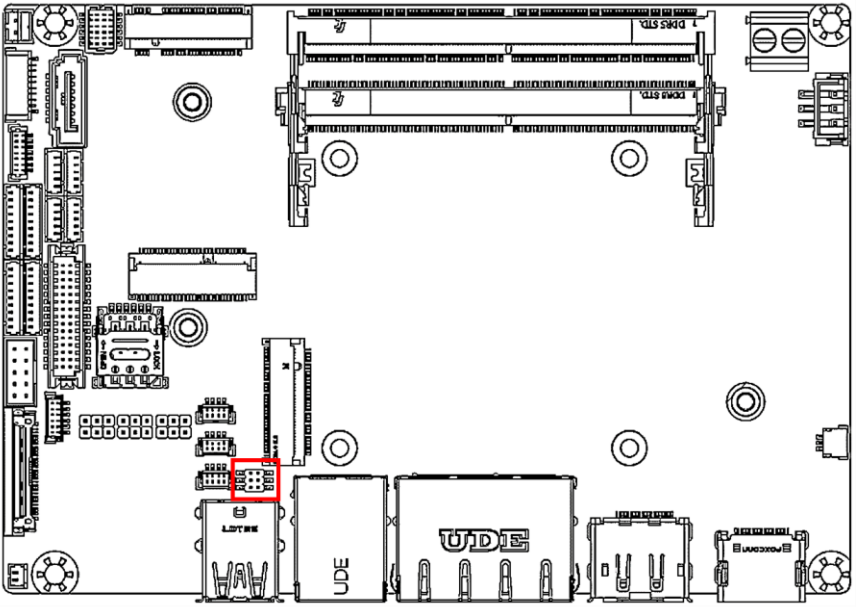


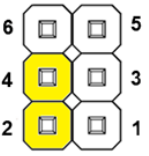
+3.3V (Default)



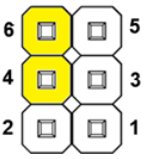
+5V

2.3.5 Clear CMOS Jumper (JP5)



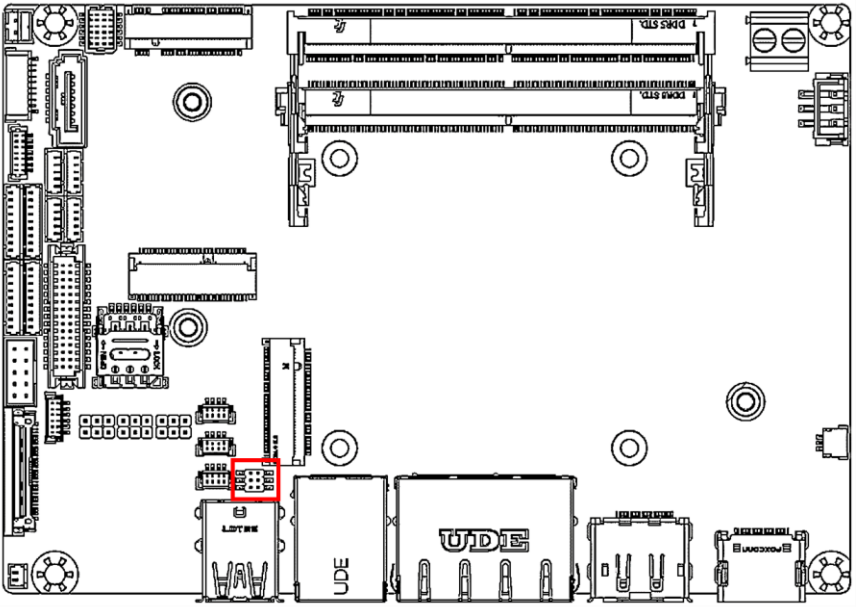


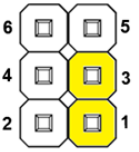
Normal (Default)



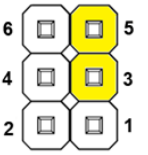
Clear CMOS

2.3.6 Auto Power Button Enable/Disable Selection (JP5)





Disable Auto Power Button



Enable Auto Power Button (Default)

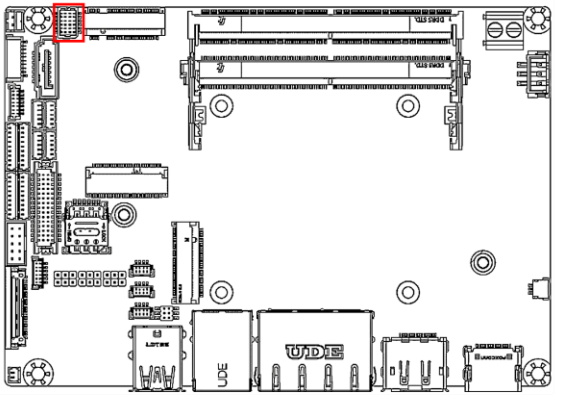
2.4 List of Connectors

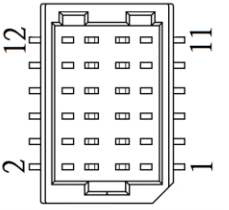
Please refer to the table below for all of the board's connectors that you can configure for your application

Label	Function
CN1	Audio I/O Port
CN2	+5V Output for SATA HDD
CN3	M.2 3052 B-Key Slot
CN5	External Power Input
CN6	DDR5 SODIMM Channel 1
CN7	Front Panel
CN8	SATA Port
CN9	External +5VSB Input
CN10	SPI Flash Programming Port
CN11	DDR5 SODIMM Channel 2
CN12	USB 2.0 Port 6
CN13	USB 2.0 Port 5
CN14	USB 2.0 Port 4
CN15	USB 2.0 Port 3
CN16	COM Port 1
CN17	COM Port 2
CN18	M.2 2230 E-Key Slot
CN19	COM Port 3
CN20	COM Port 4
CN21	LVDS Connector
CN22	Nano SIM Card Socket
CN23	GPIO
CN24	M.2 2280 M-Key Slot
CN25	LAN Port 2 LED Connector
CN26	LVDS Inverter/Backlight Connector
CN27	LAN Port 1 LED Connector
CN29	eDP Connector
CN30	LAN Port 3 LED Connector
CN31	RJ-45 LAN Port 3
CN32	RJ-45 LAN Port 1/Port 2
CN33	USB 3.2/USB 2.0 Port 1/Port 2
CN34	DP Port
CN35	HDMI Port

Label	Function
CN36	RTC Battery Connector
CN37	I2C/SMBus Connector
CN38	Port 80 Debug Port Connector
CN39	Board to Board Connector
CN40	4-pin Fan Connector

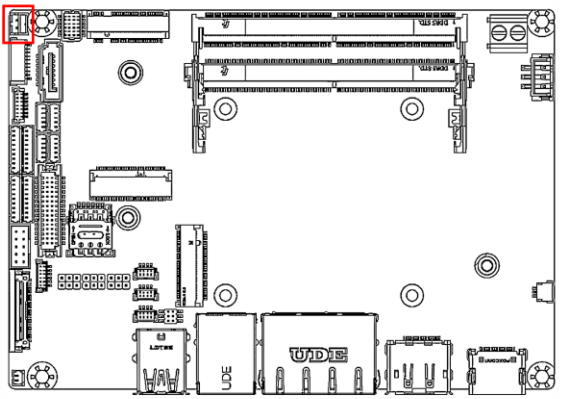
2.4.1 Audio I/O Port (CN1)

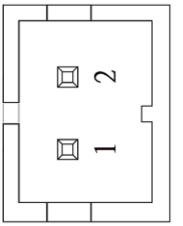




Pin	Pin Name	Signal Type	Signal Level
1	RIGHT_OUT	OUT	-
2	MIC_R	IN	-
3	LEFT_OUT	OUT	-
4	MIC_L	IN	-
5	JD_LOUT	IN	-
6	JD_MIC	IN	-
7	GND_AUDIO	GND	GND
8	GND_AUDIO	GND	GND
9	JD_LIN	IN	-
10	LINE_R_IN	IN	-
11	+VDD_AUDIO	PWR	+5V
12	LINE_L_IN	IN	-

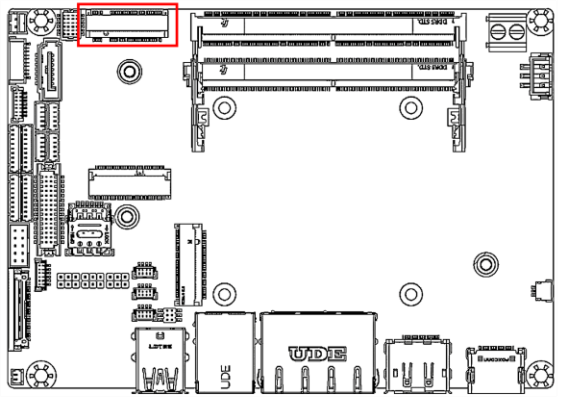
2.4.2 +5V Output for SATA HDD (CN2)

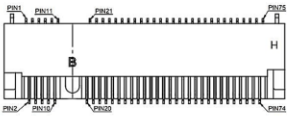




Pin	Pin Name	Signal Type	Signal Level
1	+V5S	PWR	+5V
2	GND	GND	GND

2.4.3 M.2 3052 B-Key Slot (CN3)



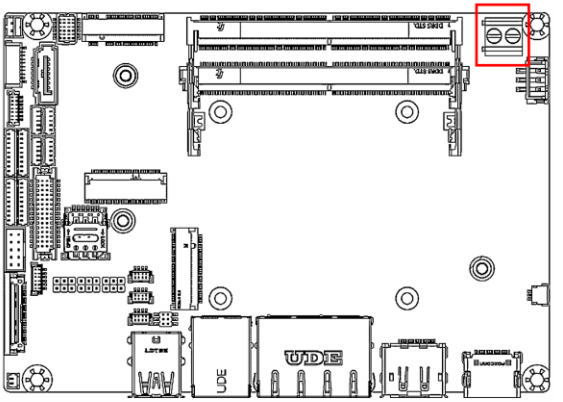


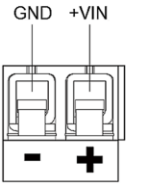
Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	+V3P3S	PWR	+3.3V
3	GND	GND	GND

Pin	Pin Name	Signal Type	Signal Level
4	+V3P3S	PWR	+3.3V
5	GND	GND	GND
6	NC		
7	USB2_2_DP	DIFF	-
8	KEYB_DISABLE_N	IN	
9	USB2_2_DN	DIFF	-
10	PCH_SATA_LED_N	OUT	+3.3V
11	GND	GND	GND
20	NC	-	-
21	NC	-	-
22	NC	-	-
23	NC	-	-
24	NC	-	-
25	NC	-	-
26	NC	-	-
27	GND	GND	GND
28	NC	-	-
29	PCIE_4_RXN/ USB3_2_RXN	DIFF	-
30	UIM_RST_M2B	OUT	-
31	PCIE4_1_RXP/ USB3_2_RXP	DIFF	-
32	UIM_CLK_M2B	-	-
33	GND	GND	GND
34	UIM_DAT_M2B	IN/OUT	-
35	PCIE4_TXN/ SB3_2_TXN	DIFF	-
36	UIM_PWR	PWR	-
37	PCIE4_TXP/ SB3_2_TXP	DIFF	-
38	NC	-	-
39	GND	GND	GND
40	NC	-	-
41	PCIE_3_RXN	DIFF	-
42	NC	-	-
43	PCIE_3_RXP	DIFF	-
44	NC	-	-
45	GND	GND	GND
46	NC	-	-
47	PCIE_3_TXN	DIFF	-
48	NC	-	-

Pin	Pin Name	Signal Type	Signal Level
49	PCIE_3_TXP	DIFF	-
50	BUF_PLT_RST#	OUT	
51	GND	GND	GND
52	M2B_CLKREQ#	IN	-
53	PCIE_4_CLK_DN	DIFF	-
54	KEYB_WAKE_N	IN	-
55	PCIE_4_CLK_DN	DIFF	-
56	NC	-	-
57	GND	GND	GND
58	NC	-	-
59	NC	-	-
60	NC	-	-
61	NC	-	-
62	NC	-	-
63	NC	-	-
64	NC	-	-
65	NC	-	-
66	SIM_Detect	IN	-
67	KEYB_WWAN_RST_N	OUT	-
68	PCH_SUS_CLK	IN	-
69	NC	-	-
70	+V3P3A	PWR	+3.3V
71	GND	GND	GND
72	+V3P3A	PWR	+3.3V
73	GND	GND	GND
74	+V3P3A	PWR	+3.3V
75	NC	-	-

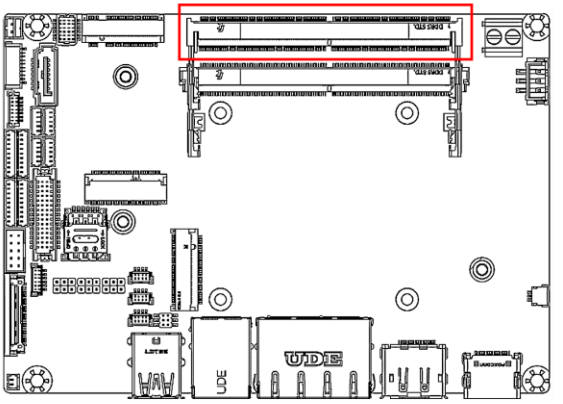
2.4.4 External Power Input (CN5)

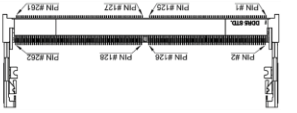




Pin	Pin Name	Signal Type	Signal Level
1	+VIN	PWR	+12V or +9~+36V
2	GND	GND	GND

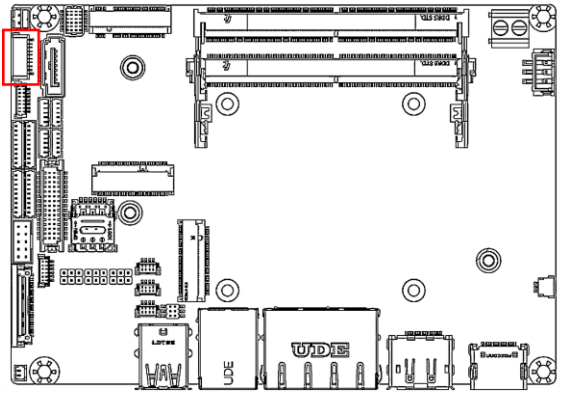
2.4.5 DDR5 SODIMM Channel 1 (CN6)

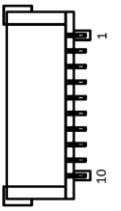




Standard specification.

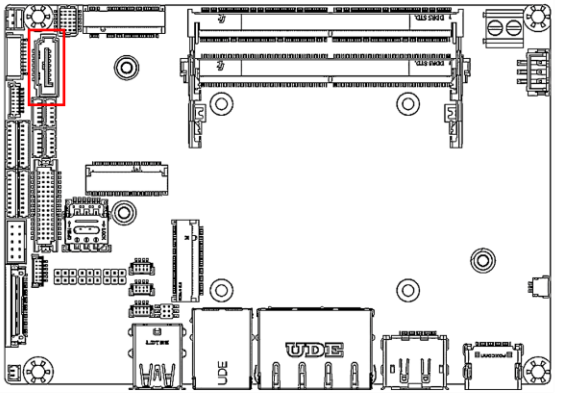
2.4.6 Front Panel (CN7)

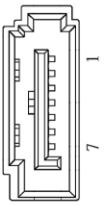




Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	EXT_PWRBTN#	IN	-
3	SATA_LED-	OUT	-
4	SATA_LED+	OUT	-
5	BUZZER-	OUT	-
6	BUZZER+	OUT	-
7	GND	GND	GND
8	PWR_LED+	OUT	-
9	GND	GND	GND
10	HWRST#	IN	-

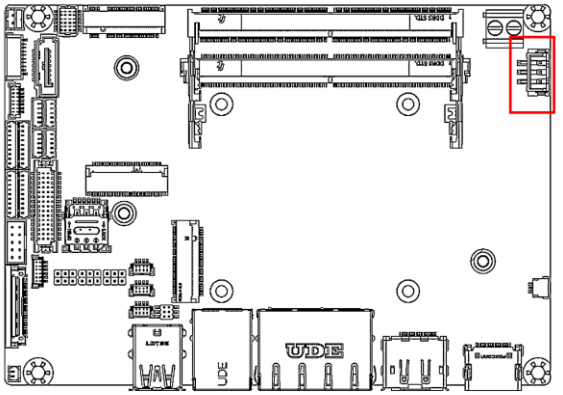
2.4.7 SATA Port (CN8)

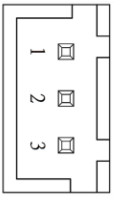




Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	SATA_TXP	DIFF	-
3	SATA_TXN	DIFF	-
4	GND	GND	GND
5	SATA_RXN	DIFF	-
6	SATA_RXP	DIFF	-
7	GND	GND	GND

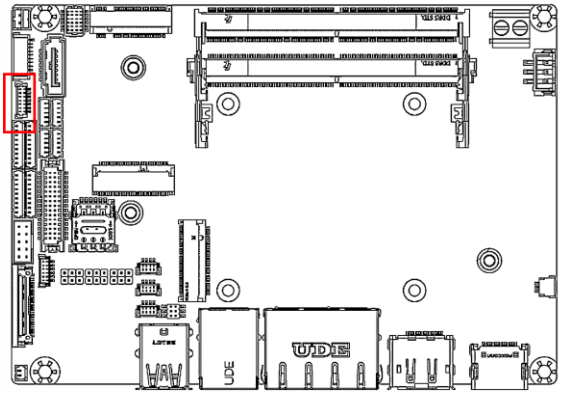
2.4.8 External +5VSB Input (CN9)

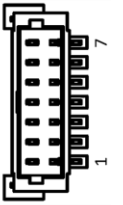




Pin	Pin Name	Signal Type	Signal Level
1	PS_ON#	OUT	+5V
2	GND	GND	GND
3	+5VSB	PWR	+5V(2.5A)

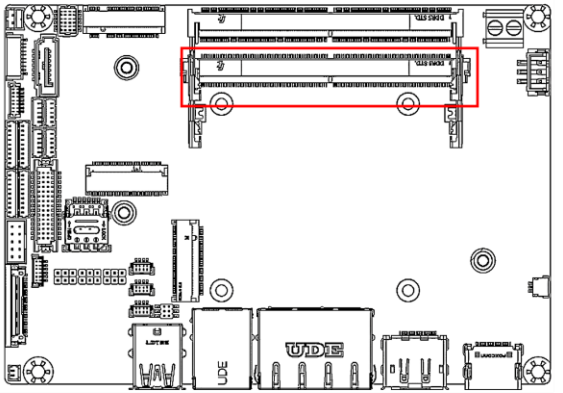
2.4.9 SPI Flash Programming Port (CN10)





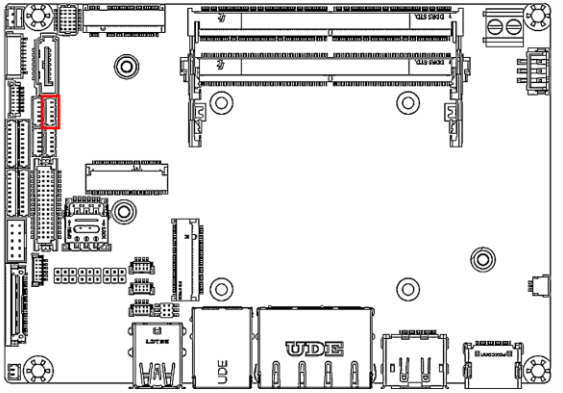
Pin	Pin Name	Signal Type	Signal Level
1	SPI_MISO	OUT	-
2	GND	GND	GND
3	SPI_CLK	IN	-
4	+V1P8A_SPI	PWR	+1.8V
5	SPI_MOSI	IN	-
6	SPI_CS	IN	-
7	NC	-	-

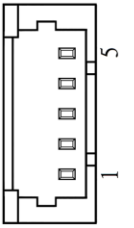
2.4.10 DDR5 SODIMM Channel 2 (CN11)



Standard specification.

2.4.11 USB 2.0 Port 6 (CN12)

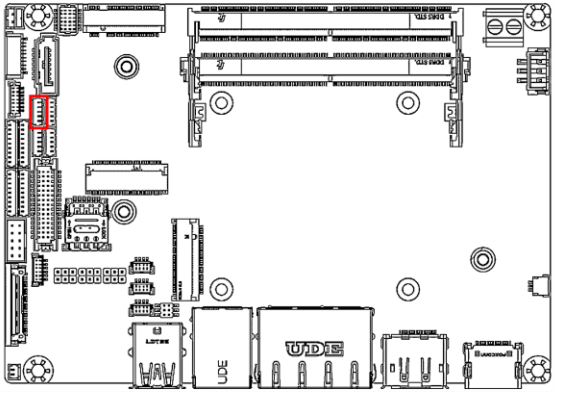


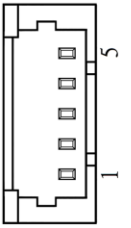


Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_6_DN	DIFF	-
3	USB2_6_DP	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
4	GND	GND	GND
5	GND	GND	GND

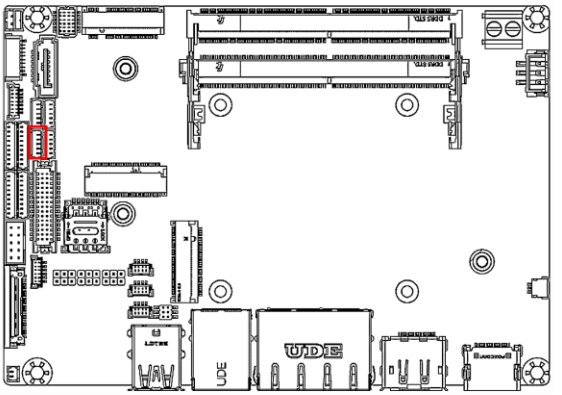
2.4.12 USB 2.0 Port 5 (CN13)

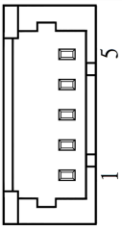




Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_5_DN	DIFF	-
3	USB2_5_DP	DIFF	-
4	GND	GND	GND
5	GND	GND	GND

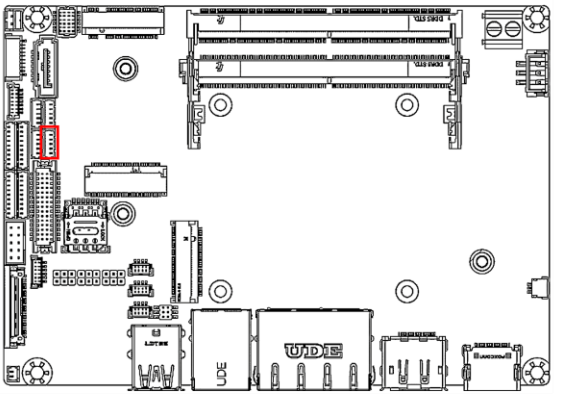
2.4.13 USB 2.0 Port 4 (CN14)

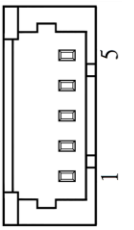




Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_4_DN	DIFF	-
3	USB2_4_DP	DIFF	-
4	GND	GND	GND
5	GND	GND	GND

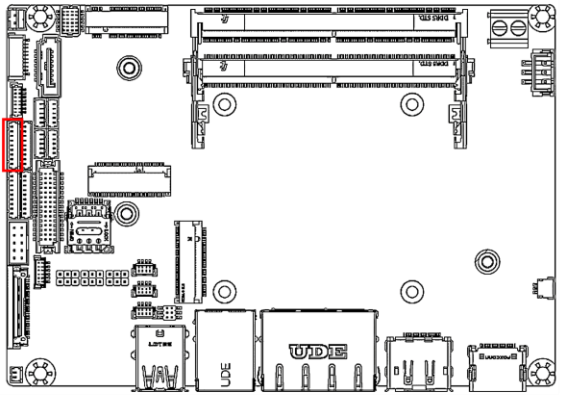
2.4.14 USB 2.0 Port 3 (CN15)





Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_3_DN	DIFF	-
3	USB2_3_DP	DIFF	-
4	GND	GND	GND
5	GND	GND	GND

2.4.15 COM Port 1 (CN16)



RS-232 (Default)			
Pin	Pin Name	Signal Type	Signal Level
1	DCD1	IN	-
2	DSR1	IN	-
3	RX1	IN	-
4	RTS1	OUT	±9V
5	TX1	OUT	±9V
6	CTS1	IN	-
7	DTR1	OUT	±9V
8	RI1/ +5V/ +12V	IN/ PWR	+5V/+12V
9	GND	GND	GND

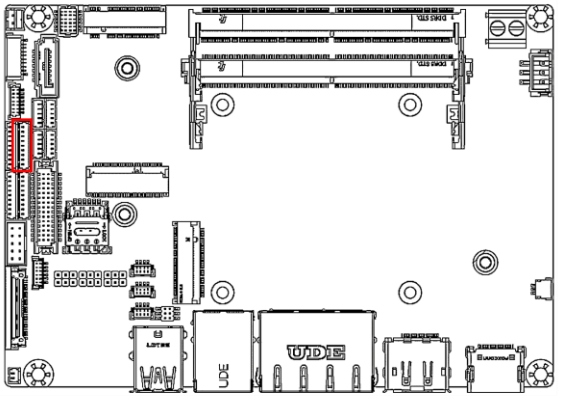
RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±9V
2	NC		

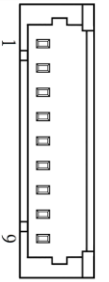
RS-422			
Pin	Pin Name	Signal Type	Signal Level
3	RS422_TX+	OUT	±9V
4	NC		
5	RS422_RX+	IN	-
6	NC		
7	RS422_RX-	IN	-
8	NC		
9	GND	GND	GND

RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	IN/OUT	±9V
2	NC		
3	RS485_D+	IN/OUT	±9V
4	NC		
5	NC		
6	NC		
7	NC		
8	NC		
9	GND	GND	GND

Note: COM 1 RS-232/422/485 can be set by BIOS setting. Default is RS-232.
Note: Pin 8 function can be set by JP2.

