uCOM-ADN

SMARC Module

User's Manual 3rd Ed

Last Updated: May 14, 2025

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Packing List

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

Item	Quantity
● uCOM-ADN	1

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

About this Document

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

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

Safety Precautions

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

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

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

FCC Statement

This device complies with Part 15 FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received including interference that may cause undesired operation.

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON 主板/子板/背板 QO4-381 Rev.A2

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	×	○	○	○	○	○

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。

环保使用期限(EFUP (Environmental Friendly Use Period)) : 10年

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)

Name and content of hazardous substances in product

AAEON Main Board/Daughter Board/Backplane QO4-381 Rev.A2

Part Name	Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
PCB Assemblies	×	O	O	O	O	O
Connector and Cable	×	O	O	O	O	O

The table is prepared in accordance with the provisions of SJ/T 11364.

O：Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

×：Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572. But this product still be compliance with 2011/65/EU Directive (allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1).

EFUP (Environment Friendly Use Period) value: 10 years

Notes: This product defined period of use is under normal condition.

Table of Contents

Chapter 1 - Product Specifications 1

1.1 Specifications 2

1.2 Block Diagram 5

Chapter 2 – Hardware Information 6

2.1 Dimensions 7

2.2 Jumpers and Connectors 9

2.3 Extra DC 5V Power in (BAT1) 10

2.4 MXM Gold Finger (GF2) 10

Chapter 3 - AMI BIOS Setup 15

3.1 System Test and Initialization 16

3.2 AMI BIOS Setup 17

3.3 Setup Submenu: Main 18

3.4 Setup Submenu: Advanced 19

3.4.1 CPU Configuration 20

3.4.2 PCH-FW Configuration 21

3.4.2.1 Firmware Update Configuration 22

3.4.3 PTT Configuration 23

3.4.4 Trusted Computing 24

3.4.5 SATA Configuration 26

3.4.6 On-Module H/W Monitor 27

3.4.7 SIO Configuration 30

3.4.7.1 Serial Port 1 31

3.4.7.2 Serial Port 2 32

3.4.8 Serial I/O Configuration 33

3.4.9 Serial Port Console Redirection 35

3.4.9.1 Legacy Console Redirection Settings 36

3.4.10 AAEON BIOS Robot 37
3.4.10.1 Device Detecting Configuration 39
3.4.10.2 Device #* Detecting Configuration 40
3.4.11 On-Module Configuration 41
3.4.12 Power Management 42
3.4.13 GPIO Port Configuration 43
3.5 Setup Submenu: Chipset 44
3.5.1 System Agent (SA) Configuration 45
3.5.1.1 Memory Configuration 46
3.5.2 PCH-IO Configuration 47
3.5.3 HSIO Configuration 48
3.5.4 PCI Express Configuration 49
3.5.4.1 PCI Express Root Port * 50
3.6 Setup Submenu: Security 51
3.6.1 Secure Boot 52
3.6.1.1 Key Management 53
3.7 Setup Submenu: Boot 55
3.8 Setup Submenu: Save & Exit 56
Chapter 4 – Drivers Installation 57
4.1 Drivers Download and Installation 58
Appendix A - I/O Information 61
A.1 I/O Address Map 62
A.2 Memory Address Map 63
A.3 Large Memory Address Map 64
A.4 IRQ Mapping Chart 65

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	SMARC Module
CPU	Intel® Core™ i3-N305 Processor (8C/8T, up to 3.8 GHz, 15W) Intel Atom® x7425E Processor (4C, up to 3.4 GHz, 12W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5x 4800MHz, up to 8GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension (L x W)	3.23" x 1.97" (82mm x 50mm)
Security	TPM 2.0

Power	
Power Requirement	+5V for ATX / AT
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 4.23A @+5V

Display	
Graphics Controller	Intel® UHD Graphics
Video Output	DP++ x 2, up to 3840 x 2160 eDP x 1, up to 3840 x 2160

