EPIC-ADN9

EPIC Board

User's Manual 1st Ed

Last Updated: June 28, 2023

Copyright Notice

Acknowledgement

Packing List

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

Item	Quantity
● EPIC-ADN9	1
● Screw Kit	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 on 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	×	×	O	O	O	O
外部信号连接器及线材	×	×	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	4" EPIC Board
CPU	Intel Atom® x7000E Series/Intel® Processor N Series/Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, TDP 15W) Intel Atom® x7425E (4C/4T, up to 3.4 GHz, TDP 12W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, TDP 12W) Intel® Processor N50 (2C/2T, up to 3.4 GHz, TDP 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200MHz Single-Channel SODIMM x 1, up to 16GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension (L x W)	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows® 10 (64-bit) Ubuntu 22.04.2 LTS/Kernel 5.15.0

Power

Power Requirement	+9~24V or +12V
Power Supply Type	AT/ATX
Connector	2-Pin Phoenix Connector
Power Consumption	Intel® Core™ i3-N305, DDR4 16GB, 1.87A @+24V (Typical)
	Intel® Core™ i3-N305, DDR4 16GB, 2.66A @+24V (Max)

Display

Controller	Intel® UHD Graphics
LVDS/eDP	LVDS or eDP (Default: LVDS)
	24/48-bit Dual-Channel LVDS x 1, up to 1920 x 1080
	eDP 1.4 x 1, up to 3840 x 2160
Display Interface	HDMI 1.4 x 1, up to 1920 x 1080
	DP 1.2 or VGA x 1 (Default: DP 1.2)
	DP 1.2 x 1, up to 3840 x 2160
	VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays

Audio

Codec	Realtek ALC897
Audio Interface	Line-In/Line-Out/Mic
Speaker	5W Amp. (Optional)

External I/O

Ethernet	RJ-45 for Intel® I226-V 2.5GbE x 2 (Standard: 2 Ports, Advanced: 4 Ports)
USB	USB 3.2 Gen 2 x 2
Serial Port	COM 1, COM 2 (RS-232/422/485, support 5V/12V/RI)
Video	HDMI 1.4 x 1 DP 1.2 x 1

Internal I/O

USB	USB 2.0 x 4
Serial Port	COM 3, COM 4, COM 5, COM 6 (RS-232, support RI only)
Video	LVDS x 1 or eDP x 1 (Default: LVDS) LVDS Inverter 5V/12V @2A
SATA	SATA III x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
Audio	Line-In/Line-Out/Mic
DIO/GPIO	GPIO 16-bit
SMBus/I2C	SMBus/I2C (Default: SMBus)
Touch	-
Fan	4-Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	-

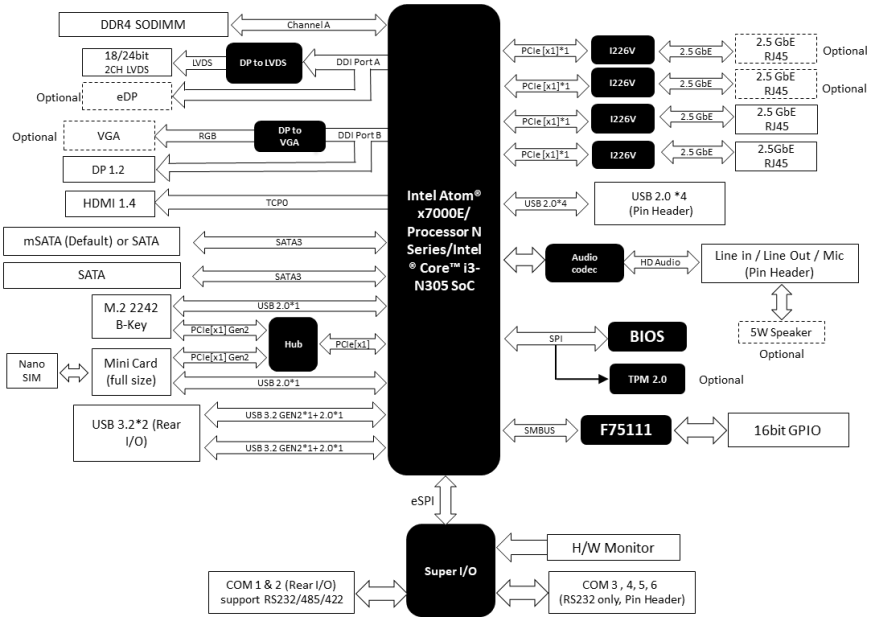
Expansion

Mini PCIe/mSATA	Full Size mPCIe x 1
	Full Size mSATA x 1
M.2 Module Support	M.2 2242 B-Key x 1 (PCIe 2.0 [x1] + USB 2.0)
Others	-

Environmental

Operating Temperature	32°F~140°F (0°C~60°C)
Storage Temperature	-40°F~176°F (-40°C~80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A

1.2 Block Diagram

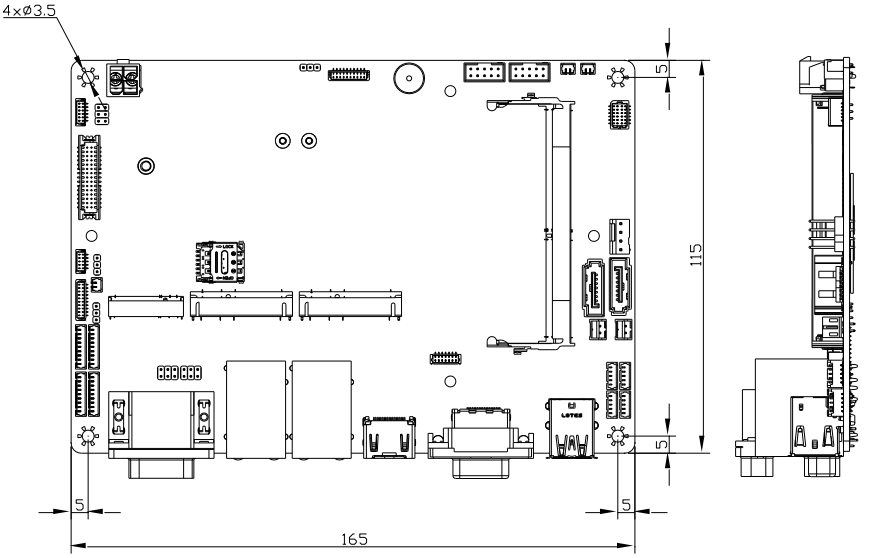


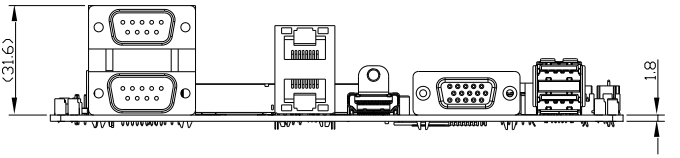
Chapter 2

Hardware Information

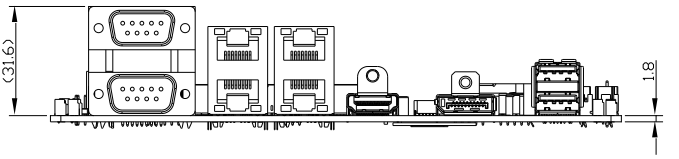
2.1 Dimensions

Component Side



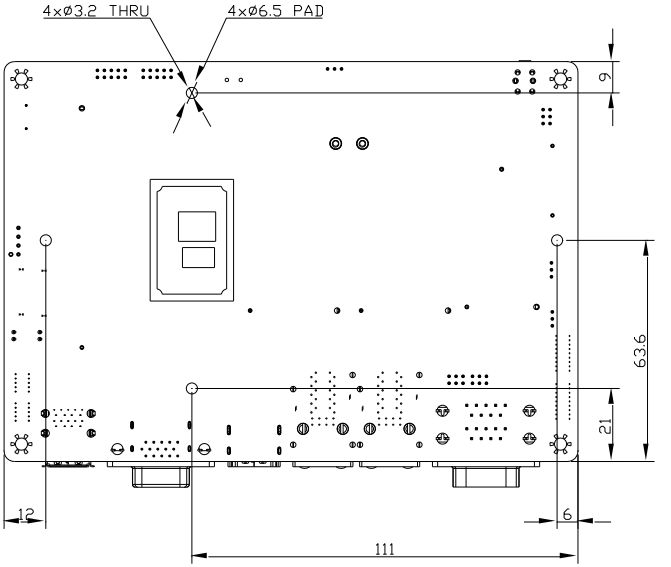


Standard

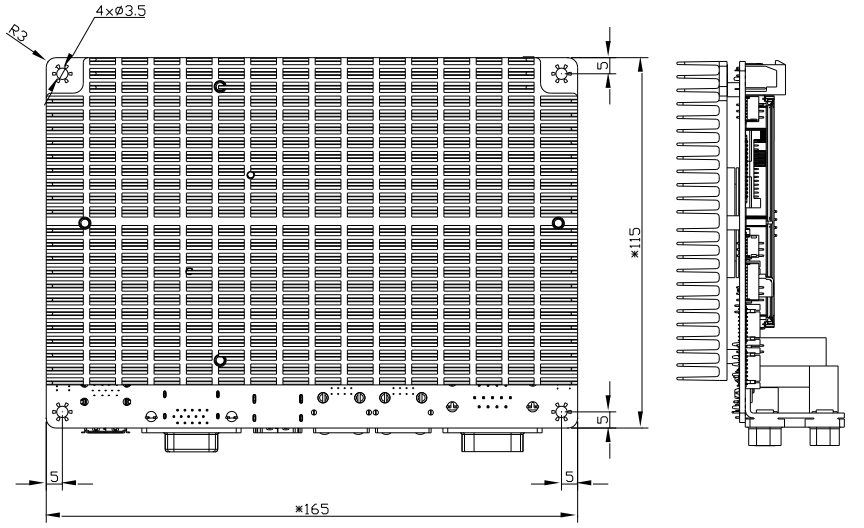


Advanced

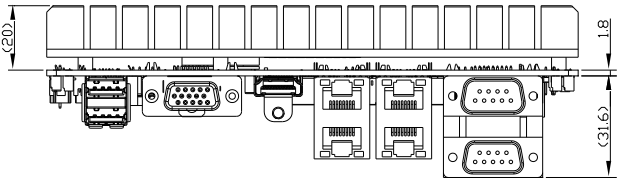
Solder Side

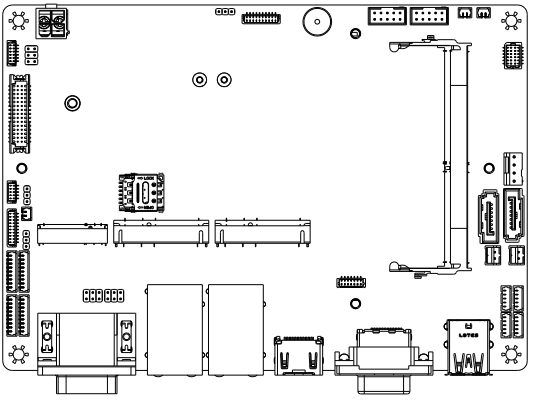


With Heatsink



Solder Side

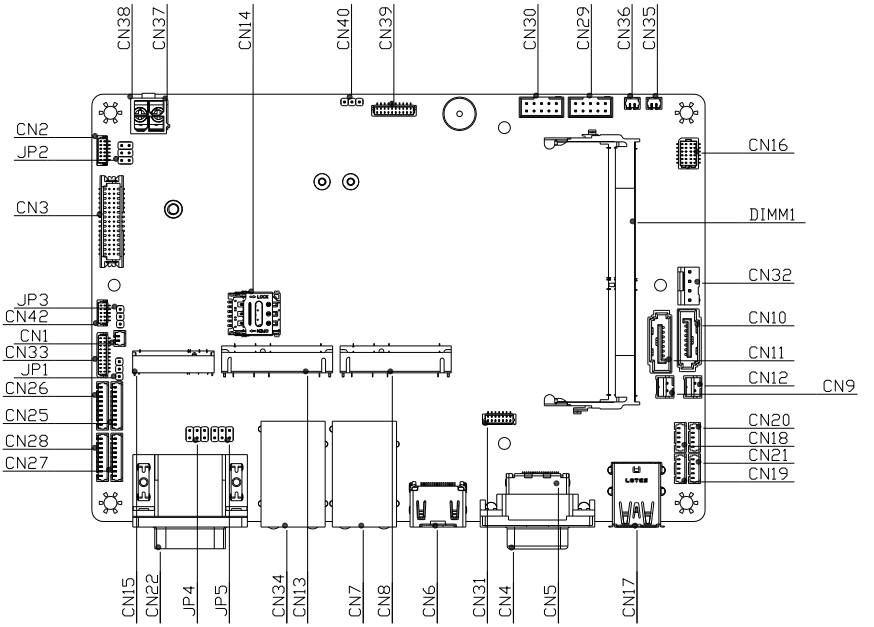




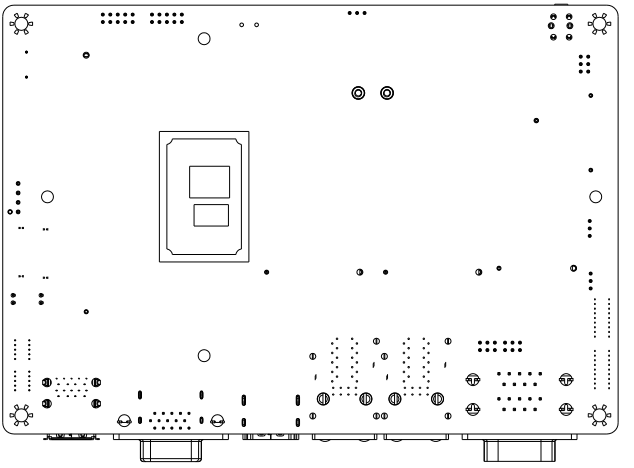
Component Side

2.2 Jumpers and Connectors

Component Side



Solder Side

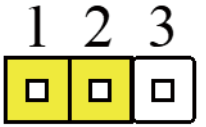


2.3 List of Jumpers

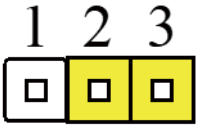
The board features a number of jumpers which can be configured for your application. Please refer to the table below and following sections for all jumpers which can be configured.

Label	Function
JP1	Clear CMOS Jumper
JP2 (1-3-5)	LVDS/eDP Backlight Inverter VCC Selection
JP2 (2-4-6)	LVDS/eDP Operating VDD Selection
JP3	Auto Power Button Enable/Disable Selection
JP4	COM 1 Port Power/RI Selection
JP5	COM 2 Port Power/RI Selection

2.3.1 Clear CMOS Jumper (JP1)

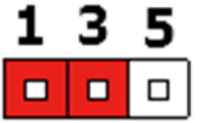


Normal (Default)

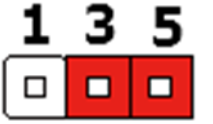


Clear CMOS

2.3.2 LVDS/eDP Port Backlight Inverter VCC Selection (JP2)

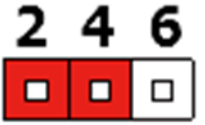


+12V



+5V (Default)

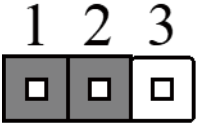
2.3.3 LVDS/eDP Operating VDD Selection (JP2)



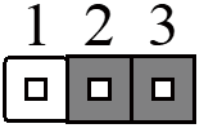
+3.3V (Default)

+5V

2.3.4 Auto Power Button Enable/Disable Selection (JP3)

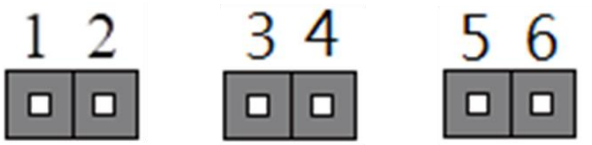


Disable



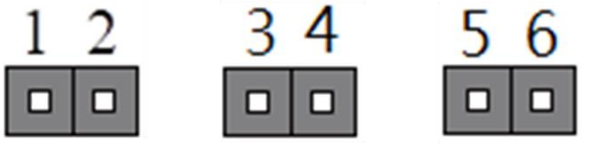
Enable (Default)

2.3.5 COM 1 Port Power/RI Selection (JP4)



+V12S RI (Default) +V5S

2.3.6 COM 2 Port Power/RI Selection (JP5)



+V12S RI (Default) +V5S

2.4 List of Connectors

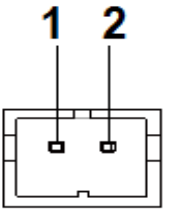
This section details the connectors featured on the board, which can be configured for your application.