2.4.16 COM Port 2 (CN17)





RS-232 (Default)			
Pin	Pin Name	Signal Type	Signal Level
1	DCD2	IN	-
2	DSR2	IN	-
3	RX2	IN	-
4	RTS2	OUT	±9V
5	TX2	OUT	±9V
6	CTS2	IN	-
7	DTR2	OUT	±9V
8	RI2/ +5V/ +12V	IN/ PWR	+5V/+12V
9	GND	GND	GND

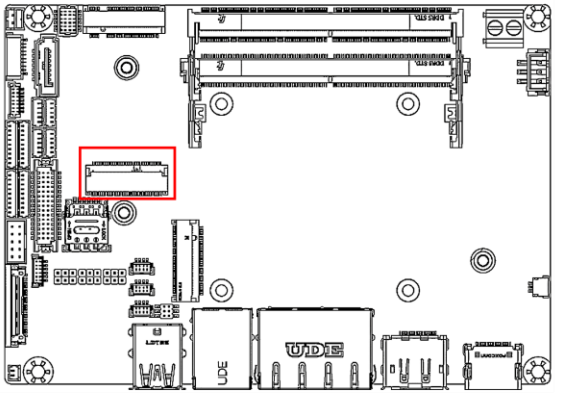
RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±9V
2	NC		
3	RS422_TX+	OUT	±9V
4	NC		
5	RS422_RX+	IN	-
6	NC		
7	RS422_RX-	IN	-
8	NC		
9	GND	GND	GND

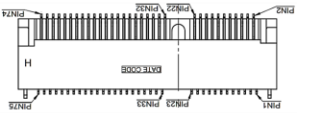
RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	IN/OUT	±9V
2	NC		
3	RS485_D+	IN/OUT	±9V
4	NC		
5	NC		
6	NC		
7	NC		
8	NC		
9	GND	GND	GND

Note: COM 2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

Note: Pin 8 function can be set by JP3.

2.4.17 M.2 2230 E-Key Slot (CN18)



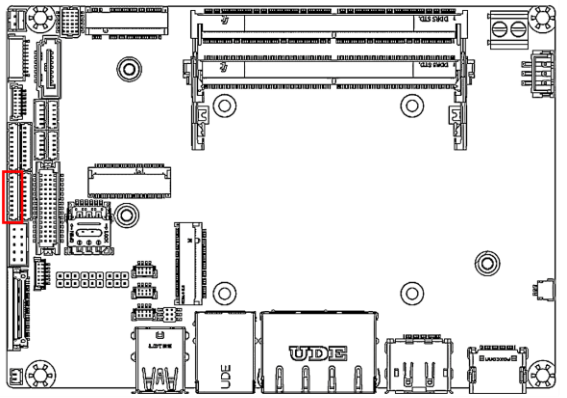


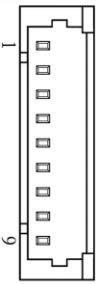
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	+V3P3A	PWR	+3.3V
3	USB2_10_DP	DIFF	-
4	+V3P3A	PWR	+3.3V
5	USB2_10_DN	DIFF	-
6	NC	-	-
7	GND	GND	GND
8	NC	-	-
9	CNV_WR_D1_DN	DIFF	-
10	KEYE_CNV_RF_RST	IN	-
11	CNV_WR_D1_DP	DIFF	-
12	NC	-	-
13	GND	GND	GND
14	KEYE_CNV_CLKREQ	OUT	-
15	CNV_WR_D0_DN	DIFF	-
16	NC	-	-
17	CNV_WR_D0_DP	DIFF	-
18	GND	GND	GND
19	GND	GND	GND
20	KEYE_UART_WAKE_N	IN	-
21	CNV_WR_CLK_DN	DIFF	-
22	CNV_BRI_RSP	IN	-
23	CNV_WR_CLK_DP	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
32	CNV_RGI_DT	IN	-
33	GND	GND	GND
34	CNV_RGI_RSP	OUT	-
35	PCIE_8_TXP	DIFF	-
36	CNV_BRI_DT	-	-
37	PCIE_8_TXN	DIFF	-
38	MLK_RST_N	IN	-
39	GND	GND	GND
40	MLK_DATA	IN/OUT	-
41	PCIE_8_RXP	DIFF	-
42	MLK_CLK	IN	-
43	PCIE_8_RXN	DIFF	-
44	NC	-	-
45	GND	GND	GND
46	NC	-	-
47	PCIE_3_CLK_DP	DIFF	-
48	NC	-	-
49	PCIE_3_CLK_DN	DIFF	-
50	SUS_CLK	IN	-
51	GND	GND	GND
52	BUF_PLT_RST#	IN	-
53	PCIE_CLKREQ#3	OUT	-
54	NC	-	-
55	PCIE_WAKE#	IN/OUT	-
56	NC	-	-
57	GND	GND	GND
58	NC	-	-
59	CNV_WT_D1_DN	DIFF	-
60	NC	-	-
61	CNV_WT_D1_DP	DIFF	-
62	NC	-	-
63	GND	GND	GND
64	NC	-	-
65	CNV_WT_D0_DN	DIFF	-
66	NC	-	-
67	CNV_WT_D0_DP	DIFF	-
68	NC	-	-
69	GND	GND	GND
70	NC	-	-

Pin	Pin Name	Signal Type	Signal Level
71	CNV_WT_CLK_DN	DIFF	-
72	+V3P3A	PWR	+3.3V
73	CNV_WT_CLK_DP	DIFF	-
74	+V3P3A	PWR	+3.3V
75	GND	GND	GND

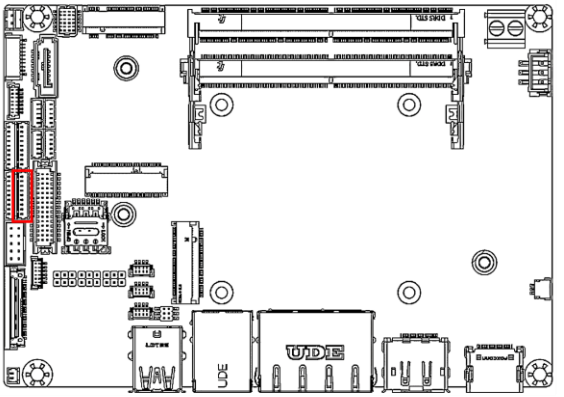
2.4.18 COM Port 3 (CN19)

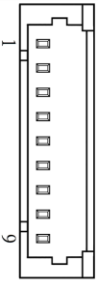




Pin	Pin Name	Signal Type	Signal Level
1	DCD3	IN	-
2	DSR3	IN	-
3	RX3	IN	-
4	RTS3	OUT	±9V
5	TX3	OUT	±9V
6	CTS3	IN	-
7	DTR3	OUT	±9V
8	RI3	IN	-
9	GND	GND	GND

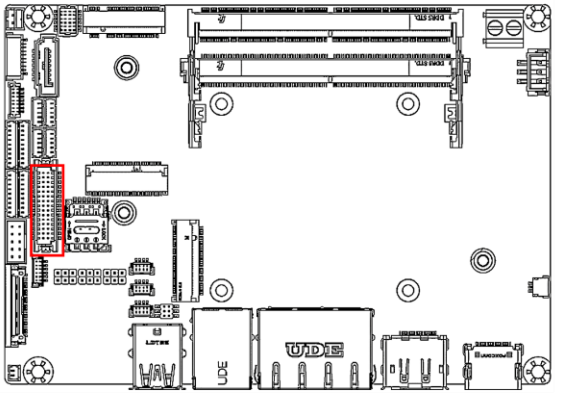
2.4.19 COM Port 4 (CN20)

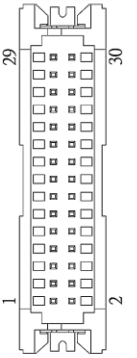




Pin	Pin Name	Signal Type	Signal Level
1	DCD4	IN	-
2	DSR4	IN	-
3	RX4	IN	-
4	RTS4	OUT	±9V
5	TX4	OUT	±9V
6	CTS4	IN	-
7	DTR4	OUT	±9V
8	RI4	IN	-
9	GND	GND	GND

2.4.20 LVDS Connector (CN21)

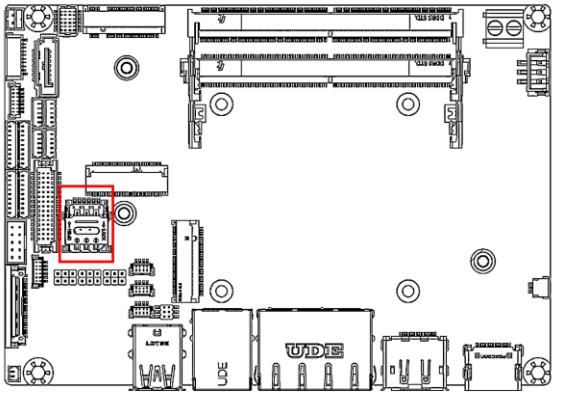


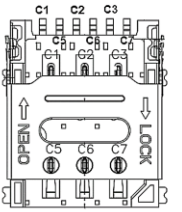


Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	-
2	BKL_CONTROL	OUT	-
3	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	GND
5	LVDS_A_CLK-	DIFF	-
6	LVDS_A_CLK+	DIFF	-
7	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	GND
9	LVDS_DA0-	DIFF	-
10	LVDS_DA0+	DIFF	-
11	LVDS_DA1-	DIFF	-
12	LVDS_DA1+	DIFF	-
13	LVDS_DA2-	DIFF	-
14	LVDS_DA2+	DIFF	-
15	LVDS_DA3-	DIFF	-
16	LVDS_DA3+	DIFF	-
17	DDC_DATA	IN/OUT	+3.3V
18	DDC_CLK	IN/OUT	+3.3V
19	LVDS_DB0-	DIFF	-
20	LVDS_DB0+	DIFF	-
21	LVDS_DB1-	DIFF	-
22	LVDS_DB1+	DIFF	-
23	LVDS_DB2-	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
24	LVDS_DB2+	DIFF	-
25	LVDS_DB3-	DIFF	-
26	LVDS_DB3+	DIFF	-
27	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	GND
29	LVDS_B_CLK-	DIFF	-
30	LVDS_B_CLK+	DIFF	-

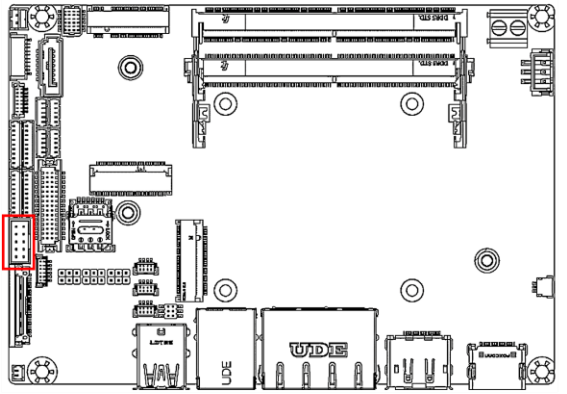
2.4.21 Nano SIM Card Socket (CN22)

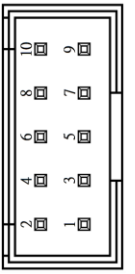




Pin	Pin Name	Signal Type	Signal Level
C1	UIM_PWR	PWR	-
C2	UIM_RST	IN	-
C3	UIM_CLK	IN	-
C5	GND	GND	GND
C6	UIM_VPP	PWR	-
C7	UIM_DATA	IN/OUT	-

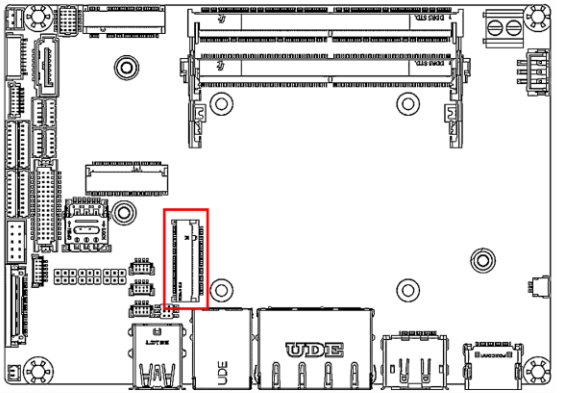
2.4.22 GPIO (CN23)

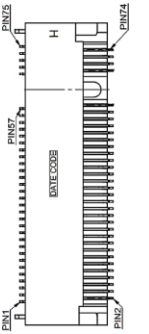




Pin	Pin Name	Signal Type	Signal Level
1	GPIO_0	IN/OUT	-
2	GPIO_1	IN/OUT	-
3	GPIO_2	IN/OUT	-
4	GPIO_3	IN/OUT	-
5	GPIO_4	IN/OUT	-
6	GPIO_5	IN/OUT	-
7	GPIO_6	IN/OUT	-
8	GPIO_7	IN/OUT	-
9	+V5S	PWR	+5V
10	GND	GND	GND

2.4.23 M.2 2280 M-Key Slot (CN24)



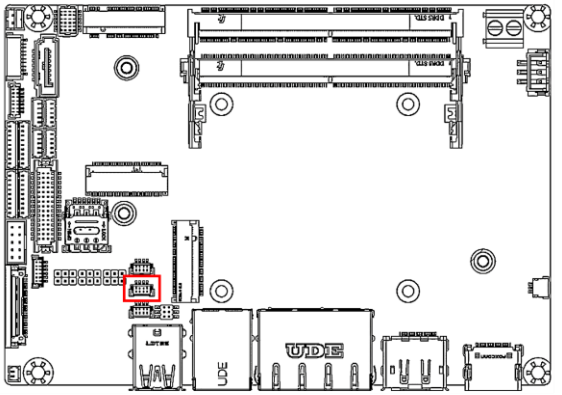


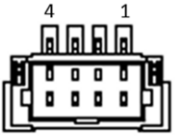
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	+V3P3S	PWR	+3.3V
3	GND	GND	GND
4	+V3P3S	PWR	+3.3V
5	PCIE_12_RXN	DIFF	-
6	CARD_PWR_OFF_N	IN	-
7	PCIE_12_RXP	DIFF	-
8	NC	-	-
9	GND	GND	GND
10	PCH_SATA_LED_N	OUT	+3.3V
11	PCIE_12_TXN	DIFF	-
12	+V3P3S	PWR	+3.3V
13	PCIE_12_TXP	DIFF	-
14	+V3P3S	PWR	+3.3V
15	GND	GND	GND
16	+V3P3S	PWR	+3.3V
17	PCIE_11_RXN	DIFF	-
18	+V3P3S	PWR	+3.3V
19	PCIE_11_RXP	DIFF	-
20	NC	-	-
21	GND	GND	GND
22	KEYM_SSD_VIO	IN	-
23	PCIE_11_TXN	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
24	NC	-	-
25	PCIE_11_TXP	DIFF	-
26	NC	-	-
27	GND	GND	GND
28	NC	-	-
29	PCIE_10_RXN	DIFF	-
30	NC	-	-
31	PCIE_10_RXP	DIFF	-
32	NC	-	-
33	GND	GND	GND
34	NC	-	-
35	PCIE_10_TXN	DIFF	-
36	NC	-	-
37	PCIE_10_TXP	DIFF	-
38	NC	-	-
39	GND	GND	GND
40	NC	-	-
41	PCIE_9_RXN/ SATA_1_RXP	DIFF	-
42	NC	-	-
43	PCIE_9_RXP/ SATA_1_RXN	DIFF	-
44	NC	-	-
45	GND	GND	GND
46	NC	-	-
47	PCIE_9_TXN/ SATA_1_TXN	DIFF	-
48	NC	-	-
49	PCIE_9_TXP/ SATA_1_TXP	DIFF	-
50	BUF_PLT_RST#	IN	-
51	GND	GND	GND
52	M2M_CLKREQ#	OUT	-
53	PCIE_5_CLK_DN	DIFF	-
54	PCIE_WAKE#	OUT	-
55	PCIE_5_CLK_DP	DIFF	-
56	NC	-	-
57	GND	GND	GND
58	NC	-	-

Pin	Pin Name	Signal Type	Signal Level
67	NC	-	-
68	SUS_CLK	IN	-
69	KEYM_DET	IN	-
70	+V3P3S	PWR	+3.3V
71	GND	GND	GND
72	+V3P3S	PWR	+3.3V
73	GND	GND	GND
74	+V3P3S	PWR	+3.3V
75	GND	GND	GND

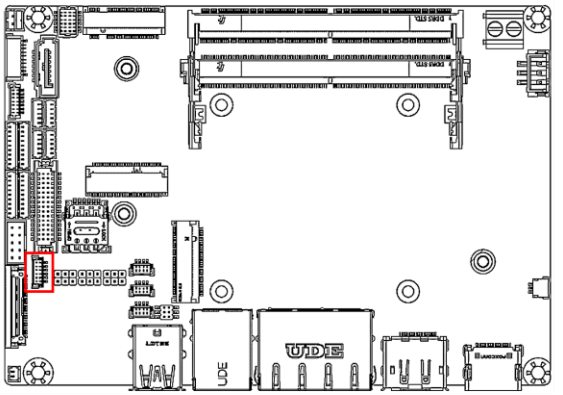
2.4.24 LAN Port 2 LED Connector (CN25)

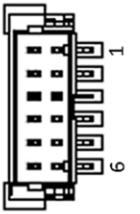




Pin	Pin Name	Signal Type	Signal Level
1	+V3P3A_LAN	PWR	+3.3V
2	LAN2_LED_1000#	OUT	+3.3V
3	LAN2_LED_LNK#_ACT	OUT	+3.3V
4	LAN2_LED_2500#	OUT	+3.3V

2.4.25 LVDS Inverter/Backlight Connector (CN26)



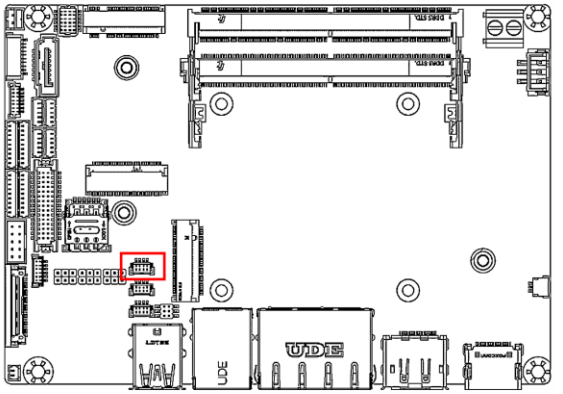


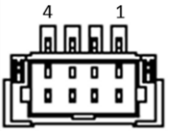
Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V(Default)/+12V
2	BKL_PWR	PWR	+5V(Default)/+12V
3	BKL_CONTROL	OUT	-
4	GND	GND	GND
5	GND	GND	GND
6	BKL_ENABLE	OUT	+3.3V

Note: LVDS/BKL_PWR & LVDS/BKL_CONTROL can be set to +12V or +5V by JP4.

Note: The driving current of BKL_PWR supports up to 2A.

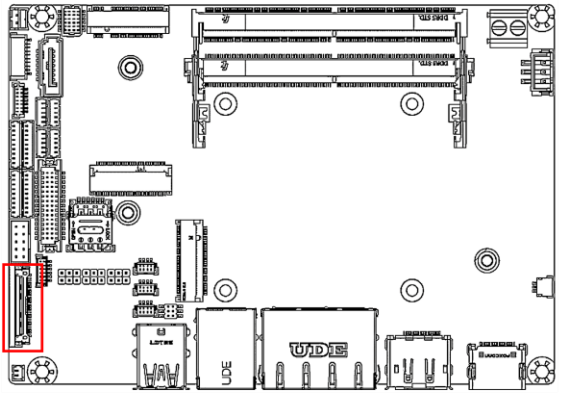
2.4.26 LAN Port 1 LED Connector (CN27)

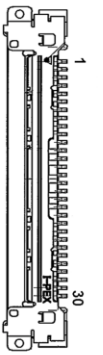




Pin	Pin Name	Signal Type	Signal Level
1	+V3P3A_LAN	PWR	+3.3V
2	LAN1_LED_1000#	OUT	+3.3V
3	LAN1_LED_LNK#_ACT	OUT	+3.3V
4	LAN1_LED_100#	OUT	+3.3V

2.4.27 eDP Connector (CN29)





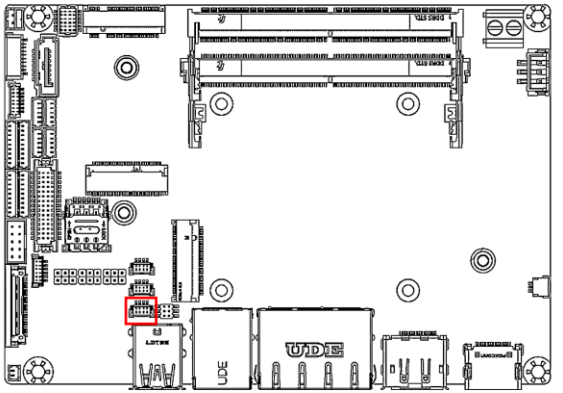
Pin	Pin Name	Signal Type	Signal Level
1	+VCC_EDP_BKLT	PWR	+12V

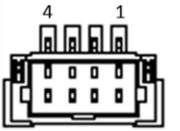
Pin	Pin Name	Signal Type	Signal Level
2	+VCC_EDP_BKLT	PWR	+12V
3	+VCC_EDP_BKLT	PWR	+12V
4	+VCC_EDP_BKLT	PWR	+12V
5	GND	GND	GND
6	GND	GND	GND
7	GND	GND	GND
8	EDP_HPD	-	-
9	EDP_BKLT_EN	-	-
10	NC		
11	EDP_BKLTCTL	-	-
12	GND	GND	GND
13	EDP_ AUX _DP	DIFF	-
14	EDP_ AUX _DN	DIFF	-
15	GND	GND	GND
16	EDP_LANE3_DP	DIFF	-
17	EDP_LANE3_DN	DIFF	-
18	GND	GND	GND
19	EDP_LANE0_DP	DIFF	-
20	EDP_LANE0_DN	DIFF	-
21	GND	GND	GND
22	EDP_LANE1_DP	DIFF	-
23	EDP_LANE1_DN	DIFF	-
24	GND	GND	GND
25	EDP_LANE2_DP	DIFF	-
26	EDP_LANE2_DN	DIFF	-
27	GND	GND	GND
28	+VDD	PWR	+3.3V
29	+VDD	PWR	+3.3V
30	+VDD	PWR	+3.3V

Note: The driving current of +VCC_EDP_BKLT supports up to 1.2A.