I/O

Ethernet	Intel® Ethernet Controller I226-V/IT, 2.5GbE x 2
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6
	USB 3.2 x 2
Serial Port	2-Wire UART x 2 (Tx/Rx)
	4-Wire UART x 2 (Tx/Rx/RTS/CTS)
HDD Interface	SATA 6Gb/s x 1
Expansion	PCIe Gen 3 [x1] x 3 (Max PCIe [x2] x 1)
	MIPI CSI x 2
	Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team
GPIO	7-bit (up to 14-bit by customization)
	Note: Another 7-bit GPIO through multiplexed pins P108-P114 can be activated by custom BIOS. Please contact the AAEON support team
SMBus/I2C	GP_I2C x 1
	SMBus x1

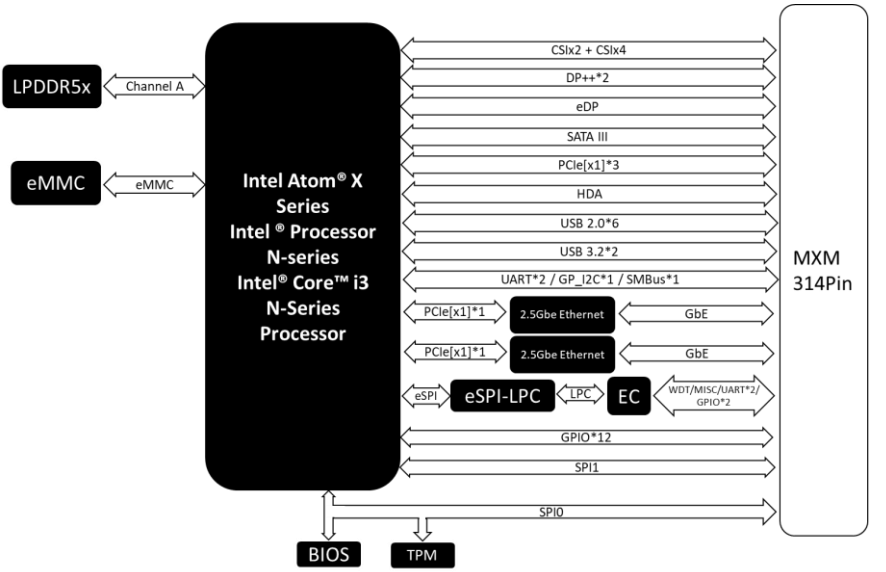
Environmental

Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)
	Extended Temp: -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A
OS Support	Windows® 10 (64-bit)
	Windows 11® Enterprise
	Linux Ubuntu 22.04.2/Kernel 5.19

Environmental

Weight	0.14 lb. (0.06Kg)

1.2 Block Diagram



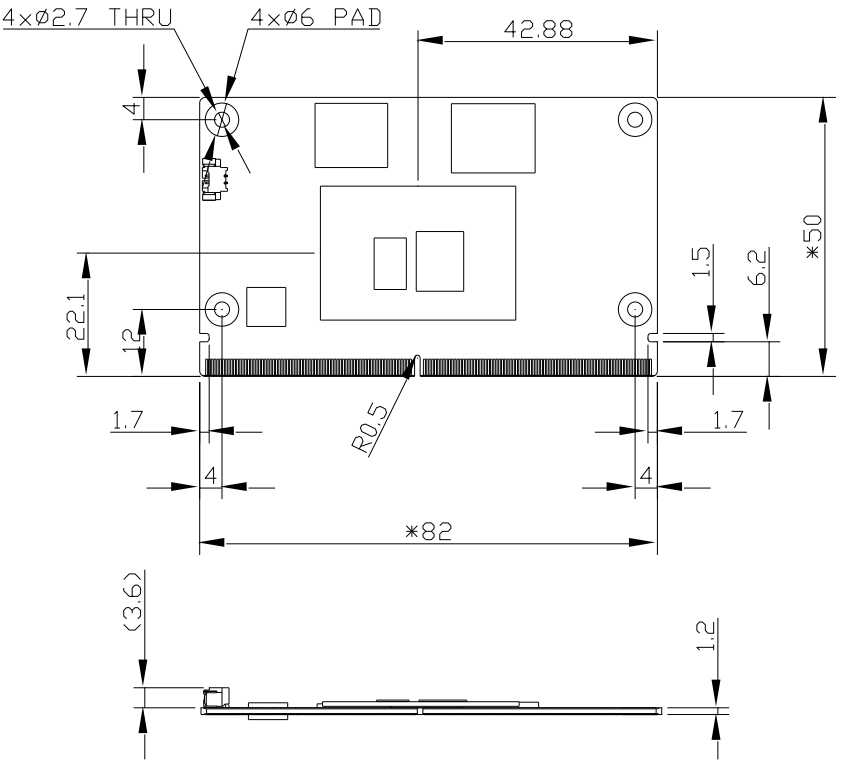
Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.

