MXM-ACMA-PUC

MXM System

User's Manual 1st Ed

Last Updated: November 28, 2024

Copyright Notice

Acknowledgements

Packing List

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

Item	Quantity
• MXM-ACMA-PUC	1
• Power Adapter	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.

产品中有毒有害物质或元素名称及含量

AAEON System QO4-381 Rev.A0

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	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：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 GB/T 26572 标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求，然而该部件仍符合欧盟指令 2011/65/EU 的规范。

备注：

一、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。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

Hazardous and Toxic Materials List

AAEON System QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext.Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	O	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	MXM System
CPU	12th/13th Generation Intel® Core™ Processor, up to 35W
Chipset	Intel® Q670E Chipset
Memory Type	Dual-Channel DDR5 4800 SODIMM x 2, up to 64GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0
RTC Battery	Lithium Battery 3V/240mAh
Dimension	12.2" x 6.2" x 2.9" (310mm x 160mm x 75mm)
OS Support	Windows® 10 (64-bit) Ubuntu 24.04/kernel 6.8

Power	
Power Requirement	+19V ~ +24V
Power Supply Type	AT/ATX
Connector	3-Pin Phoenix Connector
Power Consumption	Intel ® Core ™ i7-13700TE, DDR5 32GB x 2, Intel® Arc™ A370E, 3.54A @22.9V, 80.83W (Typical) Intel ® Core ™ i7-13700TE, DDR5 32GB x 2, Intel® Arc™ A370E, 7.48A @23.1V, 167.71W (Max)

Display

Controller	CPU Graphic Controller
	Intel® UHD Graphics 770 (i5 SKU and above)
	Intel® UHD Graphics 730 (i3 SKU)
	MXM-ACMA Graphic Module:
	Intel® Arc™ A370E/Intel® Arc™ A350E Graphics
LVDS/eDP	—
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz (from Main Board)
	DP++ 1.4 x 4 (from MXM Module)
Multiple Display	1 Display from Main Board
	Up to 4 Simultaneous Displays from MXM-ACMA Module

Audio

Codec	—
Audio Interface	—
Speaker	—

External I/O

Ethernet	Intel® Ethernet Controller I226-LM, 2.5GbE RJ-45 x 3
	Intel® Ethernet Connection I219-LM, GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
	USB 2.0 x 2
Serial Port	COM 1 ~ COM 2 (RS-232/422/485, RI as default, 5V/12V selected by BOM change)
Video	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz (from Main Board)
	DP++1.4 x 4 (from MXM Module) up to 1920 x 1080

Internal I/O

USB	—
Serial Port	—
Video	—
SATA	SATA 6Gb/s x 2
	+5V SATA Power Connector x 2
Audio	—
DIO/GPIO	—
SMBus/I2C	—
Touch	—
Fan	4-Pin Smart Fan (CPU) x 1
	3-Pin Fan (MXM-ACMA) x 1
	System Fan x 1
SIM	Nano SIM x 1
Front Panel	Power Button, Power LED
Others	MXM 3.1 Type A Module

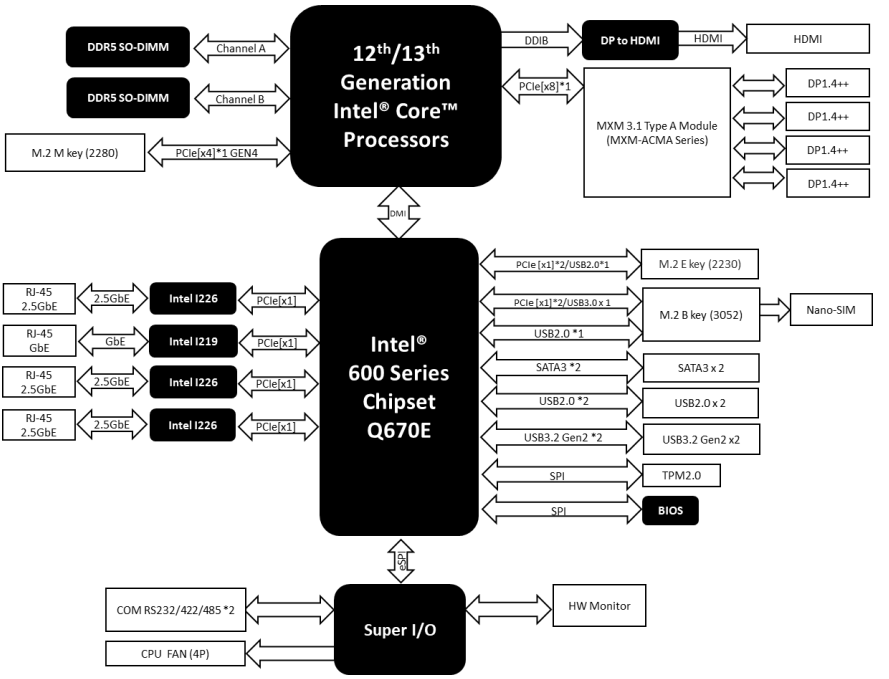
Expansion

Mini PCIe/mSATA	—
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1)
	M.2 3052 B-Key x 1 (PCIe 3.0 [x2] + USB 3.2 + USB 2.0)
	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	MXM 3.1 Type A Module

Environmental

Operating Temperature	14°F ~ 122°F (-10°C ~ 50°C) with 0.7m/sec airflow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	823,430
EMC	CE/FCC Class A

1.2 Block Diagram

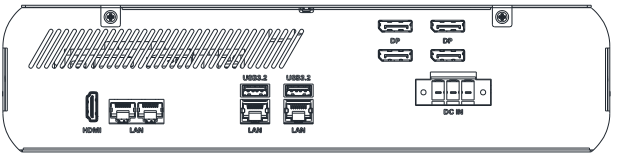


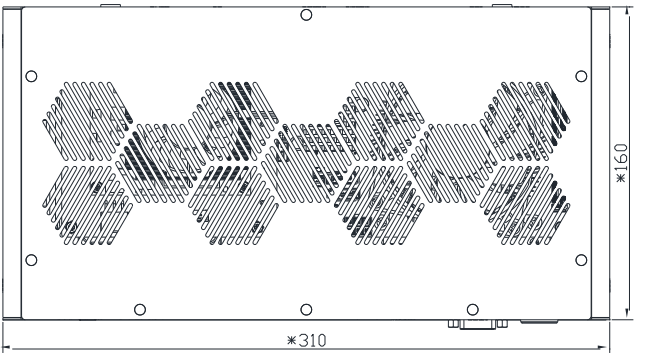
Chapter 2

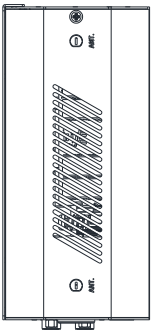
Hardware Information

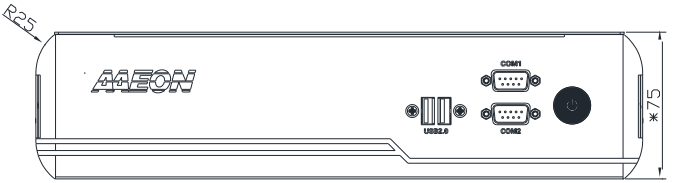
2.1 Dimensions

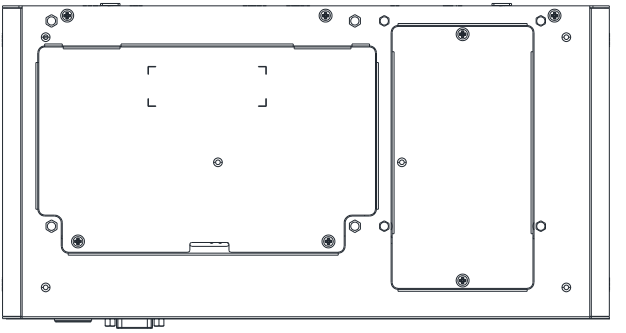
System



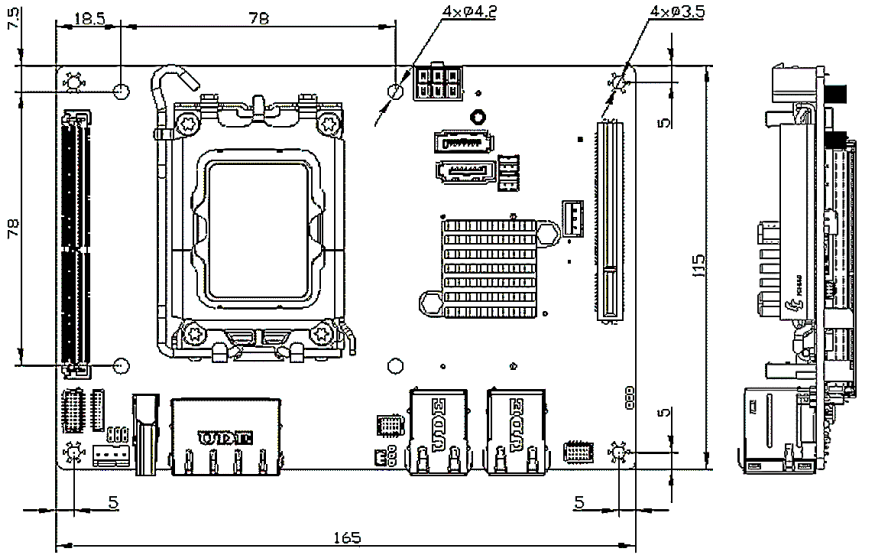




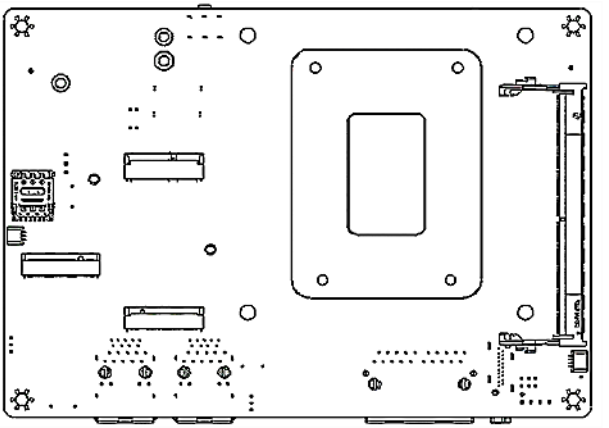




Board Top



Board Bottom



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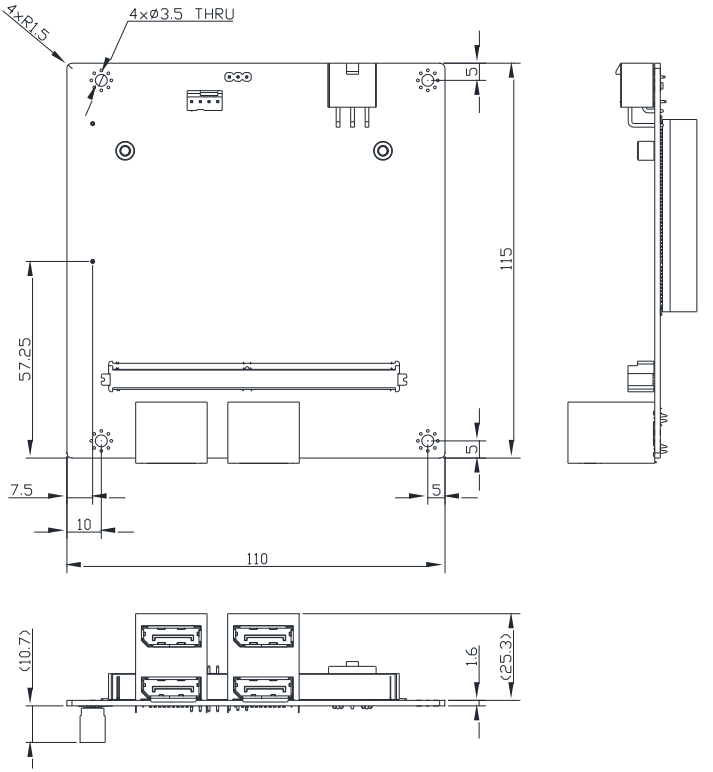

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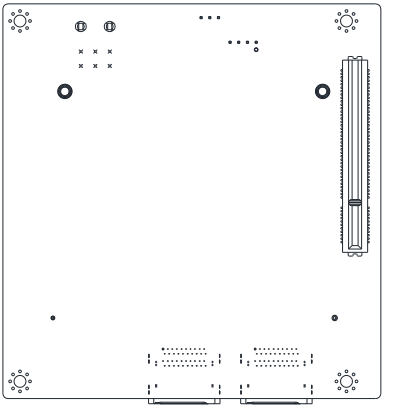

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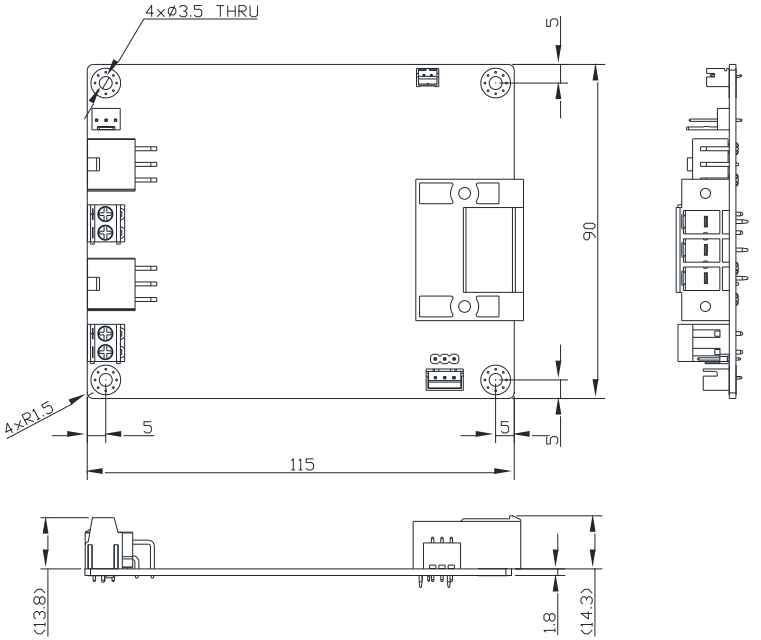

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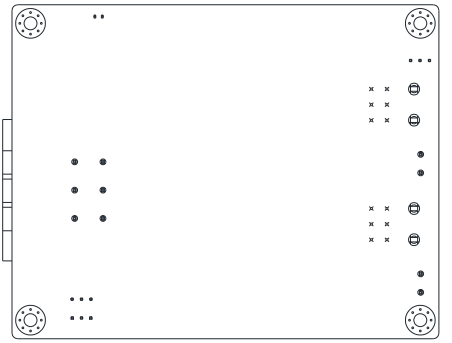

2.2 Jumpers and Connectors

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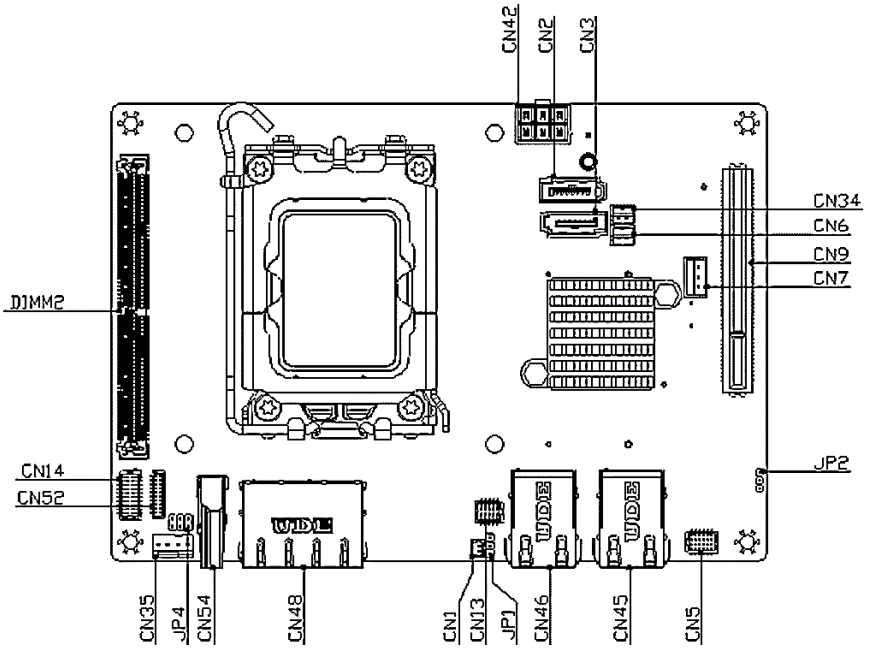

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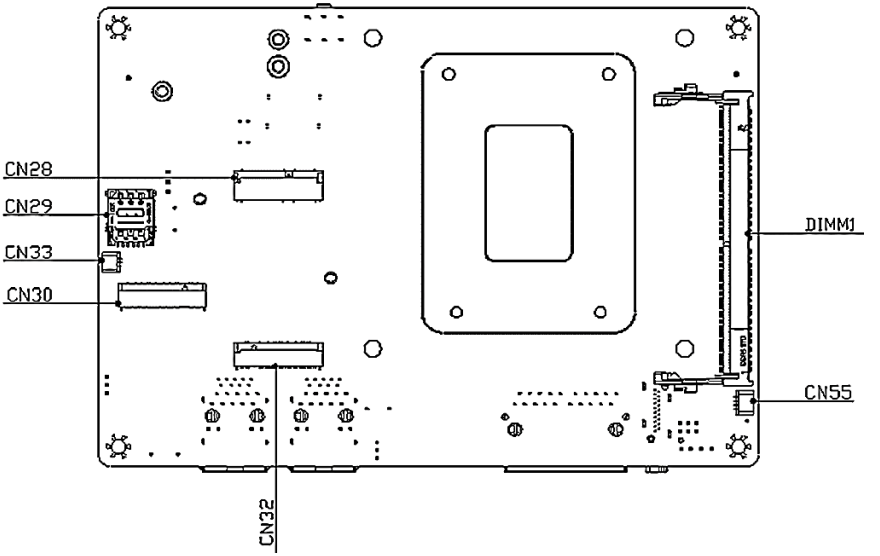

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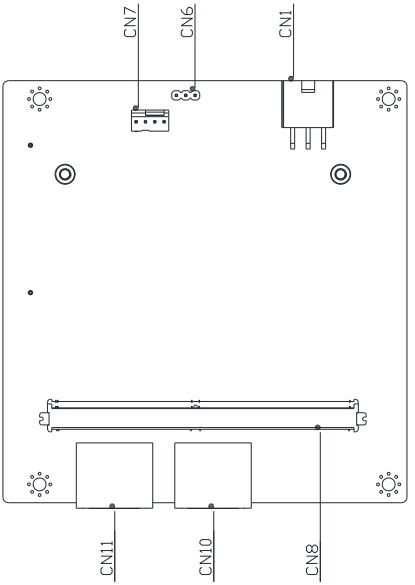

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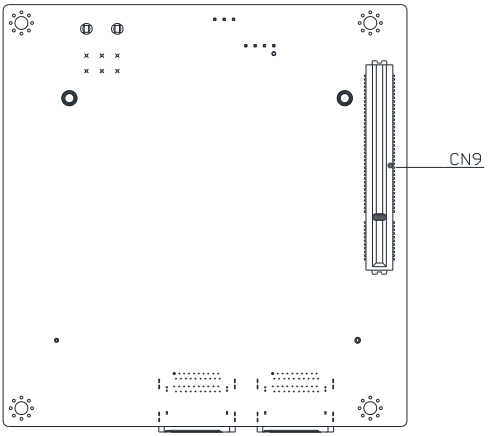