Note: The driving current of +VDD supports up to 1A.

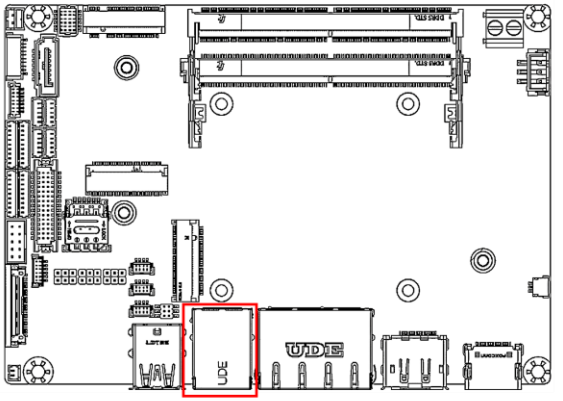
2.4.28 LAN Port 3 LED Connector (CN30)

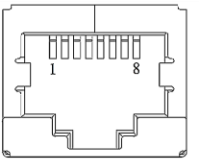




Pin	Pin Name	Signal Type	Signal Level
1	+V3P3A_LAN	PWR	+3.3V
2	LAN3_LED_1000#	OUT	+3.3V
3	LAN3_LED_LNK#_ACT	OUT	+3.3V
4	LAN3_LED_2500#	OUT	+3.3V

2.4.29 RJ-45 LAN Port 3 (CN31)



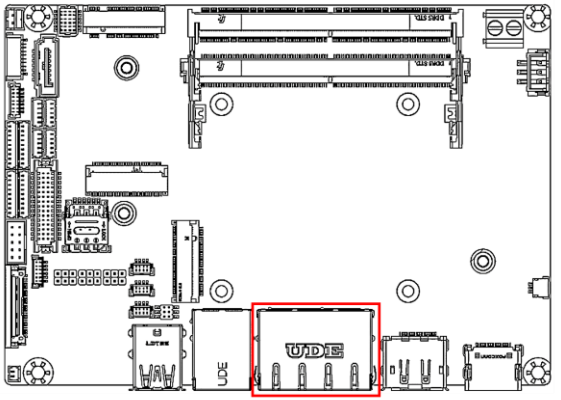


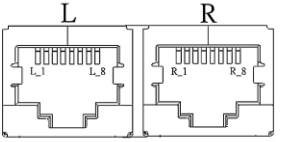
Pin	Pin Name	Signal Type	Signal Level
1	LAN3_MDI0_P	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
2	LAN3_MDI0_N	DIFF	-
3	LAN3_MDI1_P	DIFF	-
4	LAN3_MDI1_N	DIFF	-
5	LAN3_MDI2_P	DIFF	-
6	LAN3_MDI2_N	DIFF	-
7	LAN3_MDI3_P	DIFF	-
8	LAN3_MDI3_N	DIFF	-

Note: The chip used for LAN 3 is Intel® Ethernet Controller I226.

2.4.30 RJ-45 LAN Port 1/Port 2 (CN32)



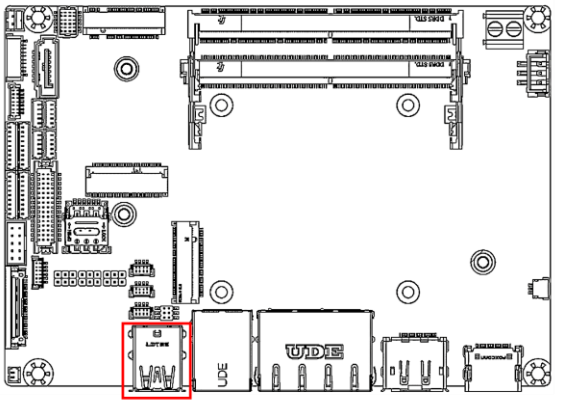


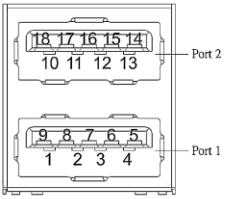
Pin	Pin Name	Signal Type	Signal Level
L_1	LAN1_MDI0_P	DIFF	-
L_2	LAN1_MDI0_N	DIFF	-
L_3	LAN1_MDI1_P	DIFF	-
L_4	LAN1_MDI1_N	DIFF	-
L_5	LAN1_MDI2_P	DIFF	-
L_6	LAN1_MDI2_N	DIFF	-
L_7	LAN1_MDI3_P	DIFF	-
L_8	LAN1_MDI3_N	DIFF	-
R_1	LAN2_MDI0_P	DIFF	-
R_2	LAN2_MDI0_N	DIFF	-
R_3	LAN2_MDI1_P	DIFF	-
R_4	LAN2_MDI1_N	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
R_5	LAN2_MDI2_P	DIFF	-
R_6	LAN2_MDI2_N	DIFF	-
R_7	LAN2_MDI3_P	DIFF	-
R_8	LAN2_MDI3_N	DIFF	-

Note: The chip used for LAN 1 is Intel® Ethernet Connection I219.
Note: The chip used for LAN 2 is Intel® Ethernet Controller I226.

2.4.31 USB 3.2/USB 2.0 Port 1/Port 2 (CN33)



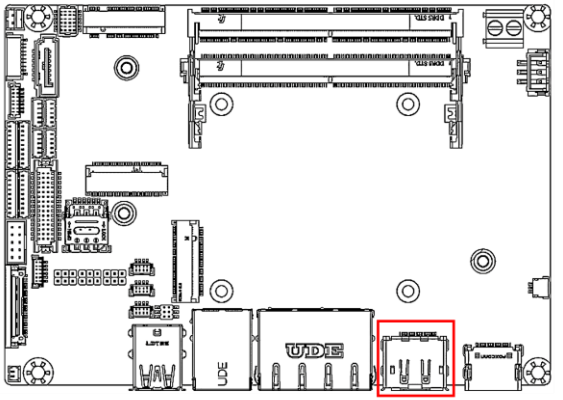


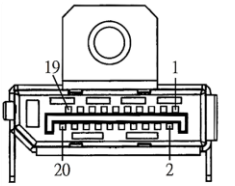
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB2_1_DN	DIFF	-
3	USB2_1_DP	DIFF	-
4	GND	GND	GND
5	USB3_1_RXN	DIFF	-
6	USB3_1_RXP	DIFF	-
7	GND	GND	GND
8	USB3_1_TXN	DIFF	-
9	USB3_1_TXP	DIFF	-
10	+5VSB	PWR	+5V
11	USB2_8_DN	DIFF	-
12	USB2_8_DP	DIFF	-
13	GND	GND	GND
14	USB3_2_RXN	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
15	USB3_2_RXP	DIFF	-
16	GND	GND	GND
17	USB3_2_TXN	DIFF	-
18	USB3_2_TXP	DIFF	-

Note: The driving current of +5VSB supports up to 0.9A/Port

2.4.32 DP Port (CN34)

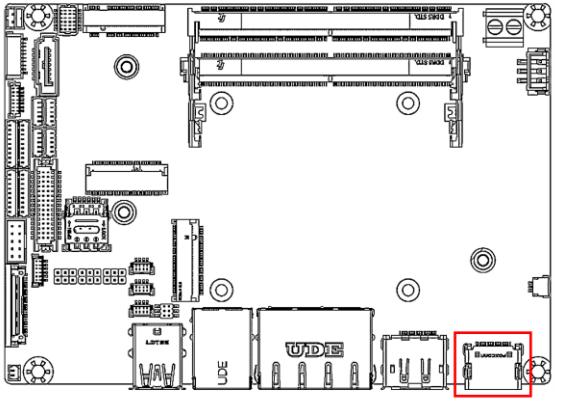


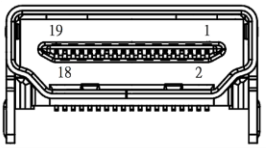


Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	+V3P3A	PWR	+3.3V
3	USB2_10_DP	DIFF	-
4	+V3P3A	PWR	+3.3V
5	USB2_10_DN	DIFF	-
6	NC	-	-
7	GND	GND	GND
8	NC	-	-
9	CNV_WR_D1_DN	DIFF	-
10	KEYE_CNV_RF_RST	IN	-
11	CNV_WR_D1_DP	DIFF	-
12	NC	-	-
13	GND	GND	GND
14	KEYE_CNV_CLKREQ	OUT	-
15	CNV_WR_D0_DN	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
16	NC	-	-
17	CNV_WR_D0_DP	DIFF	-

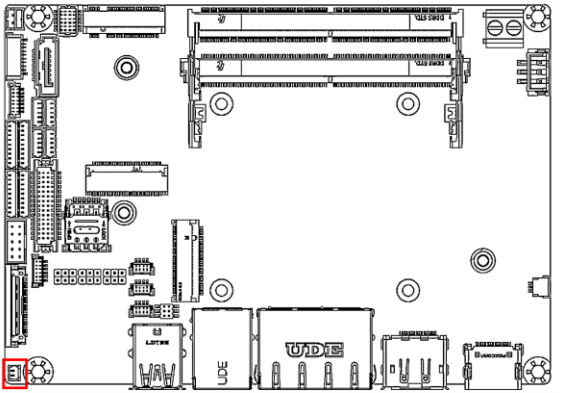
2.4.33 HDMI Port (CN35)

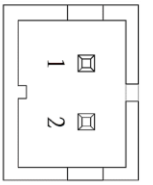




Pin	Pin Name	Signal Type	Signal Level
1	HDMI_TX2+	DIFF	-
2	GND	GND	GND
3	HDMI_TX2-	DIFF	-
4	HDMI_TX1+	DIFF	-
5	GND	GND	GND
6	HDMI_TX1-	DIFF	-
7	HDMI_TX0+	DIFF	-
8	GND	GND	GND
9	HDMI_TX0-	DIFF	-
10	HDMI_CLK+	DIFF	-
11	GND	GND	GND
12	HDMI_CLK-	DIFF	-
13	N/A	N/A	N/A
14	N/A	N/A	N/A
15	DDC_CLK	IN/OUT	-
16	DDC_DATA	IN/OUT	-
17	GND	GND	GND
18	+V5S	PWR	+5V
19	HDMI_HPD	IN	-

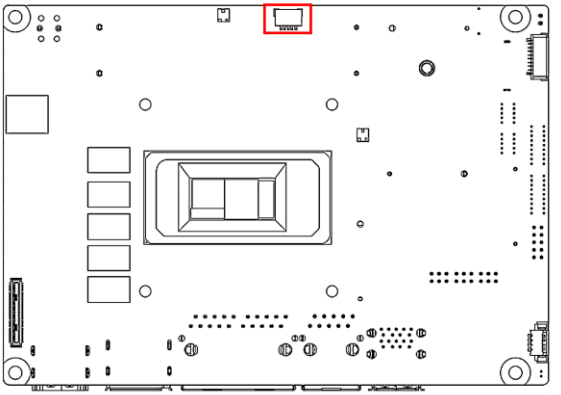
2.4.34 RTC Battery Connector (CN36)

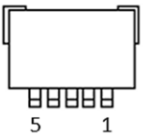




Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	+3.3V
2	GND	GND	GND

2.4.35 I2C/SMBus Connector (CN37)



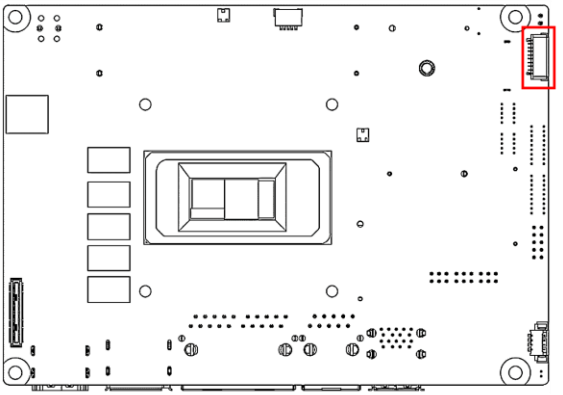


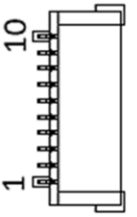
Pin	Pin Name	Signal Type	Signal Level
1	+V3P3S	PWR	+3.3V
2	SMB_CLK/ I2C_CLK/TIME_SYNC0	OUT	+3.3V

Pin	Pin Name	Signal Type	Signal Level
3	SMB_DAT/ I2C_DAT/TIME_SYNC1	OUT	+3.3V
4	SMB_ALERT/ INT_SERIRQ/LAN_SDP	IN	+3.3V
5	GND	GND	GND

Note: Default function is SMBus.

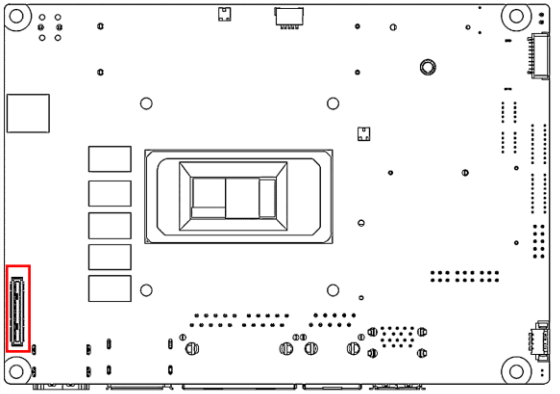
2.4.36 Port 80 Debug Port Connector (CN38)

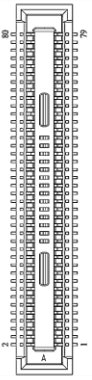




Pin	Pin Name	Signal Type	Signal Level
1	ESPI_IO0_EC_R	IN/OUT	+3.3V
2	ESPI_IO1_EC_R	IN/OUT	+1.8V
3	ESPI_IO2_EC_R	IN/OUT	+1.8V
4	ESPI_IO3_EC_R	IN/OUT	+1.8V
5	+V3P3S	PWR	+3.3V
6	ESPI_CS_EC_R_N	OUT	+3.3V
7	ESPI_RST_EC_R_N	OUT	+1.8V
8	GND	GND	GND
9	ESPI_CLK_EC_R	OUT	+1.8V
10	+V3P3A	PWR	+3.3V

2.4.37 Board to Board Connector (CN39)



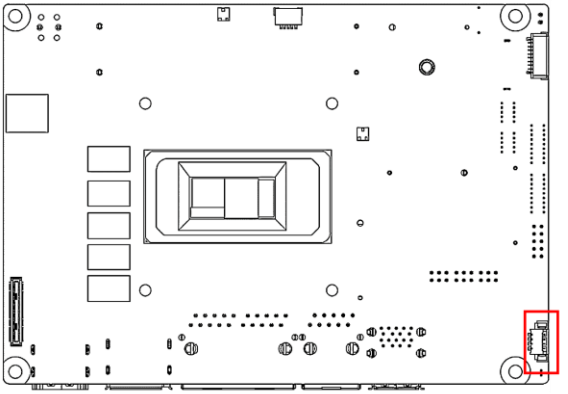


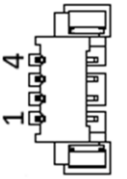
Pin	Pin Name	Signal Type	Signal Level
1	+V12S	PWR	+12V
2	+V12S	PWR	+12V
3	+V12S	PWR	+12V
4	+V12S	PWR	+12V
5	+V12S	PWR	+12V
6	+V12S	PWR	+12V
7	+V12S	PWR	+12V
8	+V12S	PWR	+12V
9	+V12S	PWR	+12V
10	+V12S	PWR	+12V
11	GND	GND	GND
12	GND	GND	GND
13	PCIE_13_TXP	DIFF	-
14	PCIE_17_TXP	DIFF	-
15	PCIE_13_TXN	DIFF	-
16	PCIE_17_TXN	DIFF	-
17	GND	GND	GND
18	GND	GND	GND
19	PCIE_7_CLK_TXP	DIFF	-
20	PCIE_8_CLK_TXP	DIFF	-
21	PCIE_7_CLK_TXN	DIFF	-
22	PCIE_8_CLK_TXN	DIFF	-
23	GND	GND	GND
24	GND	GND	GND

Pin	Pin Name	Signal Type	Signal Level
25	PCIE_14_TXP	DIFF	-
26	PCIE_18_TXP	DIFF	-
27	PCIE_14_TXN	DIFF	-
28	PCIE_18_TXN	DIFF	-
29	GND	GND	GND
30	GND	GND	GND
31	PCIE_15_TXP	DIFF	-
32	PCIE_19_TXP	DIFF	-
33	PCIE_15_TXN	DIFF	-
34	PCIE_19_TXN	DIFF	-
35	GND	GND	GND
36	GND	GND	GND
37	PCIE_16_TXP	DIFF	-
38	PCIE_20_TXP	DIFF	-
39	PCIE_16_TXN	DIFF	-
40	PCIE_20_TXN	DIFF	-
41	GND	GND	GND
42	GND	GND	GND
43	PCIE_13_RXN	DIFF	-
44	PCIE_17_RXN	DIFF	-
45	PCIE_13_RXP	DIFF	-
46	PCIE_17_RXP	DIFF	-
47	GND	GND	GND
48	GND	GND	GND
49	PCIE_14_RXN	DIFF	-
50	PCIE_18_RXN	DIFF	-
51	PCIE_14_RXP	DIFF	-
52	PCIE_18_RXP	DIFF	-
53	GND	GND	GND
54	GND	GND	GND
55	PCIE_15_RXN	DIFF	-
56	PCIE_19_RXN	DIFF	-
57	PCIE_15_RXP	DIFF	-
58	PCIE_19_RXP	DIFF	-
59	GND	GND	GND
60	GND	GND	GND
61	PCIE_16_RXN	DIFF	-
62	PCIE_20_RXN	DIFF	-
63	PCIE_16_RXP	DIFF	-

Pin	Pin Name	Signal Type	Signal Level
64	PCIE_20_RXP	DIFF	-
65	GND	GND	GND
66	GND	GND	GND
67	+V3P3A	PWR	+3.3V
68	+V3P3A	PWR	+3.3V
69	BUF_PLT_RST#	OUT	-
70	BUF_PLT_RST#	OUT	-
71	SMB_CLK	OUT	-
72	SMB_CLK	OUT	-
73	SMB_DATA	IN/OUT	-
74	SMB_DATA	IN/OUT	-
75	+V3P3S	PWR	+3.3V
76	+V3P3S	PWR	+3.3V
77	+V3P3S	PWR	+3.3V
78	+V3P3S	PWR	+3.3V
79	+V3P3S	PWR	+3.3V
80	+V3P3S	PWR	+3.3V

2.4.38 4-pin Fan Connector (CN40)

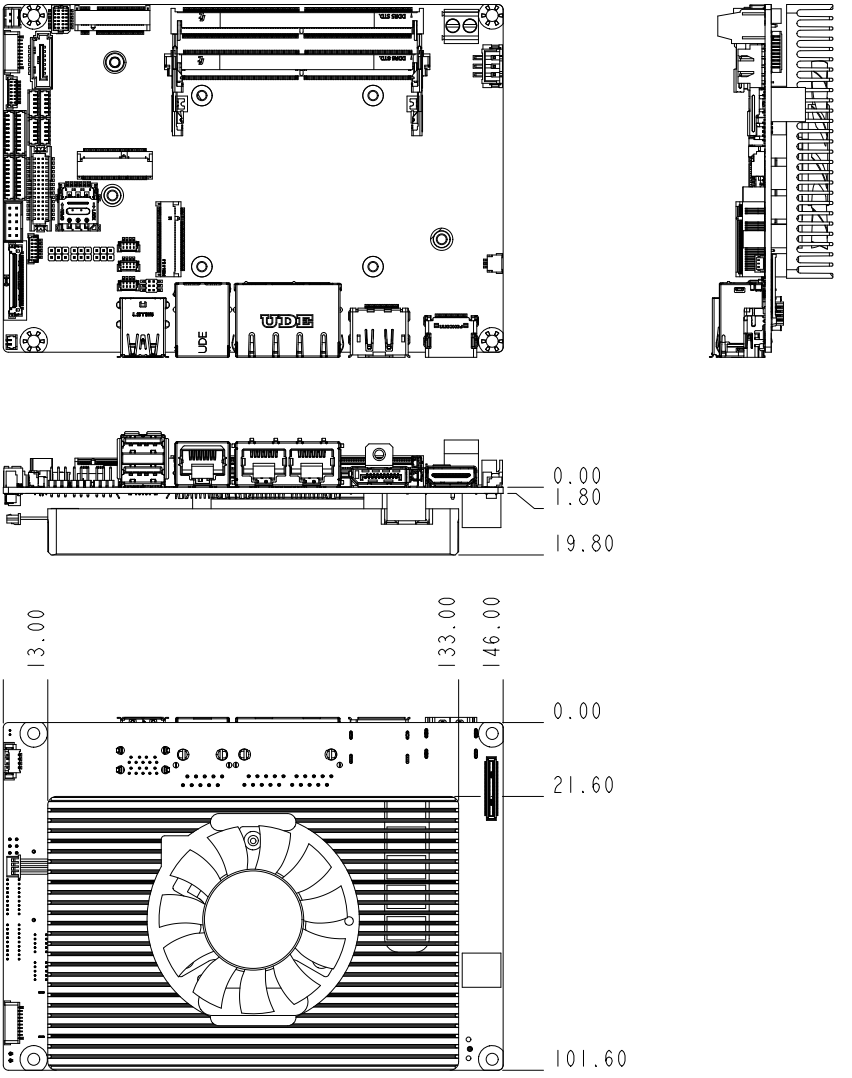




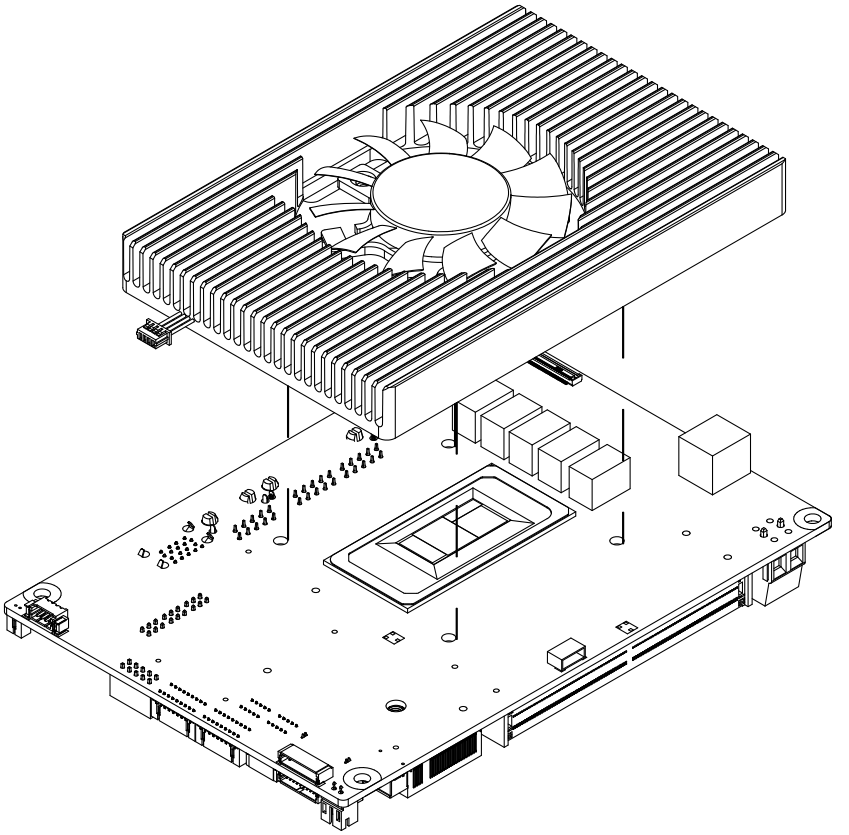
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	FAN_POWER	PWR	+12V
3	FAN_TAC	IN	-
4	FAN_CTL	OUT	-