Please refer to the table below for a list of all connectors on this board which can be configured.

Label	Function
CN1	RTC Battery Connector
CN2	LVDS/eDP Port Inverter/Backlight Connector
CN3	LVDS/eDP Connector
CN4	VGA Connector
CN5	DP Connector
CN6	HDMI Connector
CN7	Dual 2.5GbE LAN Port
CN8	Full Size mSATA Slot
CN9	+5V Output for SATA HDD
CN10	SATA 0 Connector
CN11	SATA 1 Connector
CN12	+5V Output for SATA HDD
CN13	Full Size Mini Card Slot
CN14	Nano SIM Card Socket
CN15	M.2 2242 B-Key
CN16	Audio Connector
CN17	USB 3.2 x 2 Connector
CN18	USB 2.0 Port 3
CN19	USB 2.0 Port 5
CN20	USB 2.0 Port 4
CN21	USB 2.0 Port 6
CN22	COM Port 1 & 2

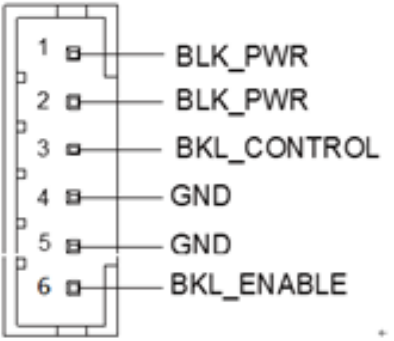
Label	Function
CN23	COM Port 1 (colay with CN22)
CN24	COM Port 2 (colay with CN22)
CN25	COM Port 3
CN26	COM Port 4
CN27	COM Port 5
CN28	COM Port 6
CN29	GPIO Port 0
CN30	GPIO Port 1
CN31	SPI Flash Programming Port
CN32	FAN Connector
CN33	Port 80 Debug Port
CN34	Dual 2.5GbE LAN Port
CN35	Speaker Left
CN36	Speaker Right
CN37	External Power Input
CN38	ATX 12V Power Connector
CN39	Front Panel
CN40	Power Management SMBus
CN42	I2C/SMBus Header
DIMM1	DDR4 SODIMM Slot

2.4.1 RTC Battery Connector (CN1)



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

2.4.2 LVDS Port Inverter/Backlight Connector (CN2)



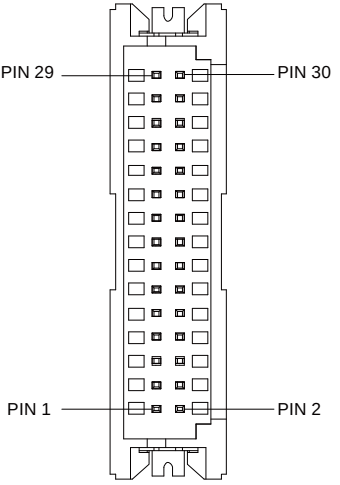
Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_PWR	PWR	+5V / +12V
3	BKL_CONTROL	OUT	+3.3V
4	GND	GND	
5	GND	GND	
6	BKL_ENABLE	OUT	+3.3V

Note: LVDS BKL_PWR can be set to +5V or +12V.

Note: LVDS BKL_PWR current support => 2A.

Note: LVDS BKL_CONTROL can be set by JP2.

2.4.3 LVDS/eDP Connector (CN3)



	LVDS	eDP		
Pin	Pin Name	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	BKL_ENABLE	OUT	
2	BKL_CONTROL	BKL_CONTROL	OUT	
3	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
4	GND	GND	GND	
5	LVDS_A_CLK-	eDP_TXN3	DIFF	
6	LVDS_A_CLK+	eDP_TXP3	DIFF	
7	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
8	GND	GND	GND	
9	LVDS_DA0-	eDP_TXN2	DIFF	

	LVDS	eDP		
Pin	Pin Name	Pin Name	Signal Type	Signal Level
10	LVDS_DA0+	eDP_TXP2	DIFF	
11	LVDS_DA1-	eDP_TXN1	DIFF	
12	LVDS_DA1+	eDP_TXP1	DIFF	
13	LVDS_DA2-	eDP_TXN0	DIFF	
14	LVDS_DA2+	eDP_TXP0	DIFF	
15	LVDS_DA3-	NC	DIFF	
16	LVDS_DA3+	eDP_HPD	DIFF	
17	DDC_DATA	eDP_AUX_N	I/O	+3.3V
18	DDC_CLK	eDP_AUX_P	I/O	+3.3V
19	LVDS_DB0-	NC	DIFF	
20	LVDS_DB0+	NC	DIFF	
21	LVDS_DB1-	NC	DIFF	
22	LVDS_DB1+	NC	DIFF	
23	LVDS_DB2-	NC	DIFF	
24	LVDS_DB2+	NC	DIFF	
25	LVDS_DB3-	NC	DIFF	
26	LVDS_DB3+	NC	DIFF	
27	LCD_PWR	LCD_PWR	PWR	+3.3V/+5V
28	GND	GND	GND	
29	LVDS_B_CLK-	NC	DIFF	
30	LVDS_B_CLK+	NC	DIFF	

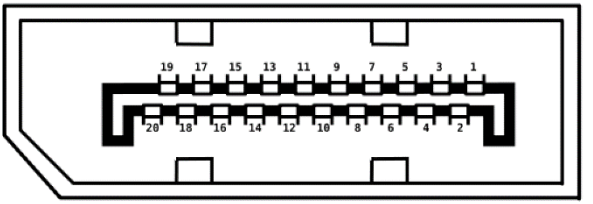
Note: LVDS LCD_PWR current support => 2A

Note: LVDS LCD_PWR can be set to +3.3V or +5V by JP2(2-4-6).

2.4.4 VGA Connector (CN4)

Pin	Pin Name	Signal Type	Signal Level
1	VSYNC	OUT	
2	HSYNC	OUT	
3	GND	GND	
4	DDC_CLK	OUT	
5	DDC_DATA	OUT	
6	GND	GND	
7	BLUE	OUT	
8	GND	GND	
9	GREEN	OUT	
10	GND	GND	
11	RED	OUT	
12	GND	GND	
13	+5V	OUT	

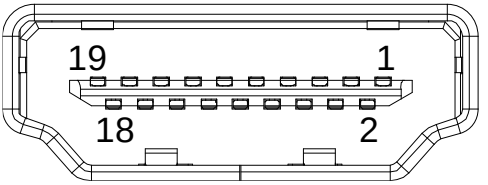
2.4.5 DP Connector (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	DP_TX0_DP	DIFF	
2	GND	GND	
3	DP_TX0_DN	DIFF	
4	DP_TX1_DP	DIFF	

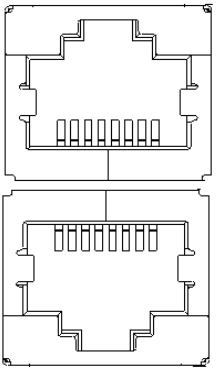
Pin	Pin Name	Signal Type	Signal Level
5	GND	GND	
6	DP_TX1_DN	DIFF	
7	DP_TX2_DP	DIFF	
8	GND	GND	
9	DP_TX2_DN	DIFF	
10	DP_TX3_DP	DIFF	
11	GND	GND	
12	DP_TX3_DN	DIFF	
13	DP_OB_AUX_EN	GND	
14	GND	GND	
15	D1_AUX_DP	I/O	
16	GND	GND	
17	DP_AUX_DN	I/O	
18	HDMI_HPD	I/O	
19	GND	GND	
20	+V3P3S	PWR	+3.3V

2.4.6 HDMI Connector (CN6)



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	NC		
14	NC		
15	DDC_CLK	I/O	+5V
16	DDC_DATA	I/O	+5V
17	GND	GND	GND
18	+5V	PWR	+5V
19	HDMI_HPD		

2.4.7 Dual 2.5GbE LAN Port (CN7)



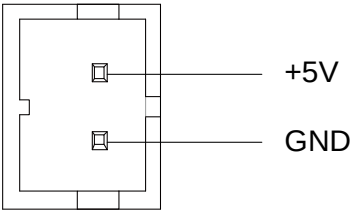
Pin	Pin Name	Signal Type	Signal Level
R1B	LAN2_MDI0_P	R1A	LAN1_MDI0_P
R2B	LAN2_MDI0_N	R2A	LAN1_MDI0_N
R3B	LAN2_MDI1_P	R3A	LAN1_MDI1_P
R4B	LAN2_MDI1_N	R4A	LAN1_MDI1_N
R9B	VCCB	R9A	VCCA
R10B	GND1B	R10A	GND1A
R5B	LAN2_MDI2_P	R5A	LAN1_MDI2_P
R6B	LAN2_MDI2_N	R6A	LAN1_MDI2_N
R7B	LAN2_MDI3_P	R7A	LAN1_MDI3_P
R8B	LAN2_MDI3_N	R8A	LAN1_MDI3_N
L1B	LAN2_LED_LINK#	L1A	LAN1_LED_LINK#
L2B	LAN2_LED_3P3A	L2A	LAN1_LED_3P3A
L4B	LAN2_LED_2500#	L4A	LAN1_LED_1000#
L3B	LAN2_LED_1000#	L3A	LAN1_LED_2500#

2.4.8 Full Size mSATA Slot (CN8)

Pin	Pin Name	Signal Type	Signal Level
1	NC		
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	NC		
8	NC		
9	GND	GND	
10	NC		
11	NC		
12	NC		
13	NC		
14	NC		
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	SATA_1_RXP_MSATA_R	DIFF	
24	+3.3VSB	PWR	+3.3V
25	SATA_1_RXN_MSATA_R	DIFF	
26	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	SATA_1_TXN_MSATA_C	DIFF	
32	SMB_DATA	I/O	+3.3V
33	SATA_1_TXP_MSATA_C	DIFF	
34	GND	GND	
35	GND	GND	
36	NC		
37	GND	GND	
38	NC		
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	mSATA_DET	PWR/GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

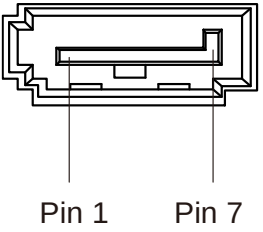
2.4.9 +5V Output for SATA HDD (CN9)



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

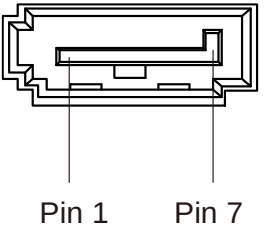
Note: CN9 offers 2A current for SATA Connector.

2.4.10 SATA 0 Connector (CN10)



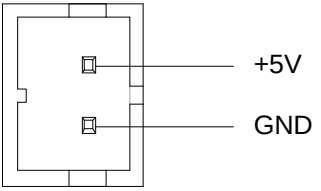
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

2.4.11 SATA 1 Connector (CN11)



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

2.4.12 +5V Output for SATA HDD (CN12)



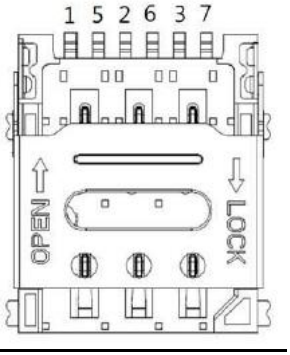
Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GND	GND	

2.4.13 Full Size Mini Card Slot (CN13)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	
11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	
13	PCIE_REF_CLK+	DIFF	
14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+	DIFF	
26	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

2.4.14 Nano SIM Card Socket (CN14)

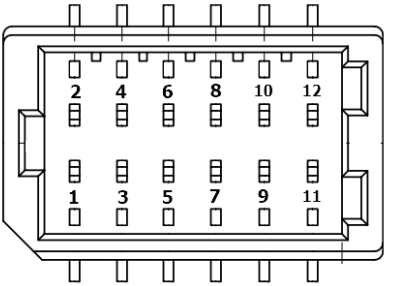


Pin	Pin Name	Signal Type	Signal Level
C1	UIM_PWR	PWR	
C2	UIM_RST	IN	
C3	UIM_CLK	IN	
C5	GND	GND	
C6	UIM_VPP	PWR	
C7	UIM_DATA	I/O	

2.4.15 M.2 2242 B-Key (CN15)

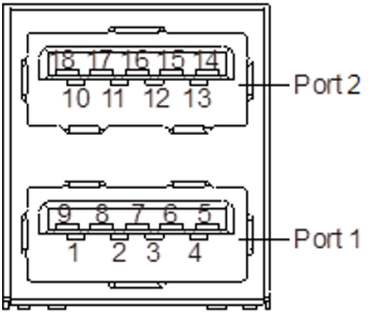
Standard specification.

2.4.16 Audio Connector (CN16)



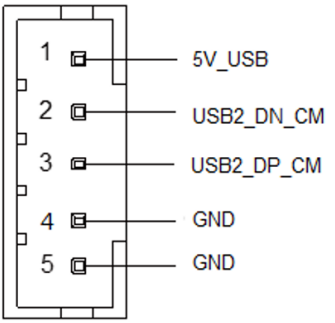
Pin	Pin Name	Signal Type	Signal Level
1	RIGHT_OUT	OUT	
2	MIC_R	IN	
3	LEFT_OUT	OUT	
4	MIC_L	IN	
5	JD_LOUT	IN	
6	JD_MIC	IN	
7	GND_AUDIO	GND	
8	GND_AUDIO	GND	
9	JD_LIN	IN	
10	LINE_R_IN	IN	
11	+5V_AUDIO	PWR	+5V
12	LINE_L_IN	IN	

2.4.17 USB 3.2 x 2 Connector (CN17)



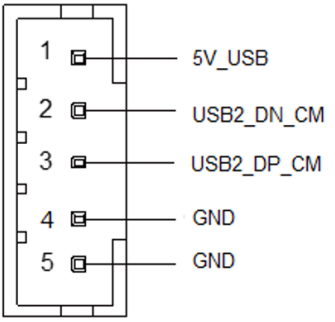
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V(0.9A)
2	USB0_D-	DIFF	
3	USB0_D+	DIFF	
4	GND	GND	
5	USB0_SSRX−	DIFF	
6	USB0_SSRX+	DIFF	
7	GND	GND	
8	USB0_SSTX−	DIFF	
9	USB0_SSTX+	DIFF	
10	+5VSB	PWR	+5V(0.9A)
11	USB1_D-	DIFF	
12	USB1_D+	DIFF	
13	GND	GND	
14	USB1_SSRX−	DIFF	
15	USB1_SSRX+	DIFF	
16	GND	GND	
17	USB1_SSTX−	DIFF	
18	USB1_SSTX+	DIFF	

2.4.18 USB 2.0 Port 3 (CN18)



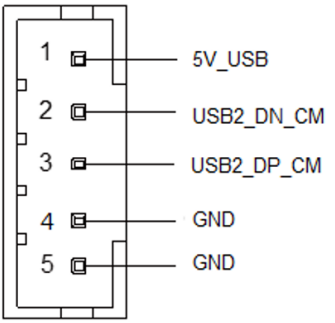
Pin	Pin Name	Pin	Pin Name
Pin 1	5V_USB(0.5A)	Pin 2	USB2_3_DN_CM
Pin 3	USB2_3_DP_CM	Pin 4	GND
Pin 5	GND		