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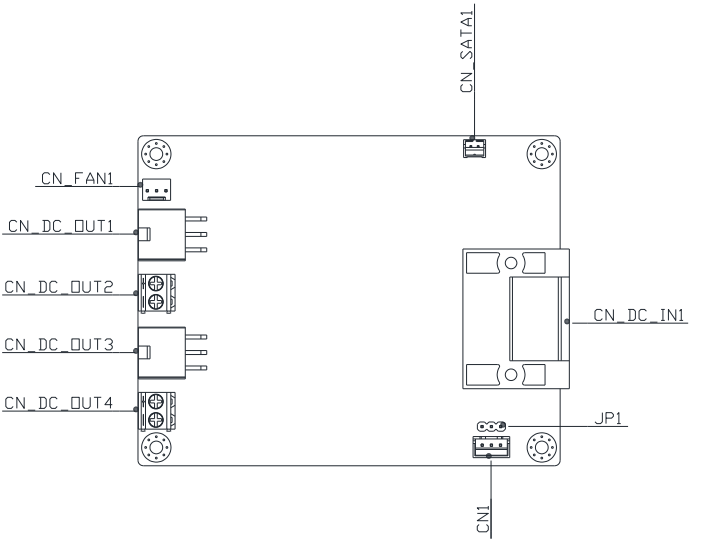

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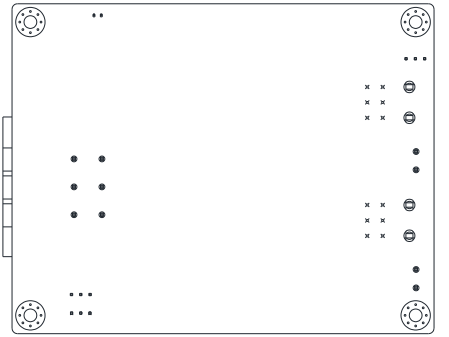
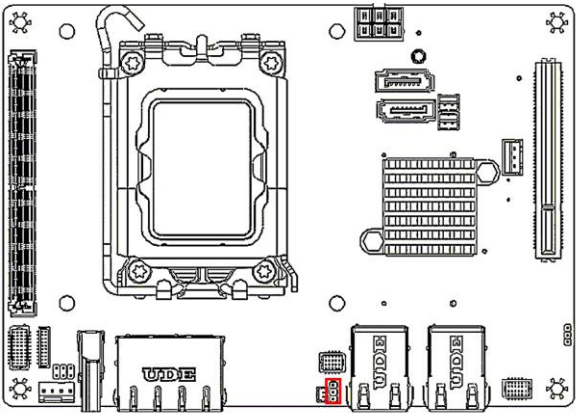


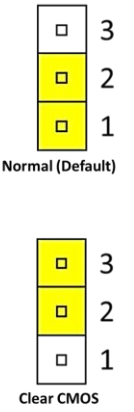
2.3 List of Jumpers

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

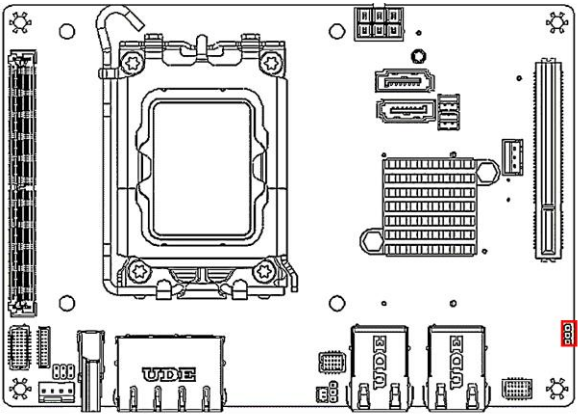
Label	Function
JP1	Clear CMOS Pin Header
JP2	Auto Power Button AT/ATX Selection
JP4	COM 2 Pin 8 Function Selection

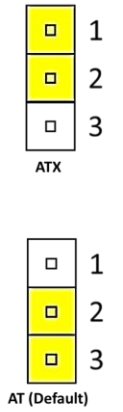
2.3.1 Clear CMOS Pin Header (JP1)



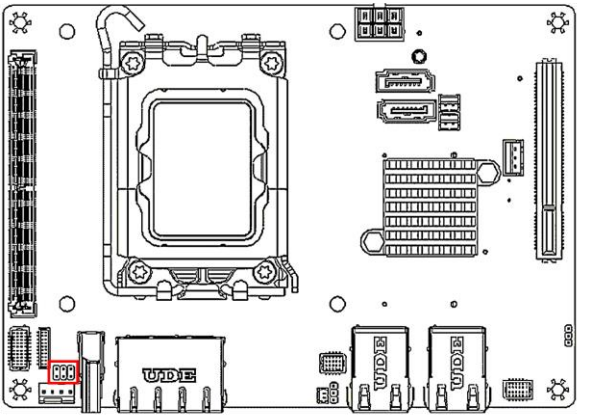


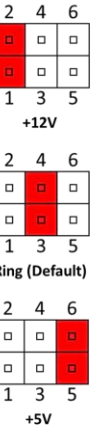
2.3.2 Auto Power Button AT/ATX Selection (JP2)





2.3.3 COM 2 Pin 8 Function Selection (JP4)



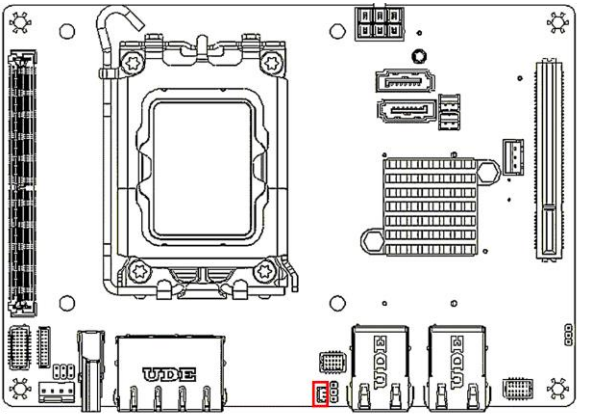


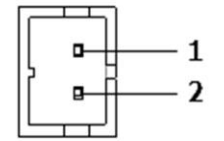
2.4 List of Connectors

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

Label	Function
CN1	RTC Battery
CN2	SATA Port
CN3	SATA Port
CN6	+5V Output for SATA HDD
CN7	External +5VSB Input
CN9	PCIe [x8] Slot
CN13	USB 2.0 Port 5/Port 6
CN14	COM Port 1/Port 2 (RS-232/422/485)
CN28	M.2 2230 E-Key Slot
CN29	Nano SIM Card Socket
CN30	M.2 3052 B-Key Slot
CN32	M.2 2280 M-Key Slot
CN34	+5V Output for SATA HDD
CN35	4-Pin CPU Smart Fan
CN42	PCIe 6-Pin DC In
CN45	2.5GbE RJ-45 Port +USB 3.2
CN46	GbE RJ-45 Port +USB 3.2
CN48	Dual 2.5GbE RJ-45 Port
CN52	Front Panel
CN54	HDMI
CN10	MXM Display for PER-T691
CN11	MXM Display for PER-T691
CN DC IN	DC In for PER-T692

2.4.1 RTC Battery Connector (CN1)

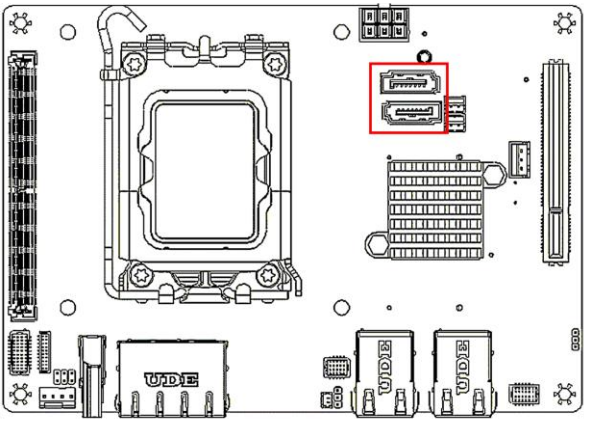


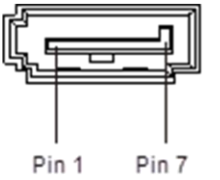


Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	3.3V
2	GND	GND	

Cable Item Number **175011901C**.

2.4.2 SATA Port (CN2/CN3)



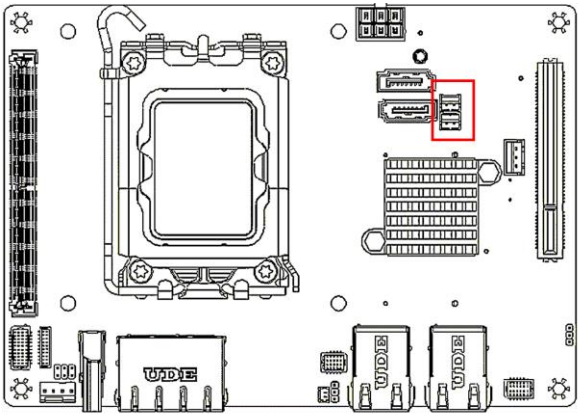


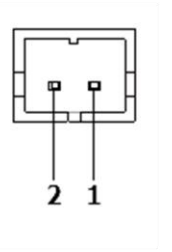
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

Cable Item Number **170X000593.**

2.4.3 +5V Output for SATA HDD (CN6/CN34)

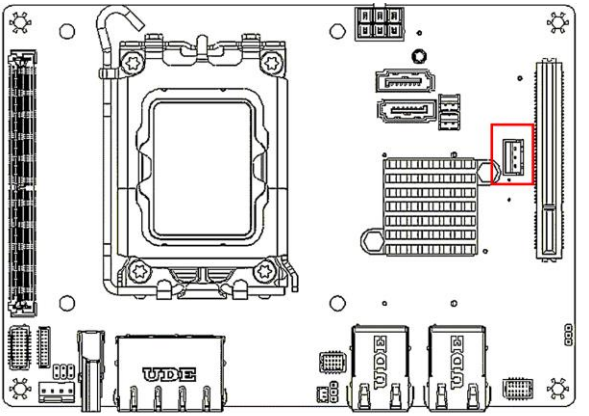


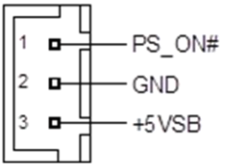


Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	5V
2	GND	GND	

Pin 1 supports a total driving current of up to 1A.
Cable Item Number **1702150130**.

2.4.4 External +5VSB Input (CN7)

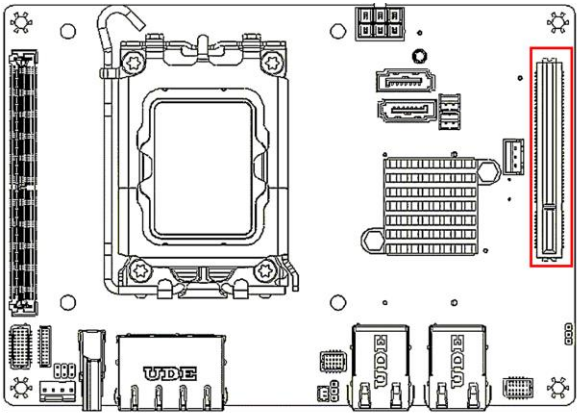


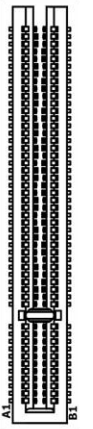


Pin	Pin Name	Signal Type	Signal Level
1	PS_ON#	OUT	+5V
2	GND	GND	
3	+5VSB	PWR	+5V

Pin 3 requires a total current of up to 2.5A.
Cable Item Number **170X000921.**
Cable Item Number **170220020B.**

2.4.5 PCIe [x8] Slot (CN9)



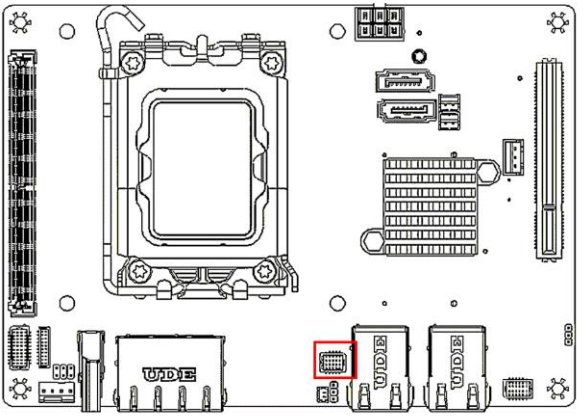


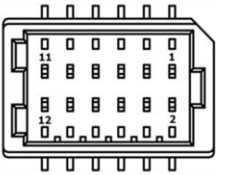
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
A1	GND	I/O	B1	+V12S	PWR
A2	+V12S	PWR	B2	+V12S	PWR
A3	+V12S	PWR	B3	+V12S	PWR
A4	GND	GND	B4	GND	GND
A5	NC		B5	SMB_CLK	CLK
A6	NC		B6	SMB_DATA	I/O
A7	NC		B7	GND	GND
A8	NC		B8	+V3P3S	PWR
A9	+V3P3S	PWR	B9	NC	
A10	+V3P3S	PWR	B10	+V3P3A	PWR
A11	RST#	I/O	B11	PCIE_WAKE#	I/O
A12	GND	GND	B12	NC	
A13	CLKOUT_PCIE_P0	DIFF	B13	GND	GND
A14	CLKOUT_PCIE_N0	DIFF	B14	PEG_TXP0	DIFF
A15	GND	GND	B15	PEG_TXN0	DIFF
A16	PEG_RXP0	DIFF	B16	GND	GND
A17	PEG_RXN0	DIFF	B17	+V3P3S	I/O
A18	GND	GND	B18	GND	GND
A19	NC		B19	PEG_TXP1	DIFF
A20	GND	GND	B20	PEG_TXN1	DIFF
A21	PEG_RXP1	DIFF	B21	GND	GND
A22	PEG_RXN1	DIFF	B22	GND	GND
A23	GND	GND	B23	PEG_TX2	DIFF

Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
A24	GND	GND	B24	PEG_TXN2	DIFF
A25	PEG_RXP2	DIFF	B25	GND	GND
A26	PEG_RXN2	DIFF	B26	GND	GND
A27	GND	GND	B27	PEG_TXP3	DIFF
A28	GND	GND	B28	PEG_TXN3	DIFF
A29	PEG_RXP3	DIFF	B29	GND	GND
A30	PEG_RXN3	DIFF	B30	NC	
A31	GND	GND	B31	+V3P3S	I/O
A32	NC		B32	GND	GND
A33	NC		B33	PEG_TXP4	DIFF
A34	GND	GND	B34	PEG_TXN4	DIFF
A35	PEG_RXP4	DIFF	B35	GND	GND
A36	PEG_RXN4	DIFF	B36	GND	GND
A37	GND	GND	B37	PEG_TXP5	DIFF
A38	GND	GND	B38	PEG_TXN5	DIFF
A39	PEG_RXP5	DIFF	B39	GND	GND
A40	PEG_RXN5	DIFF	B40	GND	GND
A41	GND	GND	B41	PEG_TXP6	DIFF
A42	GND	GND	B42	PEG_TXN6	DIFF
A43	PEG_RXP6	DIFF	B43	GND	GND
A44	PEG_RXN6	DIFF	B44	GND	GND
A45	GND	GND	B45	PEG_TXP7	DIFF
A46	GND	GND	B46	PEG_TXN7	DIFF
A47	PEG_RXP7	DIFF	B47	GND	GND
A48	PEG_RXN7	DIFF	B48	+V3P3S	I/O
A49	GND	GND	B49	GND	GND

Pins A2, A3, B1, B2, and B3 support a combined total driving current of up to 2.1A.
Pins A9, A10, and B8 support a combined total driving current of up to 3A.
Pin B10 supports a total driving current of up to 0.375A.

2.4.6 USB 2.0 Connector (CN13)

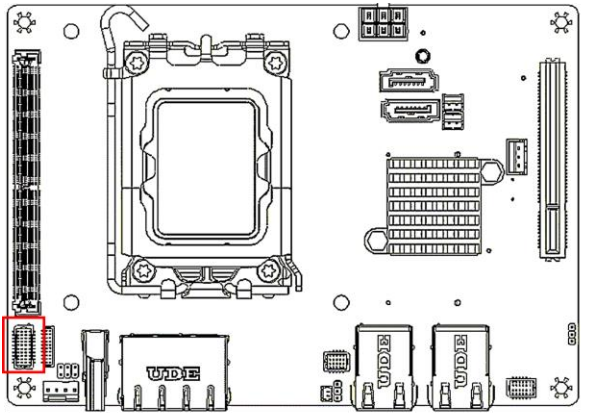


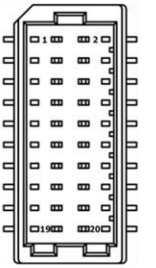


Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	+5VSB	PWR	2	+5VSB	PWR
3	USB5_D-	DIFF	4	USB6_D-	DIFF
5	USB5_D+	DIFF	6	USB6_D+	DIFF
7	GND	GND	8	GND	GND
9	GND	GND	10	GND	GND
11	GND	GND	12	GND	GND

Pin 1 supports a total driving current of up to 0.5A.
Pin 2 supports a total driving current of up to 0.5A.
Cable Item Number **170X000504**

2.4.7 COM Port 1/Port 2 (RS-232/422/485) (CN14)





RS-232					
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	DCD_1	IN	2	DCD_2	IN
3	RX_1	IN	4	RX_2	IN
5	TX_1	OUT	6	TX_2	OUT
7	DTR_1	OUT	8	DTR_2	OUT
9	GND	GND	10	GND	GND
11	DSR_1	IN	12	DSR_2	IN
13	RTS_1	OUT	14	RTS_2	OUT
15	CTS_1	IN	16	CTS_2	IN
17	RI_1	IN	18	RI_2/5V/12V	IN/PWR/PWR
19	NC		20	NC	

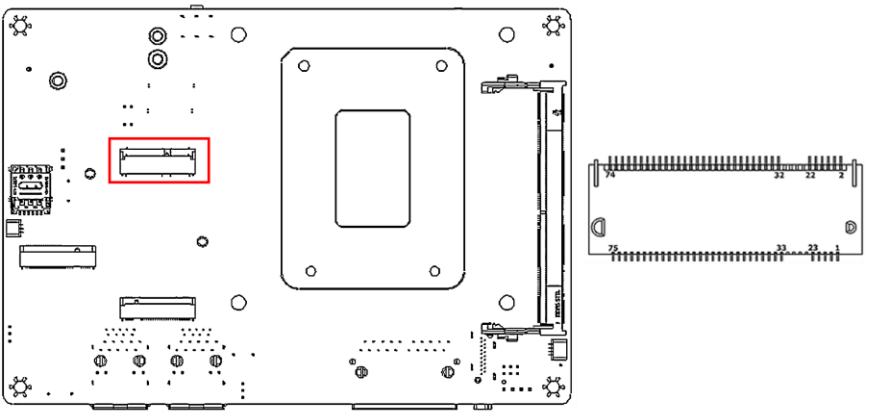
RS-485					
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	RS485_1_ D-	DIFF	2	RS485_2_ D-	I/O
3	RS485_1_D+	DIFF	4	RS485_2_D+	I/O
5	NC		6	NC	
7	NC		8	NC	
9	GND	GND	10	GND	GND
11	NC		12	NC	
13	NC		14	NC	
15	NC		16	NC	
17	RI_1	IN	18	RI_2/5V/12V	IN/PWR/PWR