2.5 Thermal Solutions

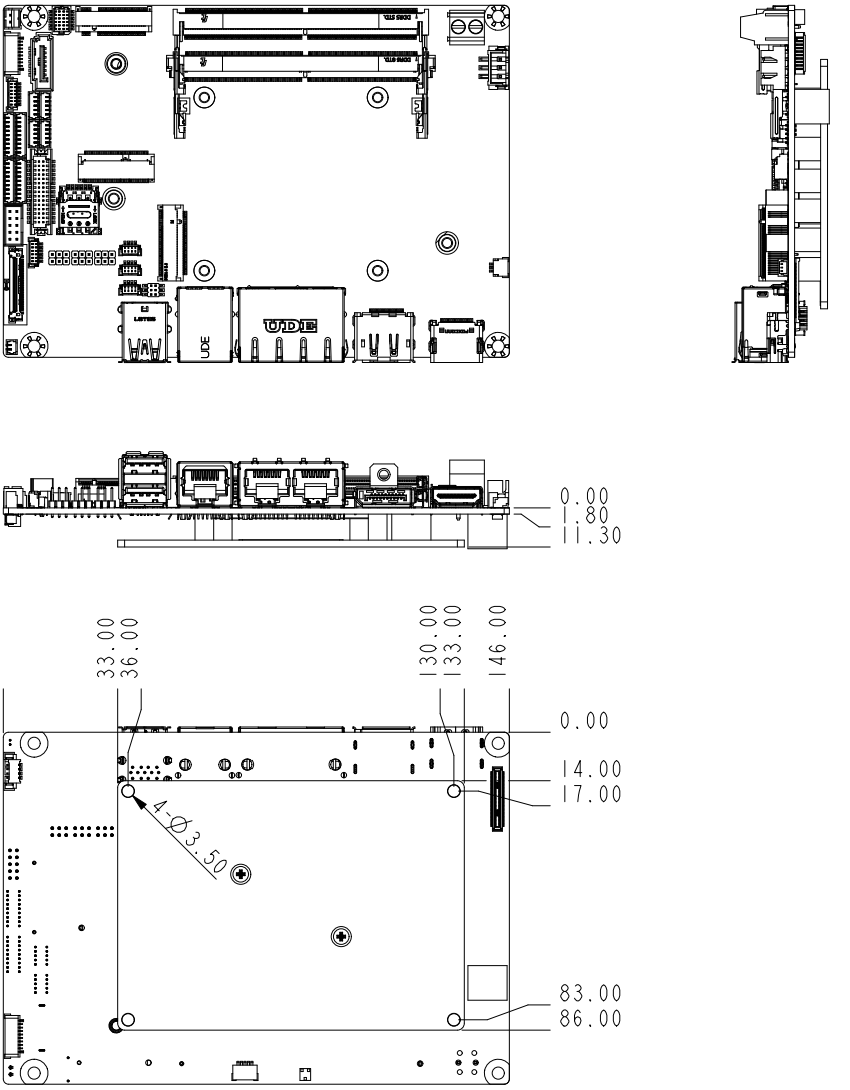
2.5.1 Active Cooling Fan - GENE-MTH6-FAN01



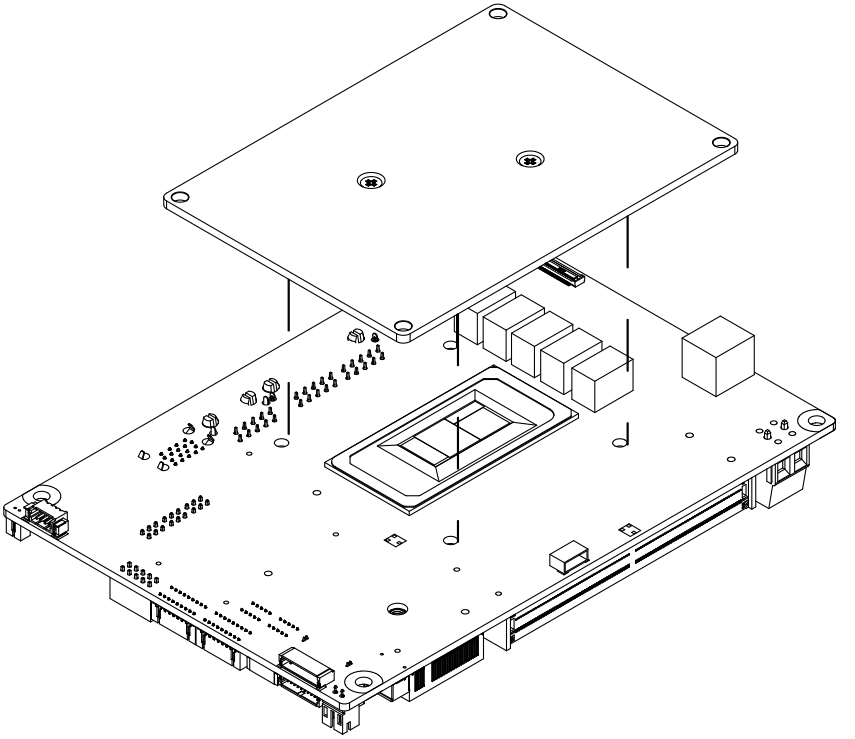
GENE-MTH6-FAN01 Assembly



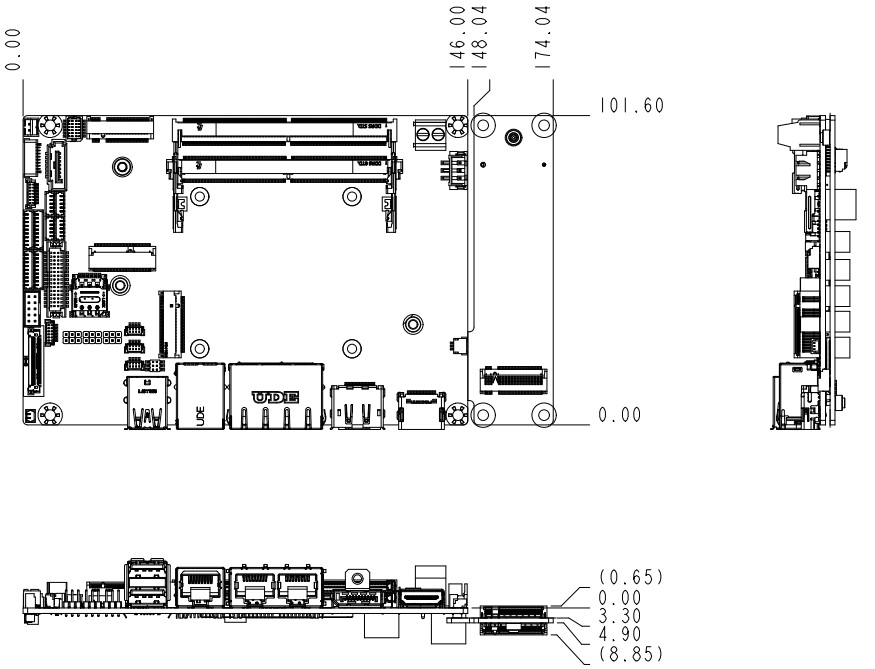
2.5.2 Heatspreader - GENE-MTH6-HSP01



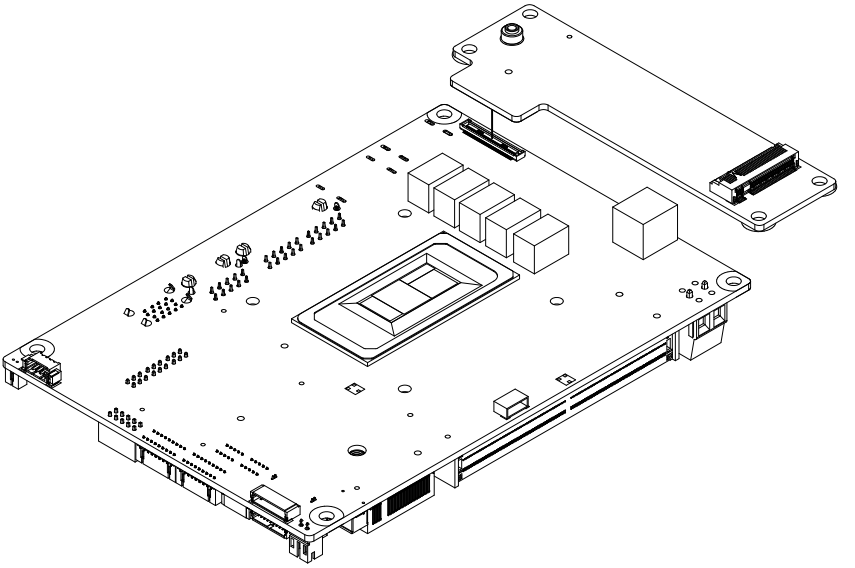
GENE-MTH6-HSP01 Assembly



2.5.3 FPC2 - PER-SB2B-A01-0001



PER-SB2B-A01-0001 Assembly



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration is reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The GENE-MTH6 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press <Del>or <ESC> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable disable boot option for legacy network devices.

Chipset

Host bridge parameters.

Boot

Enables/disable quiet boot option.

Security

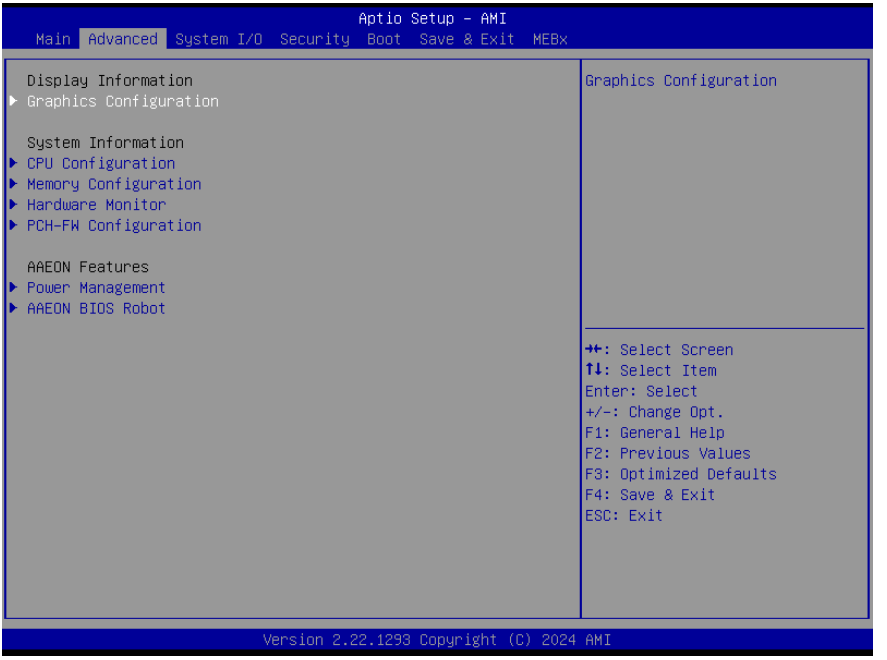
Set setup administrator password.

Save & Exit

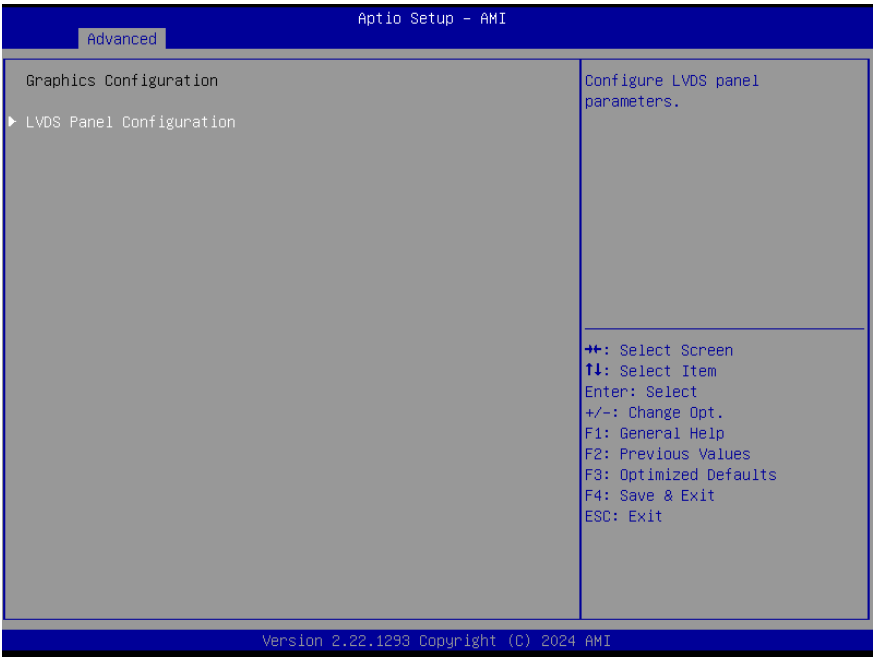
Exit system setup after saving the changes.

3.3 Setup Submenu: Main

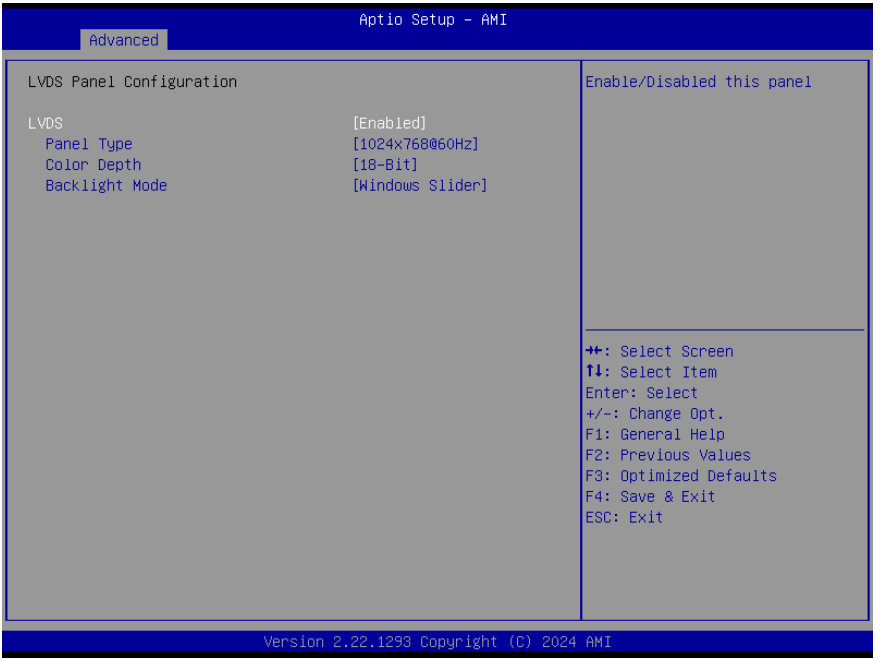
3.4 Setup Submenu: Advanced



3.4.1 Graphics Configuration



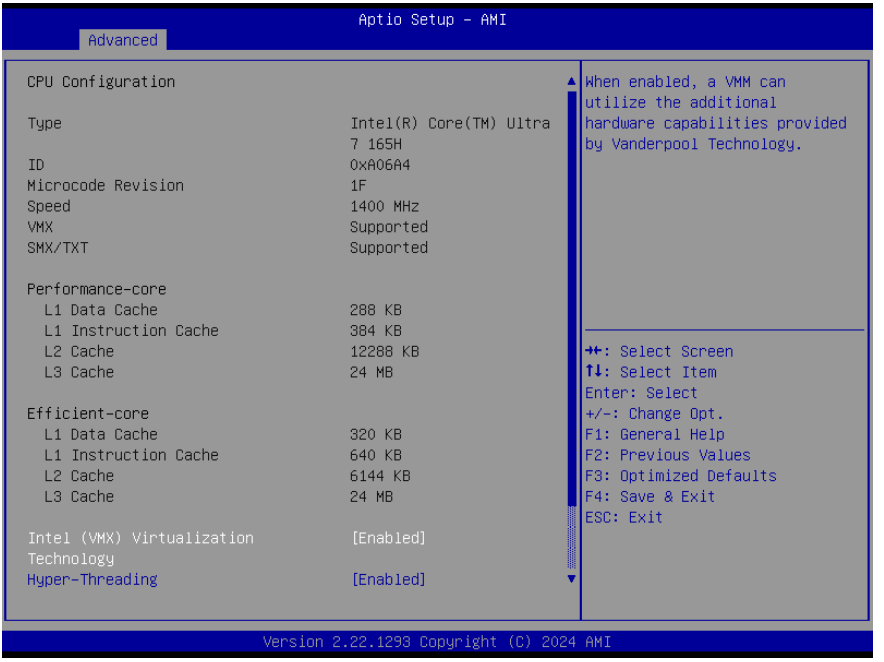
3.4.2 LVDS Panel Configuration

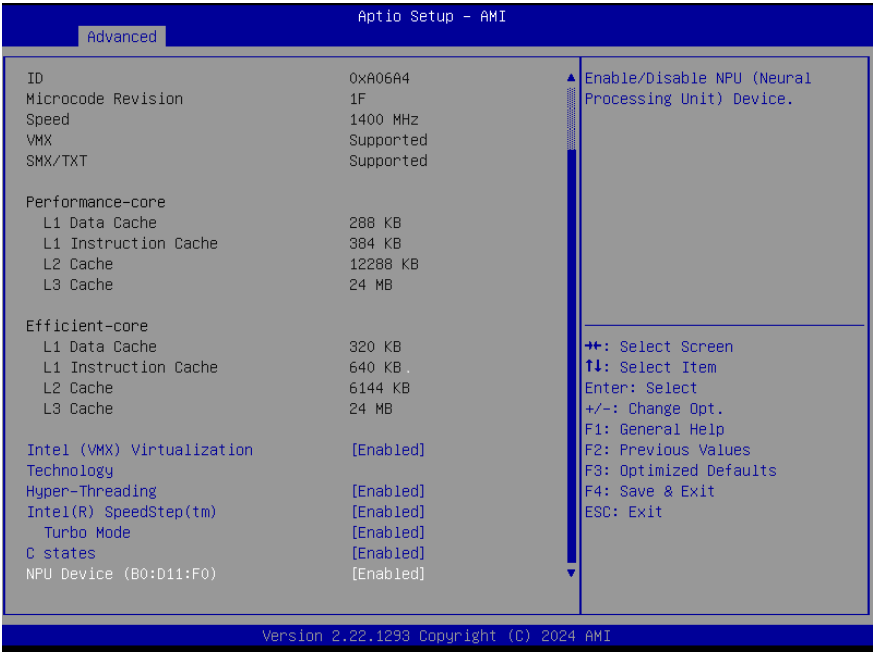


Options Summary		
LVDS	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disabled this panel.		
LVDS Panel Type	640x480,18bit,60Hz	
	800x480,18bit,60Hz	
	800x600,18bit,60Hz	
	1024x600,18bit,60Hz	
	1024x768,18bit,60Hz	
	1024x768,24bit,60Hz	Optimal Default, Failsafe Default
	1280x768,24bit,60Hz	
	1280x1024,48bit,60Hz	
	1366x768,24bit,60Hz	
	1440x900,48bit,60Hz	
	1600x1200,48bit,60Hz	
	1920x1080,48bit,60Hz	

Options Summary		
LVDS Panel Type (Cont.)	1920x1200,48bit,60Hz	
Select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.		
Color Depth	18-bit	Optimal Default, Failsafe Default
	24-bit	
	36-bit	
	48-bit	
Select panel type		
Backlight Mode	BIOS & Application	
	Windows Slider	Optimal Default, Failsafe Default
Select backlight control signal type		

3.4.3 CPU Configuration

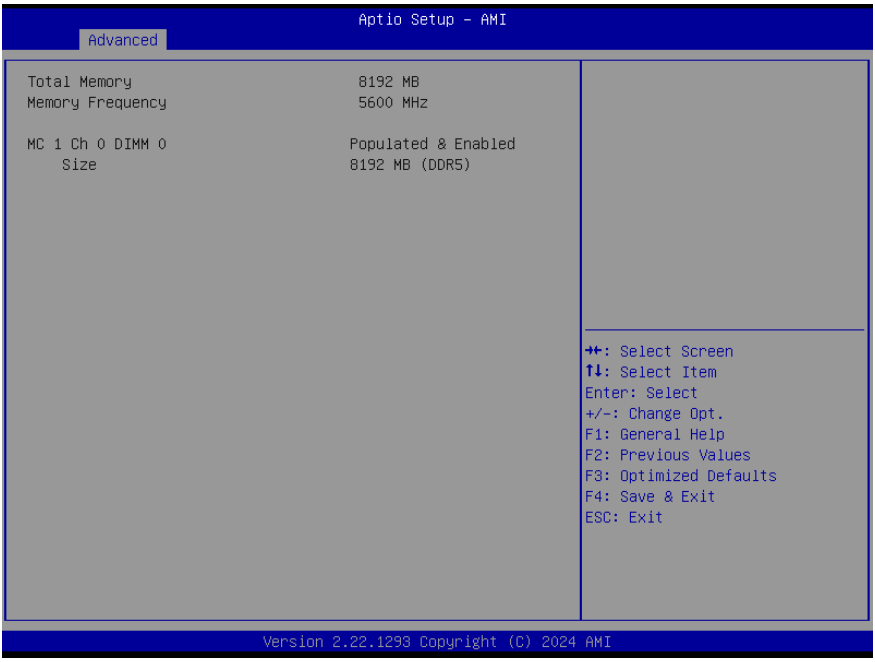




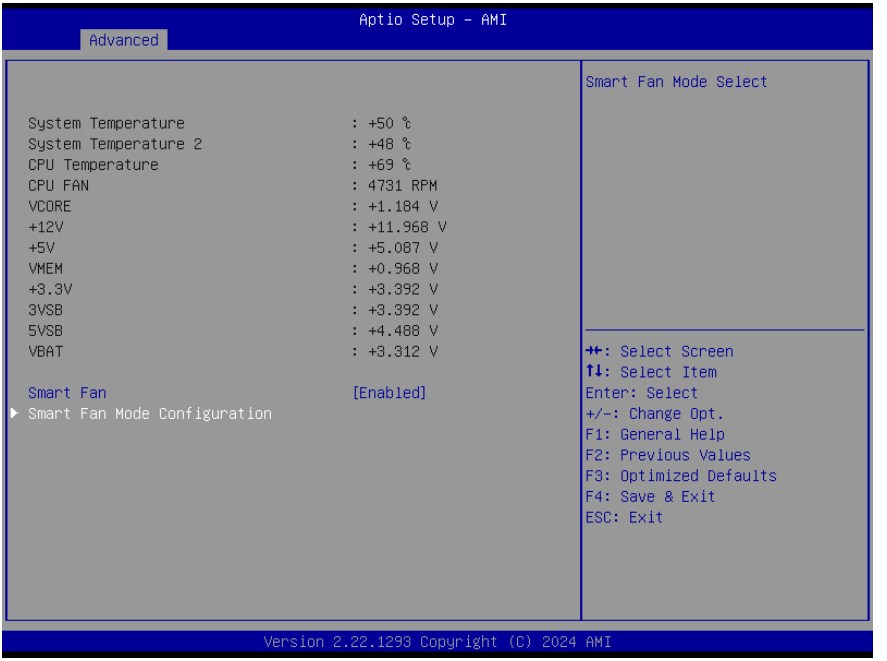
Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Hyper-Threading Technology.		
Intel® SpeedStep™	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than two frequency ranges to be supported.		
Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable processor Turbo Mode (requires EMTTM enable too). AUTO means enabled		
C states	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100 utilized.		