2.4.19 USB 2.0 Port 4 (CN20)



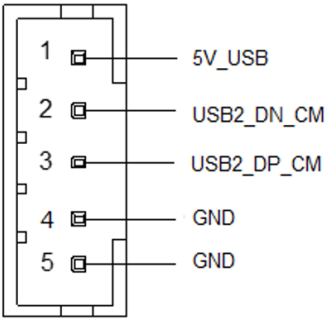
Pin	Pin Name	Pin	Pin Name
Pin 1	5V_USB(0.5A)	Pin 2	USB2_4_DN_CM
Pin 3	USB2_4_DP_CM	Pin 4	GND
Pin 5	GND		

2.4.20 USB 2.0 Port 5 (CN19)



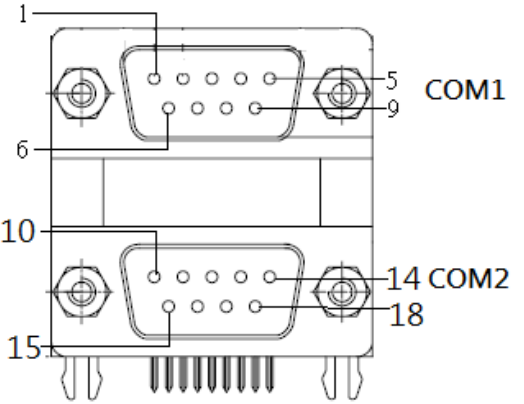
Pin	Pin Name	Pin	Pin Name
Pin 1	5V_USB(0.5A)	Pin 2	USB2_5_DN_CM
Pin 3	USB2_5_DP_CM	Pin 4	GND
Pin 5	GND		

2.4.21 USB 2.0 Port 6 (CN21)



Pin	Pin Name	Pin	Pin Name
Pin 1	5V_USB(0.5A)	Pin 2	USB2_6_DN_CM
Pin 3	USB2_6_DP_CM	Pin 4	GND
Pin 5	GND		

2.4.22 COM Port 1 & 2 (CN22)



RS-232				
Pin Port 1	Pin Port 2	Pin Name	Signal Type	Signal Level
1	10	DCD	IN	
2	11	RX	IN	
3	12	TX	OUT	+5V
4	13	DTR	OUT	+5V
5	14	GND	GND	
6	15	DSR	IN	
7	16	RTS	OUT	+5V
8	17	CTS	IN	
9	18	RI/+5V/+12V(0.5A)	IN/ PWR	+5V/+12V

RS-422				
Pin Port 1	Pin Port 2	Pin Name	Signal Type	Signal Level
1	10	RS422_TX-	IN	
2	11	RS422_TX+	IN	
3	12	RS422_RX+	OUT	+5V
4	13	RS422_RX-	OUT	+5V
5	14	GND	GND	
6	15	NC	IN	
7	16	NC	OUT	+5V
8	17	NC	IN	
9	18	NC/+5V/+12V(0.5 A)	IN/ PWR	+5V/+12V

RS-485				
Pin Port 1	Pin Port 2	Pin Name	Signal Type	Signal Level
1	10	RS485_D-	I/O	+5V
2	11	RS485_D+	I/O	+5V
3	12	NC		
4	13	NC		
5	14	GND	GND	
6	15	NC		
7	16	NC		
8	17	NC		
9	18	NC/+5V/+12V(0.5 A)	PWR	+5V/+12V

Note: COM 1/2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

Note: Pin 9 function can be set by JP4/5.

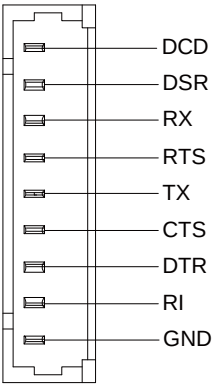
2.4.23 COM Port 1 (colay with CN22) (CN23)

RS-232				
Pin Port 1	Pin Port 2	Pin Name	Signal Type	Signal Level
1	10	DCD	IN	
2	11	DSR	IN	
3	12	RX	IN	
4	13	RTS	OUT	+5V
5	14	TX	OUT	+5V
6	15	CTS	IN	
7	16	DTR	OUT	+5V
8	17	NC/+5V/+12V(0.5A)	PWR	+5V/+12V
9	18	GND	GND	

2.4.24 COM Port 2 (colay with CN22) (CN24)

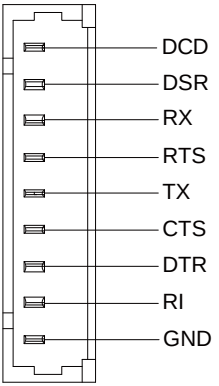
RS-232				
Pin Port 1	Pin Port 2	Pin Name	Signal Type	Signal Level
1	10	DCD	IN	
2	11	DSR	IN	
3	12	RX	IN	
4	13	RTS	OUT	±5V
5	14	TX	OUT	±5V
6	15	CTS	IN	
7	16	DTR	OUT	±5V
8	17	NC/+5V/+12V(0.5A)	PWR	+5V/+12V
9	18	GND	GND	

2.4.25 COM Port 3 (CN25)



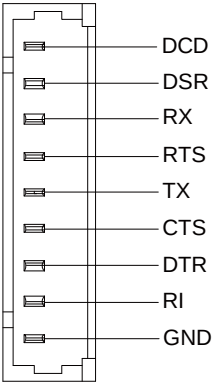
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	+5V
5	TX	OUT	+5V
6	CTS	IN	
7	DTR	OUT	+5V
8	RI	IN	
9	GND	GND	

2.4.26 COM Port 4 (CN26)



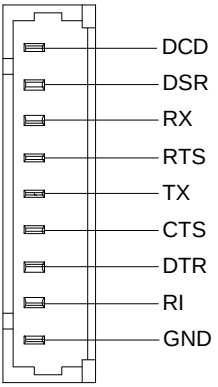
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	+5V
5	TX	OUT	+5V
6	CTS	IN	
7	DTR	OUT	+5V
8	RI	IN	
9	GND	GND	

2.4.27 COM Port 5 (CN27)



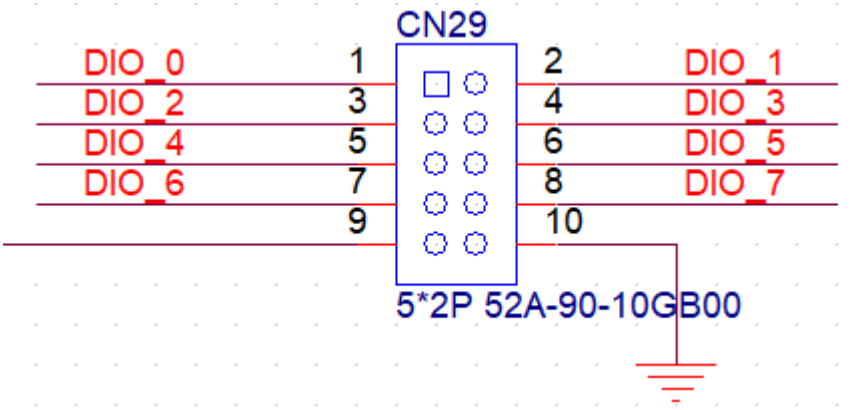
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	+5V
5	TX	OUT	+5V
6	CTS	IN	
7	DTR	OUT	+5V
8	RI	IN	
9	GND	GND	

2.4.28 COM Port 6 (CN28)



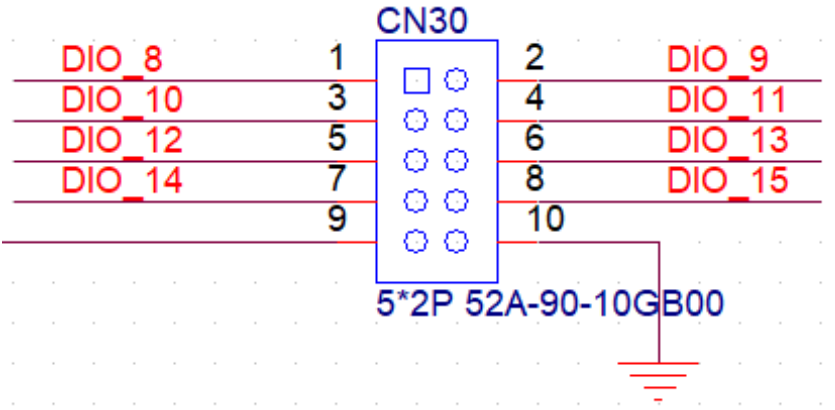
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	+5V
5	TX	OUT	+5V
6	CTS	IN	
7	DTR	OUT	+5V
8	RI	IN	
9	GND	GND	

2.4.29 GPIO Port 0 (CN29)



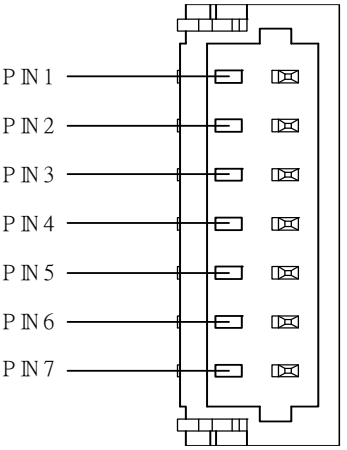
Pin	Pin Name	Pin	Pin Name
Pin 1	GPIO_0	Pin 2	GPIO_1
Pin 3	GPIO_2	Pin 4	GPIO_3
Pin 5	GPIO_4	Pin 6	GPIO_5
Pin 7	GPIO_6	Pin 8	GPIO_7
Pin 9	5V(0.5A)	Pin 10	GND

2.4.30 GPIO Port 1 (CN30)



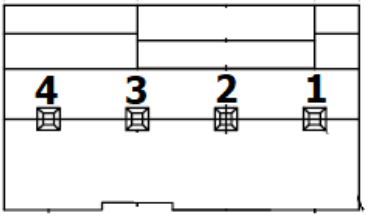
Pin	Pin Name	Pin	Pin Name
Pin 1	GPIO_8	Pin 2	GPIO_9
Pin 3	GPIO_10	Pin 4	GPIO_11
Pin 5	GPIO_12	Pin 6	GPIO_13
Pin 7	GPIO_14	Pin 8	GPIO_15
Pin 9	5V(0.5A)	Pin 10	GND

2.4.31 SPI Flash Programming Port (CN31)



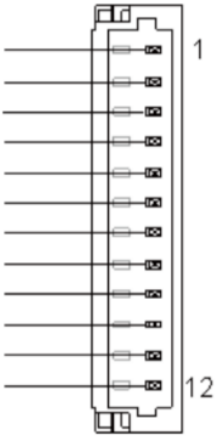
Pin	Pin Name	Signal Type	Signal Level
1	SPI_MISO	OUT	
2	GND	GND	GND
3	SPI_CLK	IN	
4	+3.3VSB	PWR	+3.3V
5	SPI_MOSI	IN	
6	SPI_CS	IN	
7	NC		

2.4.32 FAN Connector (CN32)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	+V12S	PWR	+12V (1A)
3	TACH	IN	
4	PWM	OUT	

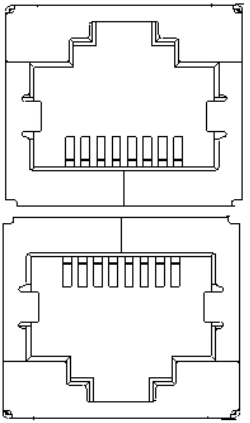
2.4.33 Port 80 Debug Port (CN33)



Pin	Pin Name	Signal Type	Signal Level
1	ESPI_IO0_EC_R	I/O	+1.8V
2	ESPI_IO1_EC_R	I/O	+1.8V
3	ESPI_IO2_EC_R	I/O	+1.8V

Pin	Pin Name	Signal Type	Signal Level
4	ESPI_IO3_EC_R	I/O	+1.8V
5	+3.3V	PWR	+3.3V
6	ESPI_CS_EC_R_N	IN	+1.8V
7	ESPI_RST_EC_R_N	OUT	+1.8V
8	GND	GND	
9	ESPI_CLK_EC_R	OUT	
10	SMB_DATA/I2C_SDA/3.	I/O	+3.3V
11	SMB_CLK/I2C_CLK	OUT	+3.3V
12	SMB_ALERT/SERIRQ	IN	+3.3V

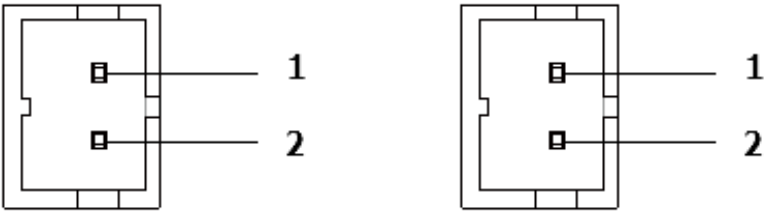
2.4.34 Dual 2.5GbE LAN Port (CN34)



Pin	Pin Name	Pin	Pin Name
R1B	LAN3_MDI0_P	R1A	LAN4_MDI0_P
R2B	LAN3_MDI0_N	R2A	LAN4_MDI0_N
R3B	LAN3_MDI1_P	R3A	LAN4_MDI1_P
R4B	LAN3_MDI1_N	R4A	LAN4_MDI1_N
R9B	VCCB	R9A	VCCA

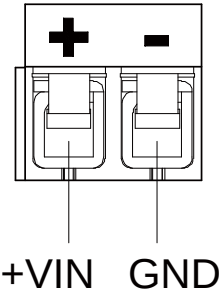
Pin	Pin Name	Pin	Pin Name
R10B	GND1B	R10A	GND1A
R5B	LAN3_MDI2_P	R5A	LAN4_MDI2_P
R6B	LAN3_MDI2_N	R6A	LAN4_MDI2_N
R7B	LAN3_MDI3_P	R7A	LAN4_MDI3_P
R8B	LAN3_MDI3_N	R8A	LAN4_MDI3_N
L1B	LAN3_LED_LINK#	L1A	LAN4_LED_LINK#
L2B	LAN3_LED_3P3A	L2A	LAN4_LED_3P3A
L4B	LAN3_LED_2500#	L4A	LAN4_LED_1000#
L3B	LAN3_LED_1000#	L3A	LAN4_LED_2500#

2.4.35 Speaker Left/Speaker Right (CN35/CN36)



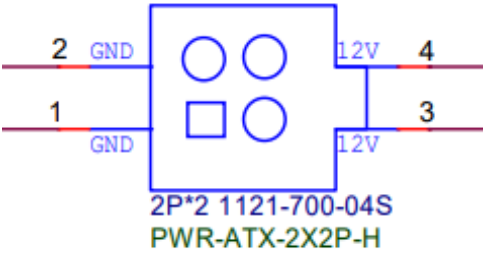
Pin	Pin Name	Signal Type	Signal Level
1	AMP_OUT_L+	IO	
2	AMP_OUT_L-	IO	

2.4.36 External Power Input (CN37)



Pin	Pin Name	Signal Type	Signal Level
1	+VIN	PWR	+12V(8A)
2	GND	GND	

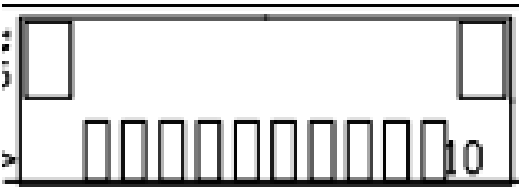
2.4.37 ATX 12V Power Connector (CN38)



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

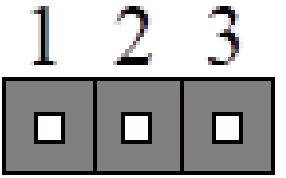
Note: 12V only.