RS-485					
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
19	NC		20	NC	

RS-422					
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	RS422_TX-	DIFF	2	RS422_TX-	DIFF
3	RS422_TX+	DIFF	4	RS422_TX+	DIFF
5	RS422_RX+	DIFF	6	RS422_RX+	DIFF
7	RS422_RX-	DIFF	8	RS422_RX-	DIFF
9	GND	GND	10	GND	GND
11	NC		12	NC	
13	NC		14	NC	
15	NC		16	NC	
17	RI_1	IN	18	RI_2/5V/12V	IN/PWR/PWR
19	NC		20	NC	

Pin 18 supports a total driving current of up to 0.5A.
Pin 18 can be set to RI, +5V, or +12V using JP4.
Cable Item Number **170X000508**

2.4.8 M.2 2230 E-Key Slot (CN28)



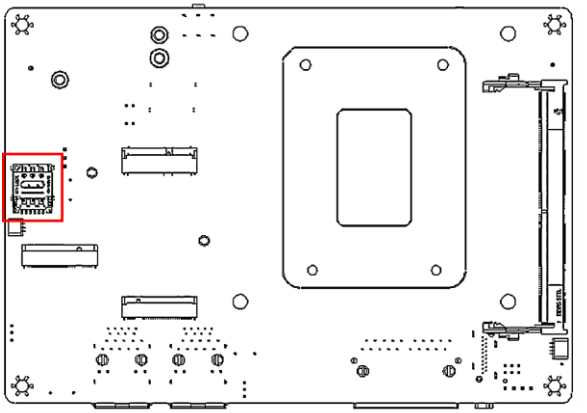
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	GND	GND	2	+V3P3A	PWR

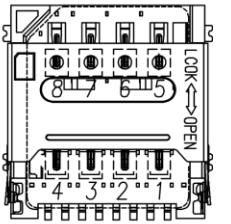
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
3	USB2P_7	DIFF	4	+V3P3A	PWR
5	USB2N_7	DIFF	6	NC	
7	GND	GND	8	PCM_CLK	CLK
9	NC		10	PCM_SYNC	I/O
11	NC		12	PCM_IN	I/O
13	NC		14	PCM_OUT	I/O
15	NC		16	NC	
17	NC		18	GND	GND
19	NC		20	NC	
21	NC		22	NC	
23	NC		24	KEY-E	
25	KEY-E		26		
27			28		
29			30		
31			32	NC	
33	GND	GND	34	NC	
35	PCIE3_TXP_C	DIFF	36	NC	
37	PCIE3_TXN_C	DIFF	38	NC	
39	GND	GND	40	NC	
41	PCIE3_RXP	DIFF	42	NC	
43	PCIE3_RXN	DIFF	44	NC	
45	GND	GND	46	NC	
47	CLKOUT_PCIE_P1	DIFF	48	NC	
49	CLKOUT_PCIE_N1	DIFF	50	SUS_CLK_E	CLK
51	GND	GND	52	BUF_PLT_RST1#	I/O
53	PCIE_CLKREQ1#	I/O	54	W_DISABLE2#	I/O
55	PCIE_WAKE#	I/O	56	W_DISABLE1#	I/O
57	GND	GND	58	SMB_DATA	I/O
59	NC		60	SMB_CLK	CLK
61	NC		62	SMBALERT#	I/O
63	GND	GND	64	TP	TP
65	NC		66	NC	
67	NC		68	NC	
69	GND	GND	70	NC	
71	NC		72	+V3P3A	PWR
73	NC		74	+V3P3A	PWR
75	GND	GND			

Pins 2, 4, 72, and 74 support a total driving current of up to 2A.

Functions marked in yellow are optional based on BOM.

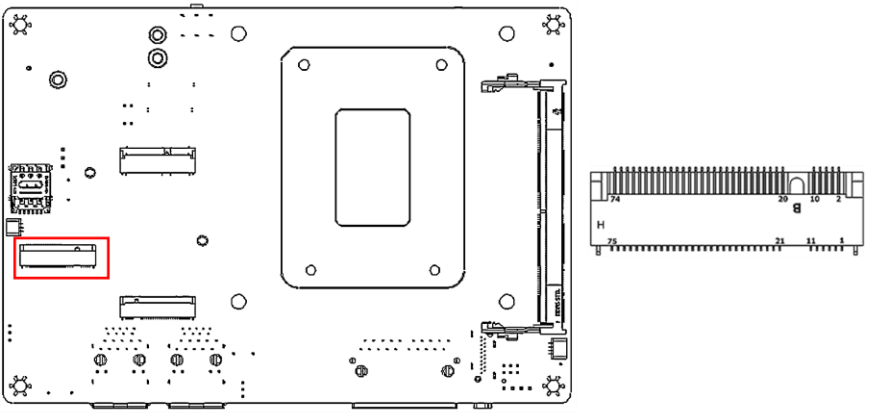
2.4.9 Nano SIM Card Socket (CN29)





Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	NC		
5	GND	GND	
6	UIM_VPP	PWR	
7	UIM_DATA	I/O	
8	NC		

2.4.10 M.2 3052 B-Key (CN30)

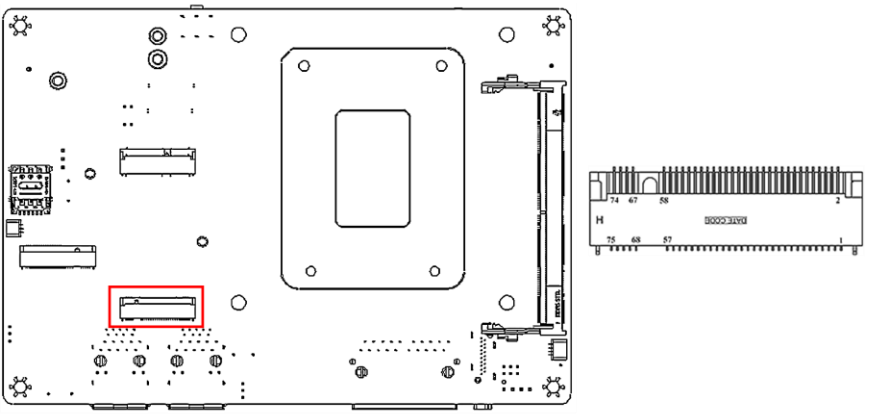


Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	CONFIG3_B	I/O	2	+V3P3A	PWR
3	GND	GND	4	+V3P3A	PWR
5	GND	GND	6	+V3P3A	I/O
7	USB2P_8_B	DIFF	8	W_DISABLE1#	I/O
9	USB2N_8_B	DIFF	10	SATA_LED#	I/O
11	GND	GND	12	KEY-B	
13	KEY-B		14		
15			16		
17			18		
19			20	NC	
21	CONFIG0_B	I/O	22	NC	
23	NC		24	NC	
25	NC		26	NC	
27	GND	GND	28	NC	
29	PCIe1_RX_N/USB3_RX_N	DIFF	30	UIM_RST_M2B	I/O
31	PCIe1_RX_N/USB3_RX_P	DIFF	32	UIM_CLK_M2B	CLK
33	GND	GND	34	UIM_DAT_M2B	I/O
35	PCIe1_TX_N/USB3_TX_N	DIFF	36	UIM_PWR_M2B	PWR
37	PCIe1_TX_N/USB3_TX_P	DIFF	38	DEVSLP6	I/O
39	GND	GND	40	NC	
41	PCIe0_RX_N/SATA_RX_P	DIFF	42	NC	
43	PCIe0_RX_P/SATA_RX_N	DIFF	44	NC	
45	GND	GND	46	NC	

Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
47	PCIe0_TX_N/SATA_TX_N	DIFF	48	NC	
49	PCIe0_TX_P/SATA_TX_P	DIFF	50	BUF_PLT_RST1#	I/O
51	GND	GND	52	PCIE_CLKREQ4#	I/O
53	CLKOUT_PCIE_N4	DIFF	54	PCIE_WAKE#	I/O
55	CLKOUT_PCIE_P4	DIFF	56	NC	
57	GND	GND	58	NC	
59	NC		60	NC	
61	NC		62	NC	
63	NC		64	NC	
65	NC		66	SIM_Detect	I/O
67	RESET#_M_B	I/O	68	SUS_CLK_B	CLK
69	CONFIG1_B	I/O	70	+V3P3A	PWR
71	GND	GND	72	+V3P3A	PWR
73	GND	GND	74	+V3P3A	PWR
75	CONFIG2_B	I/O			

Pins 2, 4, 70, 72, and 74 support a total driving current of up to 2.5A.
Functions marked in red are the default functions.
Functions marked in yellow are optional based on the BOM.

2.4.11 M.2 2280 M-Key Slot (CN32)

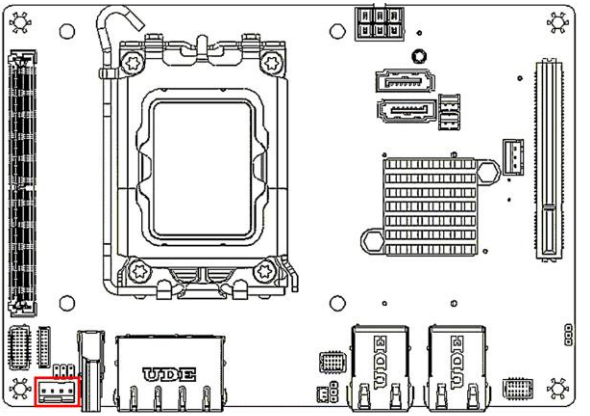


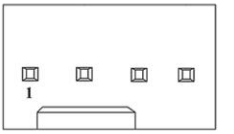
Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
1	GND	GND	2	+V3P3A	PWR
3	GND	GND	4	+V3P3A	PWR

Pin	Pin Name	Signal Type	Pin	Pin Name	Signal Type
5	PCIE_X4_RXN3	DIFF	6	NC	
7	PCIE_X4_RXP3	DIFF	8	NC	
9	GND	GND	10	SATA_LED#	I/O
11	PCIE_X4_TXN3	DIFF	12	+V3P3A	PWR
13	PCIE_X4_TXP3	DIFF	14	+V3P3A	PWR
15	GND	GND	16	+V3P3A	PWR
17	PCIE_X4_RXN2	DIFF	18	+V3P3A	PWR
19	PCIE_X4_RXP2	DIFF	20	NC	
21	GND	GND	22	NC	
23	PCIE_X4_TXN2	DIFF	24	NC	
25	PCIE_X4_TXP2	DIFF	26	NC	
27	GND	GND	28	NC	
29	PCIE_X4_RXN1	DIFF	30	NC	
31	PCIE_X4_RXP1	DIFF	32	NC	
33	GND	GND	34	NC	
35	PCIE_X4_TXN1	DIFF	36	NC	
37	PCIE_X4_TXP1	DIFF	38	DEVSLP6	I/O
39	GND	GND	40	NC	
41	PCIE_X4_RXN0	DIFF	42	NC	
43	PCIE_X4_RXP0	DIFF	44	NC	
45	GND	GND	46	NC	
47	PCIE_X4_TXN0	DIFF	48	NC	
49	PCIE_X4_TXP0	DIFF	50	BUF_PLT_RST1#	I/O
51	GND	GND	52	PCIE_CLKREQ2#	I/O
53	CLKOUT_PCIE_N2	DIFF	54	PCIE_WAKE#	I/O
55	CLKOUT_PCIE_P2	DIFF	56	NC	
57	GND	GND	58	NC	
59	KEY-M		60	KEY-M	
61			62		
63			64		
65			66		
67	NC		68	SUS_CLK_M	CLK
69	NC		70	+V3P3A	PWR
71	GND	GND	72	+V3P3A	PWR
73	GND	GND	74	+V3P3A	PWR
75	GND	GND			

Pins 2, 4, 10, 12, 14, 16, 70, 72, and 74 support a total driving current of up to 4.3A.
Functions marked in yellow are optional based on the BOM.

2.4.12 4-Pin CPU Smart Fan Connector (CN35)

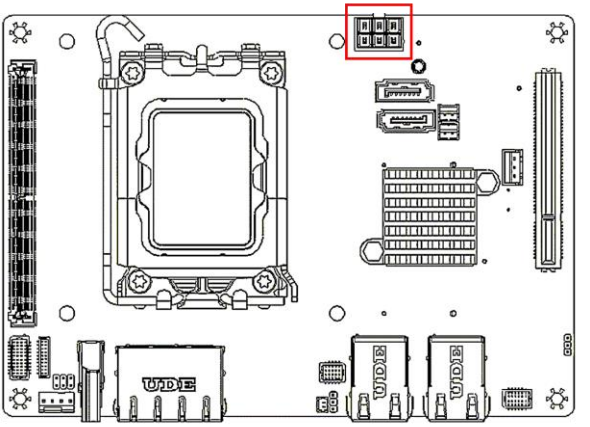


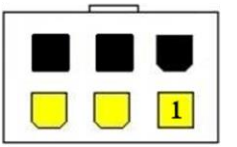


Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	+V12S	PWR	+12V
3	FAN_1_TAC_CON	I/O	
4	FAN_1_CTL_CON	I/O	

Pin 2 supports a total driving current of up to 1A.

2.4.13 6-Pin DC In (CN42)

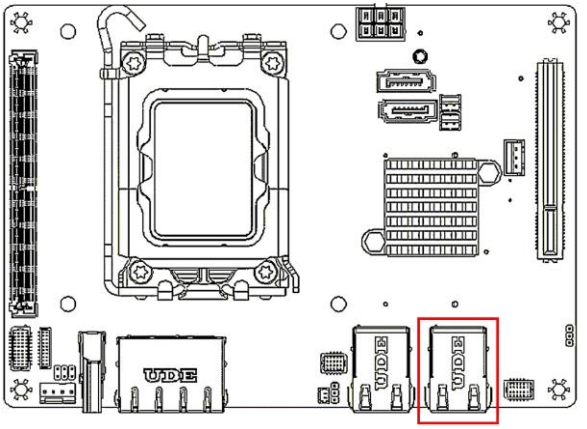


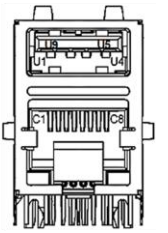


Pin	Pin Name	Signal Type	Signal Level
1	+VIN	PWR	+12V
2	+VIN	PWR	+12V
3	+VIN	PWR	+12V
4	GND	GND	
5	GND	GND	
6	GND	GND	

Pin 2 supports a total driving current of up to 1A.
Cable Item Number **170X000920**
Cable Item Number **170X000823**

2.4.14 2.5GbE RJ-45 Port + USB 3.2 (CN45)

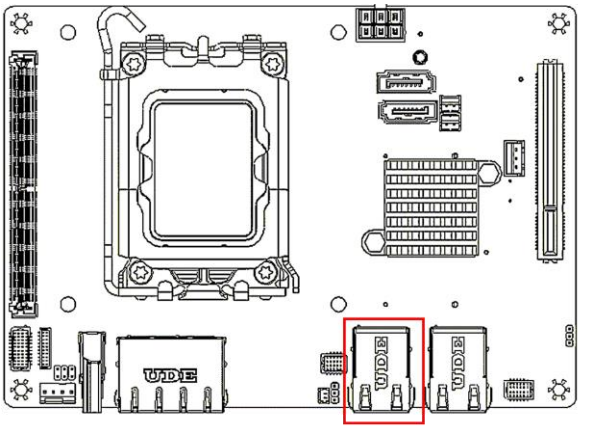


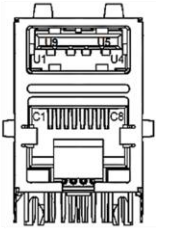


USB Type-A			
Pin	Pin Name	Signal Type	Signal Level
U1	+V5A_USB12	PWR	+5V
U2	USB2N_2	DIFF	
U3	USB2P_2	DIFF	
U4	GND	GND	
U5	USB32_2_RXN	DIFF	
U6	USB32_2_RXP	DIFF	
U7	GND	GND	
U8	USB32_2_TXN_C	DIFF	
U9	USB32_2_TXP_C	DIFF	

RJ-45			
Pin	Pin Name	Signal Type	Signal Level
C1	LAN2_MDI0_P	DIFF	
C2	LAN2_MDI0_N	DIFF	
C3	LAN2_MDI1_P	DIFF	
C4	LAN2_MDI1_N	DIFF	
C5	LAN2_MDI2_P	DIFF	
C6	LAN2_MDI2_N	DIFF	
C7	LAN2_MDI3_P	DIFF	
C8	LAN2_MDI3_N	DIFF	

2.4.15 1GbE RJ-45 Port + USB 3.2 (CN46)



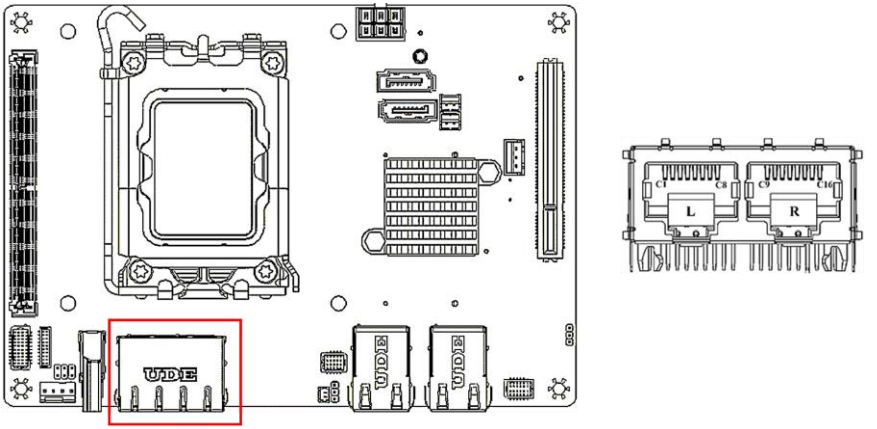


USB Type-A			
Pin	Pin Name	Signal Type	Signal Level
U1	+V5A_USB12	PWR	+5V
U2	USB2N_1	DIFF	
U3	USB2P_1	DIFF	
U4	GND	GND	
U5	USB32_1_RXN	DIFF	
U6	USB32_1_RXP	DIFF	
U7	GND	GND	
U8	USB32_1_TXN_C	DIFF	
U9	USB32_1_TXP_C	DIFF	

RJ-45			
Pin	Pin Name	Signal Type	Signal Level
C1	LAN1_MDI0P	DIFF	
C2	LAN1_MDI0N	DIFF	
C3	LAN1_MDI1P	DIFF	
C4	LAN1_MDI1N	DIFF	
C5	LAN1_MDI2P	DIFF	
C6	LAN1_MDI2N	DIFF	
C7	LAN1_MDI3P	DIFF	
C8	LAN1_MDI3N	DIFF	

CN45/CN46 USB supports a total driving current of up to 2A.