Chapter 2

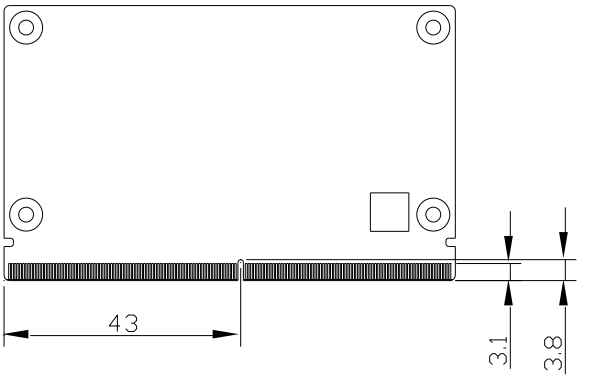
Hardware Information

2.1 Dimensions

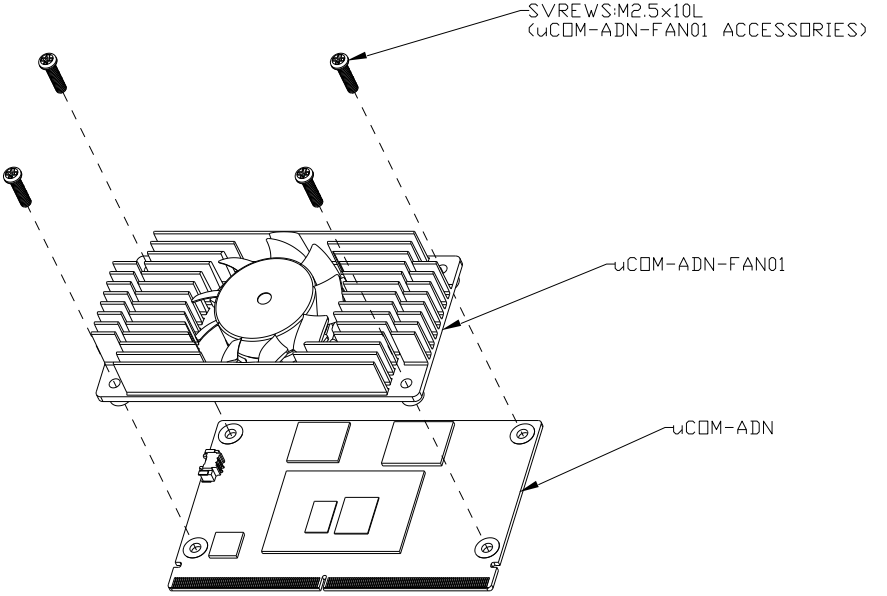
Top Side



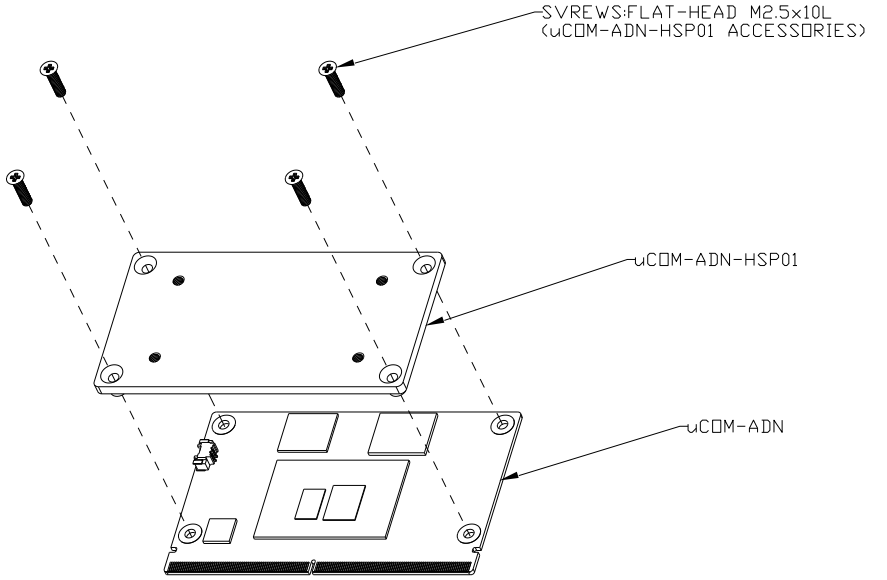