2.4.38 Front Panel (CN39)



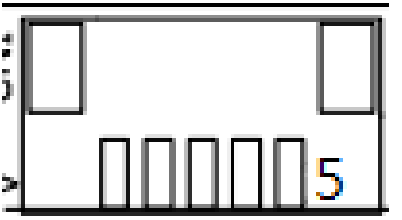
Pin	Pin Name	Pin	Pin Name
Pin 1	PWR_BTN-	Pin 2	PWR_BTN+
Pin 3	HDD_LED-	Pin 4	HDD_LED+
Pin 5	SPEAKER-	Pin 6	SPEAKER+
Pin 7	PWR_LED-	Pin 8	PWR_LED+
Pin 9	H/W RESET-	Pin 10	H/W RESET+

2.4.39 Power Management SMBus (CN40)



Pin	Pin Name	Signal Type	Signal Level
1	PM_SCL	I/O	+3.3V
2	PM_DAT	OUT	+3.3V
3	GND	GND	

2.4.40 I2C/SMBus Header (CN42)



Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	+3.3V
2	SMB_DATA/I2C_SDA	I/O	+3.3V
3	SMB_CLK/I2C_CLK	OUT	+3.3V
4	SMB_ALERT/SERIRQ	IN	+3.3V
5	GND	GND	

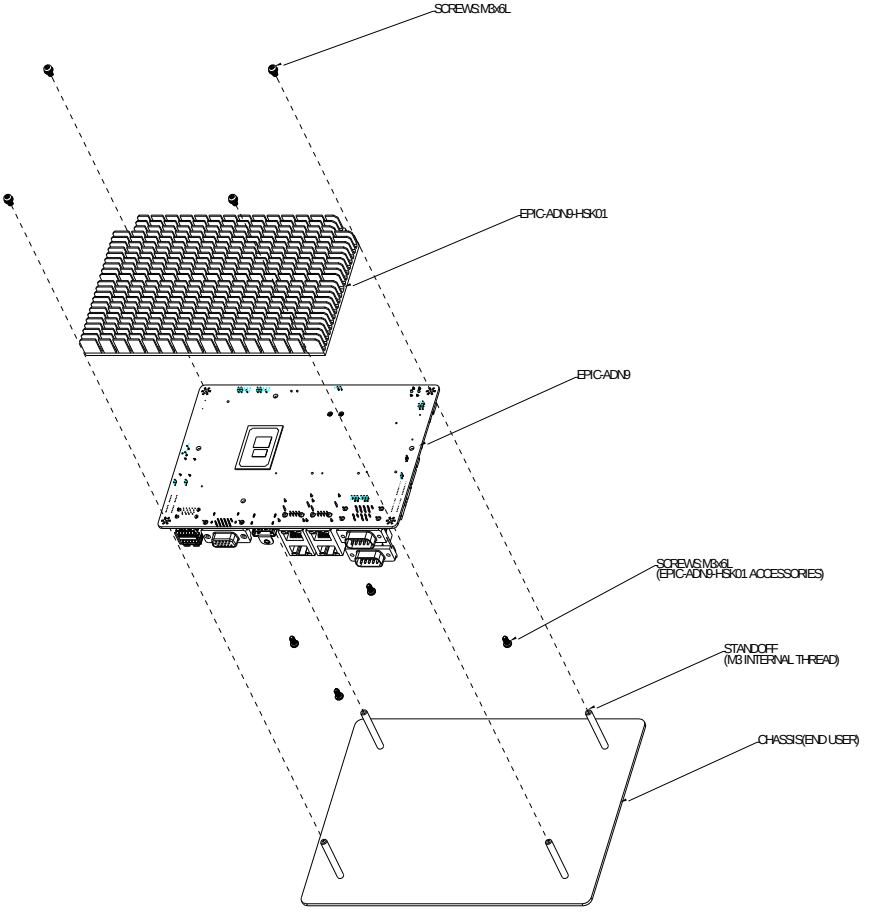
2.4.41 DDR4 SODIMM Slot (DIMM1)

Standard specification.

2.5 Thermal Solution Assembly

Thermal Solution

Heatsink EPIC-ADN9-HSK01



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The system uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the system will output a few short beeps or an error message. The board can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be output, and the BIOS setup program will need to be run to set the configuration information in memory.

There are three situations in which the CMOS settings will need to be set or changed:

- Starting the system for the first time
- The system hardware has been changed
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention. The battery must be replaced when it runs down.

3.2 AMI BIOS Setup

The AMI BIOS ROM has a pre-installed Setup program that allows users to modify basic system configurations, which is stored in the battery-backed CMOS RAM and BIOS NVRAM so that the information is retained when the power is turned off.

To enter BIOS Setup, press <Del> or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

Main – Date and time can be set here. Press <Tab> to switch between date elements

Advanced – Access and configure advanced processor options and features.

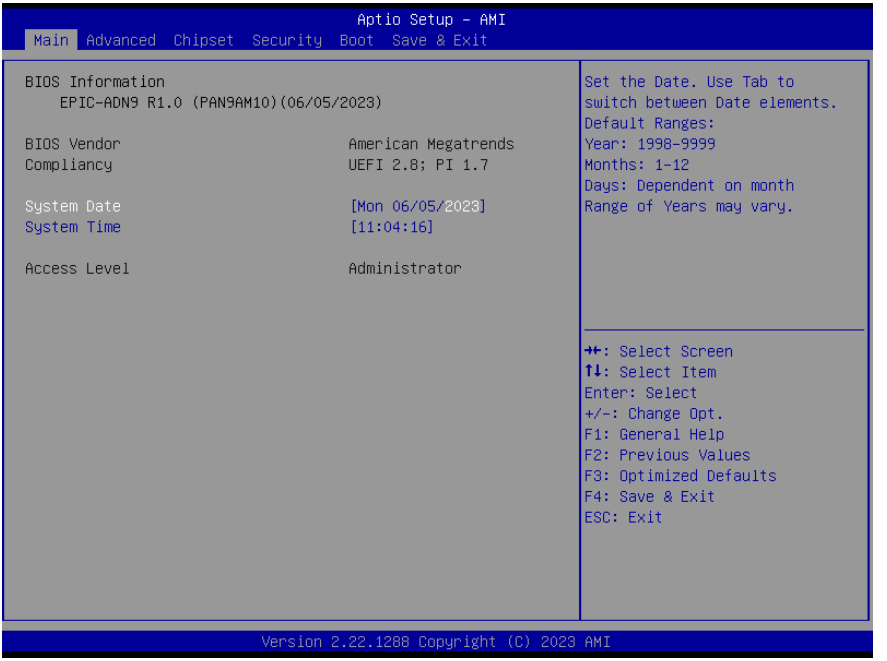
Chipset – Chipset and host bridge options and features

Boot – Set boot options including boot priority and Quiet Boot option

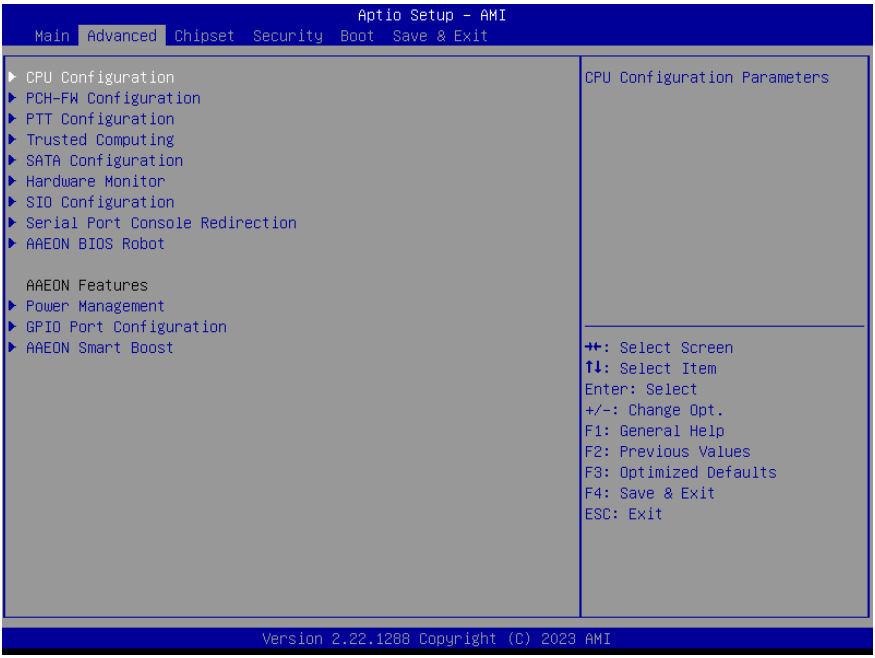
Security – The setup administrator password can be set here

Save & Exit –Save your changes and exit the program

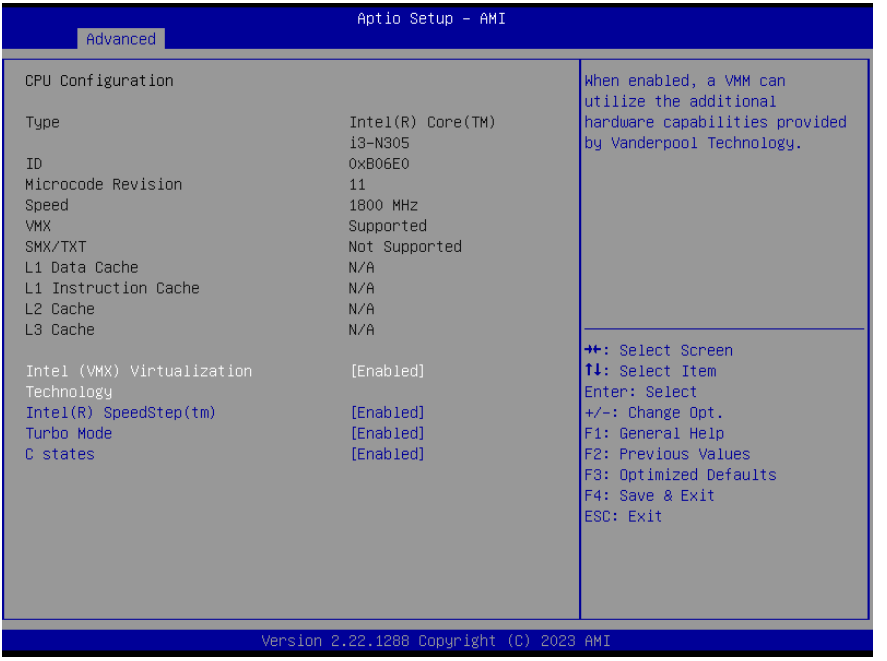
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced

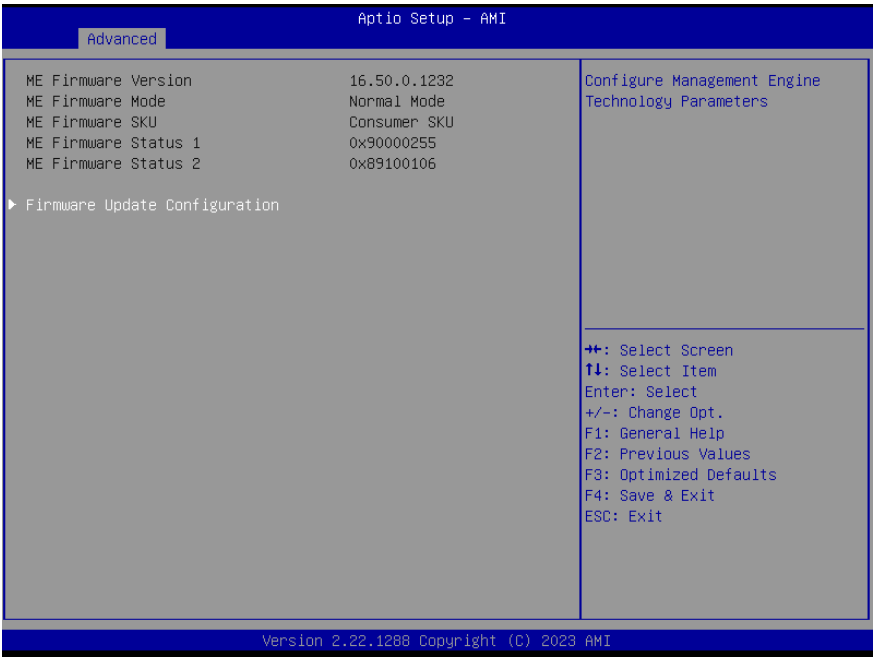


3.4.1 CPU Configuration

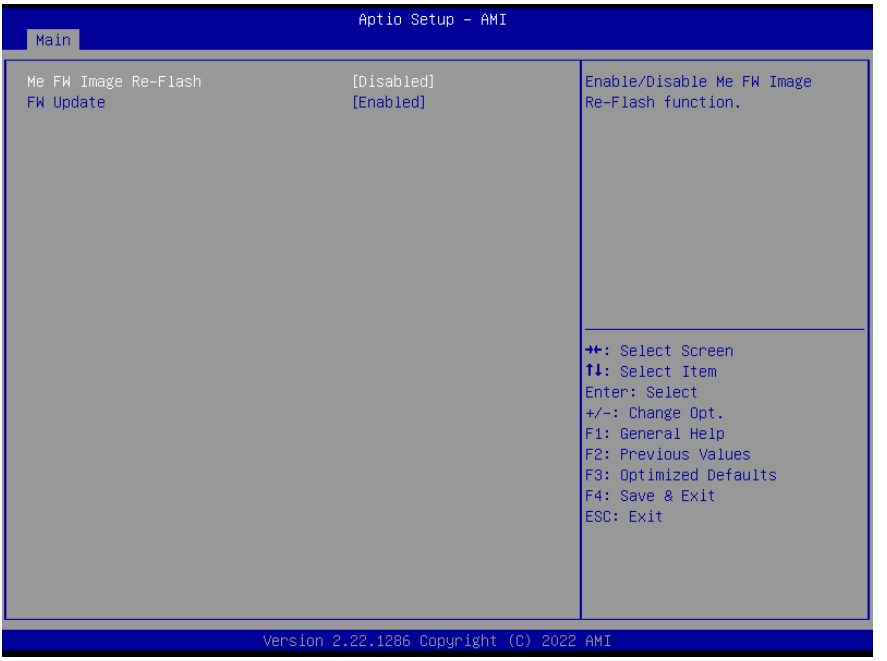


Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Intel® SpeedStep™	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than 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.		