2.4.16 Dual 2.5GbE LAN (CN48)

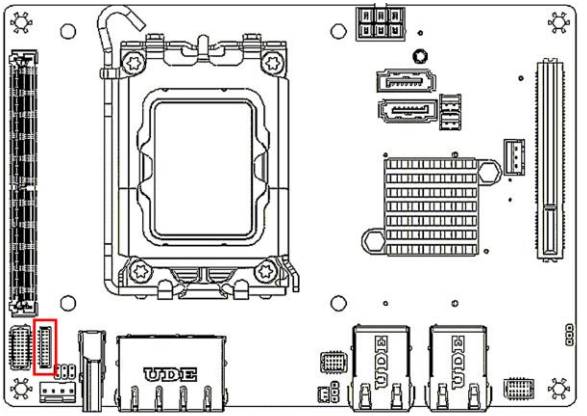


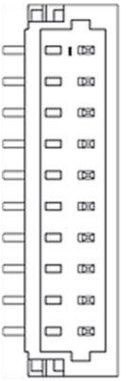
Left RJ-45			
Pin	Pin Name	Signal Type	Signal Level
C1	LAN3_MDI0P	DIFF	
C2	LAN3_MDI0N	DIFF	
C3	LAN3_MDI1P	DIFF	
C4	LAN3_MDI1N	DIFF	
C5	LAN3_MDI2P	DIFF	
C6	LAN3_MDI2N	DIFF	
C7	LAN3_MDI3P	DIFF	
C8	LAN3_MDI3N	DIFF	

Left RJ-45			
Pin	Pin Name	Signal Type	Signal Level
U9	USB32_1_TXP_C	DIFF	

Right RJ-45			
Pin	Pin Name	Signal Type	Signal Level
C9	LAN4_MDI0P	DIFF	
C10	LAN4_MDI0N	DIFF	
C11	LAN4_MDI1P	DIFF	
C12	LAN4_MDI1N	DIFF	
C13	LAN4_MDI2P	DIFF	
C14	LAN4_MDI2N	DIFF	
C15	LAN4_MDI3P	DIFF	
C16	LAN4_MDI3N	DIFF	
U9	USB32_1_TXP_C	DIFF	

2.4.17 Front Panel (CN52)



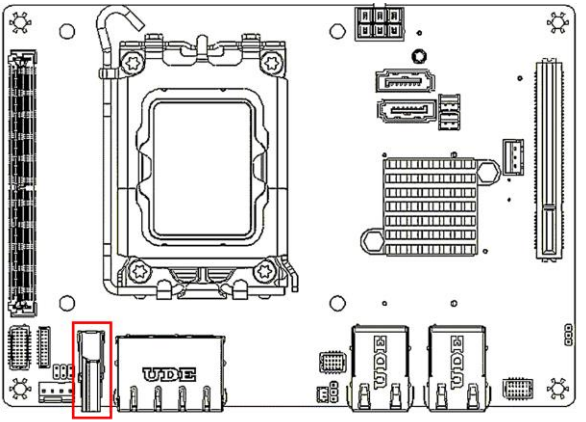


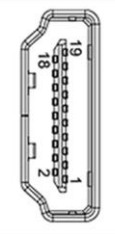
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	EXT_PWRBTN#	I/O	
3	FP_HDLED-	I/O	
4	FP_HDLED+	I/O	+3.3V
5	FP_SPKR-	I/O	
6	+V5S	PWR	+5V

Pin	Pin Name	Signal Type	Signal Level
7	GND	GND	
8	PWRLED+	I/O	+3.3V
9	GND	GND	
10	HWRST#	I/O	

Cable Item Number **170X000603**
Cable Item Number **170X000975**

2.4.18 HDMI (CN54)



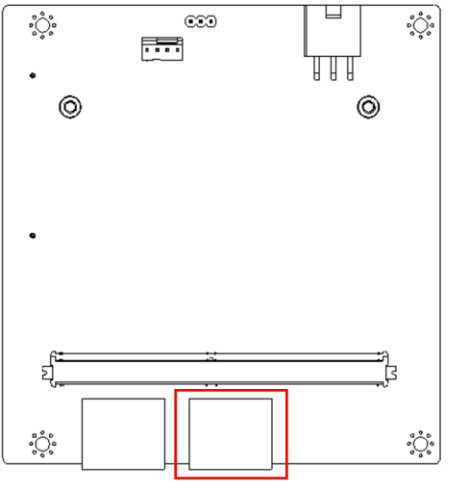


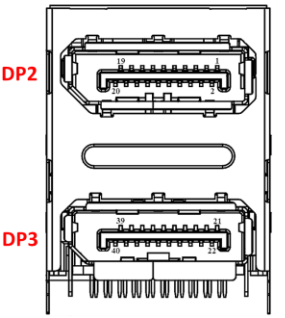
Pin	Pin Name	Signal Type	Signal Level
1	HDMI_TX2+	DIFF	
2	GND	GND	
3	HDMI_TX2-	DIFF	
4	HDMI_TX1+	DIFF	
5	GND	GND	
6	HDMI_TX1-	DIFF	
7	HDMI_TX0+	DIFF	
8	GND	GND	
9	HDMI_TX0-	DIFF	
10	HDMI_CLK+	DIFF	
11	GND	GND	
12	HDMI_CLK-	DIFF	
13	NC		
14	NC		

Pin	Pin Name	Signal Type	Signal Level
15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	
18	+5V	PWR	+5V
19	HDMI_HPD	I/O	

Pin 18 supports a total driving current of up to 0.5A.

2.4.19 MXM Display (CN10)



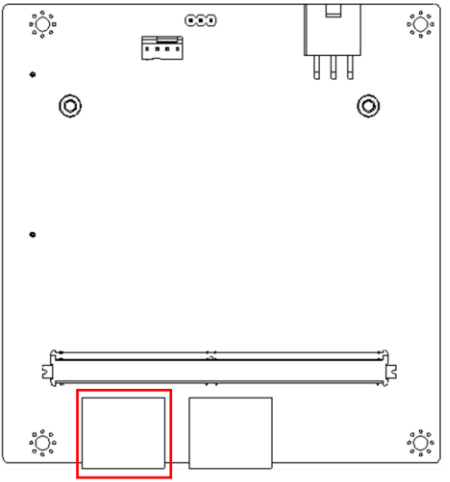


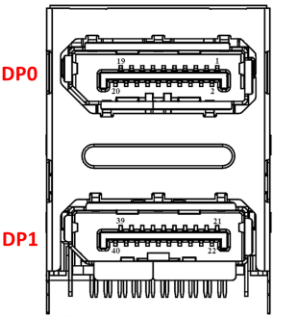
Pin	Pin Name	Signal Type	Signal Level
1	DPC_PAIR0+		
2	GND	GND	
3	DPC_PAIR0-		
4	DPC_PAIR1+		
5	GND	GND	
6	DPC_PAIR1-		
7	DPC_PAIR2+		
8	GND	GND	
9	DPC_PAIR2-	DIFF	
10	DPC_PAIR3+	DIFF	
11	GND	GND	
12	DPC_PAIR3-	DIFF	
13	DPC_CA_DET	I/O	

Pin	Pin Name	Signal Type	Signal Level
14	GND	I/O	
15	DPC_AUX+	DIFF	
16	GND	GND	
17	DPC_AUX-	DIFF	
18	DPC_HPD	I/O	
19	GND	GND	
20	+VCC3V	PWR	+3.3V
21	DPD_PAIR0+	DIFF	
22	GND	GND	
23	DPD_PAIR0-	DIFF	
24	DPD_PAIR1+	DIFF	
25	GND	GND	
26	DPD_PAIR1-	DIFF	
27	DPD_PAIR2+	DIFF	
28	GND	GND	
29	DPD_PAIR2-	DIFF	
30	DPD_PAIR3+	DIFF	
31	GND	GND	
32	DPD_PAIR3-	DIFF	
33	DPD_CA_DET	I/O	
34	GND	I/O	
35	DPD_AUX+	DIFF	
36	GND	GND	
37	DPD_AUX-	DIFF	
38	DPD_HPD	I/O	
39	GND	GND	
40	+VCC3V	PWR	+3.3V

The total driving current for Pin 20 is up to 0.5A.
The total driving current for Pin 40 is up to 0.5A.

2.4.20 MXM Display (CN11)



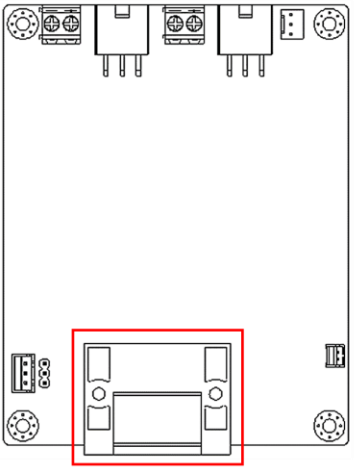


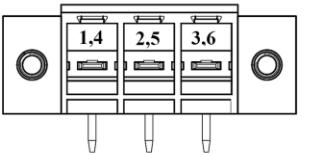
Pin	Pin Name	Signal Type	Signal Level
1	DPA_PAIR0+		
2	GND	GND	
3	DPA_PAIR0-		
4	DPA_PAIR1+		
5	GND	GND	
6	DPA_PAIR1-		
7	DPA_PAIR2+		
8	GND	GND	
9	DPA_PAIR2-	DIFF	
10	DPA_PAIR3+	DIFF	
11	GND	GND	
12	DPA_PAIR3-	DIFF	
13	DPA_CA_DET	I/O	
14	GND	I/O	
15	DPA_AUX+	DIFF	
16	GND	GND	
17	DPA_AUX-	DIFF	
18	DPA_HPD	I/O	
19	GND	GND	
20	+VCC3V	PWR	+3.3V
21	DPB_PAIR0+	DIFF	
22	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
23	DPB_PAIR0-	DIFF	
24	DPB_PAIR1+	DIFF	
25	GND	GND	
26	DPB_PAIR1-	DIFF	
27	DPB_PAIR2+	DIFF	
28	GND	GND	
29	DPB_PAIR2-	DIFF	
30	DPB_PAIR3+	DIFF	
31	GND	GND	
32	DPB_PAIR3-	DIFF	
33	DPB_CA_DET	I/O	
34	GND	I/O	
35	DPB_AUX+	DIFF	
36	GND	GND	
37	DPB_AUX-	DIFF	
38	DPB_HPD	I/O	
39	GND	GND	
40	+VCC3V	PWR	+3.3V

The total driving current for Pin 20 is up to 0.5A.
The total driving current for Pin 40 is up to 0.5A.

2.4.21 DC In (CN DC IN)





Pin	Pin Name	Signal Type	Signal Level
1	VCC_DCIN	PWR	+19V~+24V
2	GND	GND	
3	NC		
4	VCC_DCIN	PWR	+19V~+24V
5	GND	GND	
6	NC		

2.5 Hardware Installation

This section details the steps needed to install various hardware components for the MXM-ACMA-PUC. It is recommended that you read through each step before beginning installation and to make sure you have all necessary tools and components.

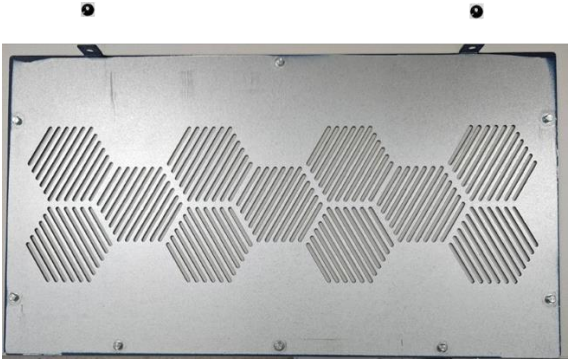
2.5.1 RAM Removal

For this process you will need a Phillips head screwdriver.

Step 1: Remove the two black screws as below.

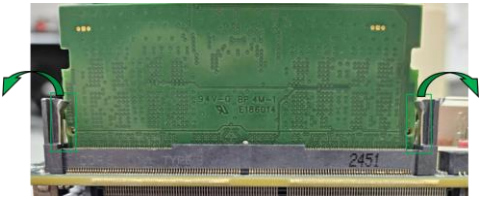
Step 2: Open the top panel.

Step 3: Remove panel screws.

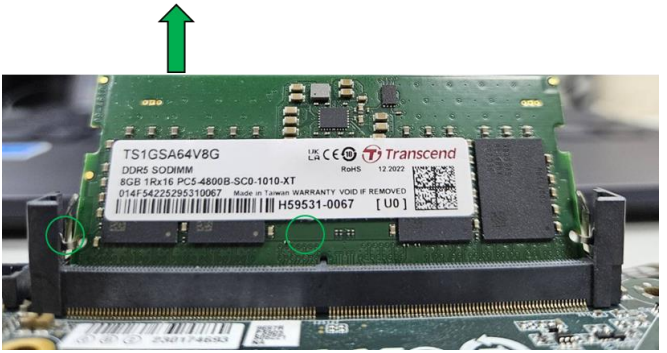


Step 4: Note the location of the first memory slot (DIMM2).

Step 5: Unhook clips holding DDR5 module in place.

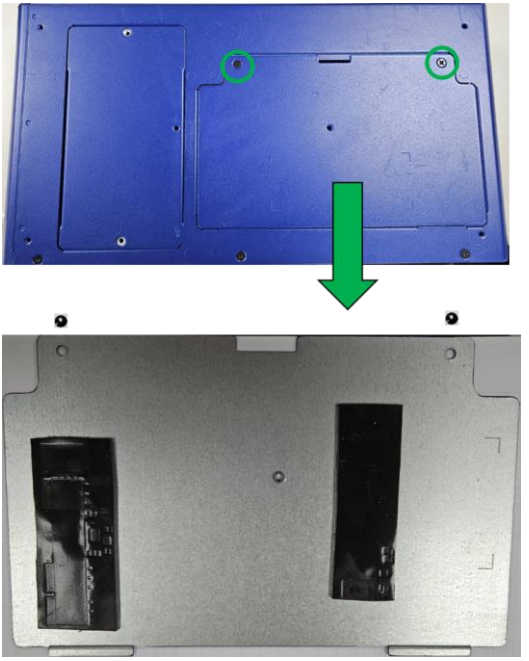


Step 6: Gently detach the module from the slot at approximately a 45° angle.

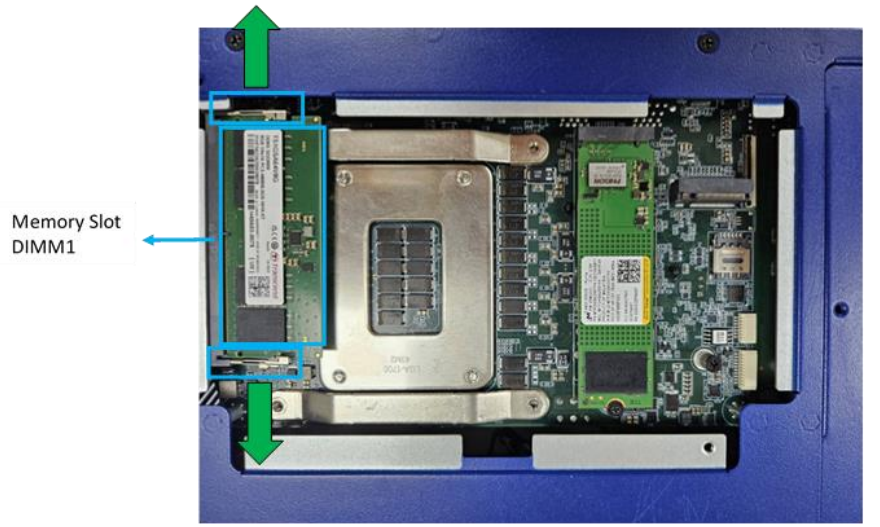


To remove the DDR5 module from the second memory slot, follow the below instructions.

Step 1: Remove the two black screws from the bottom panel, as shown.



Step 2: Unclip the DDR5 module from the slot (DIMM1) using the same method.



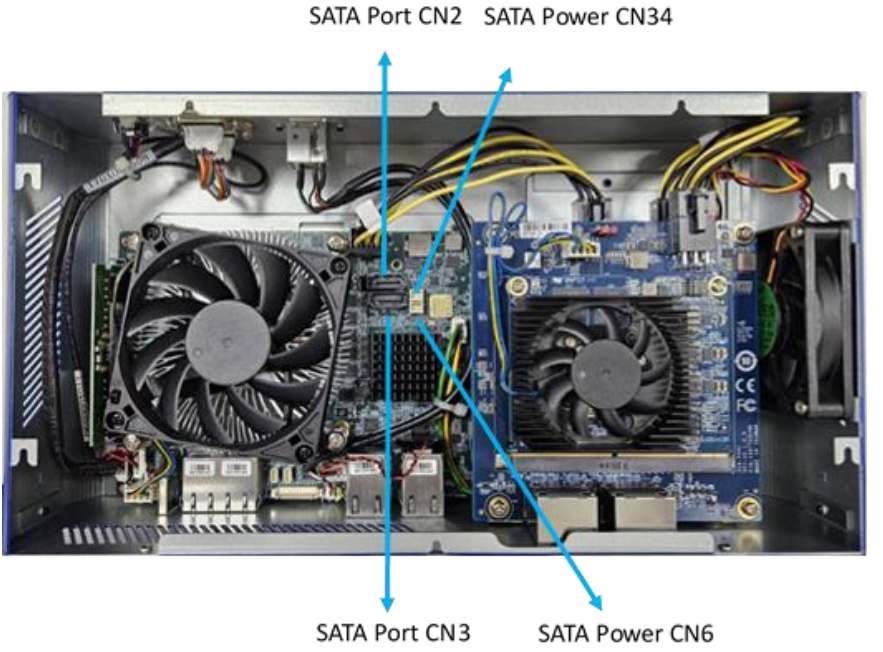
2.5.2 SATA (SSD) Installation

Before you begin, make sure you have the following components:

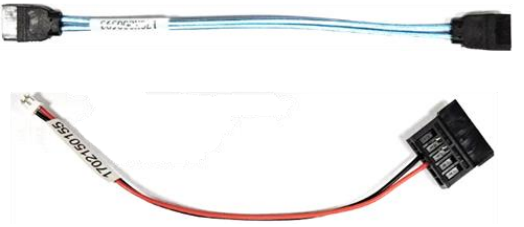
- SATA Drive x 1
- Black Screws x 4 (to mount 2.5" drive)
- SATA Cable x 1
- SATA Power Cable x 1
- Phillips head screwdriver

Step 1: Remove the two black screws as below.

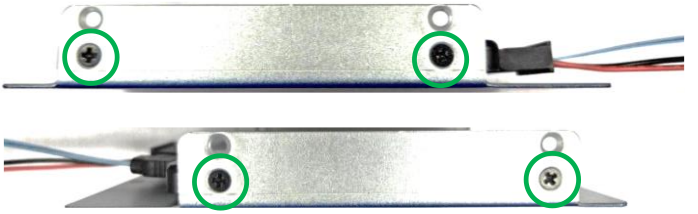
Please note the location of the SATA Port (CN2) and SATA Power Connector (CN1)



Step 2: Step 2: Connect the SATA and SATA Power cables to the 2.5" drive



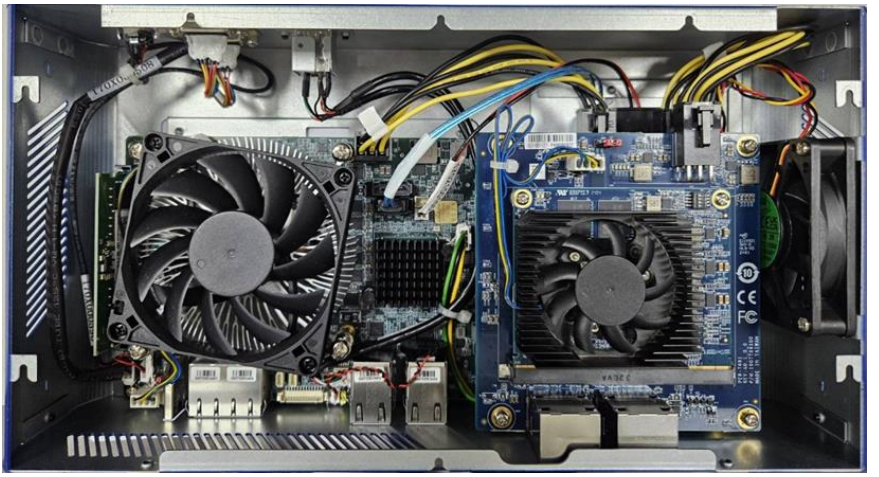
Step 3: Secure the drive with four black mounting screws.