Bottom Side



With Active Cooling (Part No: uCOM-ADN-FAN01)

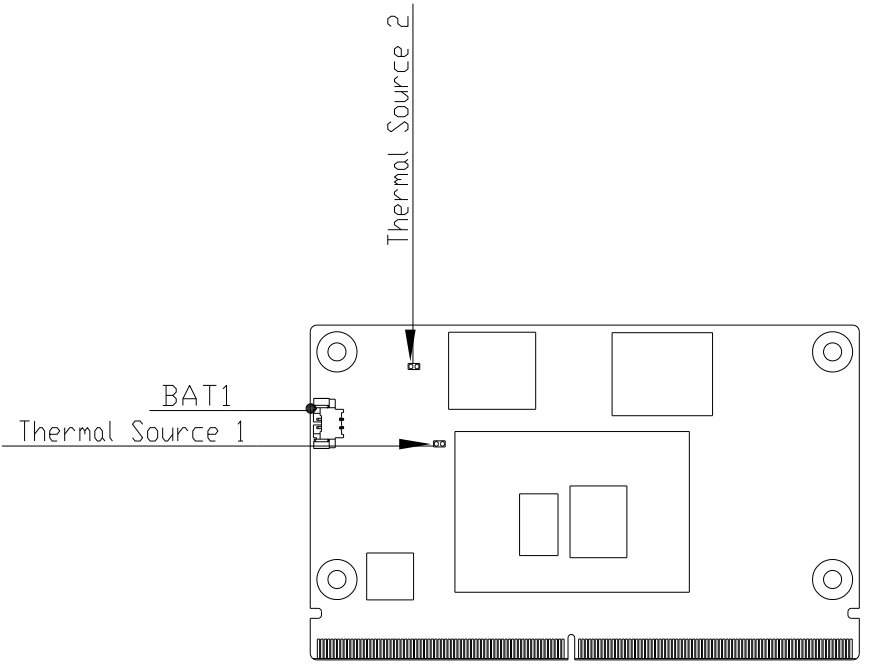


With Heatspreader (Part No: uCOM-ADN-HSP01)