3.4.2 PCH-FW Configuration

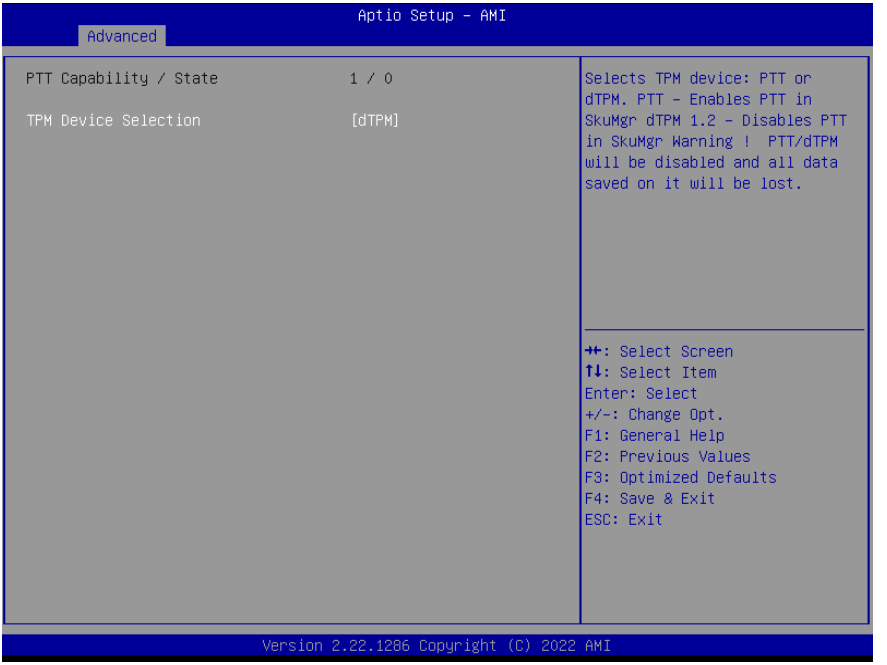


3.4.3 Firmware Update Configuration



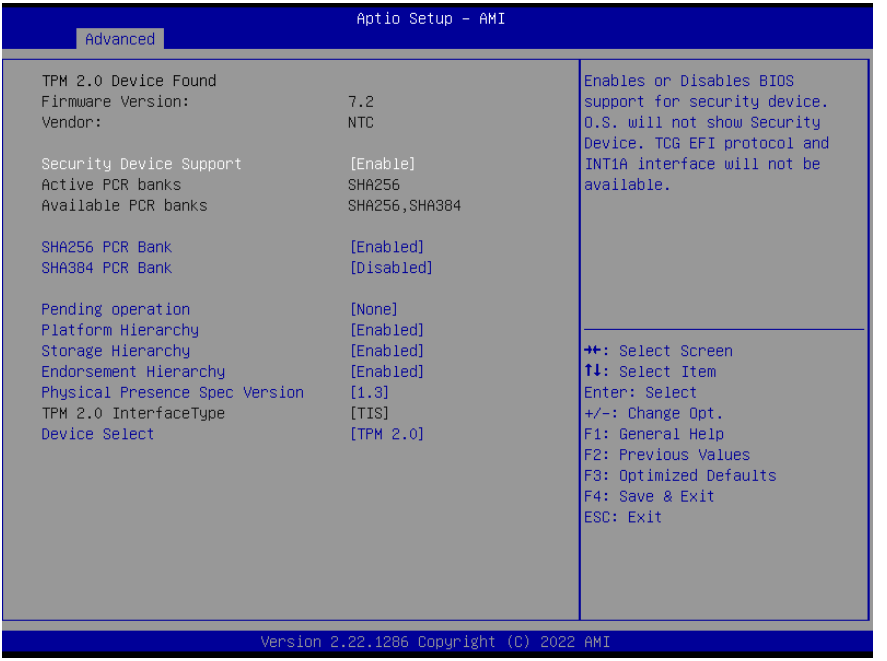
Options Summary		
Me FW Image Re-Flash	Enabled	
	Disabled	Optimal Default, Failsafe Default
Enable/Disable Me FW Image Re-Flash function.		
FW Update	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable ME FW Update function.		

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 is SkuMgr **Warning**! PTT/dTPM will be disabled and all data saved on it will be lost.		

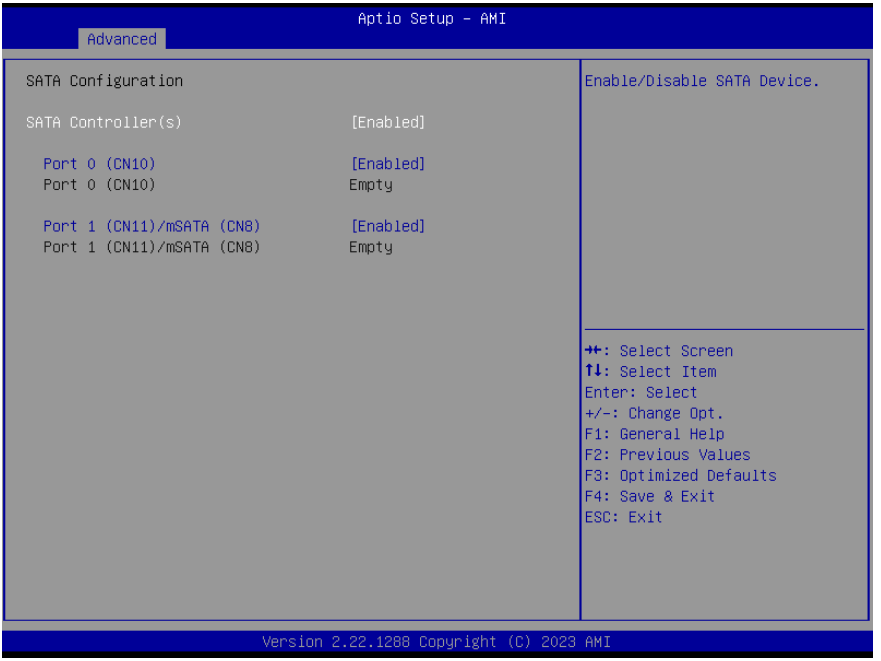
3.4.5 Trusted Computing



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.		

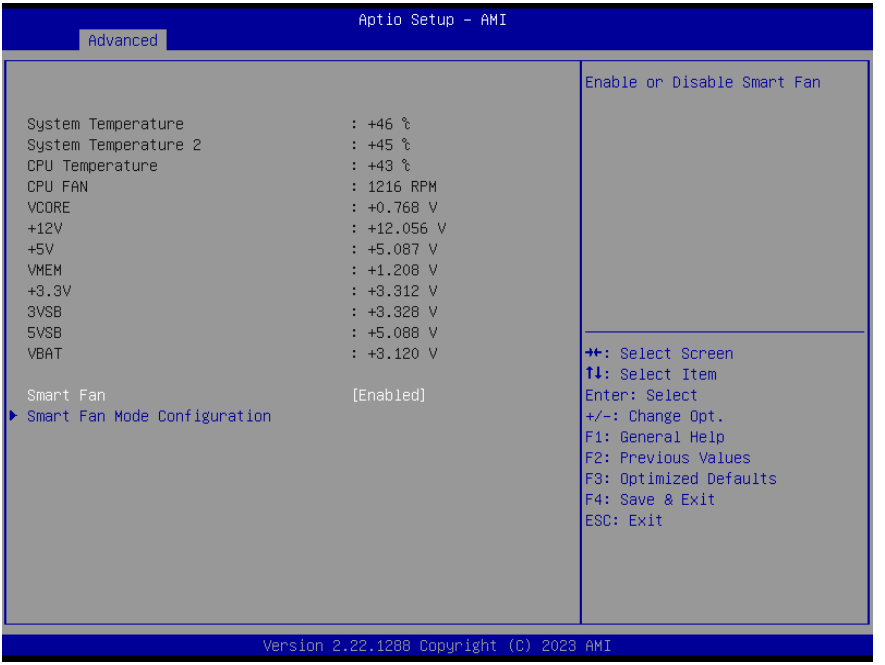
Options Summary		
Platform Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Platform Hierarchy		
Storage Hierarchy	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable Storage Hierarchy		
Endorsement Hierarchy	Enabled	Optimal Default, Failsafe Default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

3.4.6 SATA Configuration



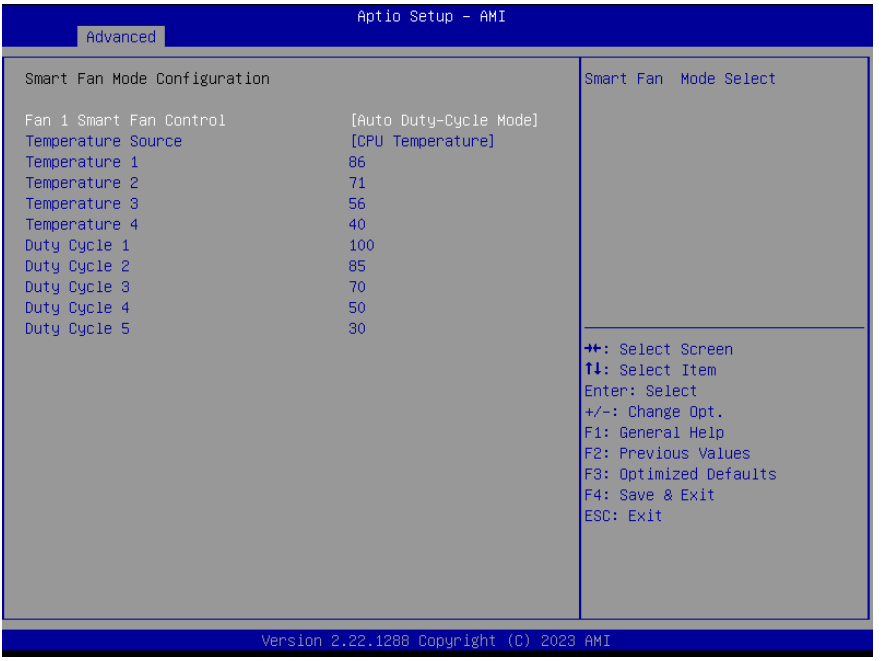
Options Summary		
SATA Controller(s)	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable/Disable SATA Device.		
Port 0 (CN10)	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		
Port1(CN11)/mSATA (CN8)	Enabled	Optimal Default, Failsafe Default
	Disabled	
Enable or Disable SATA Port.		

3.4.7 Hardware Monitor



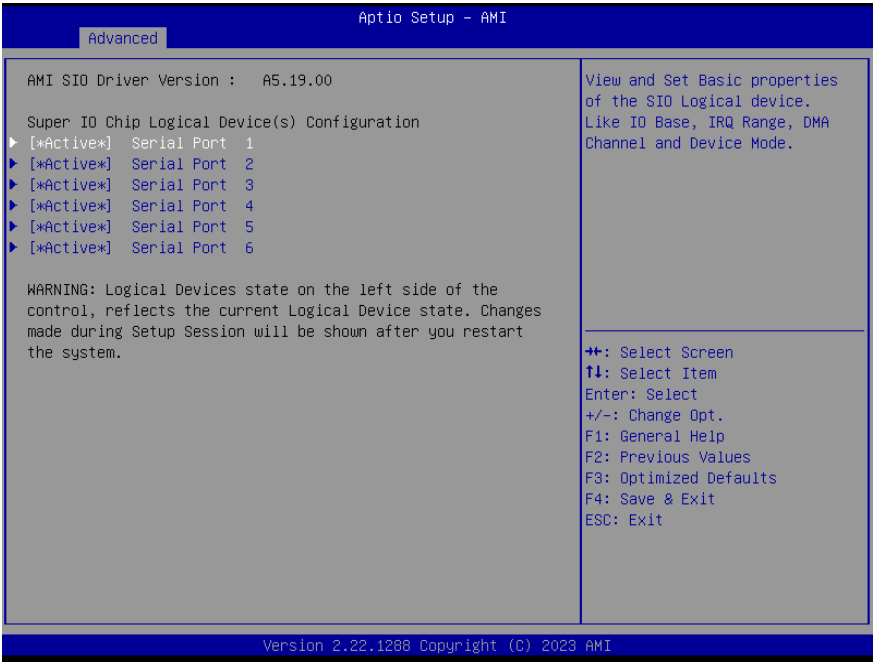
Options Summary		
Smart Fan	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables Smart Fan.		

3.4.7.1 Smart Fan Mode Configuration

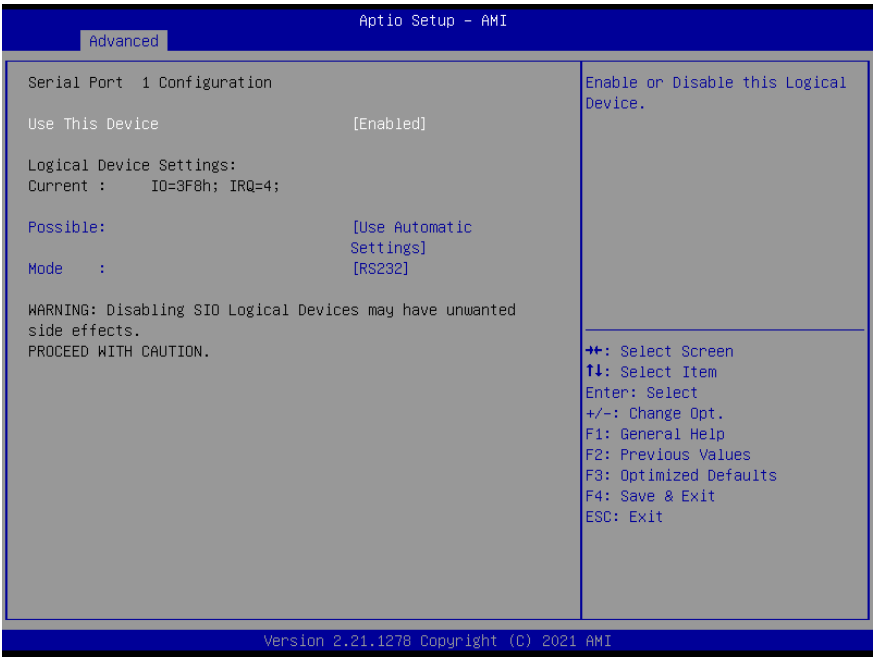


Options Summary		
Fan 1 Smart Fan Control	Manual Duty Mode	
	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default
Smart Fan Mode Select.		
Temperature Source	CPU Temperature	Optimal Default, Failsafe Default
	System Temperature	
	System Temperature 2	
Select the monitored temperature source for this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

3.4.8 SIO Configuration



3.4.8.1 Serial Port 1 Configuration

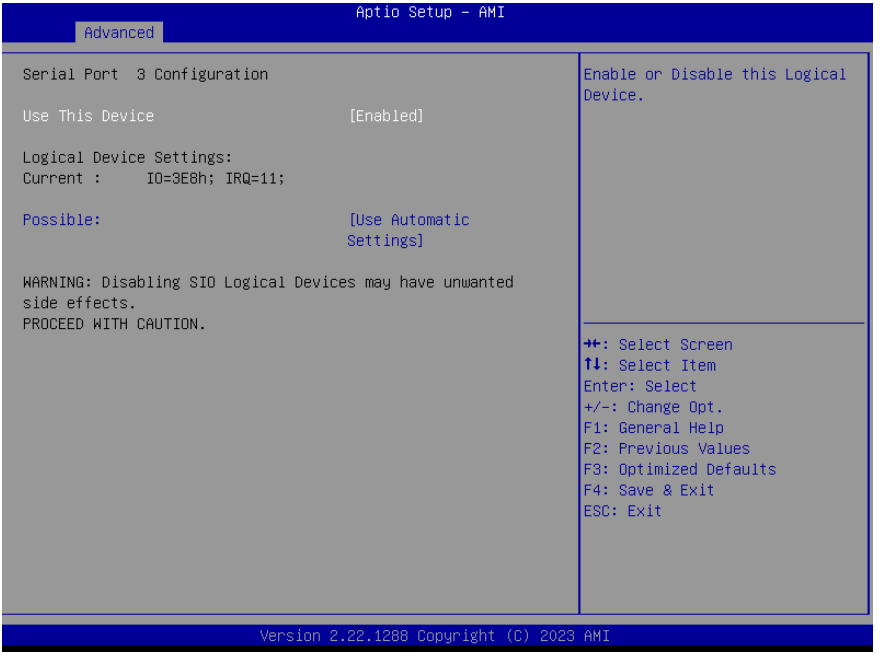


Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Serial Port (COM)		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows user to change Device's Resource settings. New settings will be reflected 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