Step 4: Insert the SATA Cable into CN3 and SATA Power Cable into CN6 or into CN2 and into CN34.

SATA Port (CN2) & SATA Power connector (CN34) location:

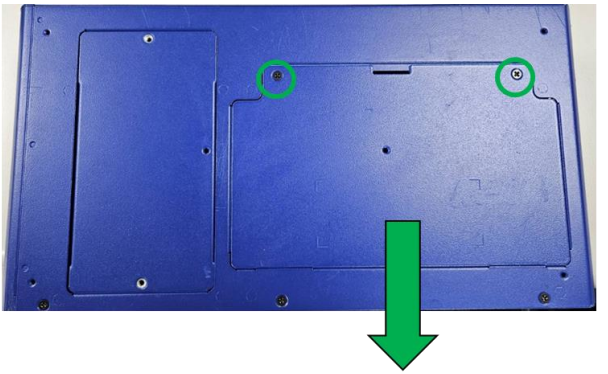
SATA Port (CN3) & SATA Power connector (CN6) location:

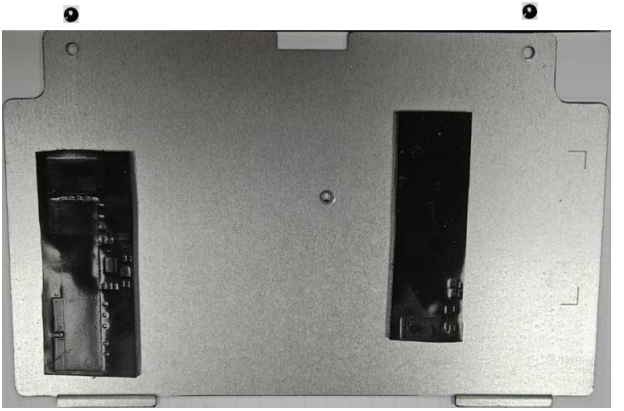


2.5.3 M.2 2280 Module Removal

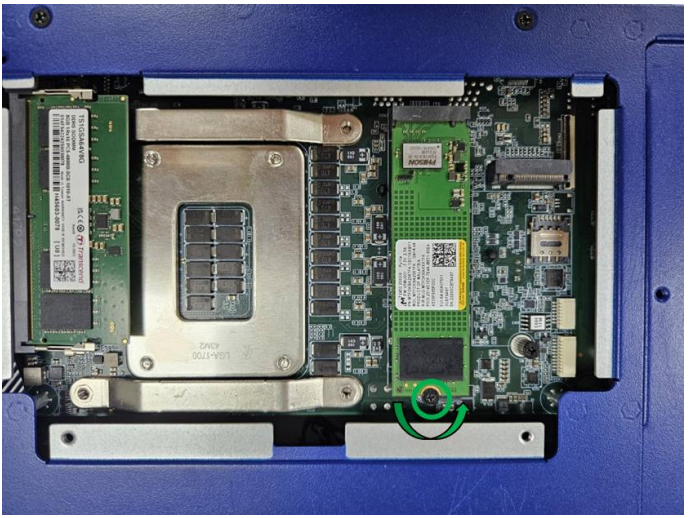
For this process you will need a Phillips head screwdriver.

Step 1: Remove the two black screws from the bottom panel, as shown.





Step 2: Remove the black screw holding the M.2 expansion module in place.



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 MXM-ACMA-PUC 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.

Security

Set setup administrator password.

Boot

Enables/disable quiet boot option.

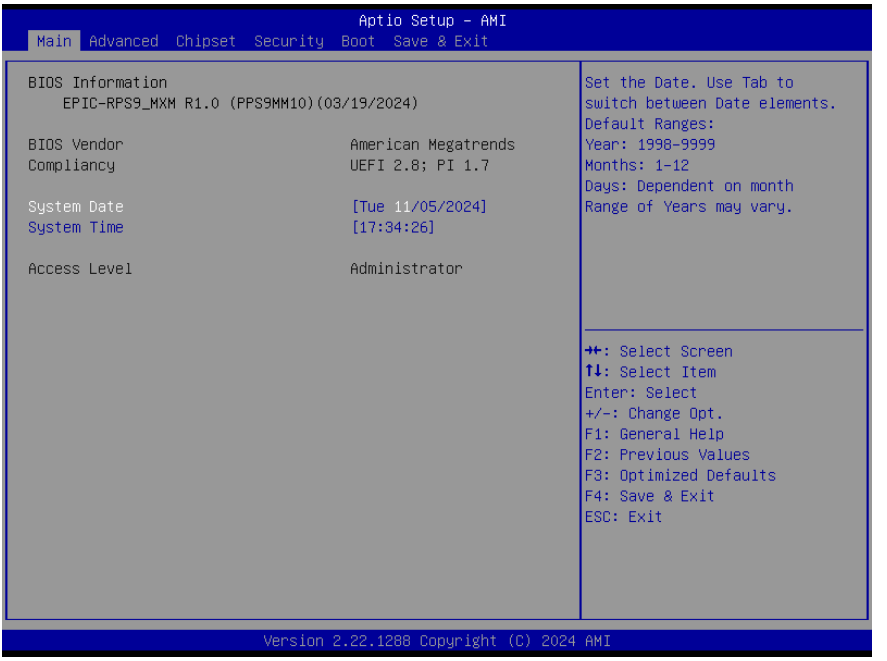
Save & Exit

Exit system setup after saving the changes.

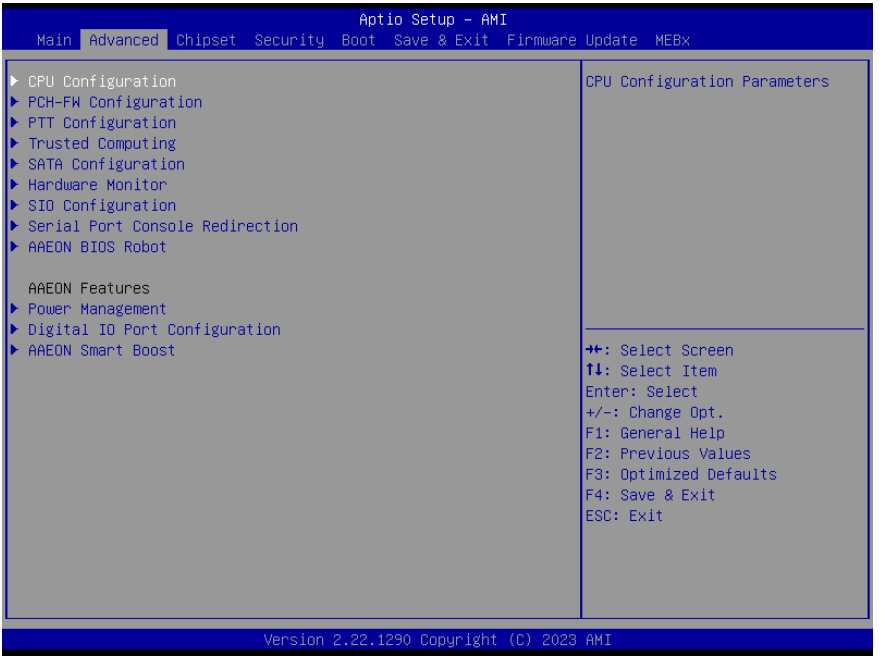
MEBx

Set management firmware and Intel ME configuration user interface.

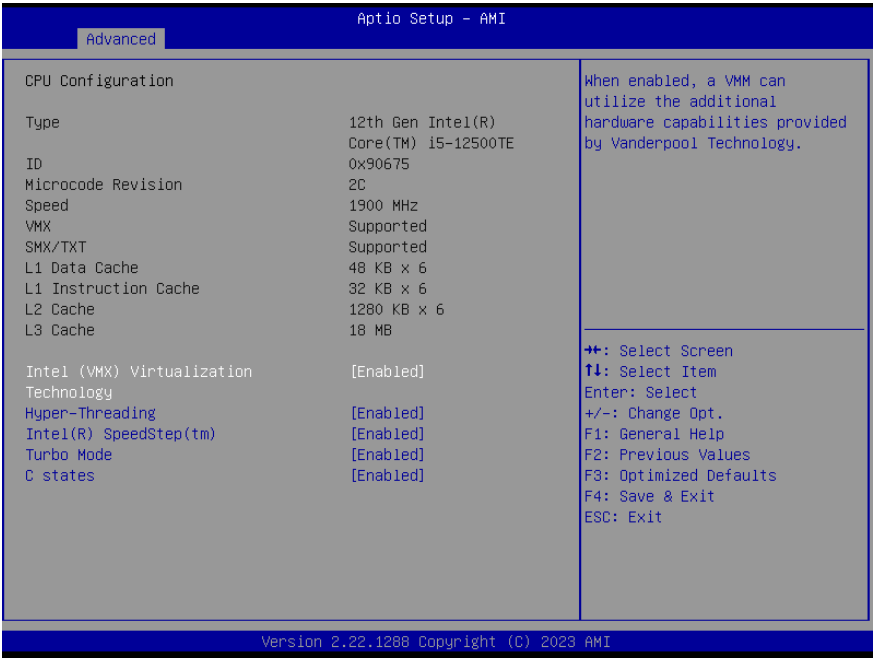
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



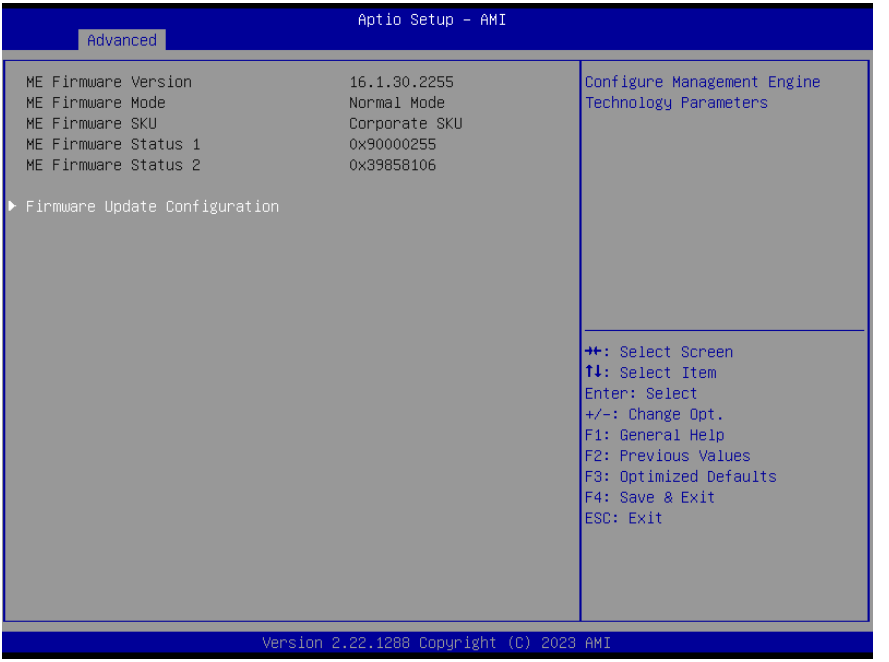
3.4.1 CPU Configuration



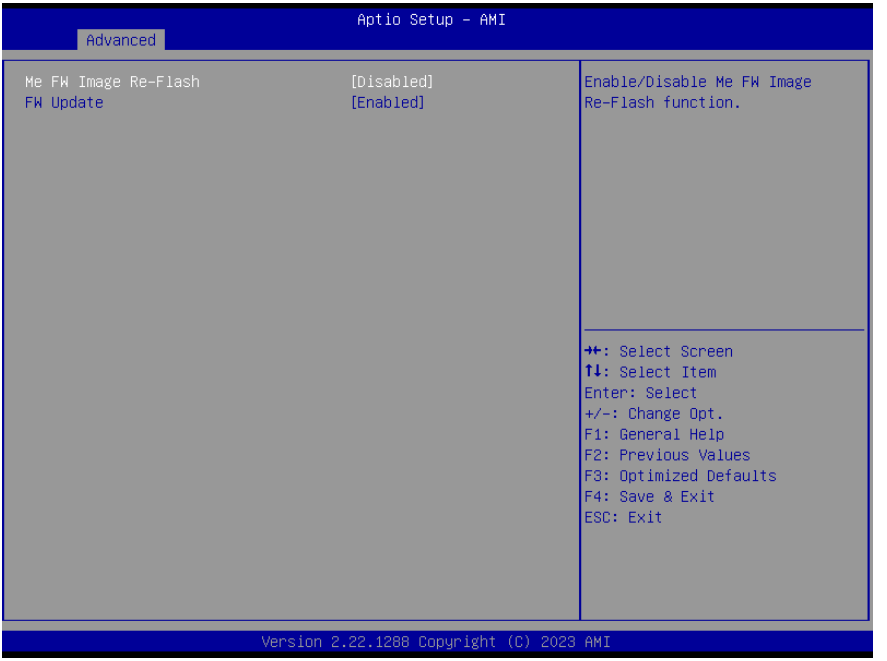
Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable 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.		

Options Summary		
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.		

3.4.2 PCH-FW Configuration

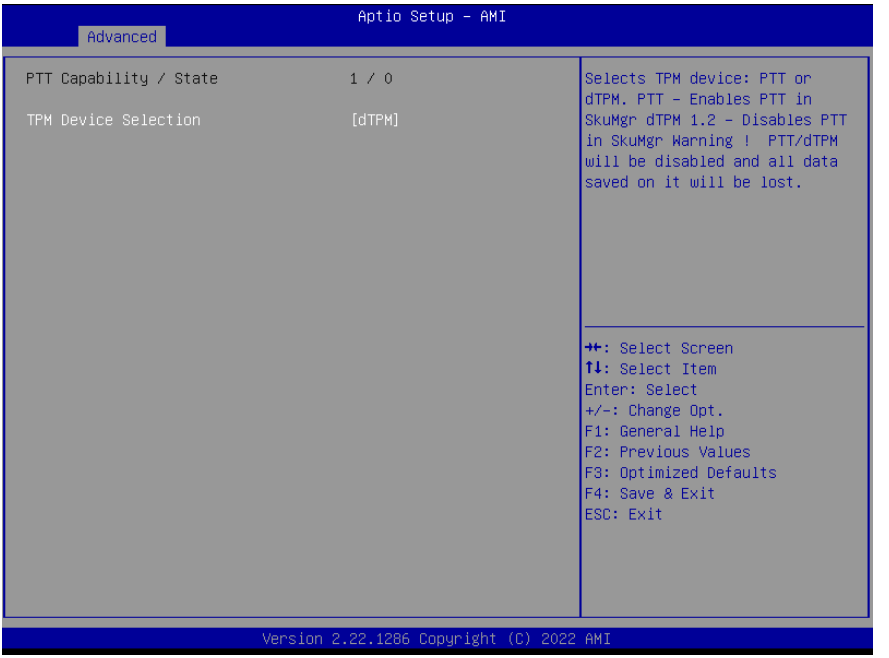


3.4.3 Firmware Update Configuration



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.		

3.4.4 PTT Configuration



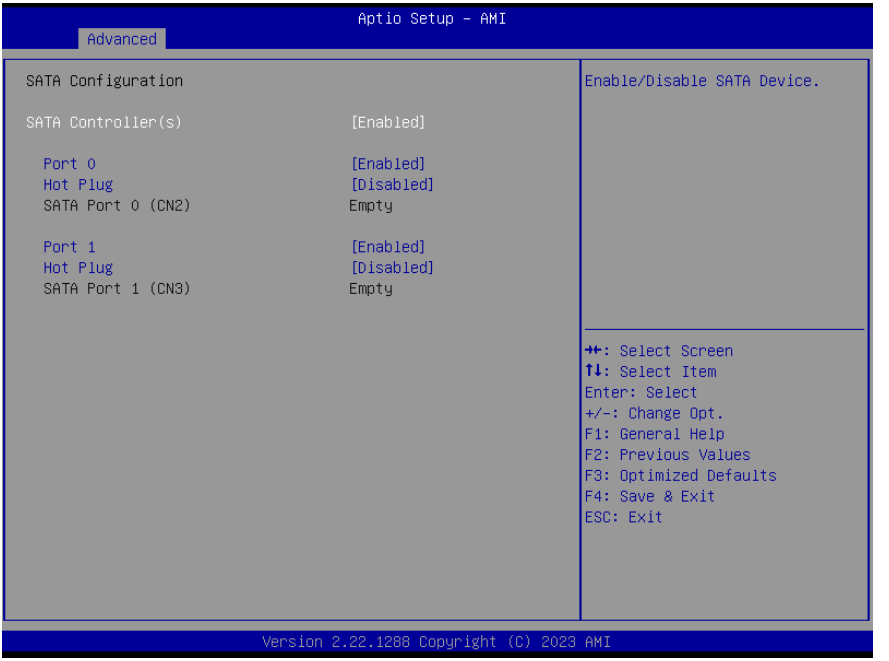
Options Summary		
TPM Device Selection	dTPM	Optimal Default, Failsafe Default
	PTT	
Selects TPM device: PTT or discrete TPM. PTT - enables PTT in SkuMgr. dTPM - disables PTT in SkuMgr. **Warning!** PTT/dTPM will be disabled and all data saved on it will be lost.		

3.4.5 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.		

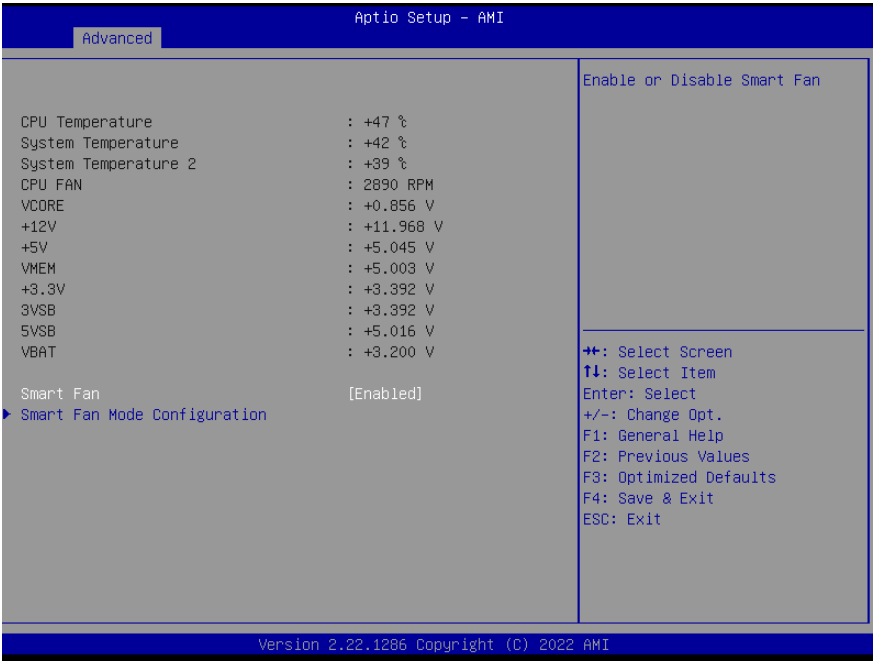
Options Summary		
Platform Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Platform Hierarchy.		
Storage Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Storage Hierarchy.		
Endorsement Hierarchy	Enabled	Optimal Default, Failsafe Default
	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	Optimal Default, Failsafe Default
	TPM 1.2	
	TPM 2.0	
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.		