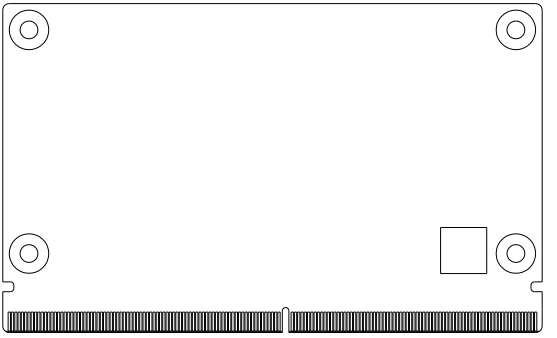


2.2 Jumpers and Connectors

Top Side



Bottom Side



2.3 Extra DC 5V Power in (BAT1)

Pin	Pin Name
1	+5V
2	GND

2.4 MXM Gold Finger (GF2)

Pin	Pin Name	Pin	Pin Name
P1	SMB_ALERT#	S1	CSI1_TX+/I2C_CAM1_CK
P2	GND	S2	CSI1_TX-/I2C_CAM1_DAT
P3	CSI1_CK+	S3	GND
P4	CSI1_CK-	S4	RSVD
P5	GBE1_SDP	S5	CSI0_TX+/I2C_CAM0_CK
P6	GBE0_SDP	S6	CAM_MCK
P7	CSI_B_DP_0	S7	CSI0_TX1/I2C_CAM0_DAT
P8	CSI_B_DN_0	S8	CSI0_CK+
P9	GND	S9	CSI0_CK-
P10	CSI_B_DP_1	S10	GND
P11	CSI_B_DN_1	S11	CSI_C_DP_0
P12	GND	S12	CSI_C_DN_0
P13	CSI_B_DP_2	S13	GND
P14	CSI_B_DN_2	S14	CSI_C_DP_1
P15	GND	S15	CSI_C_DN_1
P16	CSI_B_DP_3	S16	GND
P17	CSI_B_DN_3	S17	GBE1_MDI0+
P18	GND	S18	GBE1_MDI0-
P19	GBE0_MDI3-	S19	GBE1_LINK1000#
P20	GBE0_MDI3+	S20	GBE1_MDI1+
P21	GBE0_LINK1000#	S21	GBE1_MDI1-
P22	GBE0_LINK2500#	S22	GBE1_LINK2500#
P23	GBE0_MDI2-	S23	GBE1_MDI2+
P24	GBE0_MDI2+	S24	GBE1_MDI2-
P25	GBE0_LINK_ACT#	S25	GND
P26	GBE0_MDI1-	S26	GBE1_MDI3+
P27	GBE0_MDI1+	S27	GBE1_MDI3-
P28	GBE0_CTREF	S28	GBE1_CTREF
P29	GBE0_MDI0-	S29	PCIE_D_TX+/SERDES_0_TX+

Pin	Pin Name	Pin	Pin Name
P30	GBE0_MDI0+	S30	PCIE_D_TX-/SERDES_0_TX-
P31	SPI0_CS1#	S31	GBE1_LINK_ACT#
P32	GND	S32	PCIE_D_RX+/SERDES_0_RX+
P33	SDIO_WP	S33	PCIE_D_RX-/SERDES_0_RX-
P34	SDIO_CMD	S34	GND
P35	SDIO_CD#	S35	USB4+
P36	SDIO_CK	S36	USB4-
P37	SDIO_PWR_EN	S37	USB3_VBUS_DET
P38	GND	S38	AUDIO_MCK
P39	SDIO_D0	S39	I2S0_LRCK
P40	SDIO_D1	S40	I2S0_SDOUT
P41	SDIO_D2	S41	I2S0_SDIN
P42	SDIO_D3	S42	I2S0_CK
P43	SPI0_CS0#	S43	ESPI_ALERT0#
P44	SPI0_CK	S44	ESPI_ALERT1#
P45	SPI0_DIN	S45	MDIO_CLK
P46	SPI0_DO	S46	MDIO_DAT
P47	GND	S47	GND
P48	SATA_TX+	S48	I2C_GP_CK
P49	SATA_TX-	S49	I2C_GP_DAT
P50	GND	S50	HDA_SYNC/I2S2_LRCK
P51	SATA_RX+	S51	HDA_SDO/I2S2_SDOUT
P52	SATA_RX-	S52	HDA_SDI/I2S2_SDIN/
P53	GND	S53	HDA_CK/I2S2_CK
P54	ESPI_CS0#/SPI1_CS0#/QSPI_CS0#	S54	SATA_ACT#
P55	ESPI_CS1#/SPI1_CS1#/QSPI_CS1#	S55	USB5_EN_OC#
P56	ESPI_CK/SPI1_CK/QSPI_CK	S56	ESPI_IO_2/QSPI_IO_2
P57	ESPI_IO_1/SPI1_DIN/QSPI_IO_1	S57	ESPI_IO_3/QSPI_IO_3
P58	ESPI_IO_0/SPI1_DO/QSPI_IO_0	S58	ESPI_RESET#
P59	GND	S59	USB5+
P60	USB0+	S60	USB5-
P61	USB0-	S61	GND
P62	USB0_EN_OC#	S62	USB3_SSTX+
P63	USB0_VBUS_DET	S63	USB3_SSTX-
P64	USB0_OTG_ID	S64	GND
P65	USB1+	S65	USB3_SSRX+
P66	USB1-	S66	USB3_SSRX-
P67	USB1_EN_OC#	S67	GND
P68	GND	S68	USB3+