Options Summary		
NPU Device (B0:D11:F0)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable NPU (Neural Processing Unit) Device		

3.4.4 Memory Configuration

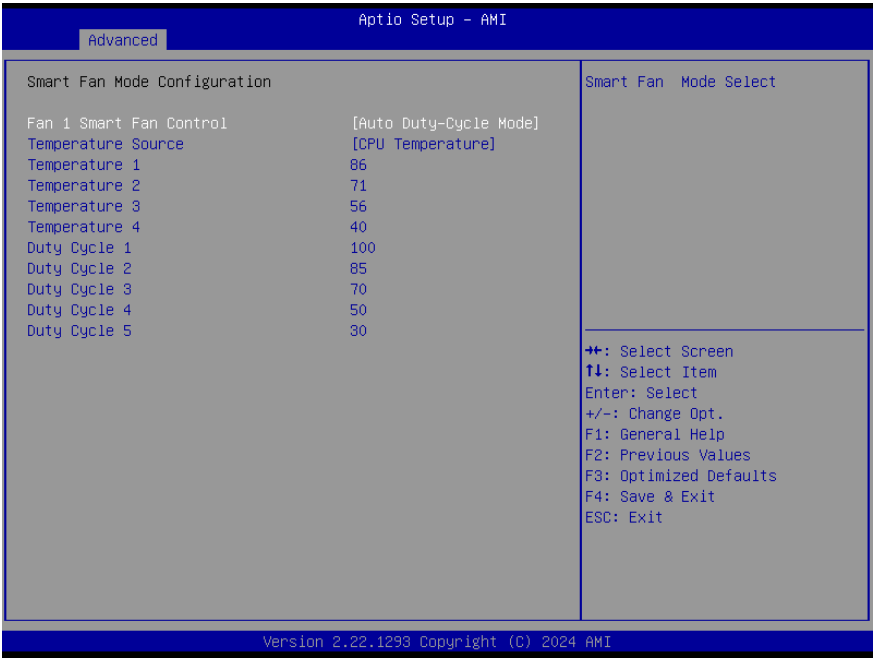


3.4.5 Hardware Monitor



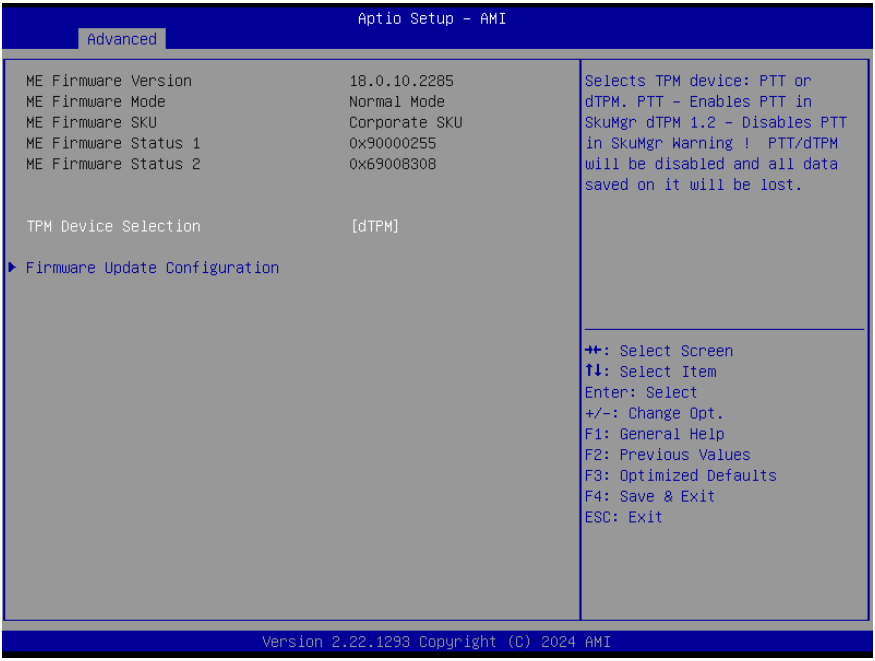
Options Summary		
Smart Fan	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables Smart Fan.		

3.4.6 Smart Fan Mode Configuration



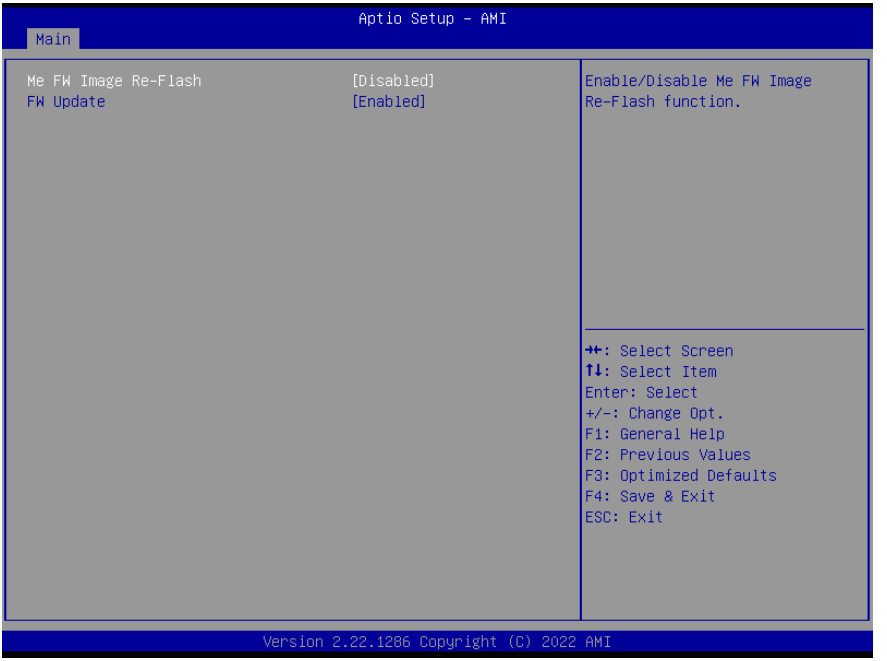
Options Summary		
Fan 1 Smart Fan Control	Manual Duty Mode	
	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default
Smart Fan Mode Select		
Temperature Source	CPU Temperature	Optimal Default, Failsafe Default
	System Temperature	
	System Temperature 2	
Select the monitored temperature source for this fan.		
Temperature 1	86	
Duty Cycle 1	100	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100		

3.4.7 PCH-FW Configuration



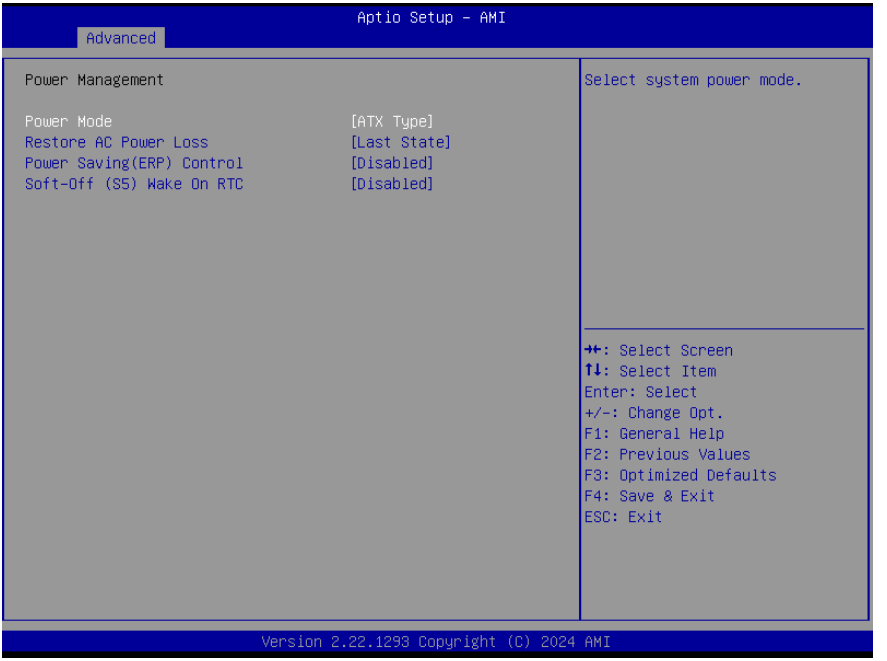
Options Summary		
TPM Device Selection	dTPM	Optimal Default, Failsafe Default
	PTT	
Selects TPM device: PTT or discrete TPM. PTT - enables PTT in SkuMgr dTPM - disables PTT is SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost.		

3.4.8 Firmware Update Configuration



Options Summary		
Me FW Image Re-Flash	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enable/Disable Me FW Image Re-Flash function.		
FW Update	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable ME FW Update function.		

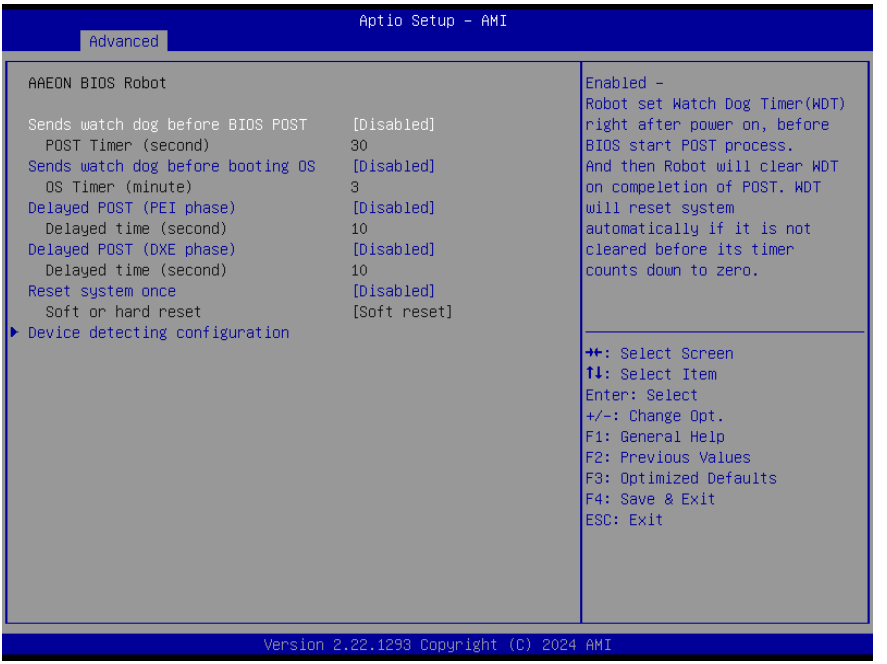
3.4.9 Power Management



Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
Select power state when power is re-applied after a power failure.		
Power Saving(ERP) Control	Disabled	Optimal Default, Failsafe Default
	Enabled	
Select Power saving control.		
Soft-Off (S5) Wake On RTC	Disable	Optimal Default, Failsafe Default
	By Date	
	By Weekday	
	Bypass	

Options Summary
By Date: System will wake on the with hr::min::sec specified./n By Weekday: System will wake on the enabled weekday with hr::min::sec specified./n Bypass: BIOS will not control RTC wake function.

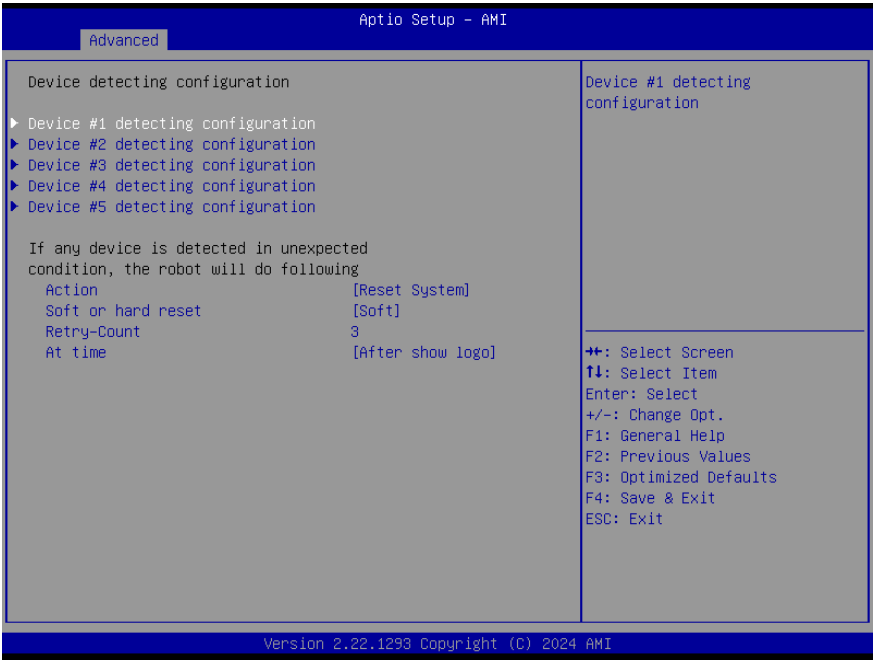
3.4.10 AAEON BIOS Robot



Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.		
POST Timer (second)	30	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for POST. WARNING: Do not set to a value equal or shorter than normal POST time, otherwise system may never complete POST unless clearing BIOS settings. More than 2x normal POST time is suggested.		

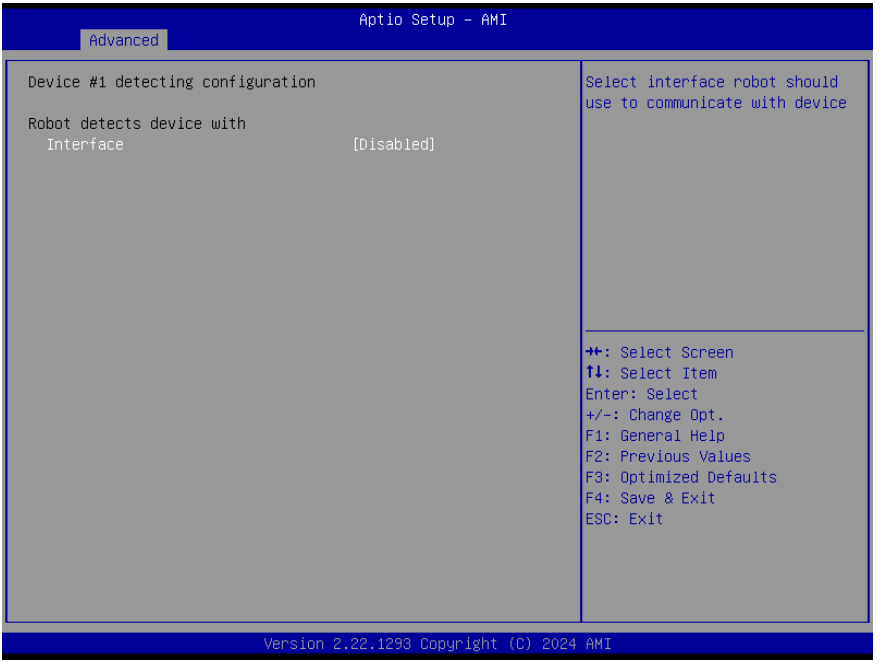
Options Summary		
Sends watch dog before booting OS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot set Watch Dog Timer (WDT) after POST completion, before BIOS transfer control to OS. **WARNING**: Before enabling this function, a program in OS must be in responsible for clearing WDT. Also, this function should be disabled if OS is going to update itself.		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for OS loading.		
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up. **Note**: Robot does this before 'Sends watch dog'.		
Delayed time (second)	10	Optimal Default, Failsafe Default
Period of time for Robot to hold BIOS from POST.		
Delayed POST (DXE phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up. **Note**: Robot does this after 'Sends watch dog before BIOS POST'.		
Delayed time (second)	10	Optimal Default, Failsafe Default
Period of time for Robot to hold BIOS from POST.		
Reset system once	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot resets system for one time on each boot. This will send a soft or hard reset to onboard devices, thus puts devices to more stable state.		
Soft or hard reset	Soft reset	Optimal Default, Failsafe Default
	Hard reset"	
Select reset type robot should send on each boot.		

3.4.11 Device Detecting Configuration



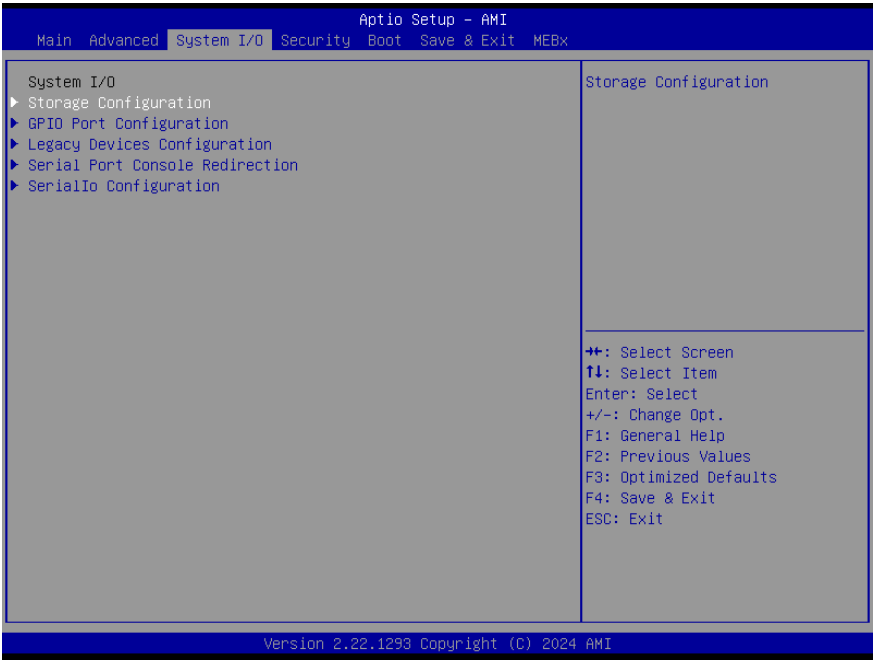
Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robot should do.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	30	Optimal Default, Failsafe Default
Fill retry counter here. Robot will reset system at most counter times, and then let system continue its POST.		
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time: After show logo - Robot will do action after logo is displayed. System devices are almost ready. Before show logo - Robot will do action earlier before logo, but some devices may not be ready.		

3.4.11.1 Device #1~#5 Detecting Configuration

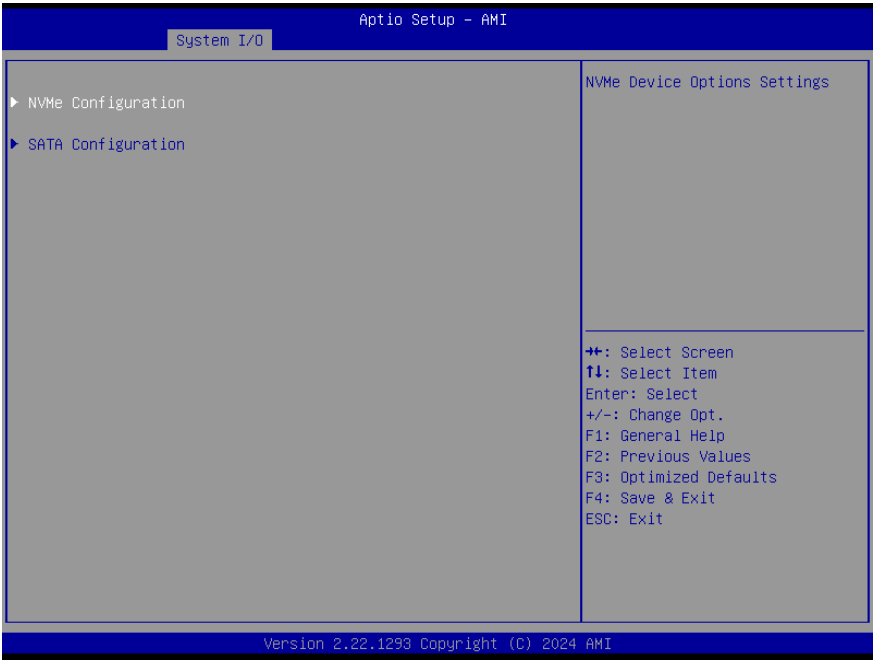


Options Summary		
Interface	Disable	Optimal Default, Failsafe Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	
	Super I/O	
	MMIO	
Select interface robot should use to communicate with device.		

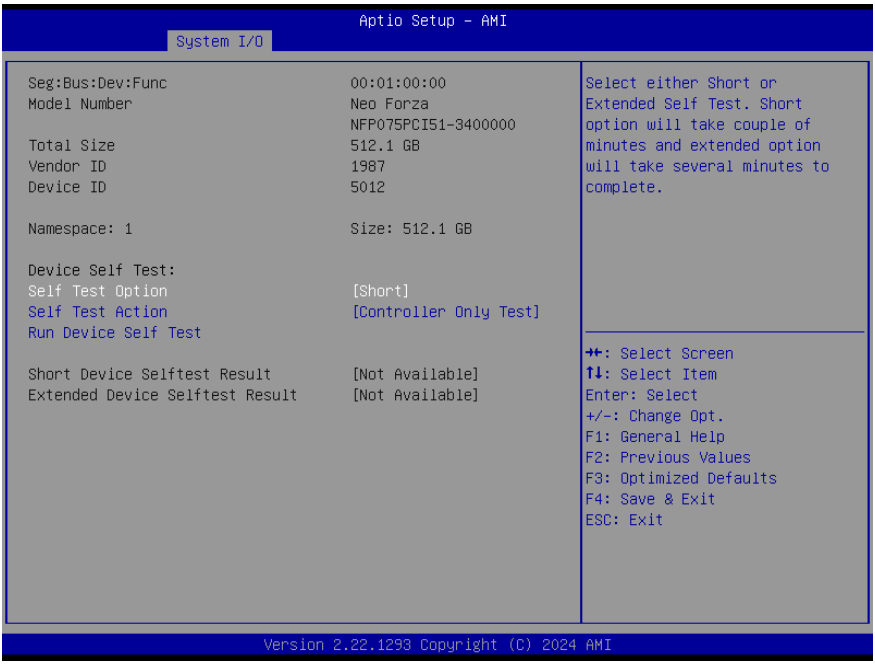
3.5 Setup Submenu: System I/O



3.5.1 Storage Configuration

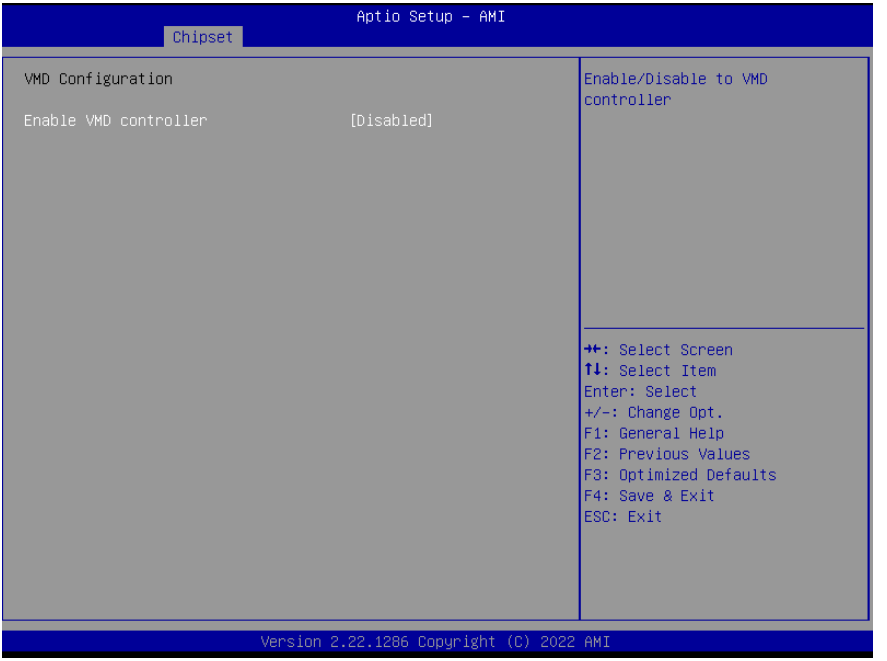


3.5.2 NVMe Configuration



Options Summary		
Self Test Option	Short	Optimal Default, Failsafe Default
	Extended	
Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.		
Self Test Action	Controller Only Test	Optimal Default, Failsafe Default
	Controller and NameSpace Test	
Select either to test Controller alone or Controller and NameSpace. Selecting Controller and NameSpace option will take lot longer to complete the test.		
Run Device Self Test	N/A	N/A
Perform device self test for the corresponding option and action selected by user. Pressing 'Esc' key will abort the test. Result shown below is the recent result logged in the device.		