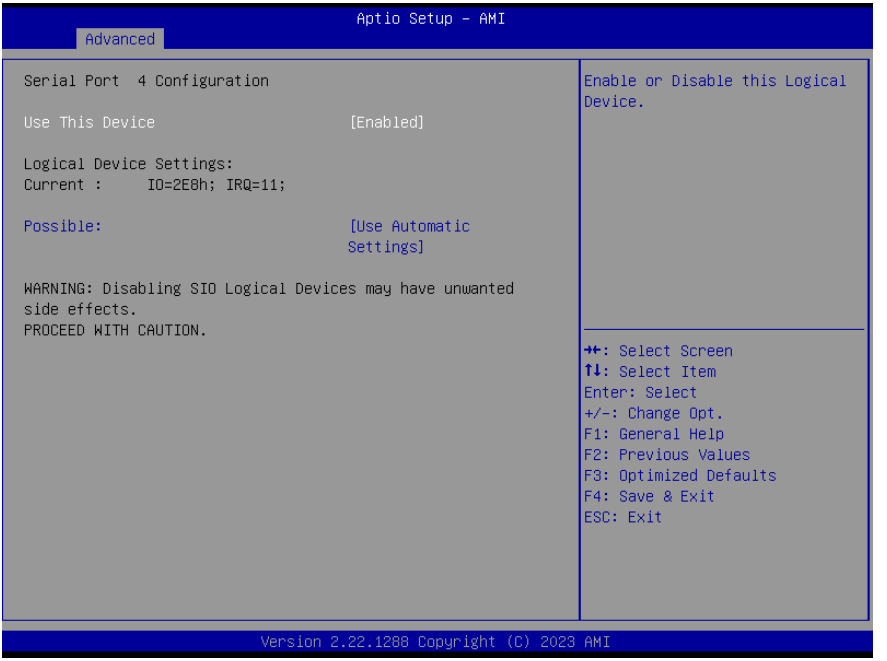
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3	
	IO=3F8h; IRQ=4	
Allows user to change Device's Resource settings. New settings will be reflected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

3.4.8.3 Serial Port 3 Configuration



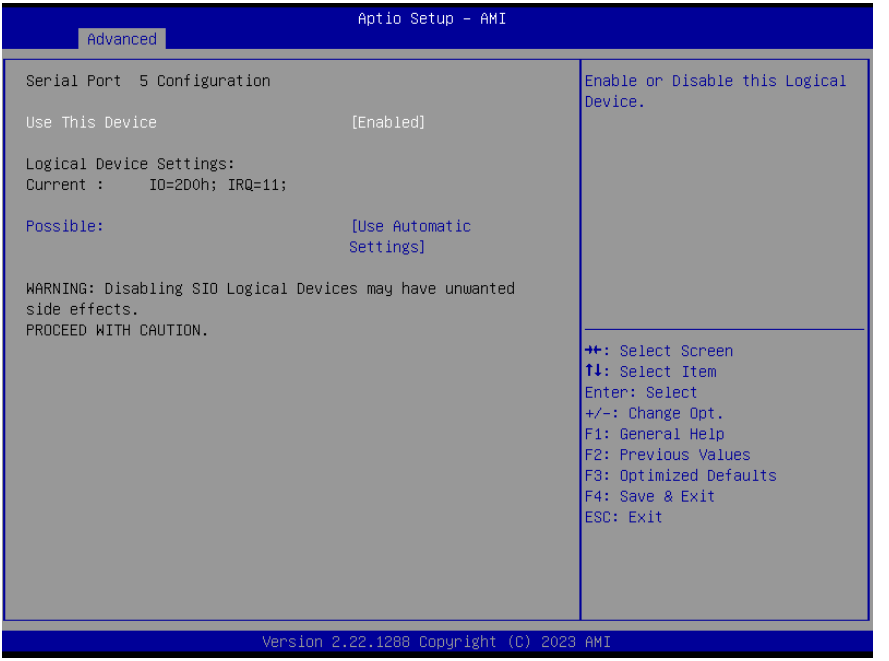
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3E8h; IRQ=11	
	IO=2E8h; IRQ=11	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.4.8.4 Serial Port 4 Configuration



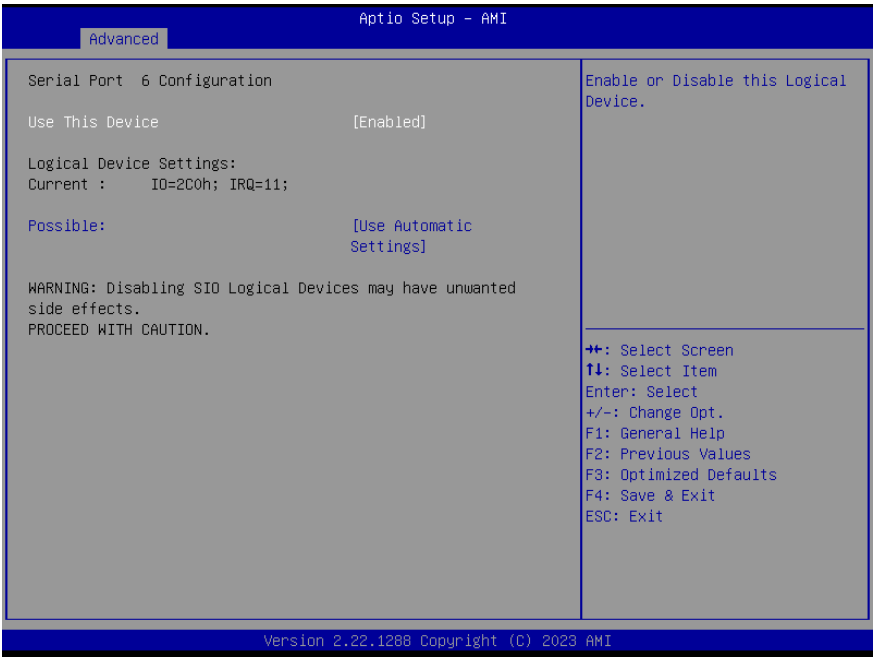
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2E8h; IRQ=11	
	IO=3E8h; IRQ=11	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.4.8.5 Serial Port 5 Configuration



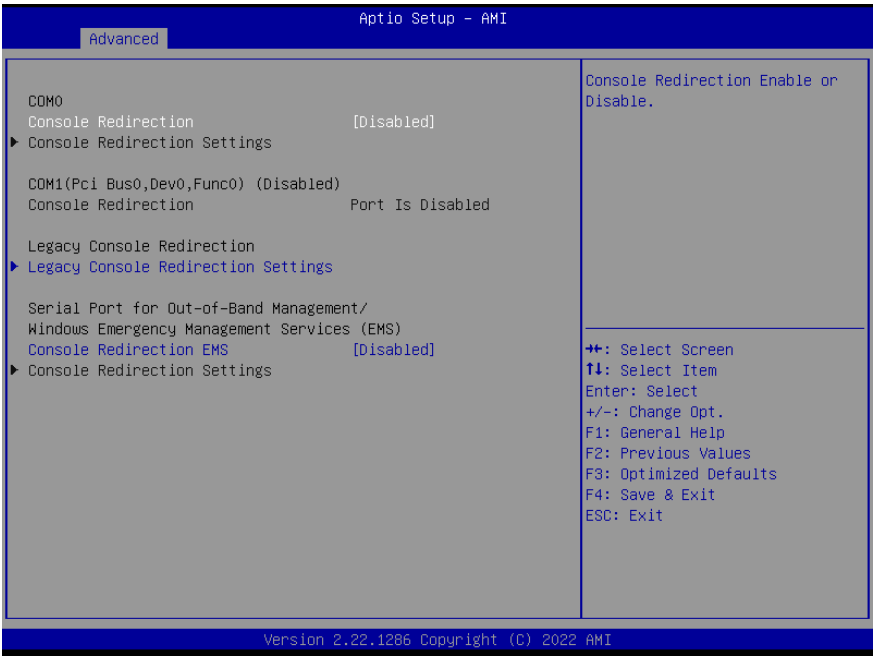
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2D0h; IRQ=11	
	IO=2C0h; IRQ=11	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.4.8.6 Serial Port 6 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=2C0h; IRQ=11	
	IO=2D0h; IRQ=11	
Allows user to change Device's Resource settings. New settings will be reflected on This Setup Page after System restarts.		

3.4.9 Serial Port Console Redirection

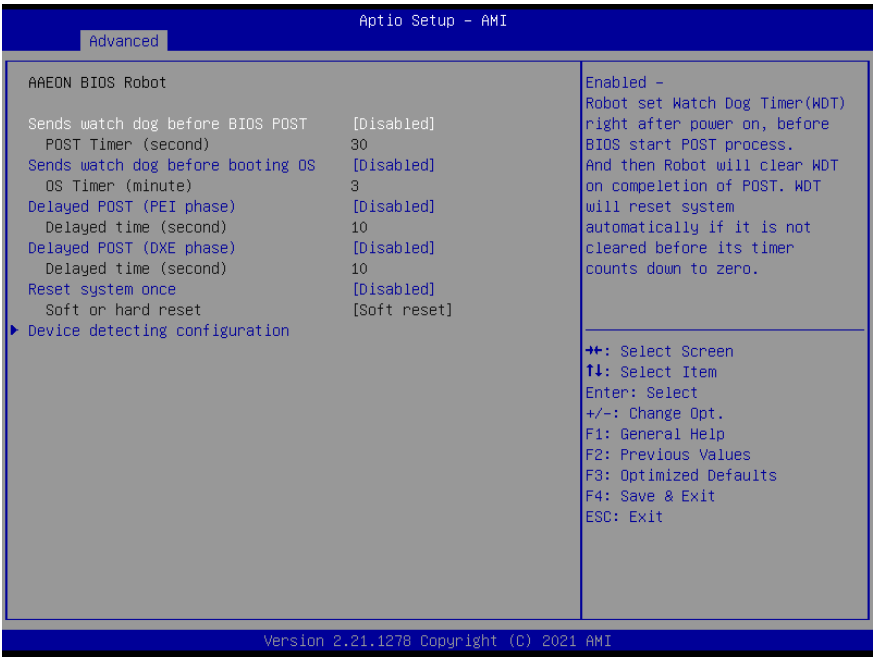


Options Summary		
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		

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



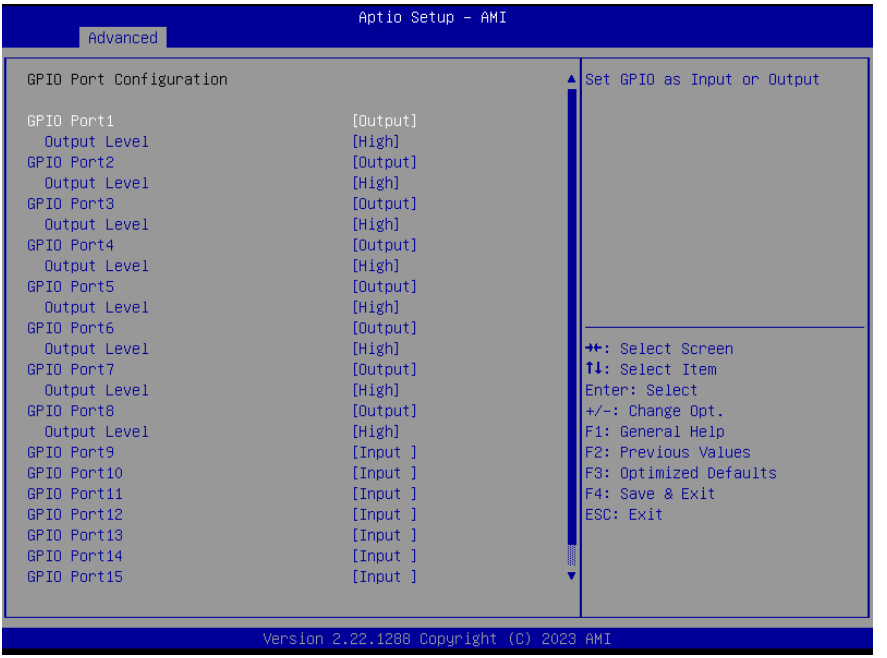
Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. Then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared 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

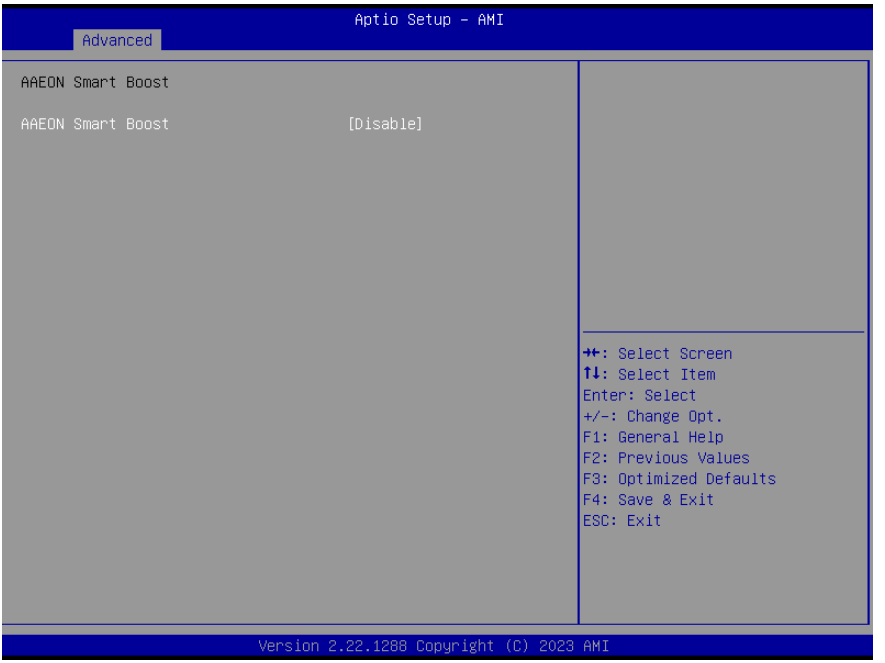
Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
Select power state when power is re-applied after a power failure.		
Soft-Off (S5) Wake On RTC	Disable	Optimal Default, Failsafe Default
	By Date	
	By Weekday	
	Bypass	
By Date: System will wake on the with hr::min::sec specified. By Weekday: System will wake on the enabled weekday with hr::min::sec specified. Bypass: BIOS will not control RTC wake function.		

3.4.13 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.		