Pin	Pin Name	Pin	Pin Name
P69	USB2+	S69	USB3-
P70	USB2-	S70	GND
P71	USB2_EN_OC#	S71	USB2_SSTX+
P72	RSVD	S72	USB2_SSTX-
P73	RSVD	S73	GND
P74	USB3_EN_OC#	S74	USB2_SSRX+
P75	PCIE_A_RST#	S75	USB2_SSRX-
P76	USB4_EN_OC#	S76	PCIE_B_RST#
P77	PCIE_B_CLKREQ#	S77	PCIE_C_RST#
P78	PCIE_A_CLKREQ#	S78	**PCIE_C_RX+**/SERDES_1_RX+
P79	GND	S79	**PCIE_C_RX-**/SERDES_1_RX-
P80	PCIE_C_REFCK+	S80	GND
P81	PCIE_C_REFCK-	S81	**PCIE_C_TX+**/SERDES_1_TX+
P82	GND	S82	**PCIE_C_TX-**/SERDES_1_TX-
P83	PCIE_A_REFCK+	S83	GND
P84	PCIE_A_REFCK-	S84	PCIE_B_REFCK+
P85	GND	S85	PCIE_B_REFCK-
P86	PCIE_A_RX+	S86	GND
P87	PCIE_A_RX-	S87	PCIE_B_RX+
P88	GND	S88	PCIE_B_RX-
P89	PCIE_A_TX+	S89	GND
P90	PCIE_A_TX-	S90	PCIE_B_TX+
P91	GND	S91	PCIE_B_TX-
P92	HDMI_D2+/**DP1_LANE0+**	S92	GND
P93	HDMI_D2-/**DP1_LANE0-**	S93	DP0_LANE0+
P94	GND	S94	DP0_LANE0-
P95	HDMI_D1+/**DP1_LANE1+**	S95	DP0_AUX_SEL
P96	HDMI_D1-/**DP1_LANE1-**	S96	DP0_LANE1+
P97	GND	S97	DP0_LANE1-
P98	HDMI_D0+/**DP1_LANE2+**	S98	DP0_HPD
P99	HDMI_D0-/**DP1_LANE2-**	S99	DP0_LANE2+
P100	GND	S100	DP0_LANE2-
P101	HDMI_CK+/**DP1_LANE3+**	S101	GND
P102	HDMI_CK-/**DP1_LANE3-**	S102	DP0_LANE3+
P103	GND	S103	DP0_LANE3-
P104	HDMI_HPD/**DP1_HDP**	S104	USB3_OTG_ID
P105	HDMI_CTRL_CK/**DP1_AUX+**	S105	DP0_AUX+
P106	HDMI_CTRL_DAT/**DP1_AUX-**	S106	DP0_AUX-
P107	DP1_AUX_SEL	S107	LCD1_BKLT_EN