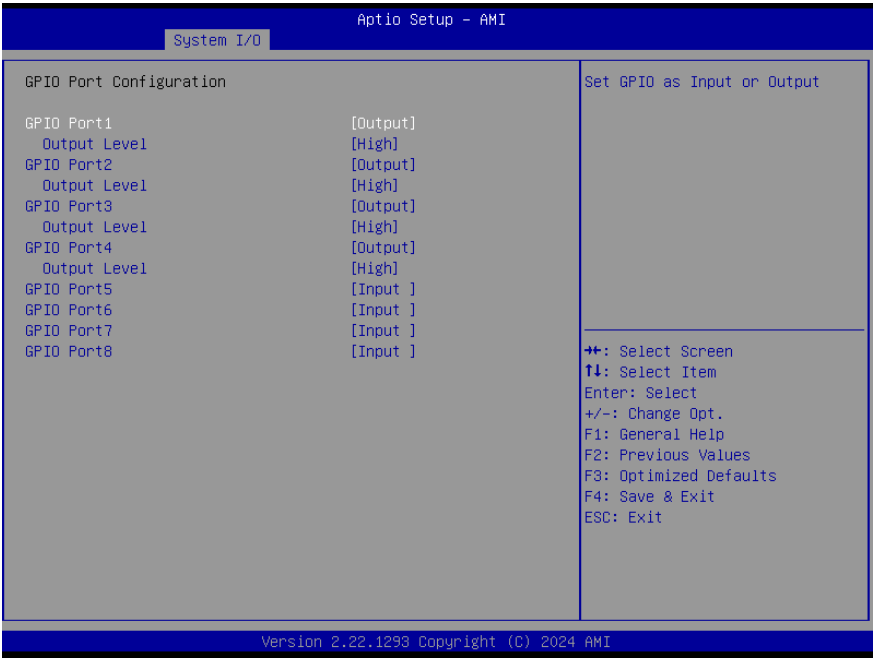
3.5.3 VMD Setup Menu



Options Summary		
Enable VMD Controller	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable to VMD Controller		

3.5.4 HD Audio Configuration

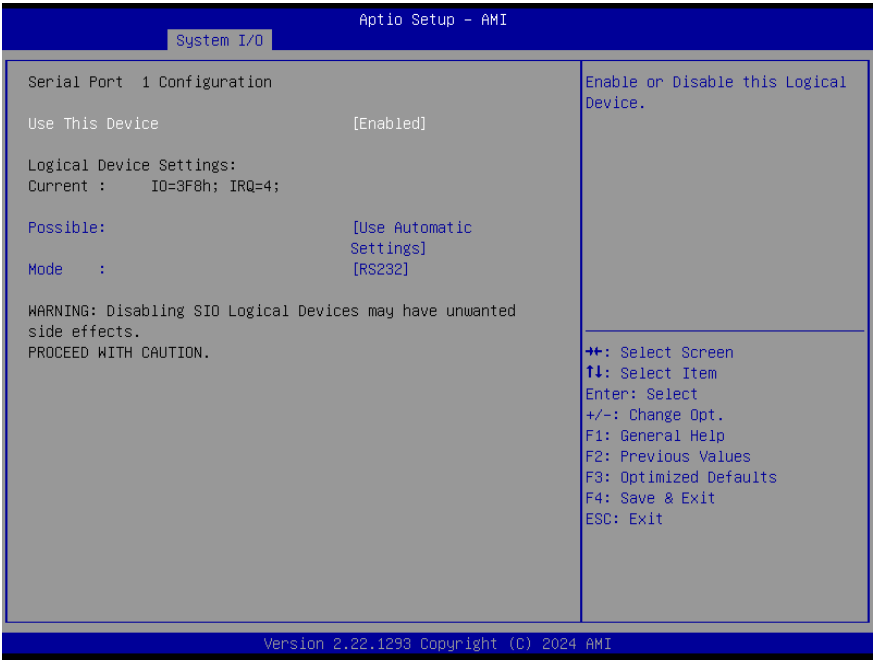
3.5.5 GPIO Port Configuration



Options Summary		
GPIO Port*	Output	
	Input	
Set GPIO as Input or Output		
Output Level	High	
	Low	
Set output level when GPIO pin is output		

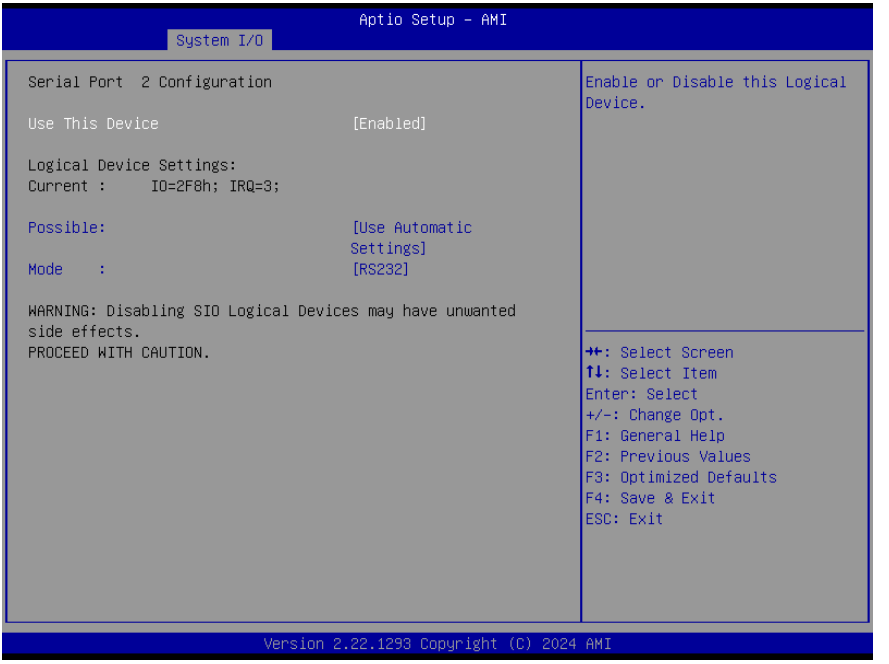
3.5.6 Legacy Devices Configuration

3.5.6.1 Serial Port 1 Configuration



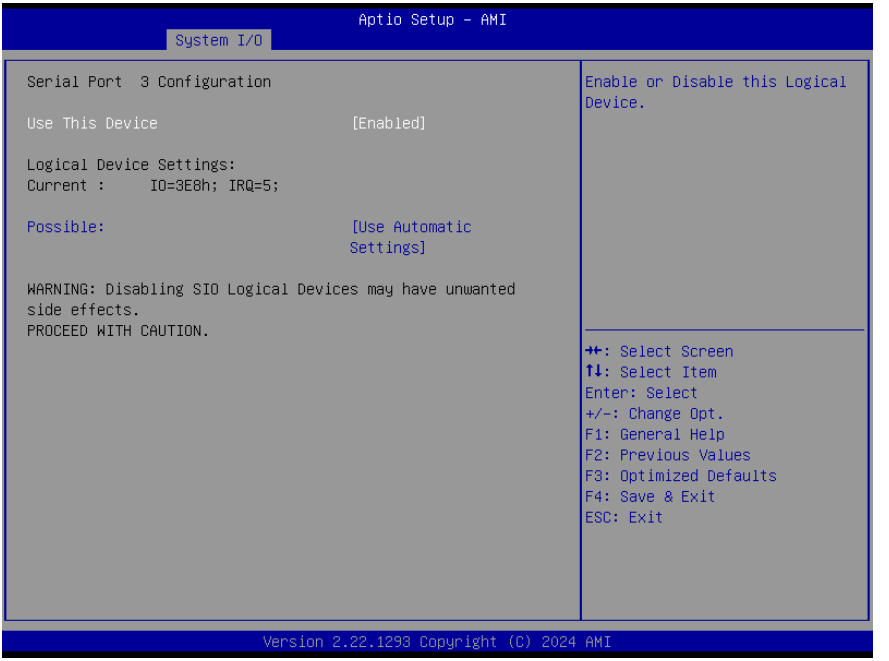
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		
Mode:	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485 selection.		

3.5.6.2 Serial Port 2 Configuration



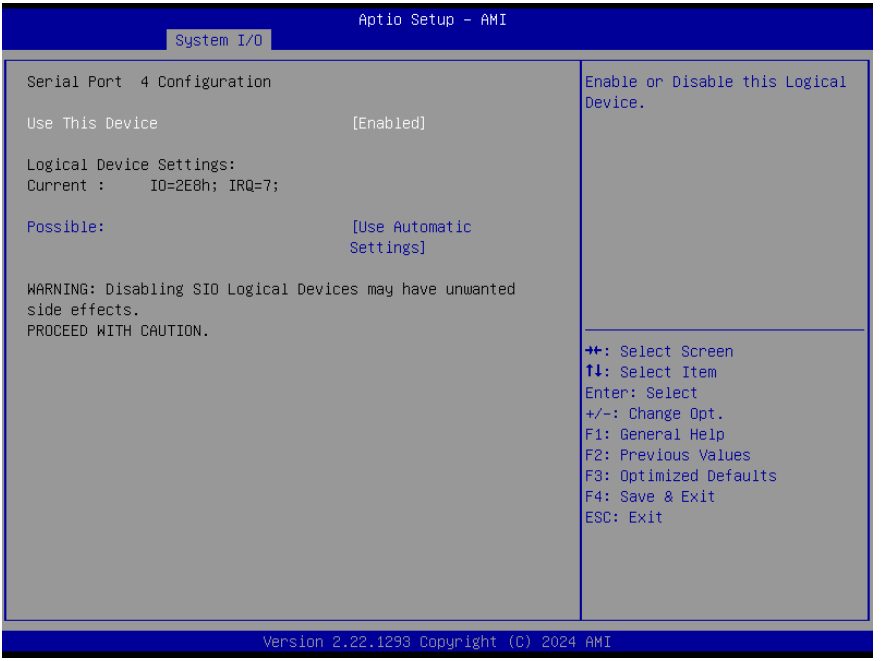
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3	
	IO=3F8h; IRQ=4	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		
Mode:	RS232	Optimal Default, Failsafe Default
	RS422	
	RS485	
UART RS232, 422, 485 selection.		

3.5.6.3 Serial Port 3 Configuration



Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8h; IRQ=5	
	IO=2E8h; IRQ=7	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.5.6.4 Serial Port 4 Configuration

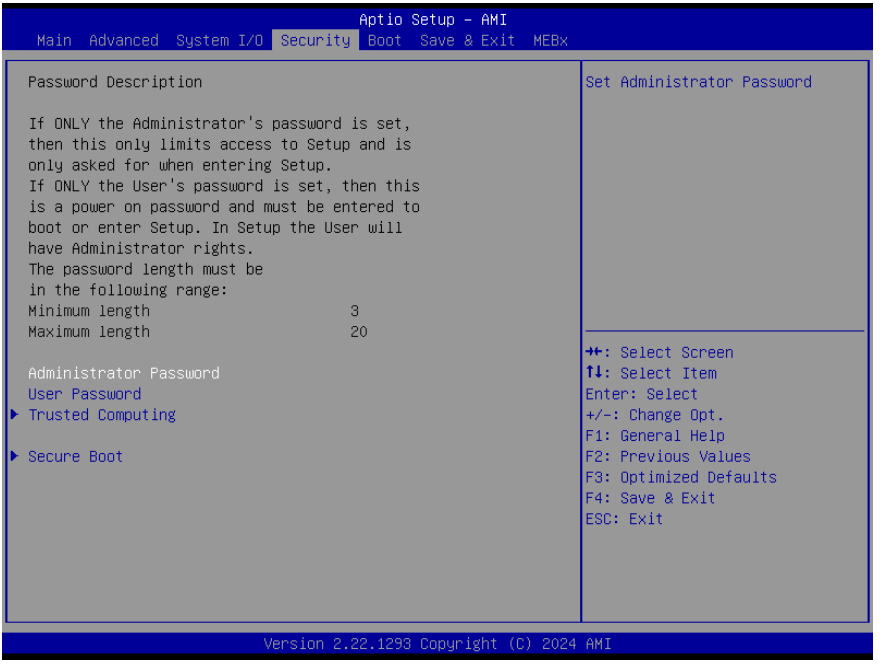


Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2E8h; IRQ=7	
	IO=3E8h; IRQ=5	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.5.7 Serial Port Console Redirection

Options Summary		
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		

3.6 Setup Submenu: Security



Change User/Supervisor Password

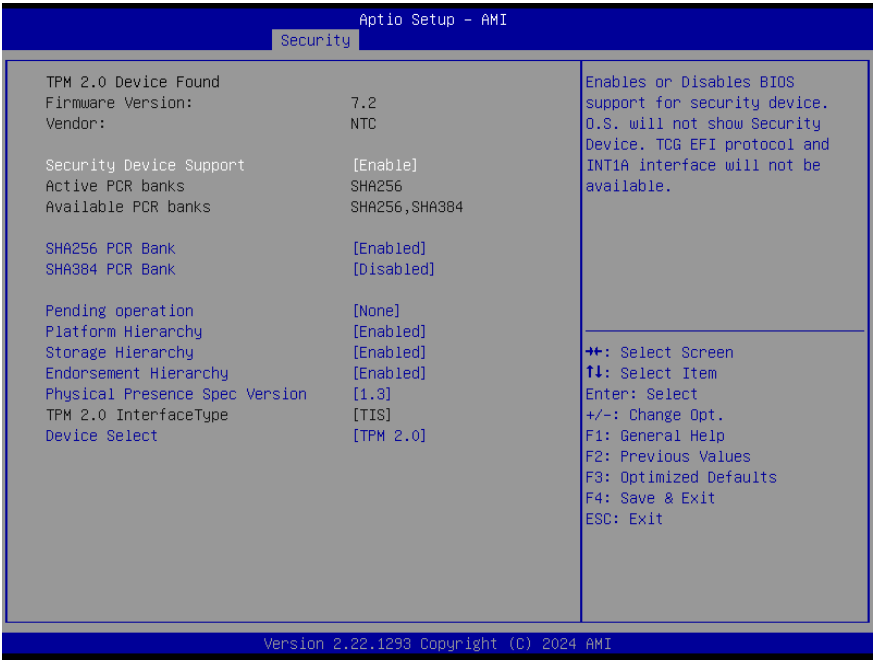
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

3.6.1 Trusted Computing



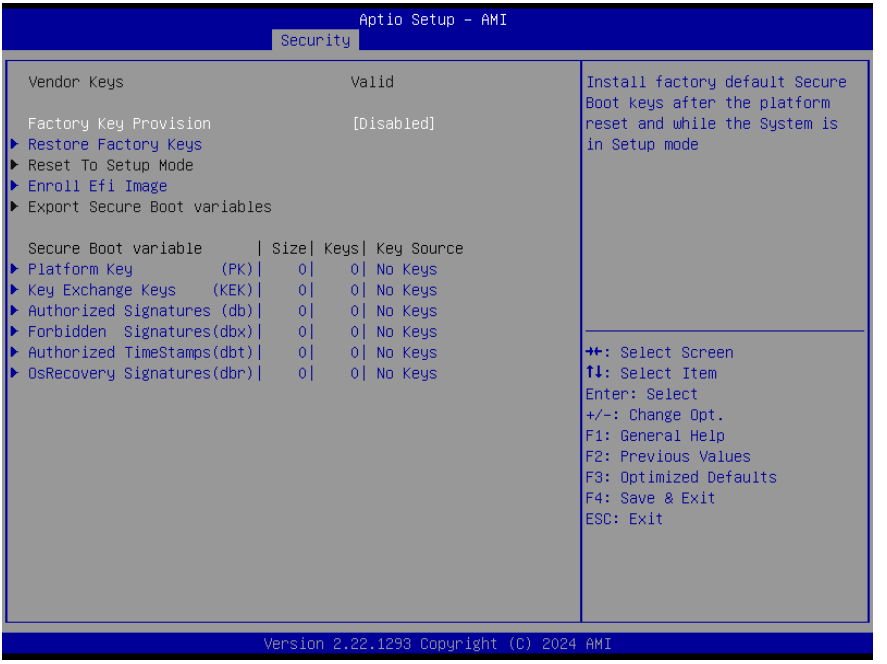
Options Summary		
Security Device Support	Enable	Optimal Default, Failsafe Default
	Disable	
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		
SHA256 PCR Bank	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SHA384 PCR Bank.		
Pending operation	None	Optimal Default, Failsafe Default
	TPM Clear	
Schedule an Operation for the Security Device. **NOTE**: Your Computer will reboot during restart in order to change State of Security Device.		

Options Summary		
Platform Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Platform Hierarchy		
Storage Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Storage Hierarchy		
Endorsement Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Endorsement Hierarchy		
Physical Presence Spec Version	1.3	Optimal Default, Failsafe Default
	1.2	
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3		
Device Select	Auto	
	TPM 1.2	
	TPM 2.0	Optimal Default, Failsafe Default
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices if not found. TPM 1.2 devices will be enumerated.		

3.6.2 Secure Boot

Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
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	Custom	Optimal Default, Failsafe Default
	Standard	
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		
Restore Factory Keys		
Force System to User Mode. Install factory default Secure Boot key databases		
Reset To Setup Mode		
Delete all Secure Boot key databases from NVRAM		

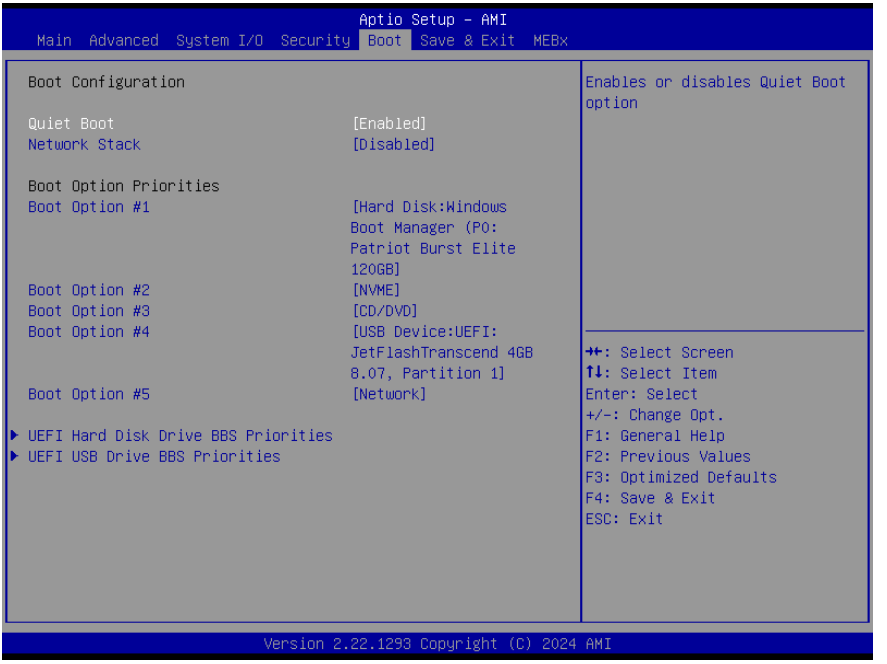
3.6.3 Expert Key Management



Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
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		
Restore Factory Keys		
Force System to User Mode. Install factory default Secure Boot key databases		
Reset To Setup Mode		
Delete all Secure Boot key databases from NVRAM		
Export Secure Boot variables		
Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device		
Enroll Efi Image		
Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)		

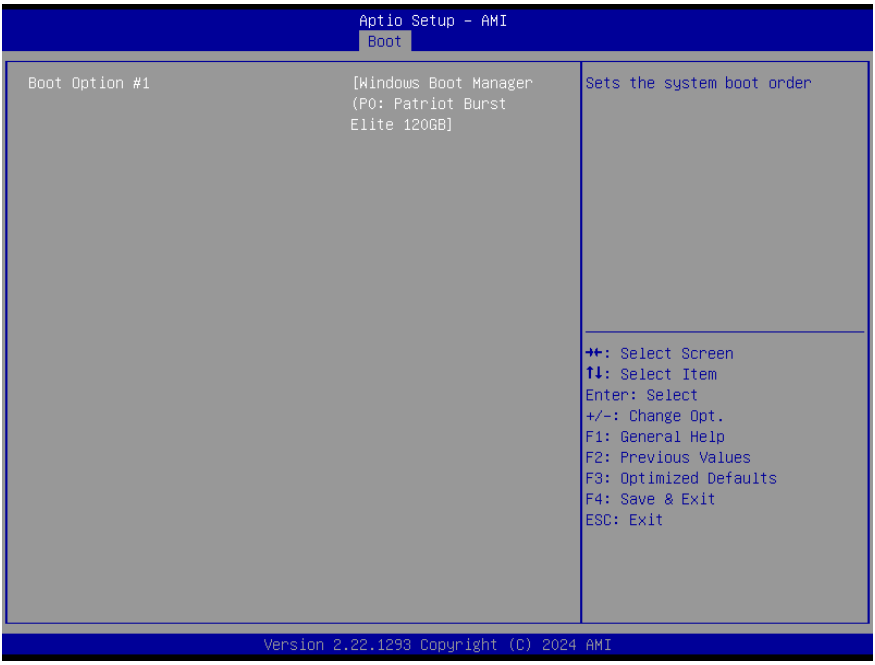
Options Summary	
Remove 'UEFI CA' from DB	
Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)	
Restore DB defaults	
Restore DB variable to factory defaults	
Platform Key(PK)	Details
	Export
	Update
	Delete
Key Exchange Keys	Details
	Export
	Update
	Append
	Delete
Authorized Signatures	Details
	Export
	Update
	Append
	Delete
Forbidden Signatures	Details
	Export
	Update
	Append
	Delete
Authorized TimeStamps	Update
	Append
OsRecovery Signatures	Update
	Append
Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a) EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image (SHA256) Key Source: Factory, External, Mixed.	

3.7 Setup Submenu: Boot



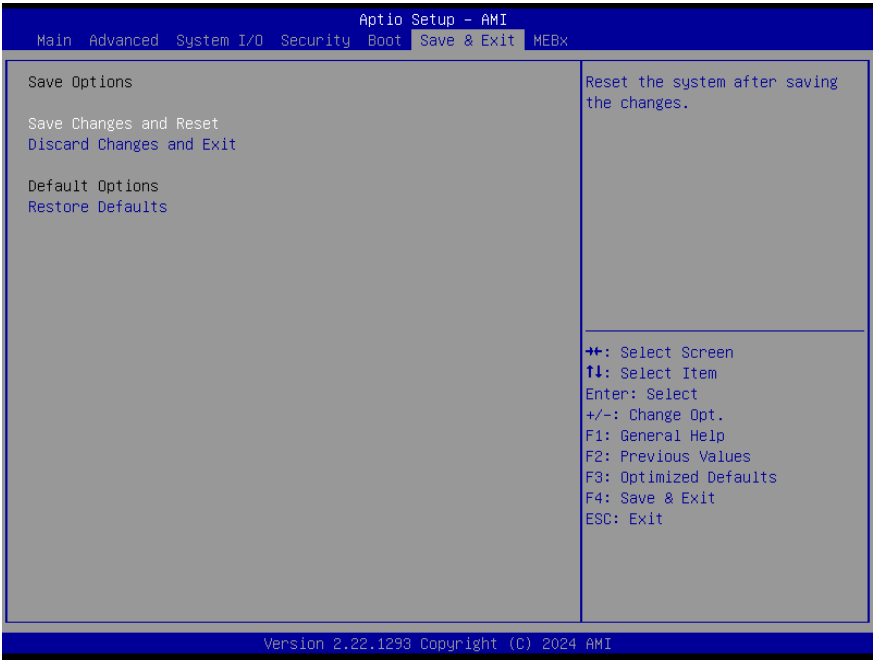
Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Quiet Boot option.		
Network Stack	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack.		
BOOT Option Priorities		
Sets the system boot order.		