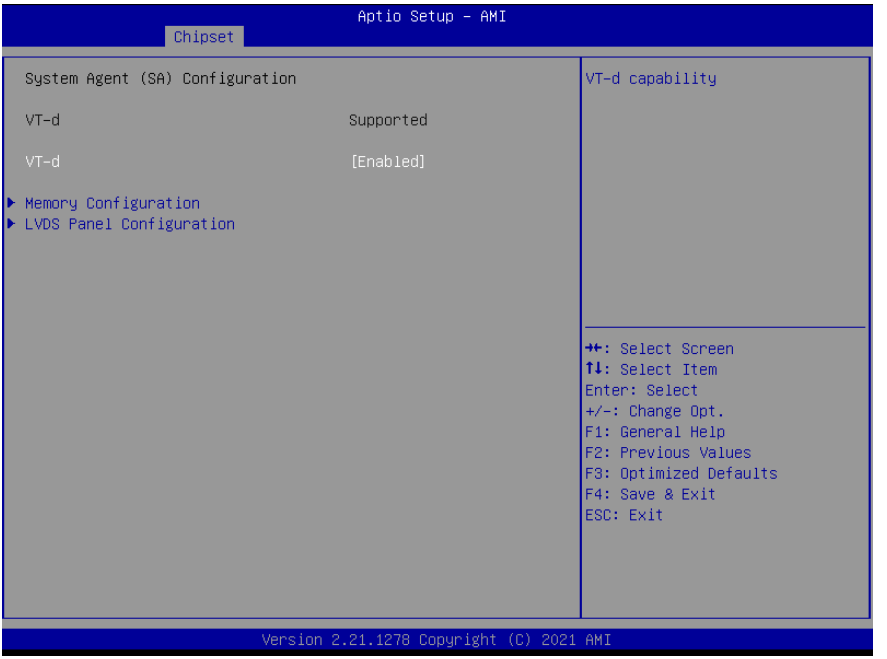
3.4.14 AAEON Smart Boost



Options Summary		
AAEON Smart Boost	Smart Boost	
	Maximum Performance	
	Good Stability	
	Disabled	Optimal Default, Failsafe Default

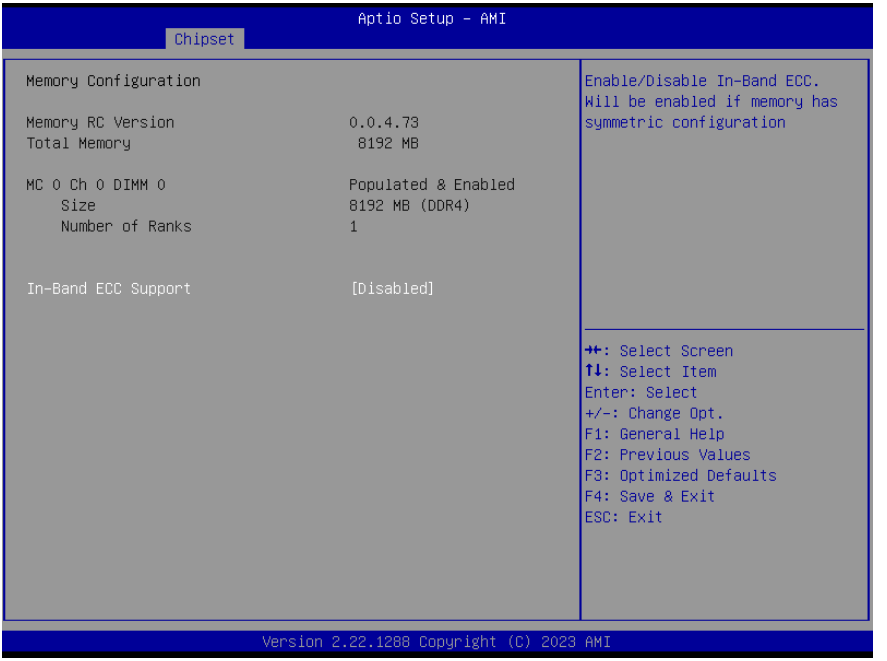
3.5 Setup Submenu: Chipset

3.5.1 System Agent (SA) Configuration



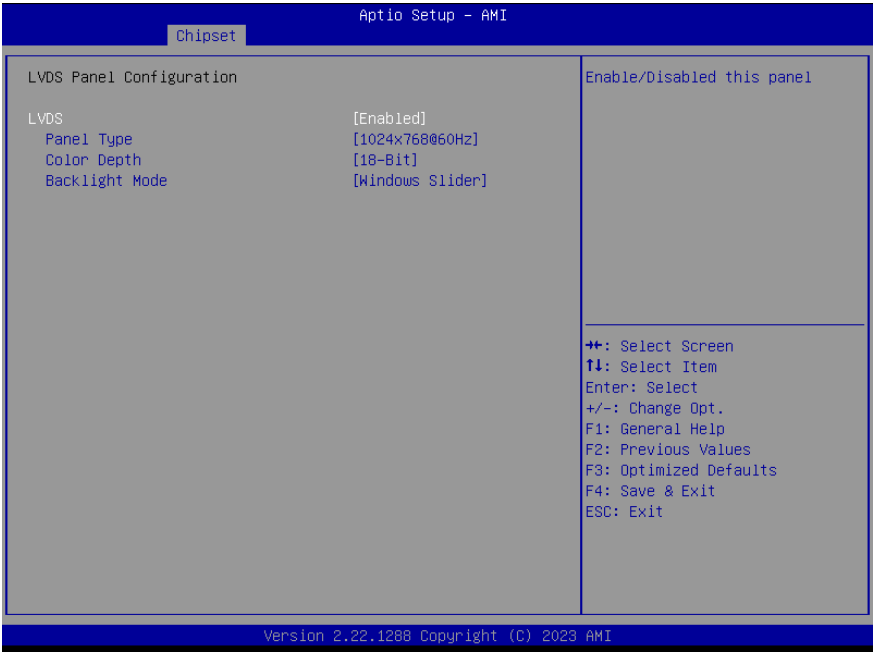
Options Summary		
VT-d	Disabled	Optimal Default, Failsafe Default
	Enabled	
VT-d capability.		

3.5.2 Memory Configuration



Options Summary		
In-Band ECC Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable In-Band ECC. Will be enabled if memory has symmetric configuration.		

3.5.3 LVDS Panel Configuration



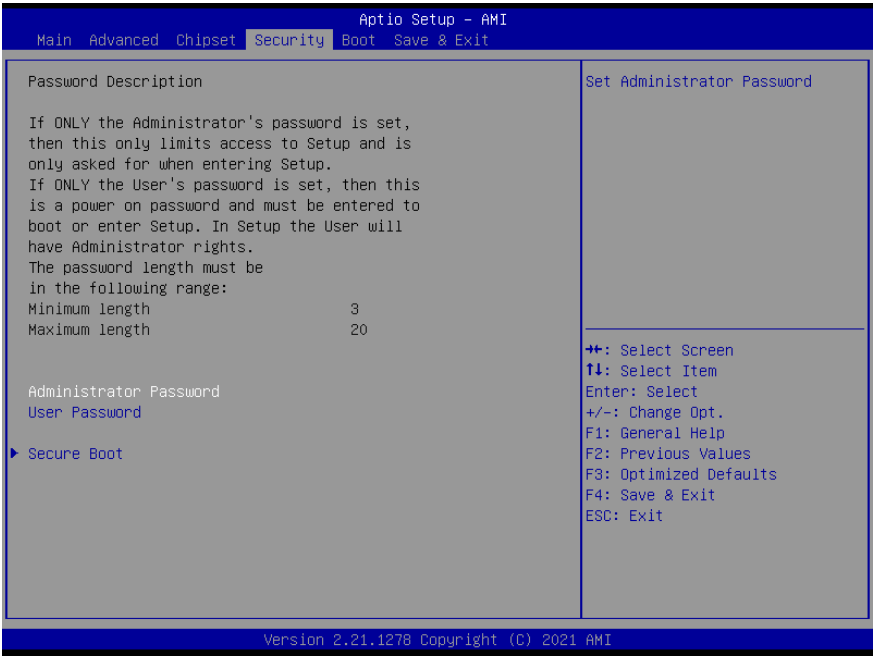
Options Summary		
LVDS	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disabled this panel.		
LVDS Panel Type	640x480,18bit,60Hz	
	800x480,18bit,60Hz	
	800x600,18bit,60Hz	
	1024x600,18bit,60Hz	
	1024x768,18bit,60Hz	
	1024x768,24bit,60Hz	Optimal Default, Failsafe Default
	1280x768,24bit,60Hz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

Options Summary		
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.		

3.5.4 PCH-IO Configuration

Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control Detection of the HD-Audio device. Disable = HAD will be unconditionally disabled Enable = HAD will be unconditionally enabled.		

3.6 Setup Submenu: Security



Change User/Administrator Password

You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

Select the password you wish to set, and press Enter. In the dialog box, enter your password (must be between 3 and 20 letters or numbers). Press Enter and retype your password to confirm. Press Enter again to set the password.

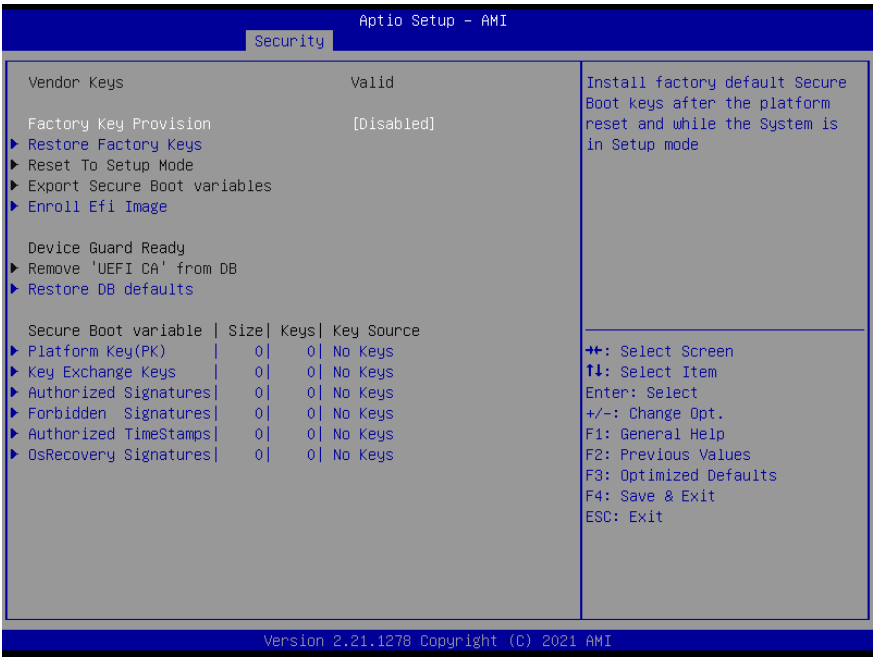
Removing the Password

Select the password you want to remove and enter 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.		

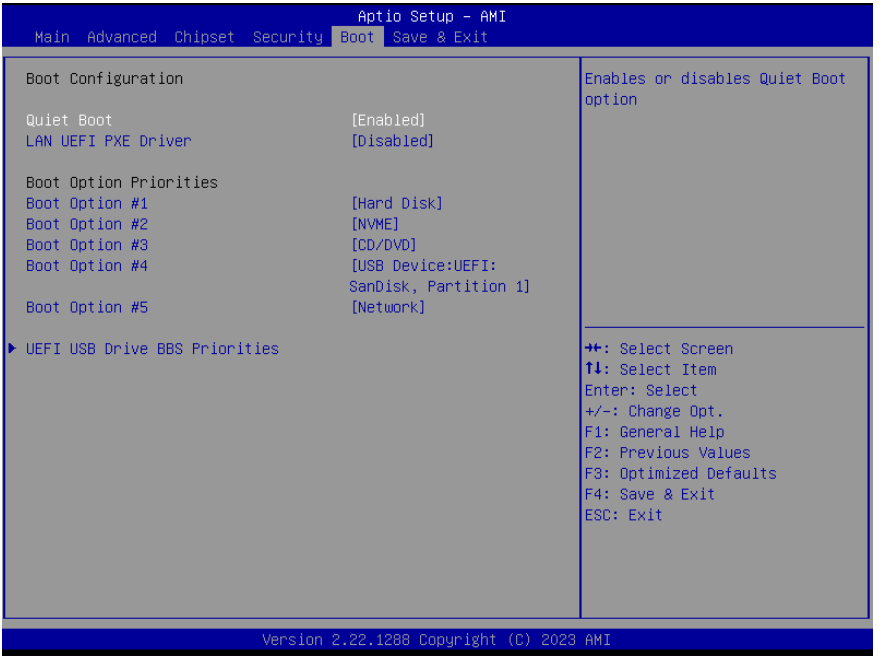
3.6.2 Key Management



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		

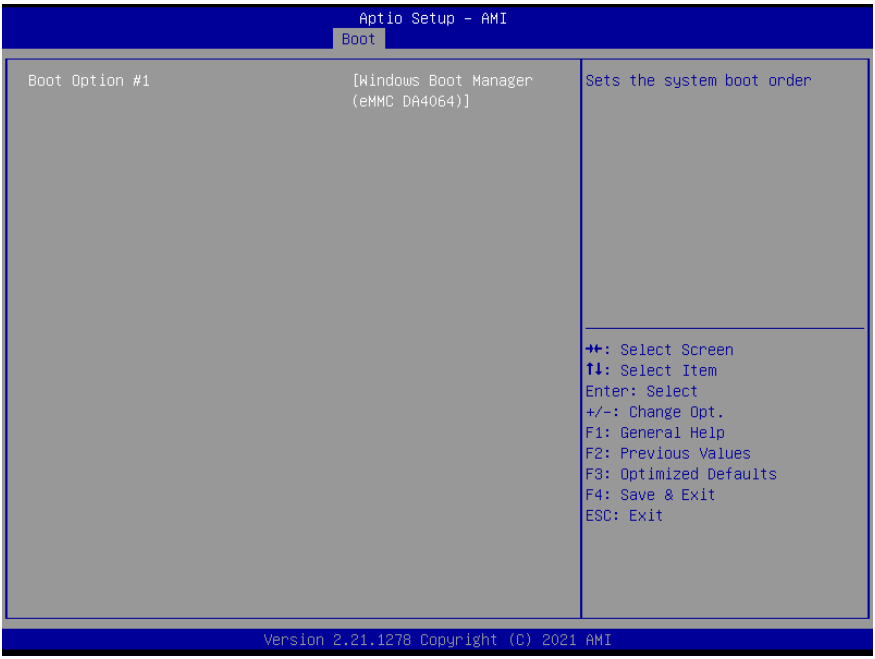
Options Summary	
Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db).	
Restore DB defaults	
Restore DB variable to factory defaults.	
Platform Key (PK)	Details
	Export
	Update
	Delete
Key Exchange Keys	Details
	Export
	Update
	Append
	Delete
Authorized 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

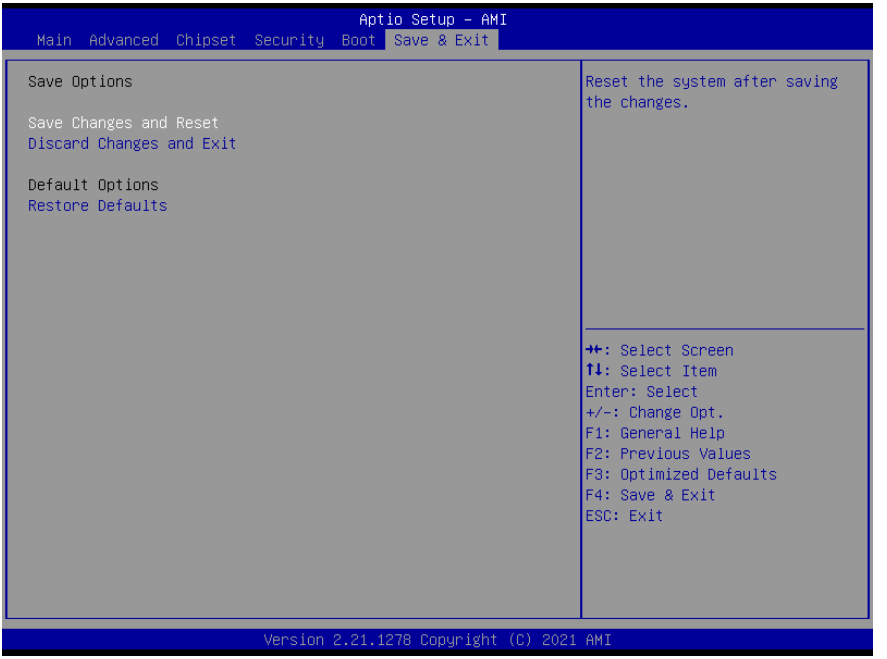


Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Quiet Boot option.		
UEFI PXE Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack.		
FIXED BOOT ORDER Priorities		
Sets the system boot order.		

3.7.1 BBS Priorities



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.

Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the EPIC-ADN9 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 and select your OS
2. Open the **SetupChipset.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Install Graphics Driver

1. Open the **Graphics** folder and select your OS
2. Open the **Installer.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Install LAN Driver

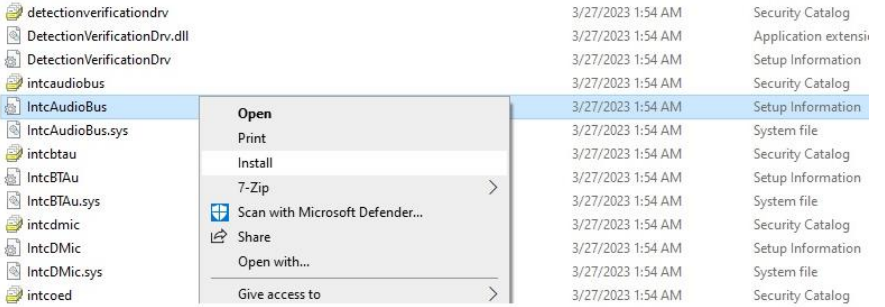
1. Open the **LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

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).