Pin	Pin Name	Pin	Pin Name
P108	GPIO0/**CAM0_PWR#**	S108	LVDS1_CK+/eDP1_AUX+/DSI1_CLK+
P109	GPIO1/**CAM1_PWR#**	S109	LVDS1_CK-/eDP1_AUX-/DSI1_CLK-
P110	GPIO2/**CAM0_RST#**	S110	GND
P111	GPIO3/**CAM1_RST#**	S111	LVDS1_0+/eDP1_TX0+/DSI1_D0+
P112	GPIO4/**HDA_RST#**	S112	LVDS1_0-/eDP1_TX0-/DSI1_D0-
P113	GPIO5/**PWM_OUT**	S113	eDP1_HPD/DSI1_TE
P114	GPIO6/**TACHIN**	S114	LVDS1_1+/eDP1_TX1+/DSI1_D1+
P115	GPIO7	S115	LVDS1_1-/eDP1_TX1-/DSI1_D1-
P116	GPIO8	S116	LCD1_VDD_EN
P117	GPIO9	S117	LVDS1_2+/eDP1_TX2+/DSI1_D2+
P118	GPIO10	S118	LVDS1_2-/eDP1_TX2-/DSI1_D2-
P119	GPIO11	S119	GND
P120	GND	S120	LVDS1_3+/eDP1_TX3+/DSI1_D3+
P121	I2C_PM_CK	S121	LVDS1_3-/eDP1_TX3-/DSI1_D3-
P122	I2C_PM_DAT	S122	LCD1_BKLT_PWM
P123	BOOT_SEL0#	S123	GPIO13
P124	BOOT_SEL1#	S124	GND
P125	BOOT_SEL2#	S125	LVDS0_0+/**eDP0_TX0+**/DSI0_D0+
P126	RESET_OUT#	S126	LVDS0_0-/**eDP0_TX0-**/DSI0_D0-
P127	RESET_IN#	S127	LCD0_BKLT_EN
P128	POWER_BTN#	S128	LVDS0_1+/**eDP0_TX1+**/DSI0_D1+
P129	SER0_TX	S129	LVDS0_1-/**eDP0_TX1-**/DSI0_D1-
P130	SER0_RX	S130	GND
P131	SER0_RTS#	S131	LVDS0_2+/**eDP0_TX2+**/DSI0_D2+
P132	SER0_CTS#	S132	LVDS0_2-/**eDP0_TX2-**/DSI0_D2-
P133	GND	S133	LCD0_VDD_EN
P134	SER1_TX	S134	LVDS0_CK+/**eDP0_AUX+**/DSI0_CLK+
P135	SER1_RX	S135	LVDS0_CK-/**eDP0_AUX-**/DSI0_CLK-
P136	SER2_TX	S136	GND
P137	SER2_RX	S137	LVDS0_3+/**eDP0_TX3+**/DSI0_D3+
P138	SER2_RTS#	S138	LVDS0_3-/**eDP0_TX3-**/DSI0_D3-
P139	SER2_CTS#	S139	I2C_LCD_CK
P140	SER3_TX	S140	I2C_LCD_DAT
P141	SER3_RX	S141	LCD0_BKLT_PWM
P142	GND	S142	GPIO12
P143	CAN0_TX	S143	GND
P144	CAN0_RX	S144	**eDP0_HPD**/DSI0_TE
P145	CAN1_TX	S145	WDT_TIME_OUT#
P146	CAN1_RX	S146	PCIE_WAKE#

Pin	Pin Name	Pin	Pin Name
P147	VDD_IN	S147	VDD_RTC
P148	VDD_IN	S148	LID#
P149	VDD_IN	S149	SLEEP#
P150	VDD_IN	S150	VIN_PWR_BAD#
P151	VDD_IN	S151	CHARGING#
P152	VDD_IN	S152	CHARGER_PRSNT#
P153	VDD_IN	S153	CARRIER_STBY#
P154	VDD_IN	S154	CARRIER_PWR_ON
P155	VDD_IN	S155	FORCE_RECOV#
P156	VDD_IN	S156	BATLOW#
		S157	TEST#
		S158	GND

Note:

1. Gray Background: Not Supported.
2. Bold: Default function.

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

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

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

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

The uCOM-ADN 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

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

To enter Setup, power on the computer and press <Del> immediately.

The function of each menu is as follows:

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

Advanced – Enable/disable boot option for legacy network devices.

Chipset – For hosting bridge parameters.