3.7.1 BBS Priorities



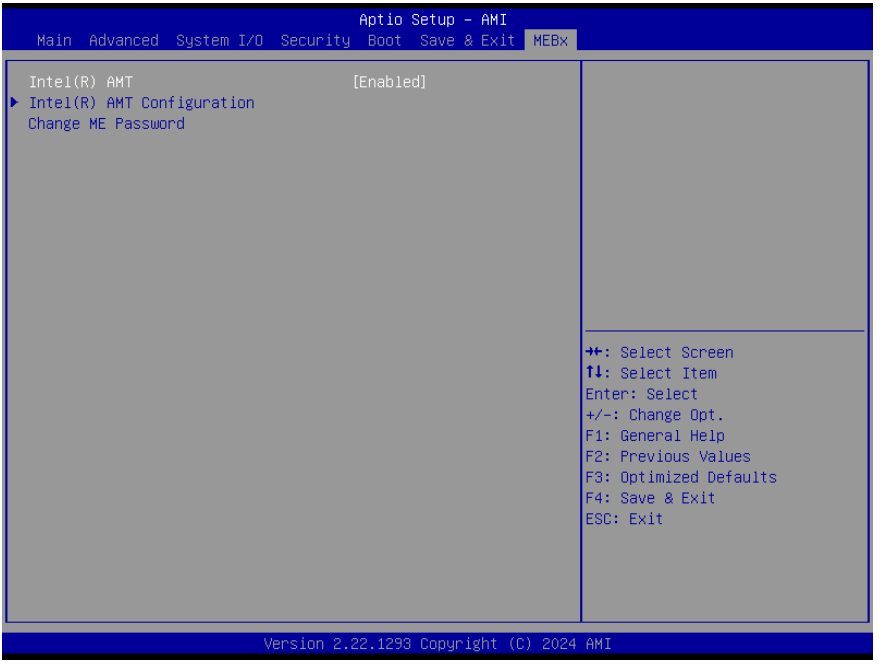

Aptio Setup – AMI
Boot
Boot Option #1
[UEFI: JetFlashTranscend 4GB 8.07, Partition 1]
Sets the system boot order
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.22.1293 Copyright (C) 2024 AMI

3.8 Setup Submenu: Save & Exit



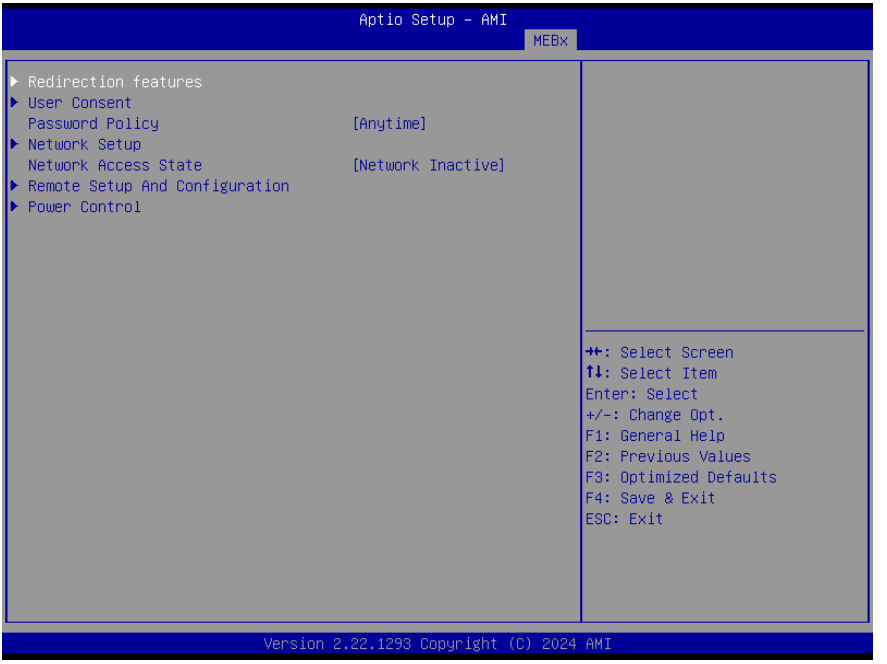
Options Summary	
Save Changes and Reset	Reset the system after saving the changes.
Discard Changes and Exit	Exit system setup without saving any changes.
Restore Defaults	Restore/Load Default values for all the setup options.

3.9 Setup Submenu: MEBx



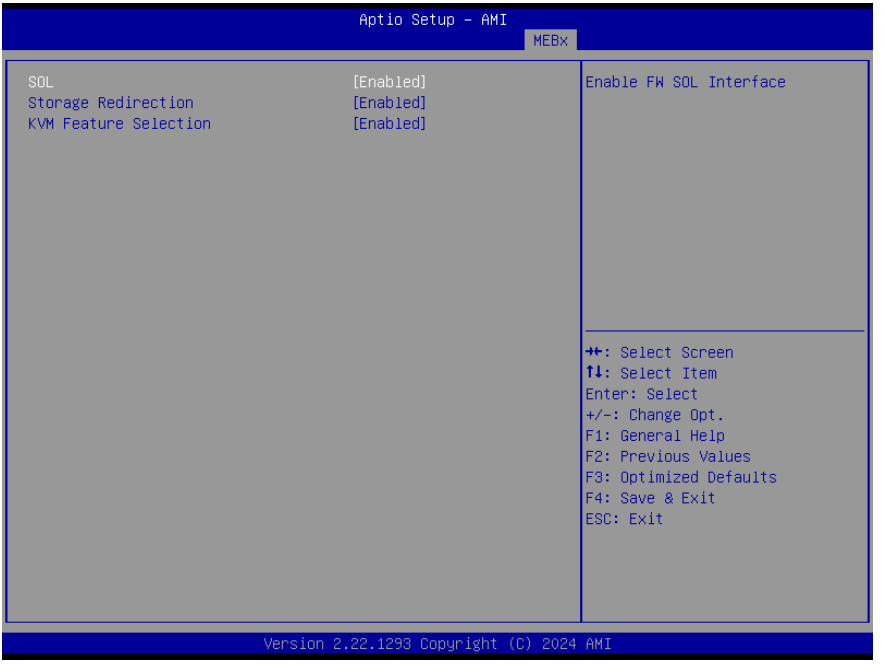
Options Summary		
Intel (R) AMT	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Intel® AMT option.		
Change ME Password		
Change Password for entering MEBx		

3.9.1 Intel(R) AMT Configuration



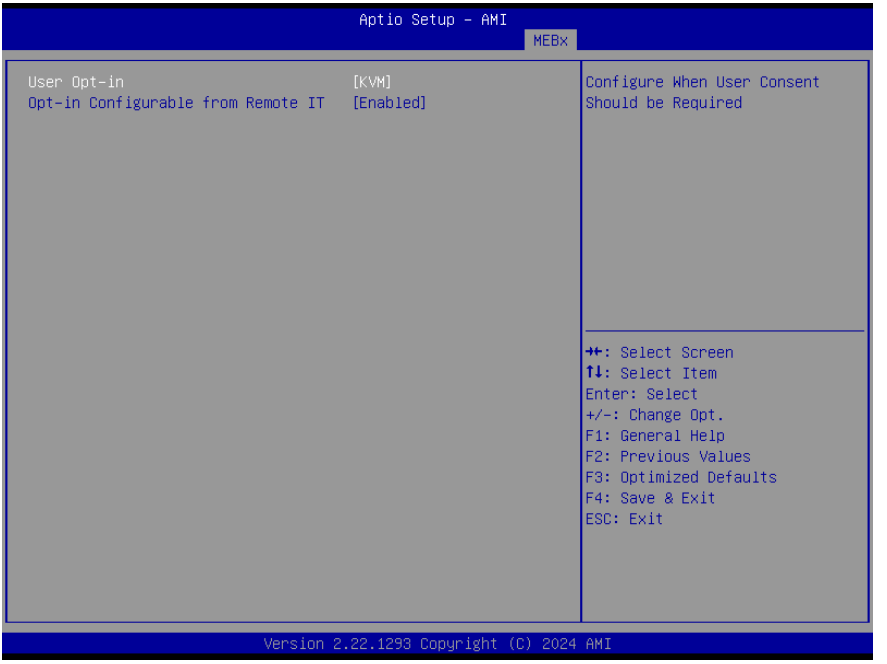
Options Summary		
Password Policy	Default Password Only	
	During Setup and Configuration	
	Anytime	Optimal Default, Failsafe Default
Network Access State	Network Active	
	Network Inactive	Optimal Default, Failsafe Default
	Full Unprovision	
Changes network state of ME. When disabling, it will also clear some other settings.		

3.9.2 Redirection Features



Options Summary		
SOL	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW SOL Interface		
Storage Redirection	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW Remote – Storage Redirection.		
KVM Features Selection	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW KVM Feature.		

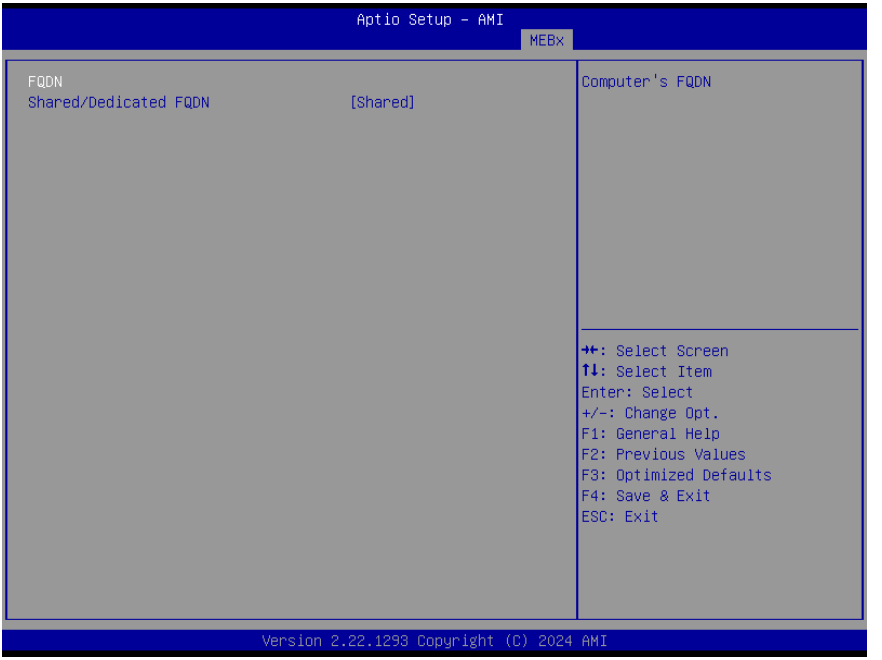
3.9.3 User Consent



Options Summary		
User Opt-in	None	
	KVM	Optimal Default, Failsafe Default
	ALL	
Configure when User Consent Should be Required.		
Opt-in Configurable from Remote IT	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable Remote Change Capability of User Consent Feature		

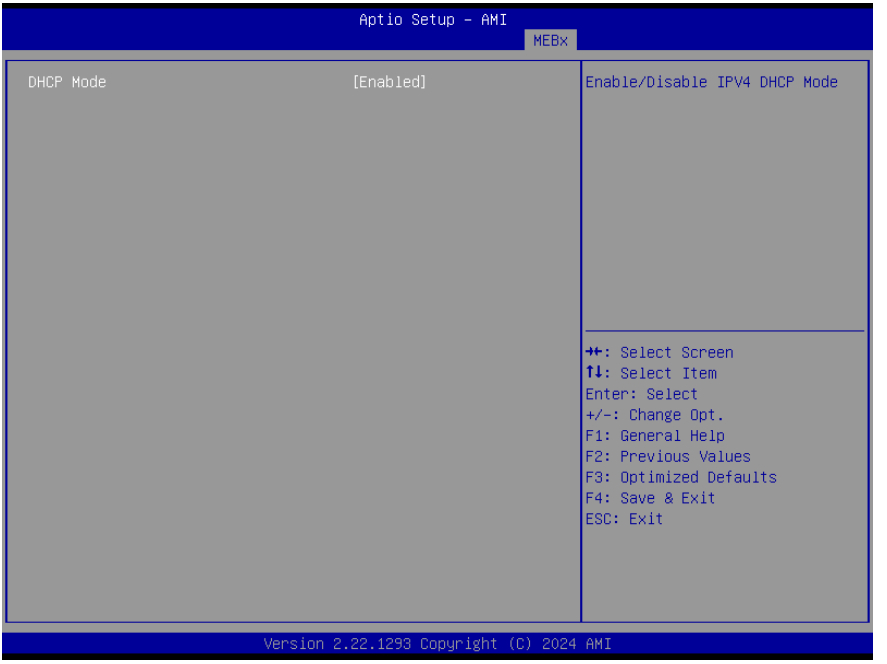
3.9.4 Network Setup

3.9.5 Intel® ME Network Name Settings



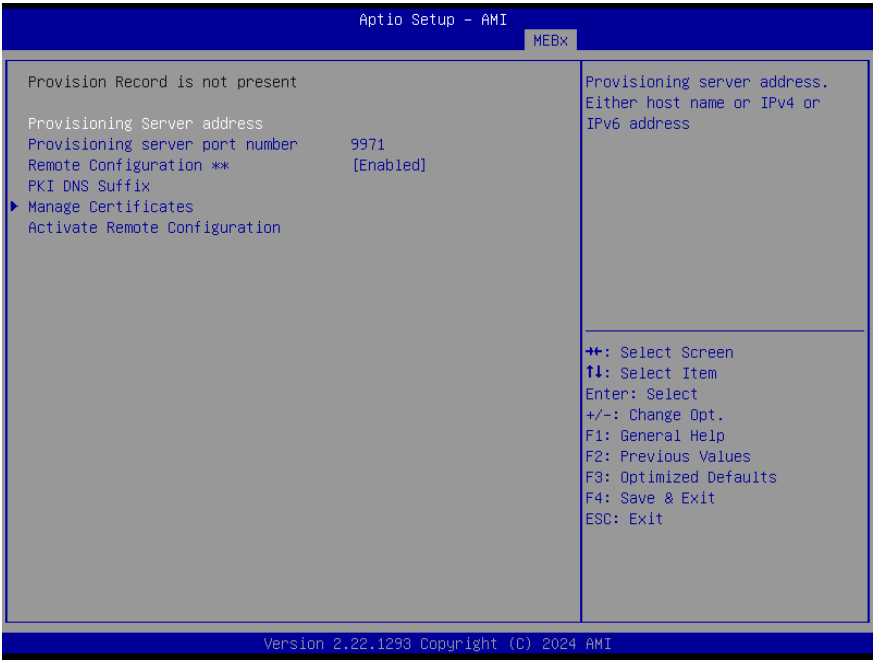
Options Summary		
FQDN		
Computer's FQDN		
Shared/Dedicated FQDN	Dedicated	
	Shared	Optimal Default, Failsafe Default

3.9.6 TCP/IP Settings



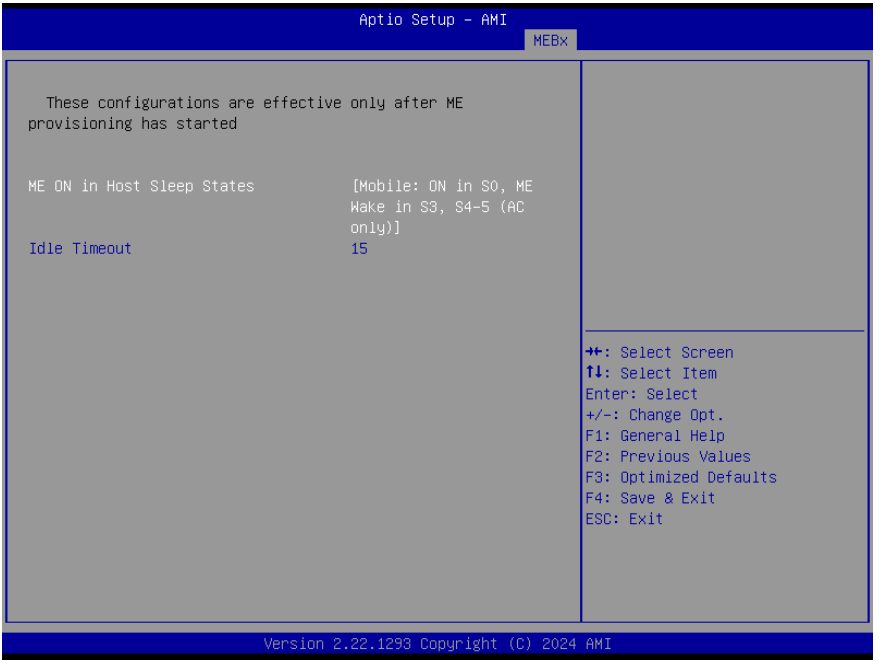
Options Summary		
DHCP Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable IPV4 DHCP Mode.		

3.9.7 Remote Setup and Configuration



Options Summary		
Provisioning Server Address		
Provisioning server address. Either host name or IPv4 or IPv6 address.		
Provisioning Server Port number		
Provisioning server port number (0-65535)		
Remote Configuration **	Enabled	Optimal Default, Failsafe Default
	Disabled	

3.9.8 Power Control



Options Summary		
ME ON in Host Sleep States	Mobile: ON in S0	
	Mobile: ON in S0, ME Wake in S3, S4-5 (AC only)	Optimal Default, Failsafe Default
Idle Timeout	15	Optimal Default, Failsafe Default
Timeout Value (1-65535).		

Chapter 4

Driver Installation

4.1 Driver Download/Installation

Drivers for the GENE-MTH6 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/

Download the driver(s) you need and follow the steps below to install them.

Chipset Driver

1. Open the folder where you unzipped the **Chipset Drivers.**
2. Run the **SetupChipset.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.

Graphics Driver

1. Open the **Graphics Driver** folder
2. Run the **gfx_win_101.5590.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.
5. Refer to the ReadMe.txt for any assistance.

LAN Drivers

a) Install Intel® Ethernet Controller I225/ I226 Series Drivers:

1. Open the folder where you unzipped the **LAN Drivers.**
2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
3. Find the network adapter that corresponds to Intel I225/I226. It may be listed under "Network adapters."
4. Right-click on the network adapter and select "Update driver."
5. Choose "Browse my computer for drivers."
6. Navigate to the location where you extracted the driver files.
7. Follow the instructions.
8. Drivers will be installed automatically.

b) Install Intel® Ethernet Connection I219 Driver:

1. Open the folder where you unzipped the **LAN Drivers.**
2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
3. Find the network adapter that corresponds to Intel I219. It may be listed under "Network adapters."
4. Right-click on the network adapter and select "Update driver."
5. Choose "Browse my computer for drivers."
6. Navigate to the location where you extracted the driver files.
7. Follow the instructions.
8. Drivers will be installed automatically.

Intel Platform Monitoring Technology Driver

1. Open the folder where you unzipped the **Intel Platform Monitoring Technology Driver.**
2. Open the Device Manager by pressing Win + X and selecting "Device Manager."
3. Find the device that corresponds to Intel Platform Monitoring Technology. It may be listed under "System devices" or "Other devices."
4. Right-click on the device and select "Update driver."
5. Choose "Browse my computer for drivers."
6. Navigate to the location where you extracted the driver files.
7. Select the folder containing the files **intcpmt.cat**, **intcpmt.inf**, and **IntcPMT.sys**, then click "Next."
8. Follow the on-screen instructions to complete the driver installation.

ME & TXE Drivers (Windows 10)

1. Open the folder where you unzipped the **ME & TXE Drivers.**
2. Run the **SetupME.exe** file in the folder.
3. Follow the instructions.
4. Drivers will be installed automatically.

Intel NPU Driver

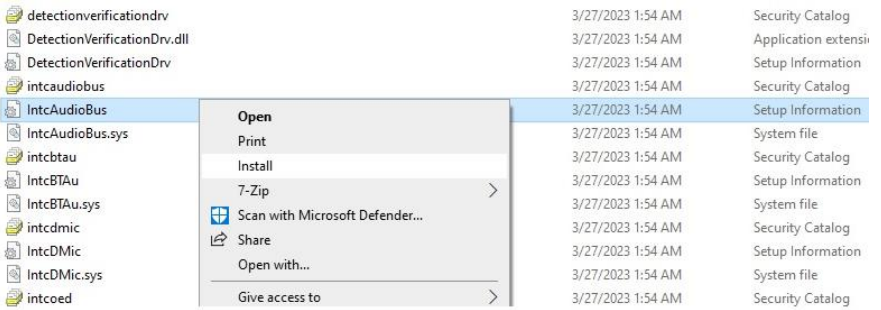
1. Open the Device Manager by pressing Win + X and selecting "Device Manager."
2. Find the device that corresponds to the Intel NPU. It may be listed under "Processors," "System devices," or "Other devices."
3. Right-click on the device and select "Update driver."
4. Choose "Browse my computer for drivers."
5. Navigate to the location where you extracted the driver files.
6. Select the folder containing all the extracted files and click "Next."
7. Follow the on-screen instructions to complete the driver installation.

Install Intel Smart Sound Driver

1. Open the **Intel Smart Sound** folder
2. Navigate the folder as follows: **Production** > **Driver**, then follow the below instructions to install the BUS Driver (IntcAudioBus.inf) and OED Driver (IntcOED.inf).