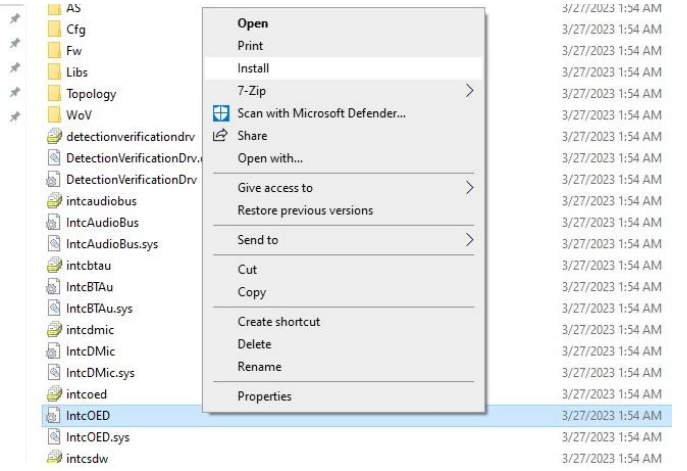
Install BUS driver (IntcAudioBus.inf)

a. Press Right Key -> Install



Install OED driver (IntcOED.inf)

b. Press Right Key -> Install



Install Windows Audio Driver (Windows 10 (64-bit)/Windows 11)

1. Open the **Windows Audio** folder followed by **Setup.exe**
2. Follow the instructions
3. 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

Install SIO Driver

1. Open the **SIO** folder and select your OS
2. Open the **FintekSerial.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

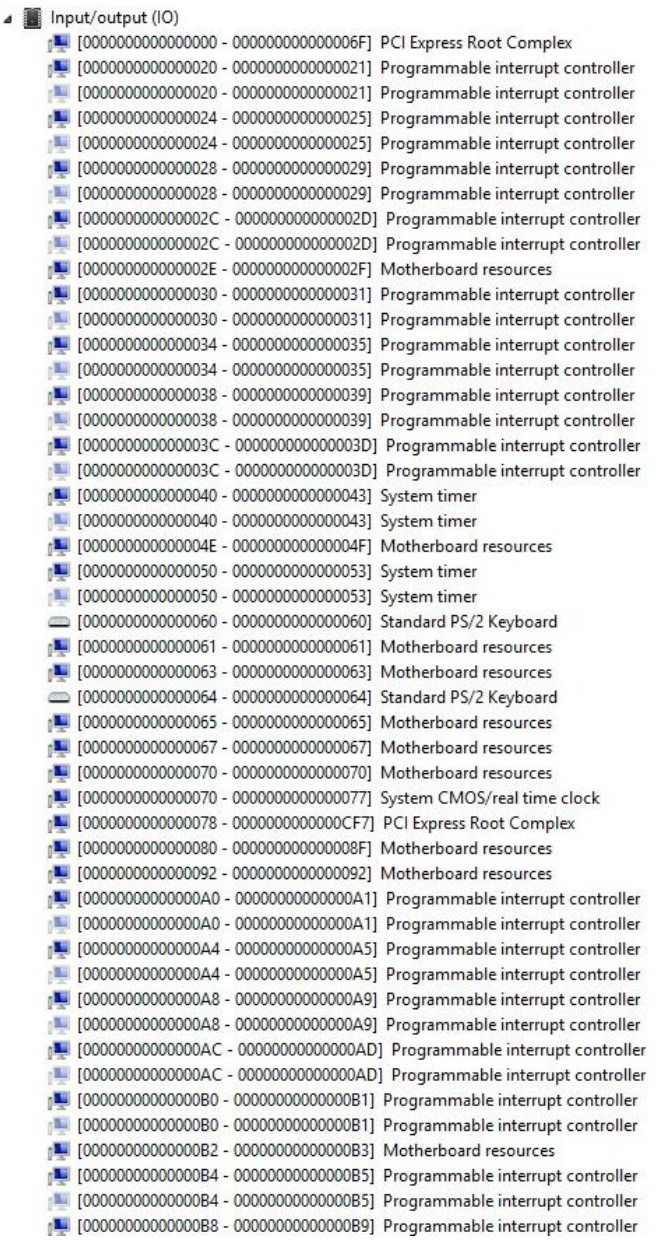
Install Intel CSME Driver

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

Appendix A

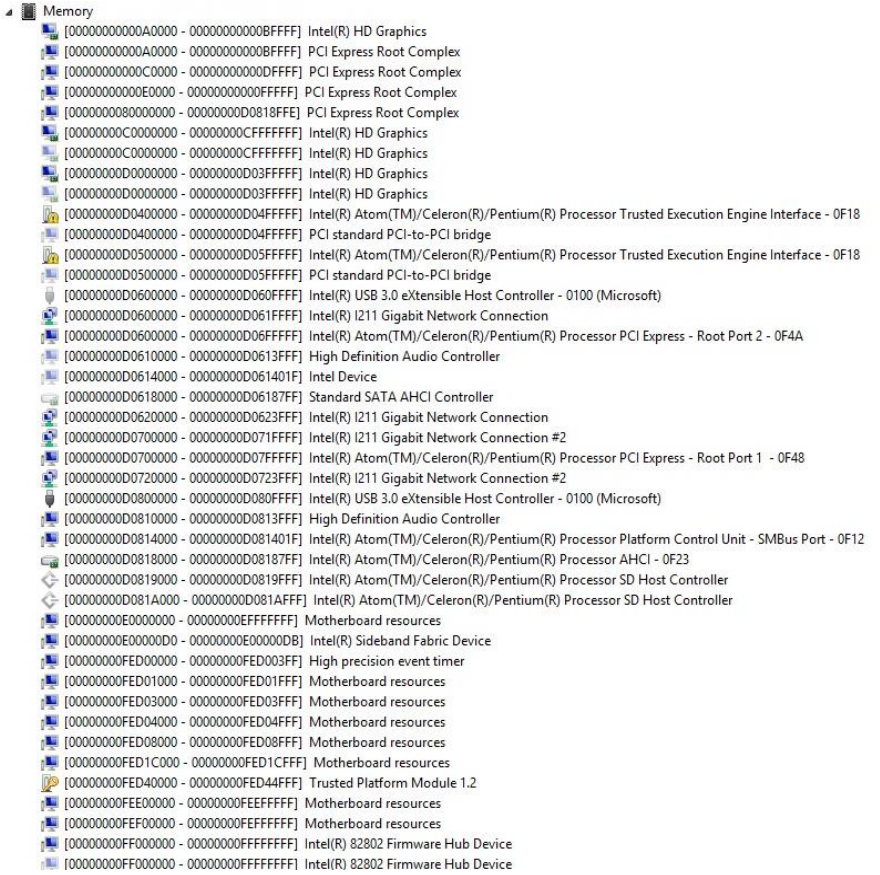
I/O Information

A.1 I/O Address Map

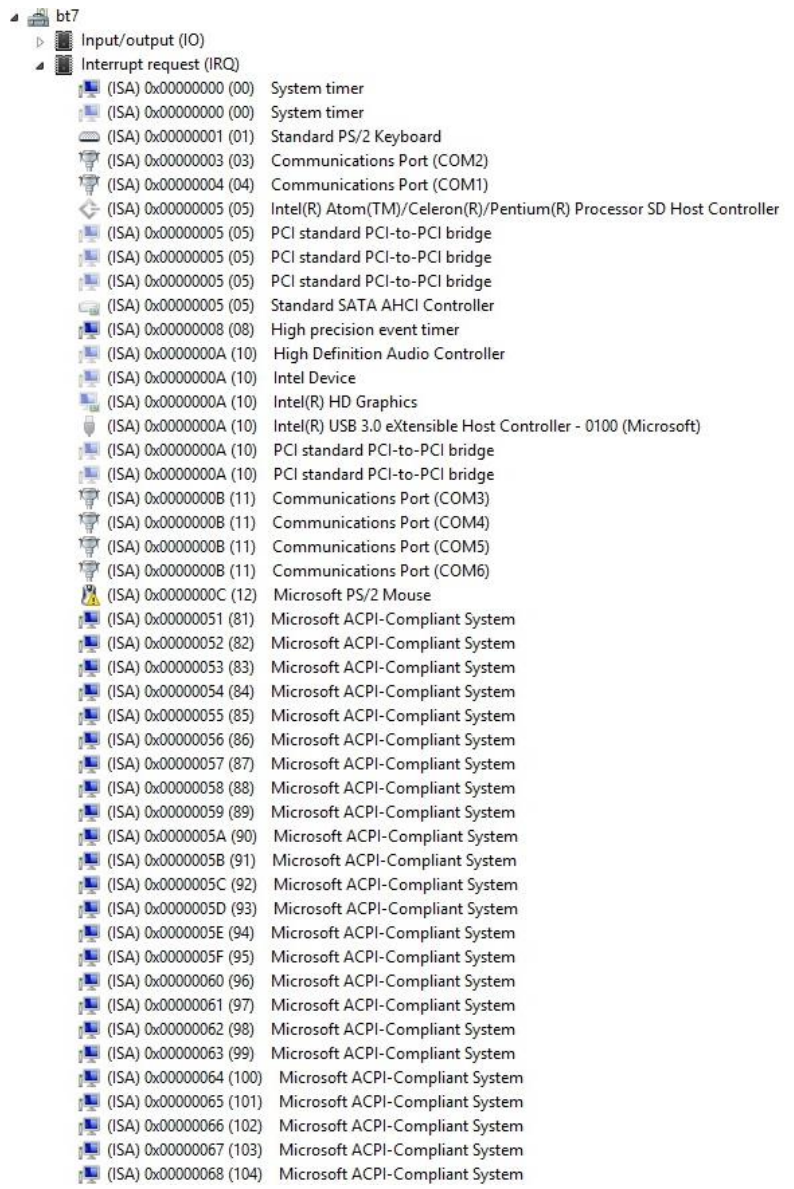


[00000000000000B8 - 00000000000000B9] Programmable interrupt controller
[00000000000000BC - 00000000000000BD] Programmable interrupt controller
[00000000000000BC - 00000000000000BD] Programmable interrupt controller
[00000000000002C0 - 00000000000002C7] Communications Port (COM6)
[00000000000002D0 - 00000000000002D7] Communications Port (COM5)
[00000000000002E8 - 00000000000002EF] Communications Port (COM4)
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[00000000000003B0 - 00000000000003BB] Intel(R) HD Graphics
[00000000000003C0 - 00000000000003DF] Intel(R) HD Graphics
[00000000000003E8 - 00000000000003EF] Communications Port (COM3)
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[0000000000000400 - 000000000000047F] Motherboard resources
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000500 - 000000000000005FE] Motherboard resources
[0000000000000600 - 000000000000061F] Motherboard resources
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000A00 - 0000000000000A0F] Motherboard resources
[0000000000000A10 - 0000000000000A1F] Motherboard resources
[0000000000000A20 - 0000000000000A2F] Motherboard resources
[0000000000000D00 - 0000000000000FFFF] PCI Express Root Complex
[0000000000000C000 - 0000000000000CFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
[0000000000000C000 - 0000000000000CFFF] PCI standard PCI-to-PCI bridge
[0000000000000D000 - 0000000000000DFFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
[0000000000000D000 - 0000000000000DFFF] PCI standard PCI-to-PCI bridge
[0000000000000E000 - 0000000000000E01F] Intel Device
[0000000000000E000 - 0000000000000E01F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
[0000000000000E020 - 0000000000000E03F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[0000000000000E020 - 0000000000000E03F] Standard SATA AHCI Controller
[0000000000000E040 - 0000000000000E043] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[0000000000000E040 - 0000000000000E043] Standard SATA AHCI Controller
[0000000000000E050 - 0000000000000E057] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[0000000000000E050 - 0000000000000E057] Standard SATA AHCI Controller
[0000000000000E060 - 0000000000000E063] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[0000000000000E060 - 0000000000000E063] Standard SATA AHCI Controller
[0000000000000E070 - 0000000000000E077] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[0000000000000E070 - 0000000000000E077] Standard SATA AHCI Controller
[0000000000000E080 - 0000000000000E087] Intel(R) HD Graphics
[0000000000000E080 - 0000000000000E087] Intel(R) HD Graphics

A.2 Memory Address Map



A.3 IRQ Mapping Chart



(ISA) 0x00000069 (105) Microsoft ACPI-Compliant System
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(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System

(PCI) 0x00000005 (05) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
(PCI) 0x0000000A (10) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Trusted Execution Engine Interface - 0F18
(PCI) 0x00000010 (16) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
(PCI) 0x00000011 (17) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
(PCI) 0x00000012 (18) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 3 - 0F4C
(PCI) 0x00000013 (19) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
(PCI) 0x00000013 (19) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 4 - 0F4E
(PCI) 0x00000013 (19) PCI standard PCI-to-PCI bridge
(PCI) 0x00000016 (22) High Definition Audio Controller
(PCI) 0xFFFFFFF1 (-15) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF2 (-14) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF3 (-13) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF4 (-12) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF5 (-11) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF6 (-10) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF7 (-9) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFF8 (-8) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFF9 (-7) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFFA (-6) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFFB (-5) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFFC (-4) Intel(R) I211 Gigabit Network Connection #2
(PCI) 0xFFFFFFFD (-3) Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
(PCI) 0xFFFFFFFE (-2) Intel(R) HD Graphics

Appendix B

Mating Connectors

B.1 List of Mating Connectors and Cables

Conn No.	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model No.		
CN1	CMOS Battery Connector	Molex	51021-0200	Battery Cable	175011901C
CN2	LVDS/eDP Port Inverter Backlight Conn	Aces	50233-006h	Inverter Cable 30cm	170X000152
CN3	LVDS / eDP Conn	HIROSE	DF13-30DS-1.25C	LVDS Cable 30cm	170430030Y
CN4	VGA Conn	Molex	510211300	VGA Cable 15cm	1709150151
CN7	LAN Conn	Molex	44915-0001	N/A	N/A
CN9	SATA 5V Power	JST	JST PHR-2	SATA Power Cable 15cm	1702150155
CN10	SATA Conn	Molex	887505318	SATA Cable 15cm	1709070150
CN11	SATA Conn	Molex	887505318	SATA Cable 15cm	1709070150
CN12	SATA 5V Power	JST	JST PHR-2	SATA Power Cable 15cm	1702150155
CN16	Audio Conn	ACES	50247-012H0H0-001	Audio Cable 25cm	170X000156
CN18	USB2.0 Conn	Molex	51021-0500	USB Wafer Cable	1700050207
CN19	USB2.0 Conn	Molex	51021-0500	USB Wafer Cable	1700050207
CN20	USB2.0 Conn	Molex	51021-0500	USB Wafer Cable	1700050207
CN21	USB2.0 Conn	Molex	51021-0500	USB Wafer Cable	1700050207
CN25	COM Port 3	Molex	21021-0900	UART Wafer Cable	1701090150
CN26	COM Port 4	Molex	21021-0900	UART Wafer Cable	1701090150
CN27	COM Port 5	Molex	21021-0900	UART Wafer Cable	1701090150
CN28	COM Port 6	Molex	21021-0900	UART Wafer Cable	1701090150
CN29	GPIO	Molex	51110-1050	N/A	N/A
CN30	GPIO	Molex	51110-1050	N/A	N/A
CN32	FAN	Molex	22-01-2045	N/A	N/A
CN33	Port 80 Debug Card	JST	SHR-10V-S-B	Debug Card Cable	1703100133
CN34	LAN Conn	Molex	44915-0001	N/A	N/A
CN35	Speaker (Left)	JST	JST PHR-1.25	N/A	N/A
CN36	Speaker (Right)	JST	JST PHR-1.25	N/A	N/A
CN39	Front Panel Conn	JST	SHR-10V-S-B	Front Panel Cable 10cm	170X000603