3.4.6 SATA Configuration



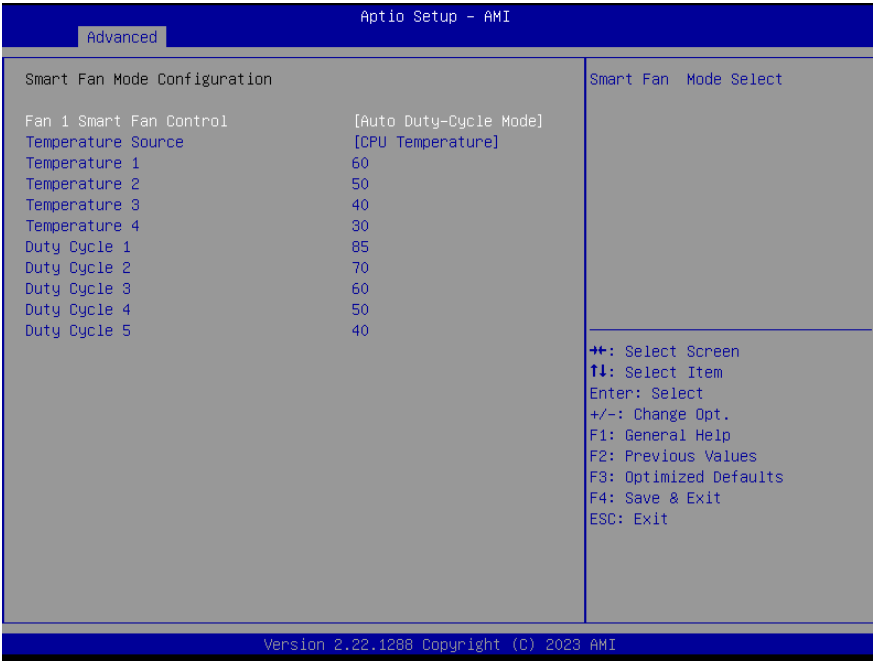
Options Summary		
SATA Controller(s)	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable/Disable SATA Device.		
Port 0	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable.		
Port 1	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable.		

3.4.7 Hardware Monitor



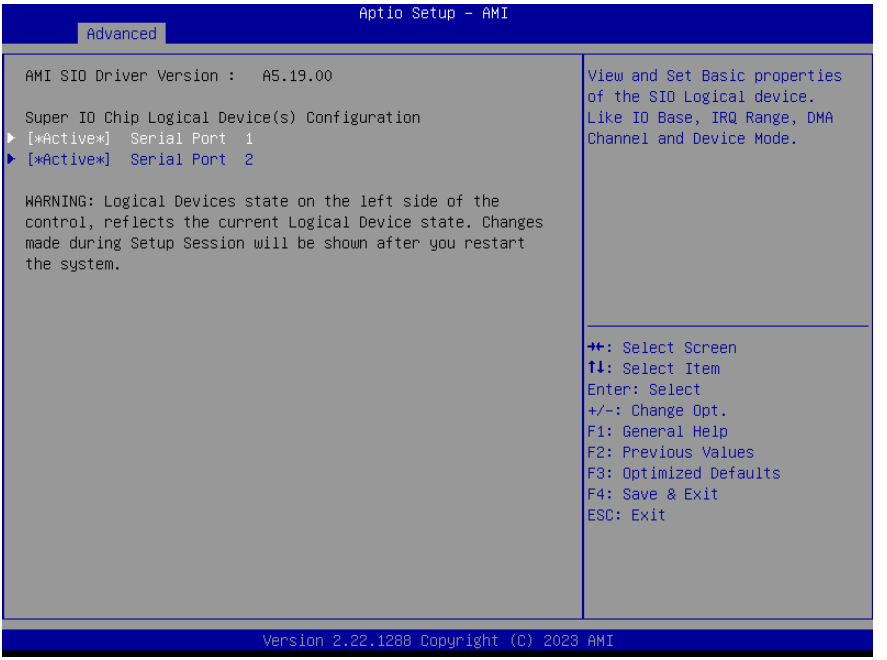
Options Summary		
Smart Fan	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables Smart Fan.		

3.4.7.1 Smart Fan Mode Configuration

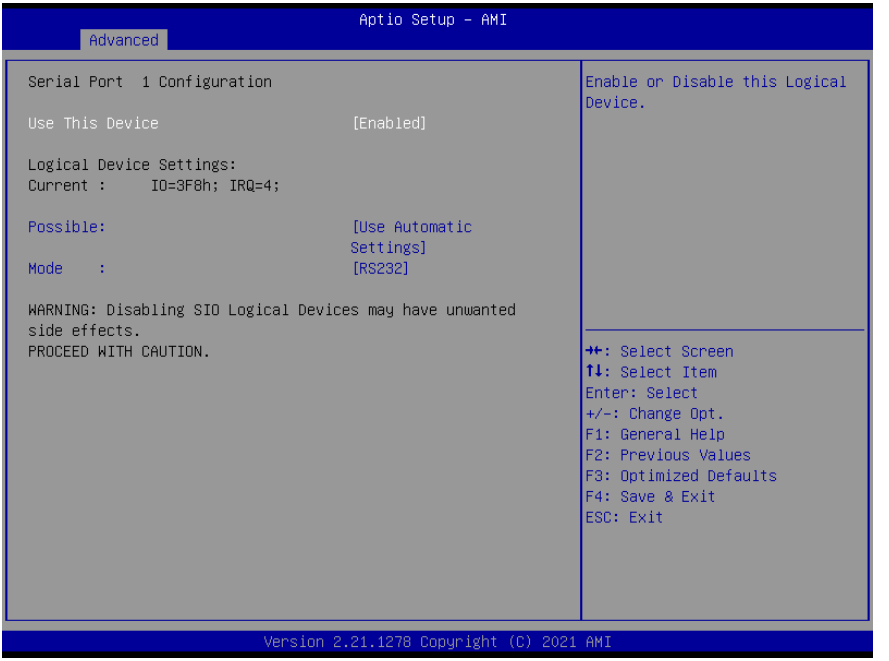


Options Summary		
Fan 1 Smart Fan Control	Manual Duty Mode	
	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default
Smart Fan Mode Select.		
Temperature Source	CPU Temperature	Optimal Default, Failsafe Default
Select the monitored temperature source for this fan.		
Temperature 1	60	
Duty Cycle 1	85	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.		

3.4.8 SIO Configuration

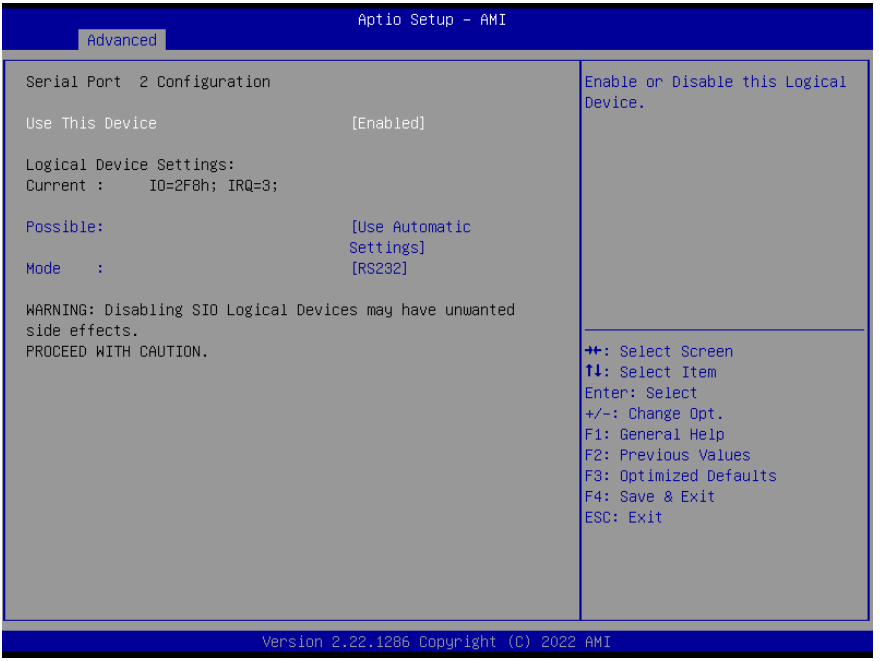


3.4.8.1 Serial Port 1 Configuration



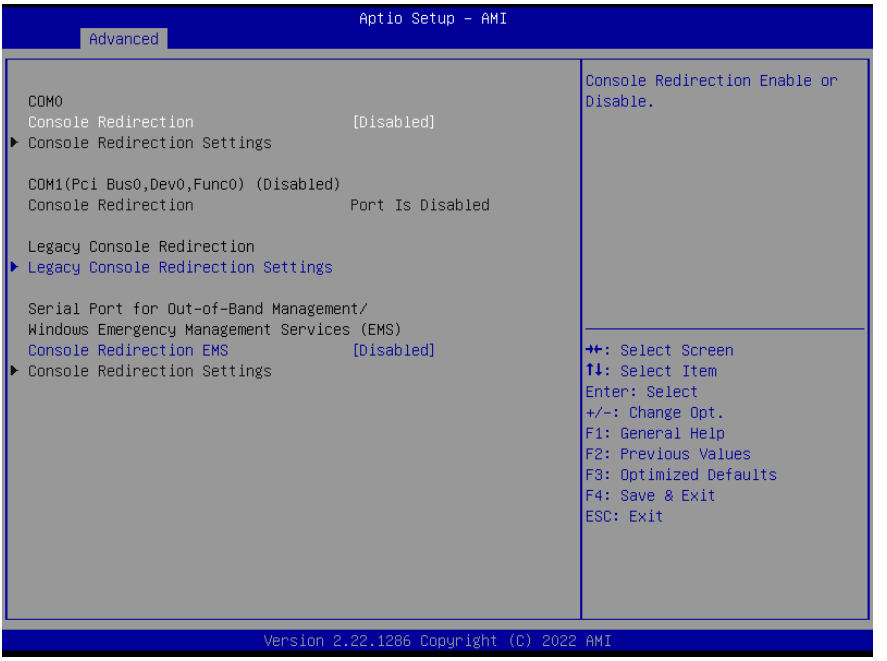
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows user to change Device's Resource settings. New settings will be reflected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

3.4.8.2 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.		

3.4.9 Serial Port Console Redirection

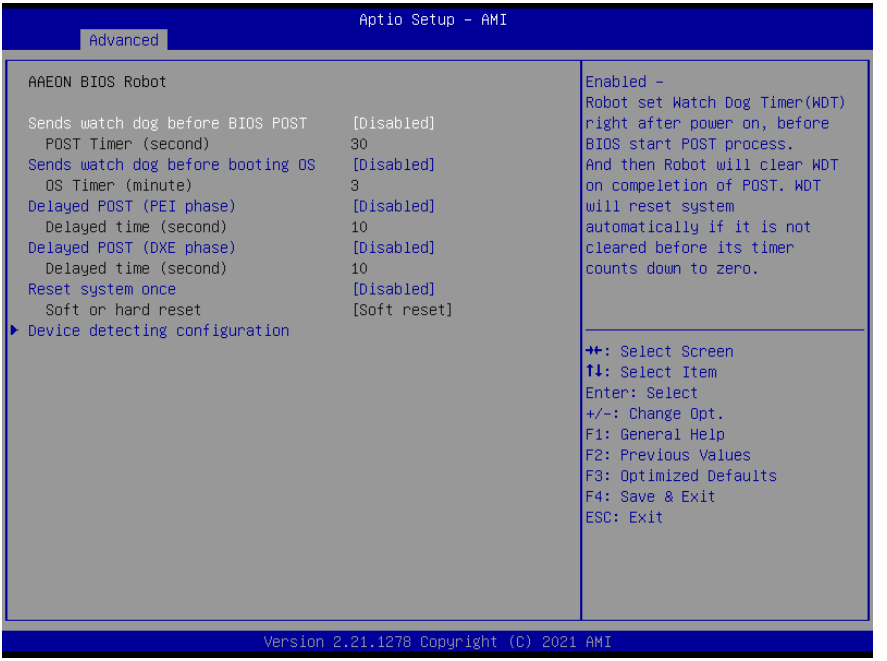


Options Summary		
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		

3.4.10 Legacy Console Redirection Settings

Options Summary		
Redirection COM port	COM0	Optimal Default, Failsafe Default
	COM1(Pci Bus0, Dev0, Func0) (Disabled)	
Select a COM Port to display redirection of Legacy OS and Legacy OPROM message.		
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the number of Rows and Columns supported redirection.		
Redirect After POST	Always Enable	Optimal Default, Failsafe Default
	BootLoader	
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.		

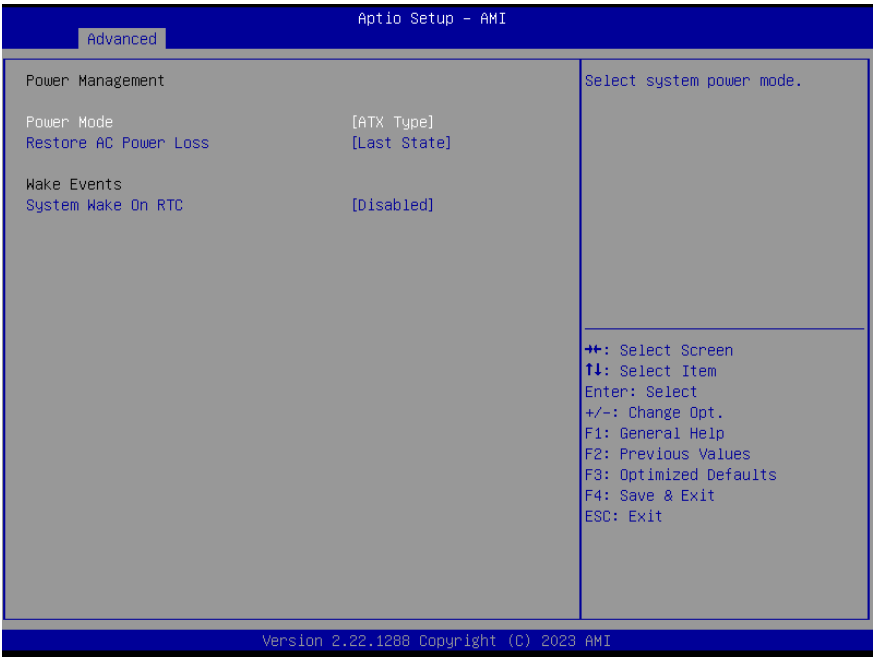
3.4.11 AAEON BIOS Robot



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.		
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.		

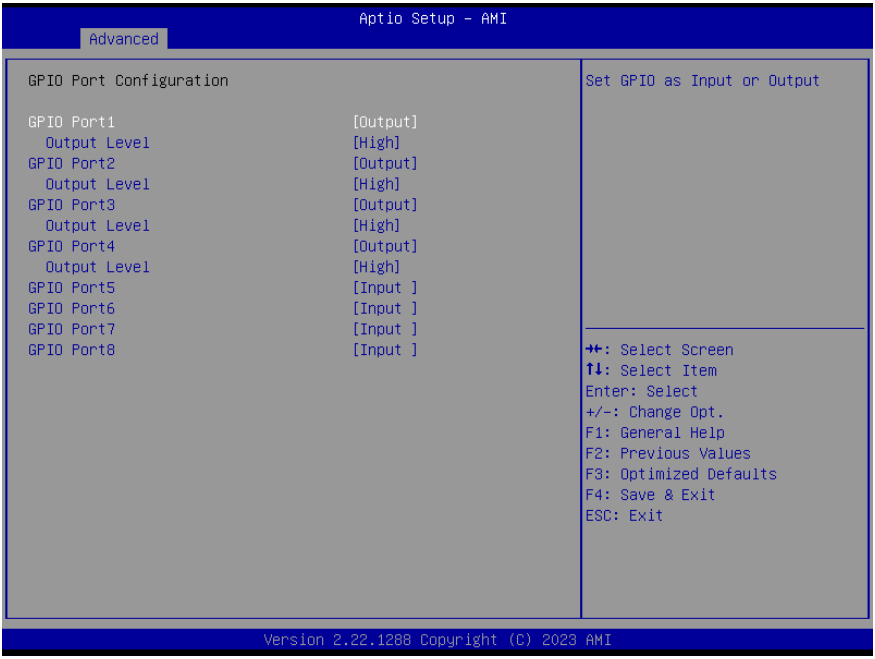
Options Summary		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for OS loading.		
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start 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.		

3.4.12 Power Management



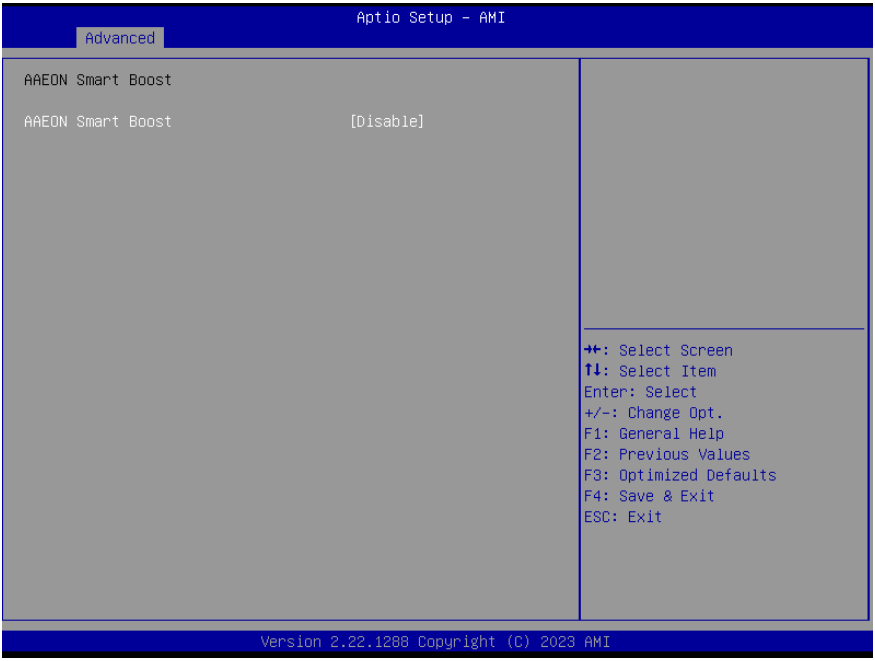
Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
Select power state when power is re-applied after a power failure.		
System Wake On RTC	Disable	Optimal Default, Failsafe Default
	By Date	
	Bypass	
By Date: System will wake on the day 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.		