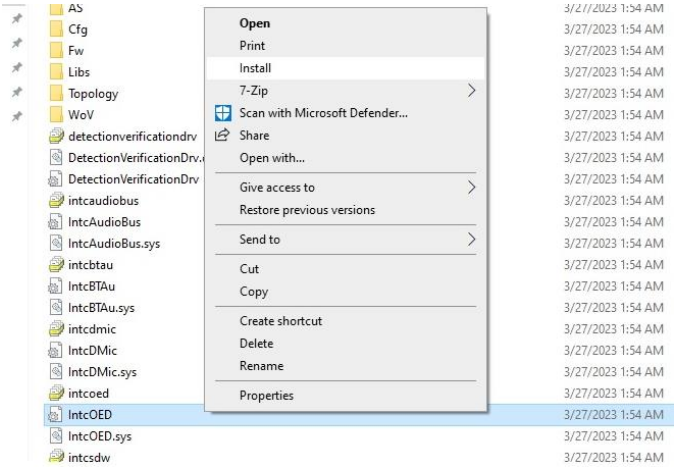
Install BUS driver (IntcAudioBus.inf)

a. Press Right Key -> Install



Install OED driver (IntcOED.inf)

b. Press Right Key -> Install



Install Realtek Audio Driver

1. Open the **Windows Audio** folder followed by **Setup.exe**
2. Follow the instructions
3. Drivers will be installed automatically

Install Intel ME & TXE Driver

1. Open the **Intel CSME** folder
2. Open the **SetupME.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

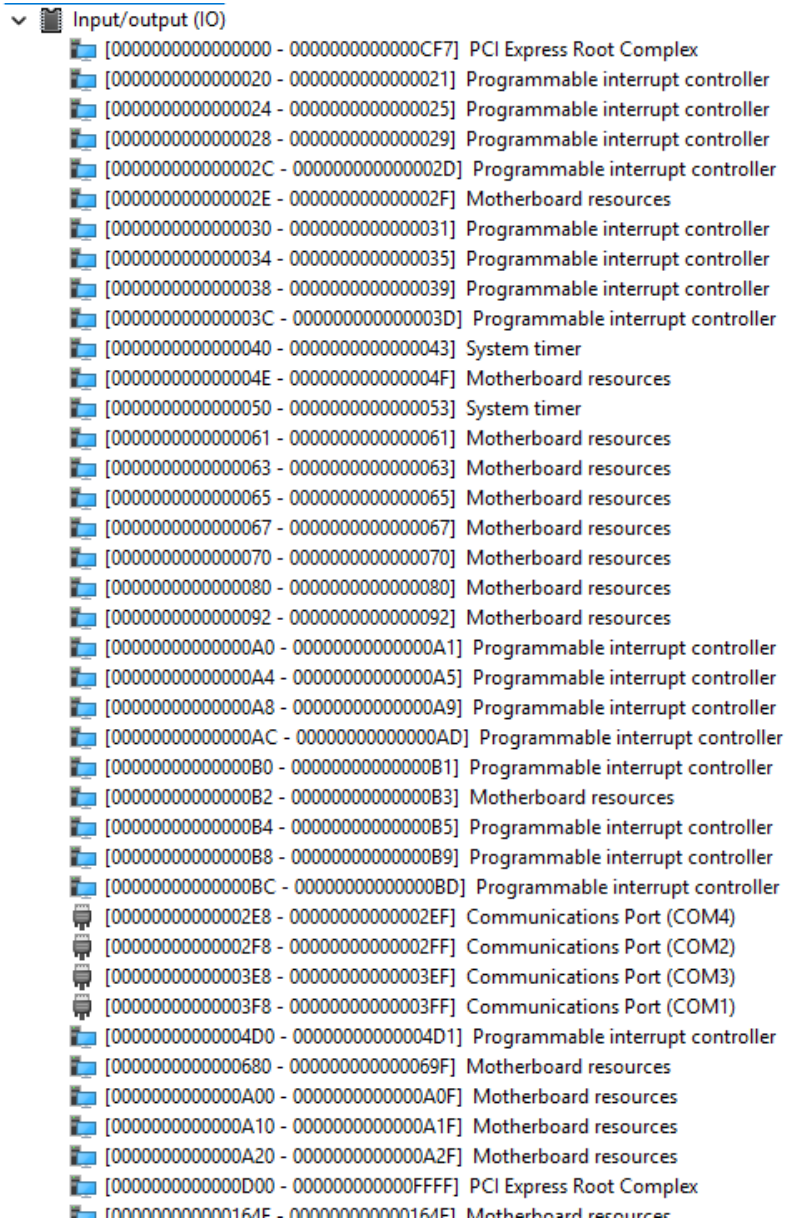
Install Peripheral Driver

1. Open the **Peripheral Driver** folder
2. Open the **SetupSerialIO.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

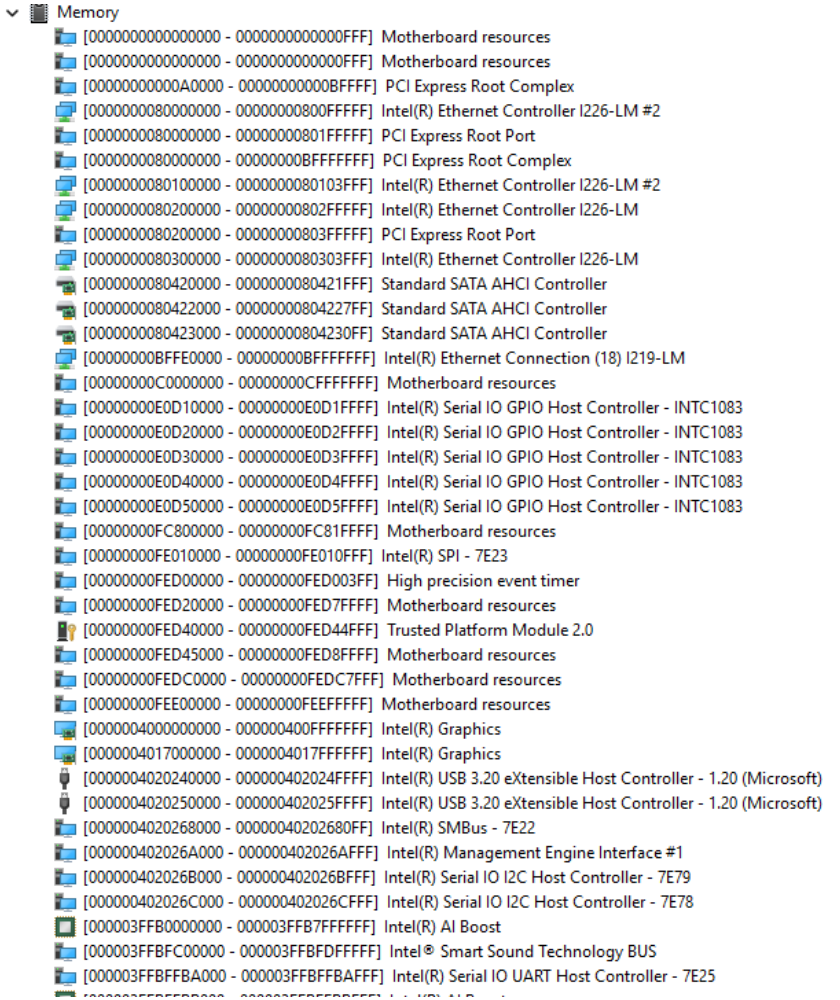
I/O Information

A.1 I/O Address Map



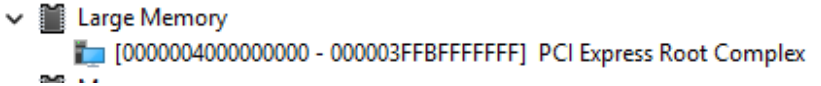

[0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
[000000000000164E - 000000000000164F] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000002000 - 00000000000020FE] Motherboard resources
[0000000000003020 - 000000000000303F] Standard SATA AHCI Controller
[0000000000003040 - 0000000000003043] Standard SATA AHCI Controller
[0000000000003050 - 0000000000003057] Standard SATA AHCI Controller
[000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus - 7E22

A.2 Memory Address Map

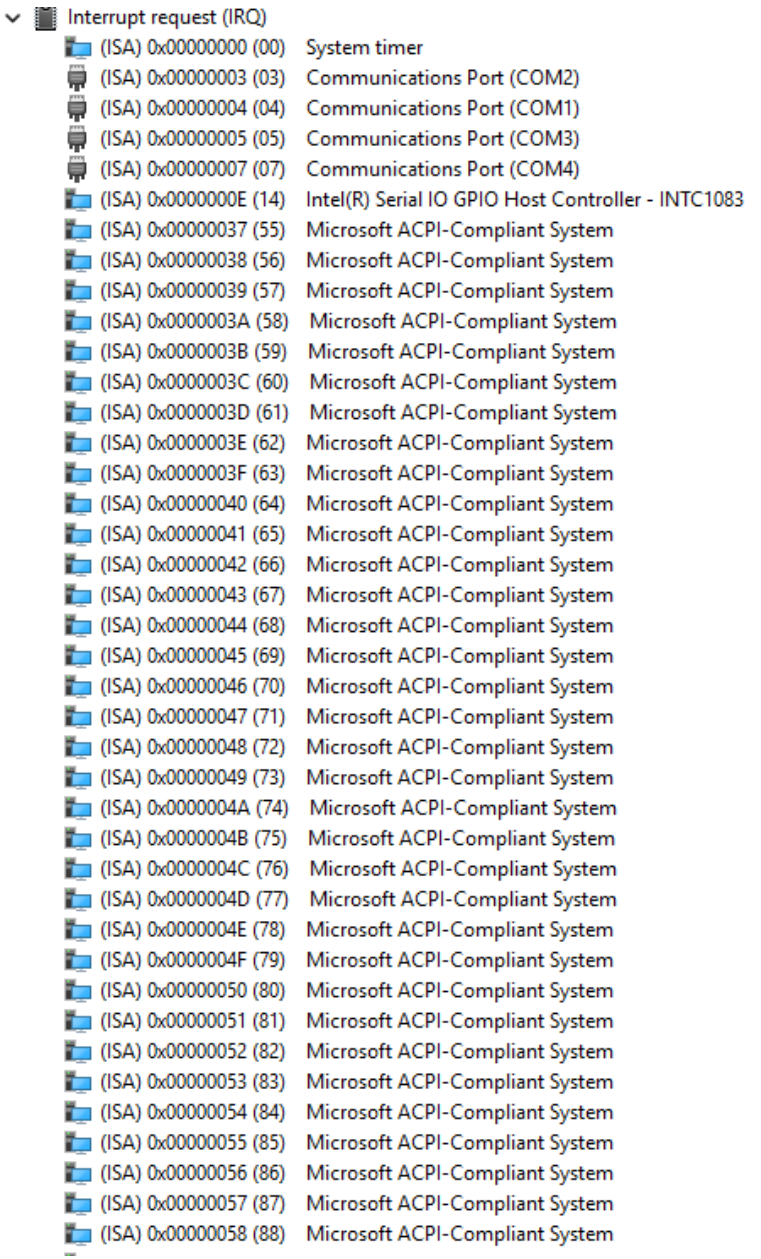


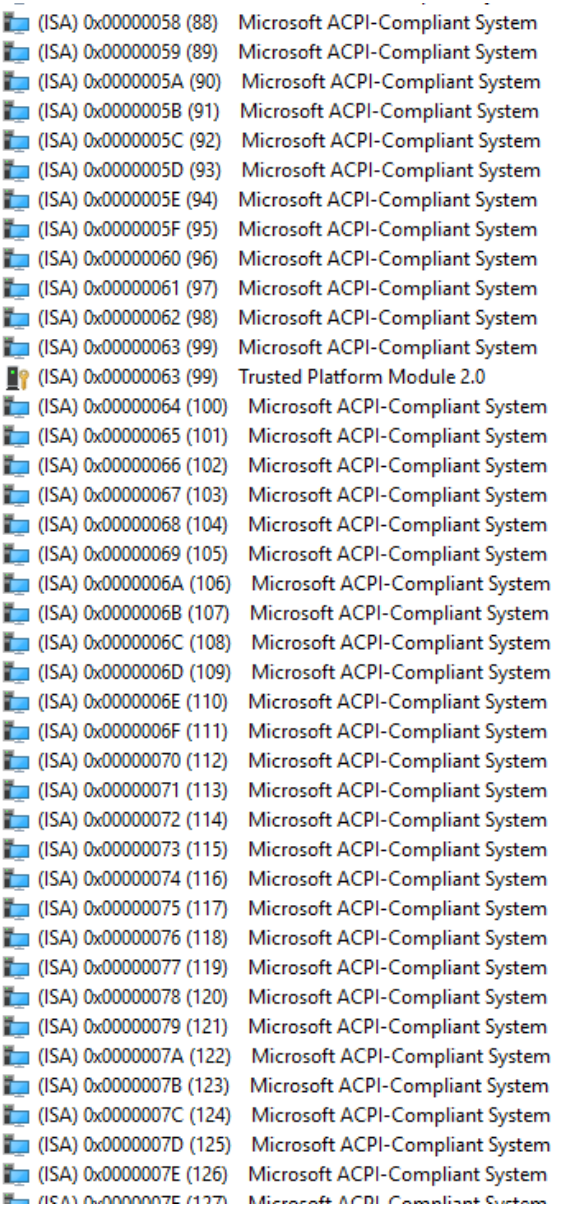

[000003FFBFFBB000 - 000003FFBFFBBFFF] Intel(R) AI Boost
[000003FFBFFBC000 - 000003FFBFFBFFFF] Intel® Smart Sound Technology BUS
[000003FFBFFC0000 - 000003FFBFFFFFFF] Intel(R) Platform Monitoring Technology (PMT) Driver

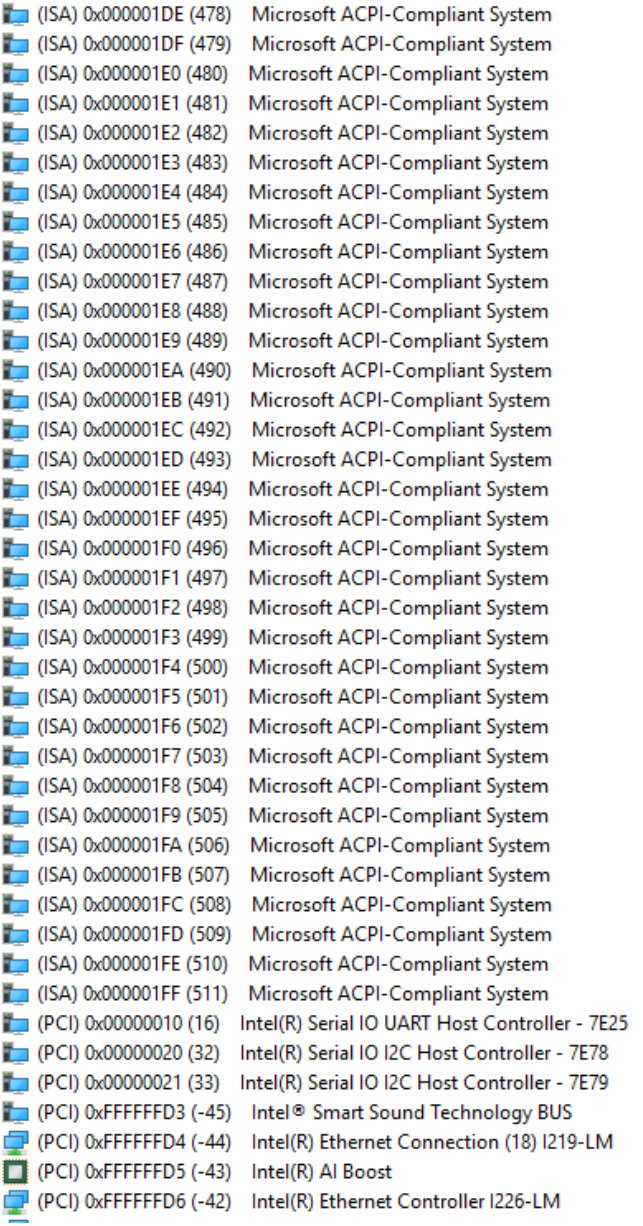
A.3 Large Memory

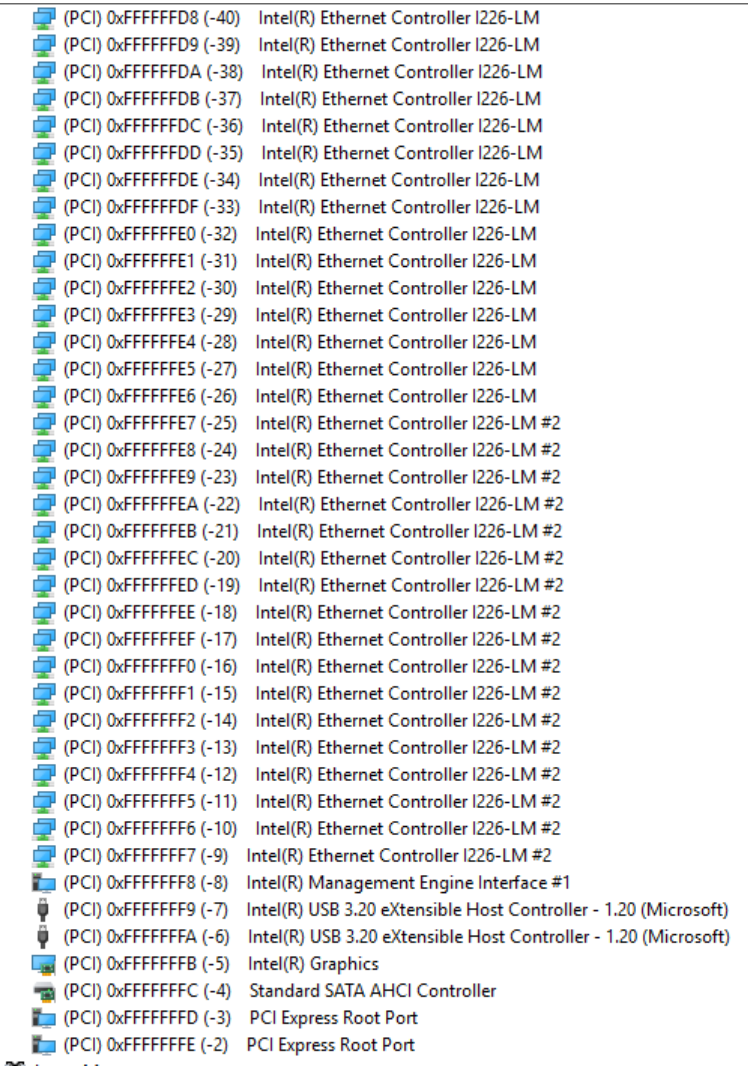


A.4 IRQ Mapping Chart




(ISA) 0x00000058 (88) Microsoft ACPI-Compliant System
(ISA) 0x00000059 (89) Microsoft ACPI-Compliant System
(ISA) 0x0000005A (90) Microsoft ACPI-Compliant System
(ISA) 0x0000005B (91) Microsoft ACPI-Compliant System
(ISA) 0x0000005C (92) Microsoft ACPI-Compliant System
(ISA) 0x0000005D (93) Microsoft ACPI-Compliant System
(ISA) 0x0000005E (94) Microsoft ACPI-Compliant System
(ISA) 0x0000005F (95) Microsoft ACPI-Compliant System
(ISA) 0x00000060 (96) Microsoft ACPI-Compliant System
(ISA) 0x00000061 (97) Microsoft ACPI-Compliant System
(ISA) 0x00000062 (98) Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99) Microsoft ACPI-Compliant System
(ISA) 0x00000063 (99) Trusted Platform Module 2.0
(ISA) 0x00000064 (100) Microsoft ACPI-Compliant System
(ISA) 0x00000065 (101) Microsoft ACPI-Compliant System
(ISA) 0x00000066 (102) Microsoft ACPI-Compliant System
(ISA) 0x00000067 (103) Microsoft ACPI-Compliant System
(ISA) 0x00000068 (104) Microsoft ACPI-Compliant System
(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
(ISA) 0x0000006A (106) Microsoft ACPI-Compliant System
(ISA) 0x0000006B (107) Microsoft ACPI-Compliant System
(ISA) 0x0000006C (108) Microsoft ACPI-Compliant System
(ISA) 0x0000006D (109) Microsoft ACPI-Compliant System
(ISA) 0x0000006E (110) Microsoft ACPI-Compliant System
(ISA) 0x0000006F (111) Microsoft ACPI-Compliant System
(ISA) 0x00000070 (112) Microsoft ACPI-Compliant System
(ISA) 0x00000071 (113) Microsoft ACPI-Compliant System
(ISA) 0x00000072 (114) Microsoft ACPI-Compliant System
(ISA) 0x00000073 (115) Microsoft ACPI-Compliant System
(ISA) 0x00000074 (116) Microsoft ACPI-Compliant System
(ISA) 0x00000075 (117) Microsoft ACPI-Compliant System
(ISA) 0x00000076 (118) Microsoft ACPI-Compliant System
(ISA) 0x00000077 (119) Microsoft ACPI-Compliant System
(ISA) 0x00000078 (120) Microsoft ACPI-Compliant System
(ISA) 0x00000079 (121) Microsoft ACPI-Compliant System
(ISA) 0x0000007A (122) Microsoft ACPI-Compliant System
(ISA) 0x0000007B (123) Microsoft ACPI-Compliant System
(ISA) 0x0000007C (124) Microsoft ACPI-Compliant System
(ISA) 0x0000007D (125) Microsoft ACPI-Compliant System
(ISA) 0x0000007E (126) Microsoft ACPI-Compliant System


(ISA) 0x000001DE (478) Microsoft ACPI-Compliant System
(ISA) 0x000001DF (479) Microsoft ACPI-Compliant System
(ISA) 0x000001E0 (480) Microsoft ACPI-Compliant System
(ISA) 0x000001E1 (481) Microsoft ACPI-Compliant System
(ISA) 0x000001E2 (482) Microsoft ACPI-Compliant System
(ISA) 0x000001E3 (483) Microsoft ACPI-Compliant System
(ISA) 0x000001E4 (484) Microsoft ACPI-Compliant System
(ISA) 0x000001E5 (485) Microsoft ACPI-Compliant System
(ISA) 0x000001E6 (486) Microsoft ACPI-Compliant System
(ISA) 0x000001E7 (487) Microsoft ACPI-Compliant System
(ISA) 0x000001E8 (488) Microsoft ACPI-Compliant System
(ISA) 0x000001E9 (489) Microsoft ACPI-Compliant System
(ISA) 0x000001EA (490) Microsoft ACPI-Compliant System
(ISA) 0x000001EB (491) Microsoft ACPI-Compliant System
(ISA) 0x000001EC (492) Microsoft ACPI-Compliant System
(ISA) 0x000001ED (493) Microsoft ACPI-Compliant System
(ISA) 0x000001EE (494) Microsoft ACPI-Compliant System
(ISA) 0x000001EF (495) Microsoft ACPI-Compliant System
(ISA) 0x000001F0 (496) Microsoft ACPI-Compliant System
(ISA) 0x000001F1 (497) Microsoft ACPI-Compliant System
(ISA) 0x000001F2 (498) Microsoft ACPI-Compliant System
(ISA) 0x000001F3 (499) Microsoft ACPI-Compliant System
(ISA) 0x000001F4 (500) Microsoft ACPI-Compliant System
(ISA) 0x000001F5 (501) Microsoft ACPI-Compliant System
(ISA) 0x000001F6 (502) Microsoft ACPI-Compliant System
(ISA) 0x000001F7 (503) Microsoft ACPI-Compliant System
(ISA) 0x000001F8 (504) Microsoft ACPI-Compliant System
(ISA) 0x000001F9 (505) Microsoft ACPI-Compliant System
(ISA) 0x000001FA (506) Microsoft ACPI-Compliant System
(ISA) 0x000001FB (507) Microsoft ACPI-Compliant System
(ISA) 0x000001FC (508) Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509) Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x00000010 (16) Intel(R) Serial IO UART Host Controller - 7E25
(PCI) 0x00000020 (32) Intel(R) Serial IO I2C Host Controller - 7E78
(PCI) 0x00000021 (33) Intel(R) Serial IO I2C Host Controller - 7E79
(PCI) 0xFFFFFFD3 (-45) Intel® Smart Sound Technology BUS
(PCI) 0xFFFFFFD4 (-44) Intel(R) Ethernet Connection (18) I219-LM
(PCI) 0xFFFFFFD5 (-43) Intel(R) AI Boost
(PCI) 0xFFFFFFD6 (-42) Intel(R) Ethernet Controller I226-LM


(PCI) 0xFFFFFFD8 (-40) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFD9 (-39) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDA (-38) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDB (-37) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDC (-36) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDD (-35) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDE (-34) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFDF (-33) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE0 (-32) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE1 (-31) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE2 (-30) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE3 (-29) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE4 (-28) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE5 (-27) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE6 (-26) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE7 (-25) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFE8 (-24) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFE9 (-23) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFEA (-22) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFEB (-21) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFEC (-20) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFED (-19) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFEE (-18) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFEF (-17) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF0 (-16) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF1 (-15) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF2 (-14) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF3 (-13) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF4 (-12) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF5 (-11) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF6 (-10) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF7 (-9) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFF8 (-8) Intel(R) Management Engine Interface #1
(PCI) 0xFFFFFFF9 (-7) Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFFA (-6) Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFFB (-5) Intel(R) Graphics
(PCI) 0xFFFFFFFC (-4) Standard SATA AHCI Controller
(PCI) 0xFFFFFFFD (-3) PCI Express Root Port
(PCI) 0xFFFFFFFE (-2) PCI Express Root Port

Appendix B

Mating Connectors and Cables

B.1 Mating Connectors and Cables

Label	Function	Mating Connector		Mating Cable P/N
		Vendor	Model no.	
CN1	Audio with detect	Aces	50247-012H0H0-001	170X000156
CN2	SATA Power	JST	PHR-2	1702150155
CN5	Power	N/A	N/A	170204010R
CN7	Front Panel	JST	SHR-10V-S-B	170X000603
CN8	SATA	Molex	887505318	N/A
CN9	External +5VSB Power Input and PS_ON#	JST	XHP-3	170220020B
CN12	USB 2.0 Port6	Molex	51021-0500	1700050207
CN13	USB 2.0 Port6	Molex	51021-0500	1700050207
CN14	USB 2.0 Port6	Molex	51021-0500	1700050207
CN15	USB 2.0 Port6	Molex	51021-0500	1700050207
CN16	COM Port1	Molex	51021-0900	1701090150
CN17	COM Port4	Molex	51021-0900	1701090150
CN19	COM Port3	Molex	51021-0900	1701090150
CN20	COM Port2	Molex	51021-0900	1701090150
CN21	LVDS	Hirose	DF13-30DS-1.25C	N/A
CN23	GPIO	MOLEX	51110-1050	N/A
CN25	LAN2 LED	JST	SHR-04V-S-B	170X000634
CN26	LVDS Inverter	ACES	50236-006H0H0-001	170X000152
CN27	LAN1 LED	JST	SHR-04V-S-B	170X000634
CN29	eDP	I-PEX	20453-030T-01S	N/A
CN30	LAN3 LED	JST	SHR-04V-S-B	170X000634
CN36	External RTC	Molex	51021-0200	175011301K
CN37	I2C/SMBUS	JST	SHR-05V-S-B	170X000743
CN38	Port 80 Debug Port	JST	SHR-10V-S-B	1703100133
CN39	Board to Board	Hirose	DF40C-80DP-0.4V(51)	N/A