3.4.13 GPIO Port Configuration



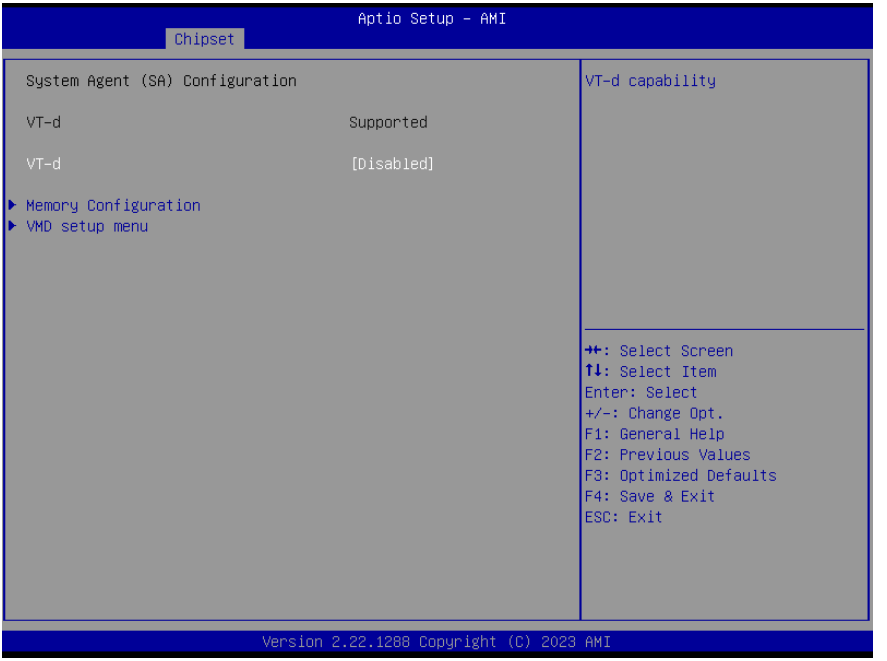
Options Summary		
GDIO Port*	Output	
	Input	
Set GPIO as Input or Output.		
Output Level	High	
	Low	
Set output level when GDIO pin is output.		

3.4.14 AAEON Smart Boost



3.5 Setup Submenu: Chipset

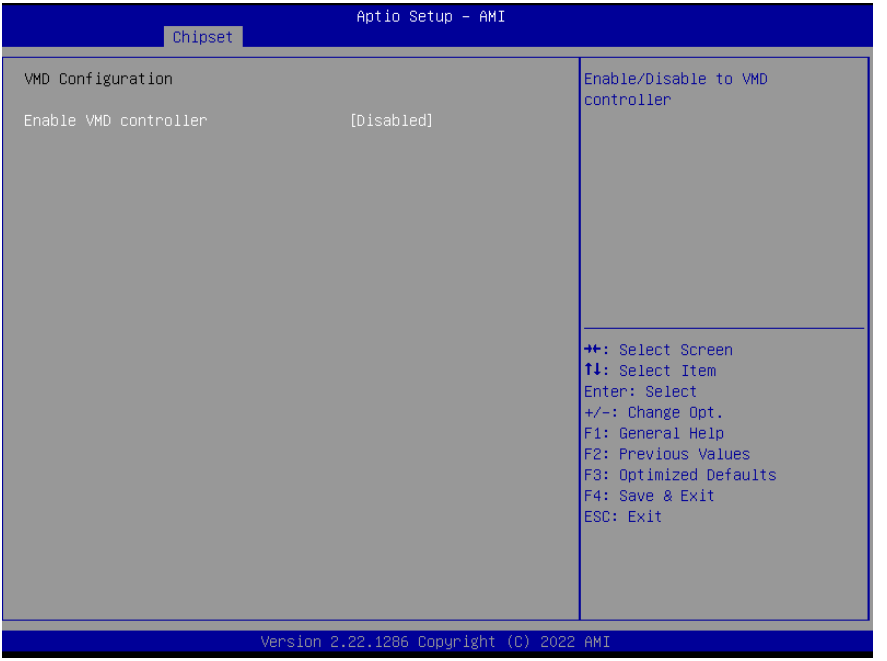
3.5.1 System Agent (SA) Configuration



Options Summary		
VT-d	Disabled	Optimal Default, Failsafe Default
	Enabled	
VT-d capability.		

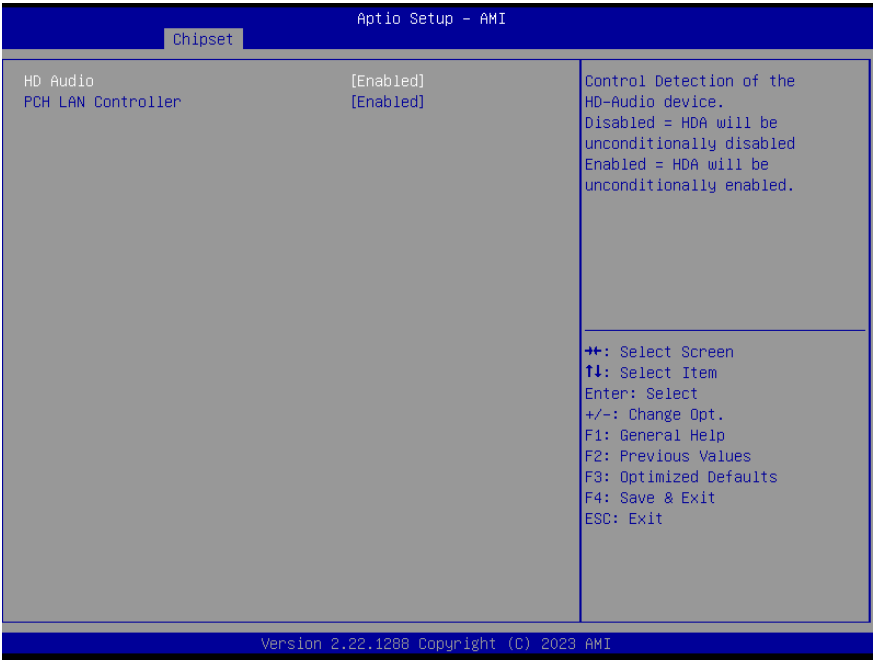
3.5.2 Memory Configuration

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 PCH-IO Configuration



Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control Detection of the HD-Audio Device. Disabled = HDA will unconditionally disabled. Enabled = HDA will be unconditionally enabled.		
PCH LAN Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable onboard NIC.		

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.

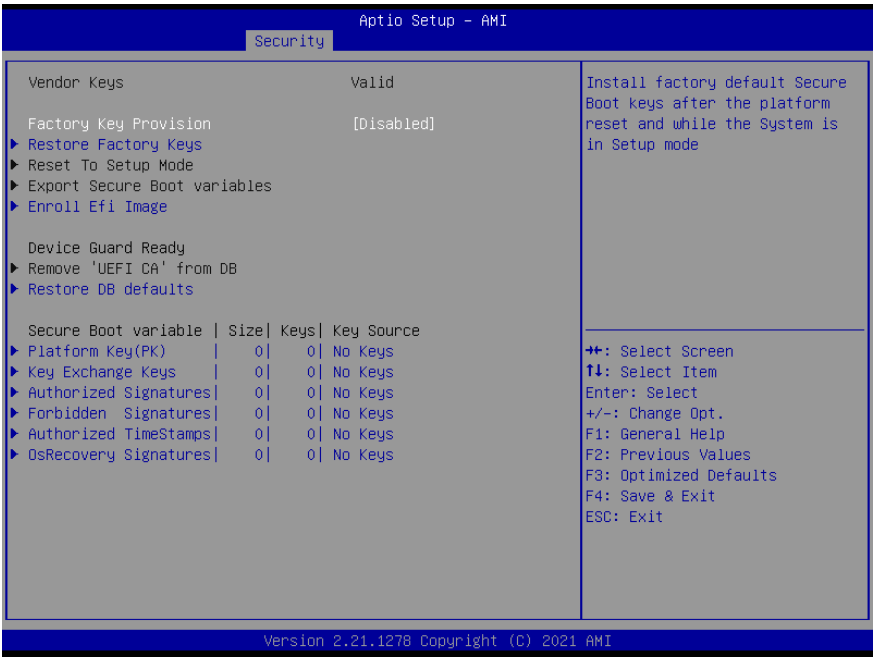
Removing the Password

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

3.6.1 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.		

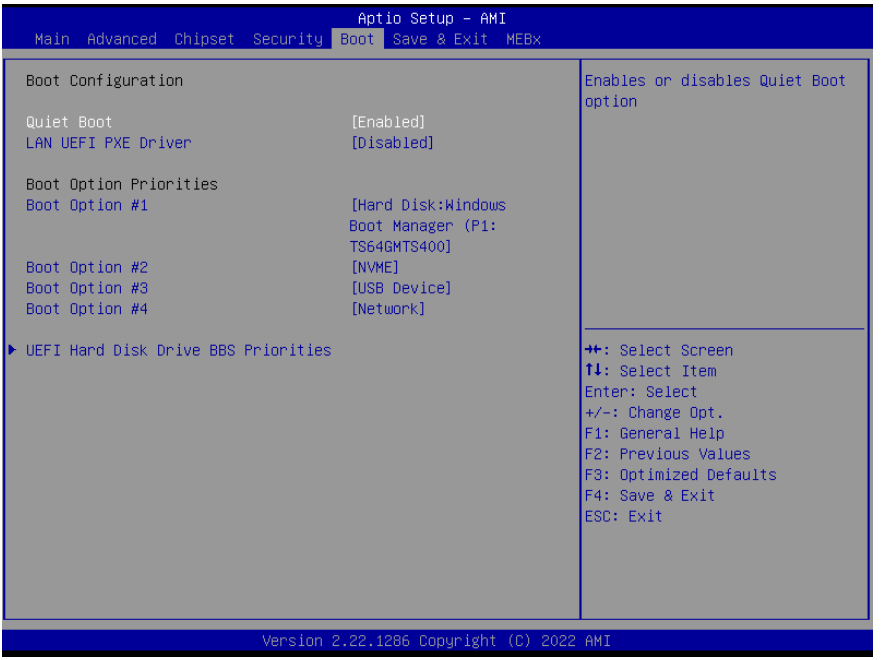
3.6.2 Key Management



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).		
Remove 'UEFI CA' from DB		

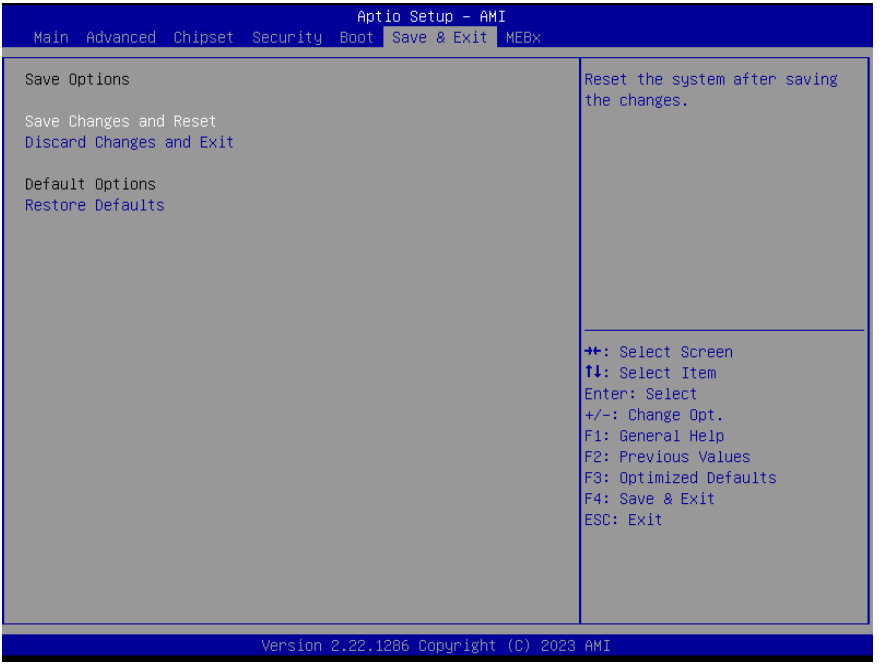
Options Summary	
Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).	
Restore DB defaults	
Restore DB variable to factory defaults.	
Platform Key (PK)	Details
	Export
	Update
	Delete
Key Exchange Keys	Details
	Export
	Update
	Append
	Delete
Authorized 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.		
UEFI PXE Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack.		
FIXED BOOT ORDER Priorities		
Sets the system boot order.		

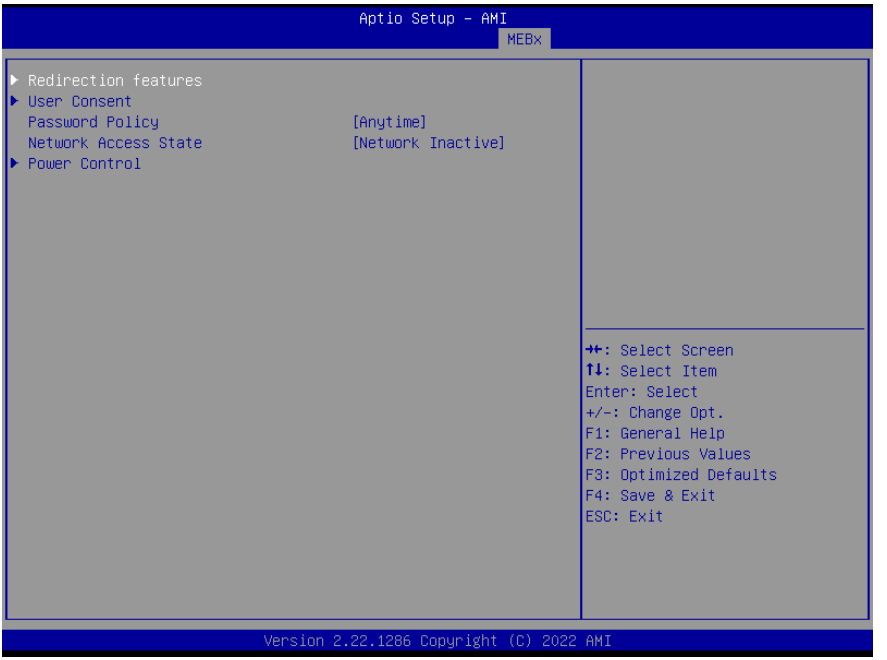
3.8 Setup Submenu: Save & Exit



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.

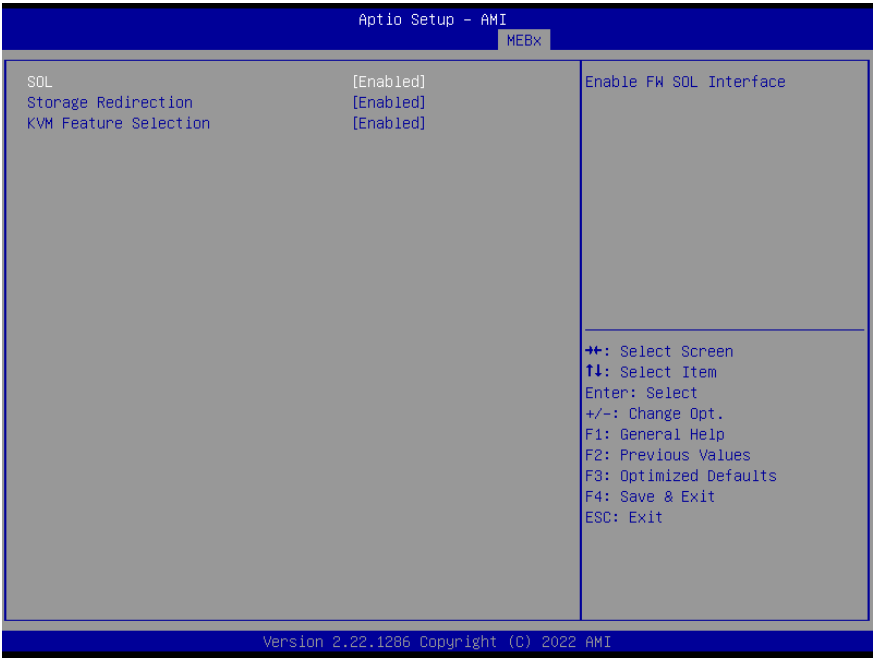
3.9 Setup Submenu: MEBx

3.9.1 Intel® AMT Configuration



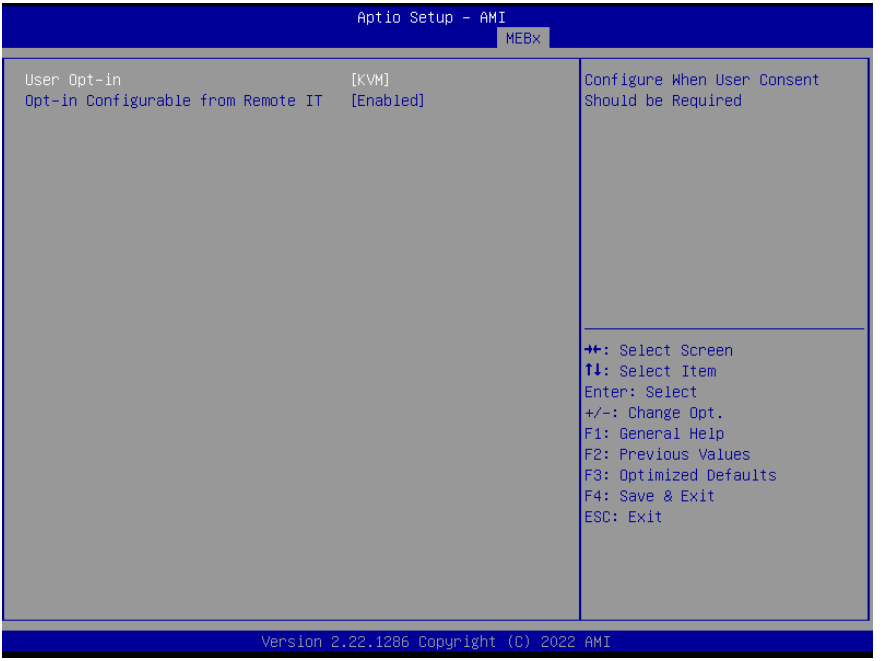
Options Summary		
Password Policy	Default Password Only	
	During Setup and Configuration	
	Anytime	Optimal Default, Failsafe Default
Network Access State	Network Active	
	Network Inactive	Optimal Default, Failsafe Default
	Full Unprovision	
Changes network state of ME. When disabling, it will also clear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

3.9.2 Redirection Features



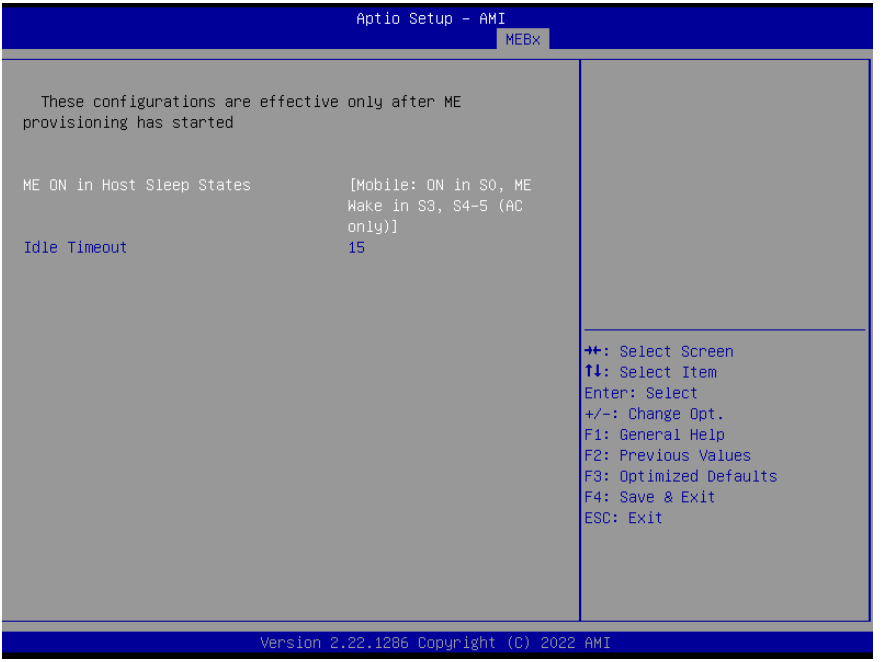
Options Summary		
SOL	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW SOL Interface.		
Storage Redirection	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW Remote – Storage Redirection.		
KVM Features Selection	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable FW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



Options Summary		
ME ON in Host Sleep States	Mobile: ON in S0	Optimal Default, Failsafe Default
	Mobile: ON in S0, ME Wake in S3, S4-5(AC only)	
Idle Timeout	15	
Timeout Value (1-65536).		

Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the MXM-ACMA-PUC 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.

Install Chipset Drivers

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

Install Graphics Driver

1. Open the **Graphics** folder
2. Open the **gfx_win_101.4669.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Install LAN Drivers

1. Open the **LAN** folder
2. Open the Setup Information file in the folder
3. Follow the instructions to manually install drivers

Install Serial I/O Driver

1. Open the **Serial I/O** folder
2. Open the **SetupSerialIO.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Install Audio Drivers

Note: Ensure Intel Smart Sound Driver (**ADL_RPL_v10.29.00.9153**) is installed before the Realtek Audio driver (**Realtek Audio 6.0.9034.2**)

Install Intel Smart Sound Driver

1. Open the **Audio (ADL_RPL_v10.29.00.9153)** folder
2. Follow the setup information within the file to manually install driver.

Install Realtek Audio Driver

1. Open the Intel Smart Sound Driver (**Realtek Audio 6.0.9034.2**) folder
2. Run the **Setup.exe** file in the folder
3. Follow the instructions
4. Driver 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

Install Intel® RST Driver

1. Open the **Intel® RST Driver** folder
2. Open the **SetupRST.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

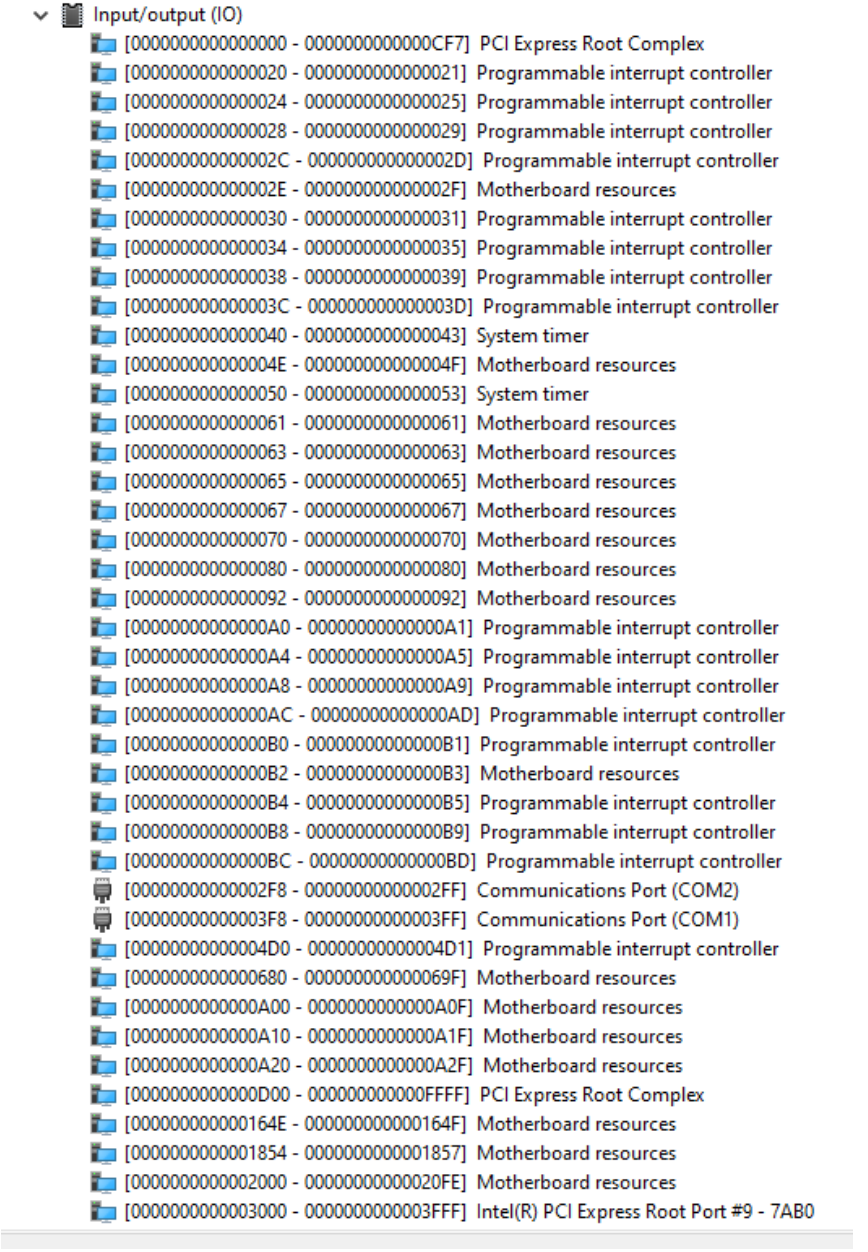
Install ME & TXE Drivers

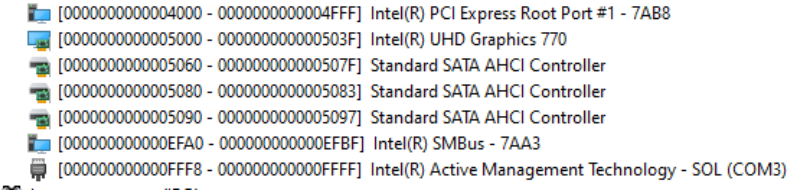
1. Open the **ME & TXE Driver** folder
2. Open the **SetupME.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

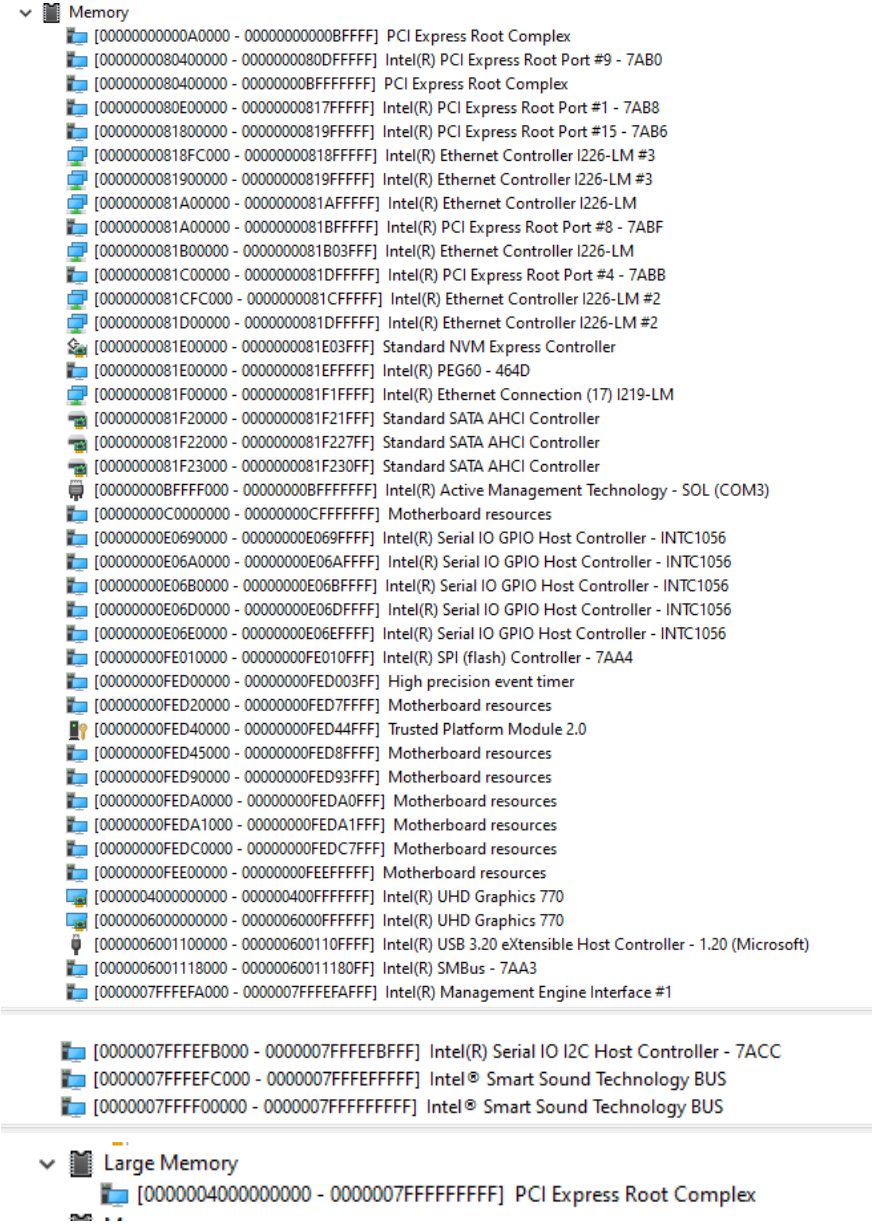
I/O Information

A.1 I/O Address Map

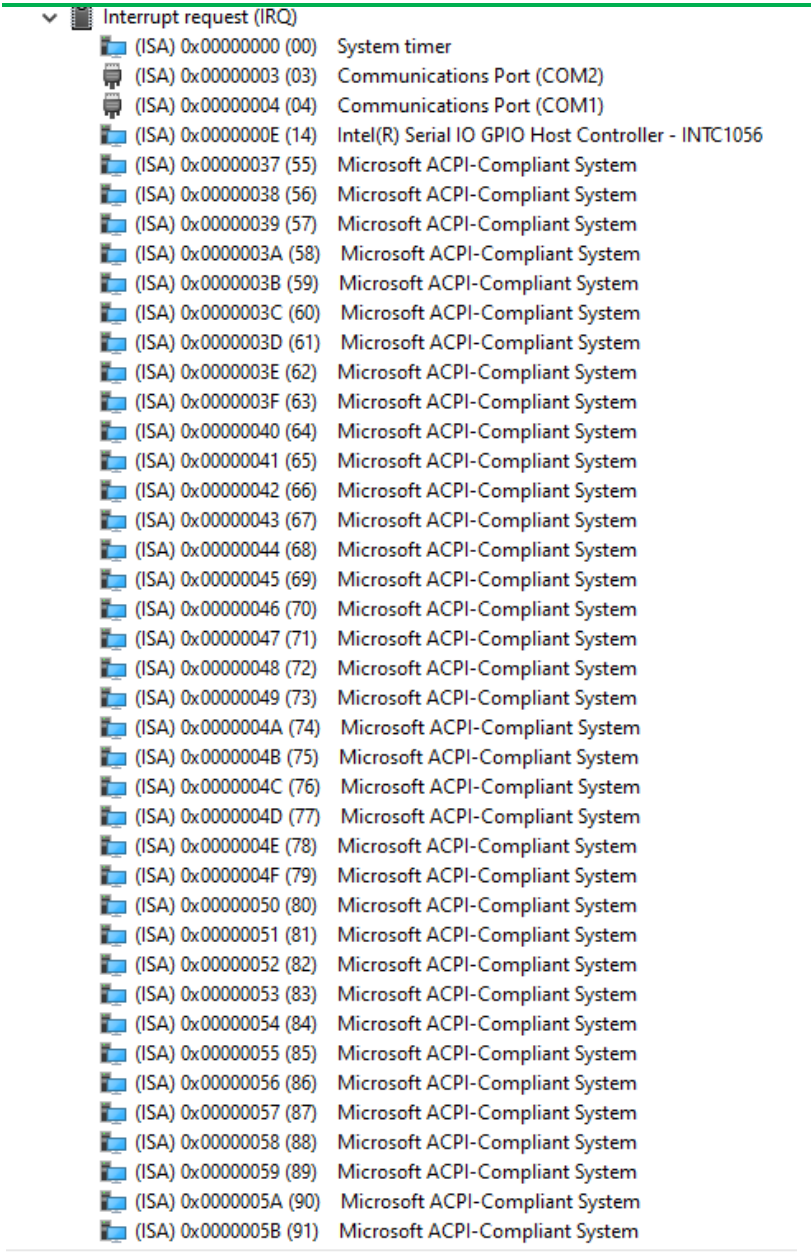



[0000000000004000 - 0000000000004FFF] Intel(R) PCI Express Root Port #1 - 7AB8
[0000000000005000 - 000000000000503F] Intel(R) UHD Graphics 770
[0000000000005060 - 000000000000507F] Standard SATA AHCI Controller
[0000000000005080 - 0000000000005083] Standard SATA AHCI Controller
[0000000000005090 - 0000000000005097] Standard SATA AHCI Controller
[000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus - 7AA3
[000000000000FFF8 - 000000000000FFFF] Intel(R) Active Management Technology - SOL (COM3)

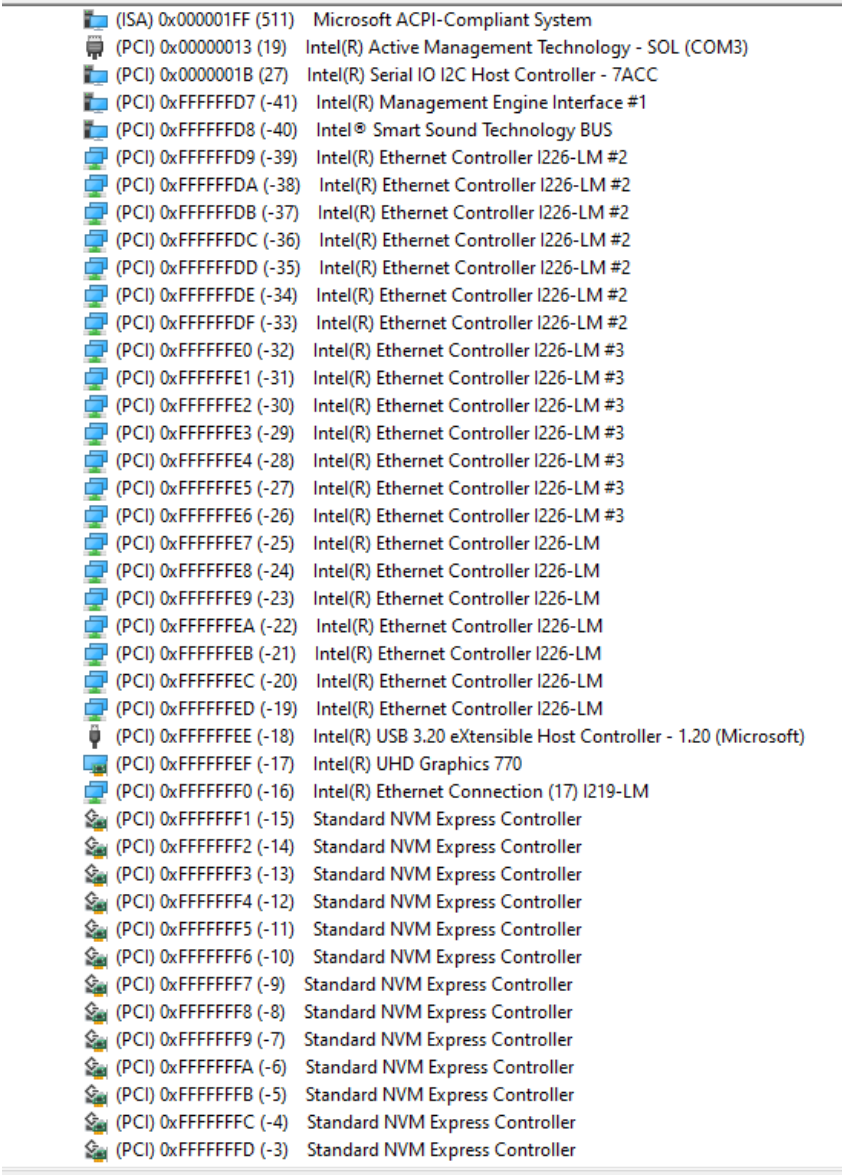
A.2 Memory Address Map



A.3 IRQ Mapping Chart



(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) 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) 0x0000006D (109) Trusted Platform Module 2.0
(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) 0x0000007F (127) Microsoft ACPI-Compliant System
(ISA) 0x00000080 (128) Microsoft ACPI-Compliant System
(ISA) 0x00000081 (129) Microsoft ACPI-Compliant System
(ISA) 0x00000082 (130) Microsoft ACPI-Compliant System
(ISA) 0x00000083 (131) Microsoft ACPI-Compliant System
(ISA) 0x00000084 (132) Microsoft ACPI-Compliant System


(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x00000013 (19) Intel(R) Active Management Technology - SOL (COM3)
(PCI) 0x0000001B (27) Intel(R) Serial IO I2C Host Controller - 7ACC
(PCI) 0xFFFFFFD7 (-41) Intel(R) Management Engine Interface #1
(PCI) 0xFFFFFFD8 (-40) Intel® Smart Sound Technology BUS
(PCI) 0xFFFFFFD9 (-39) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDA (-38) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDB (-37) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDC (-36) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDD (-35) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDE (-34) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFDF (-33) Intel(R) Ethernet Controller I226-LM #2
(PCI) 0xFFFFFFE0 (-32) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE1 (-31) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE2 (-30) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE3 (-29) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE4 (-28) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE5 (-27) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE6 (-26) Intel(R) Ethernet Controller I226-LM #3
(PCI) 0xFFFFFFE7 (-25) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE8 (-24) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFE9 (-23) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFEA (-22) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFEB (-21) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFEC (-20) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFED (-19) Intel(R) Ethernet Controller I226-LM
(PCI) 0xFFFFFFEE (-18) Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFEF (-17) Intel(R) UHD Graphics 770
(PCI) 0xFFFFFFF0 (-16) Intel(R) Ethernet Connection (17) I219-LM
(PCI) 0xFFFFFFF1 (-15) Standard NVM Express Controller
(PCI) 0xFFFFFFF2 (-14) Standard NVM Express Controller
(PCI) 0xFFFFFFF3 (-13) Standard NVM Express Controller
(PCI) 0xFFFFFFF4 (-12) Standard NVM Express Controller
(PCI) 0xFFFFFFF5 (-11) Standard NVM Express Controller
(PCI) 0xFFFFFFF6 (-10) Standard NVM Express Controller
(PCI) 0xFFFFFFF7 (-9) Standard NVM Express Controller
(PCI) 0xFFFFFFF8 (-8) Standard NVM Express Controller
(PCI) 0xFFFFFFF9 (-7) Standard NVM Express Controller
(PCI) 0xFFFFFFFA (-6) Standard NVM Express Controller
(PCI) 0xFFFFFFFB (-5) Standard NVM Express Controller
(PCI) 0xFFFFFFFC (-4) Standard NVM Express Controller
(PCI) 0xFFFFFFFD (-3) Standard NVM Express Controller

Appendix B

Mating Connectors and Cables

B.1 Mating Connectors and Cables

Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN1	External RTC Connector	Molex	51021-0200	Battery Cable	175011901C
CN2	SATA Conn	Molex	887505318	SATA Cable	170X000593
CN3	SATA Conn	Molex	887505318	SATA Cable	170X000593
CN42	Vin Conn	N/A	N/A	Power Cable	TBD
CN6/ CN34	SATA Power Conn	PINREX	PHR-2	2 Pins for HDD Power	1702150155
CN7	External +5VSB Power Input and PS_ON#	JST	PHR-3	ATX Cable	170220020B
CN35	CPU Fan Conn	Molex	2 2-01-2035	N/A	N/A
CN13	USB Port Conn	Aces	50238-01041-003	USB Wafer Cable	1700010010D
CN14	COM1/2	Molex	51021-0900	Serial Port Cable	170X000231
CN52	Front Panel Conn	PINREX	710-74-10TWRG.NY9T	Front Panel	170X000603