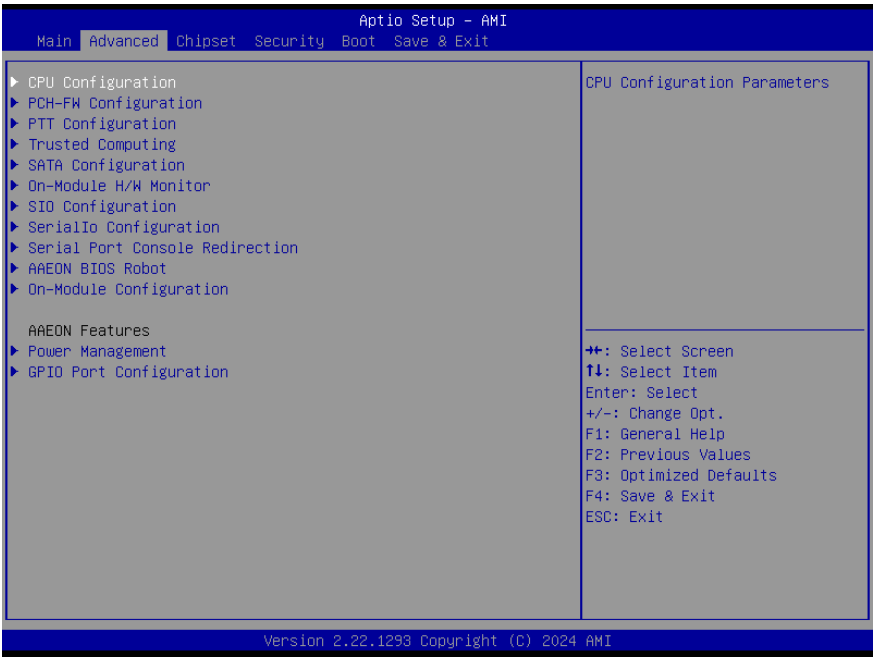
Security – Password for setup administrator can be set here.

Boot – Enable/disable Quiet Boot option.

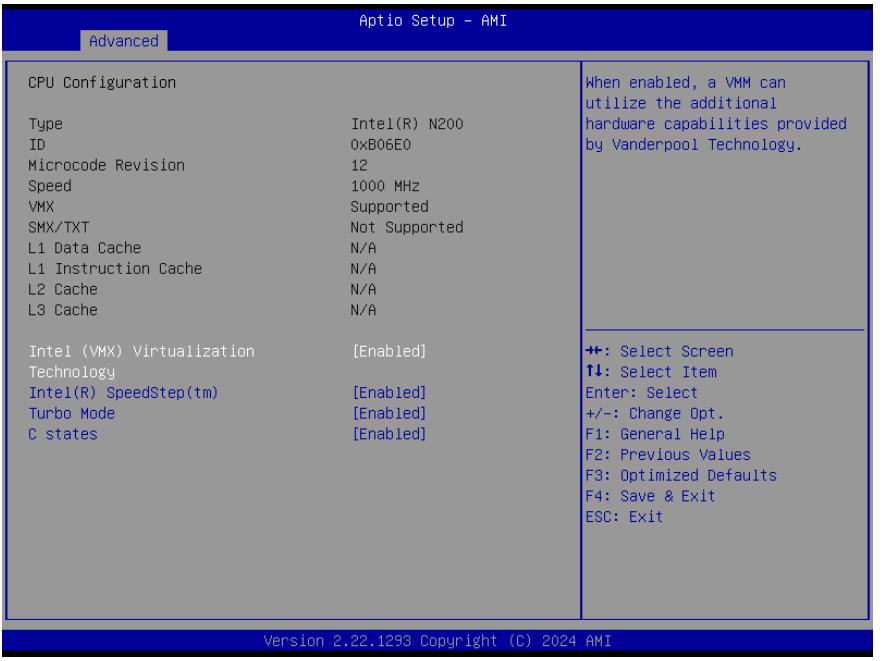
Save & Exit – Save changes and exit Setup.

3.3 Setup Submenu: Main

3.4 Setup Submenu: Advanced



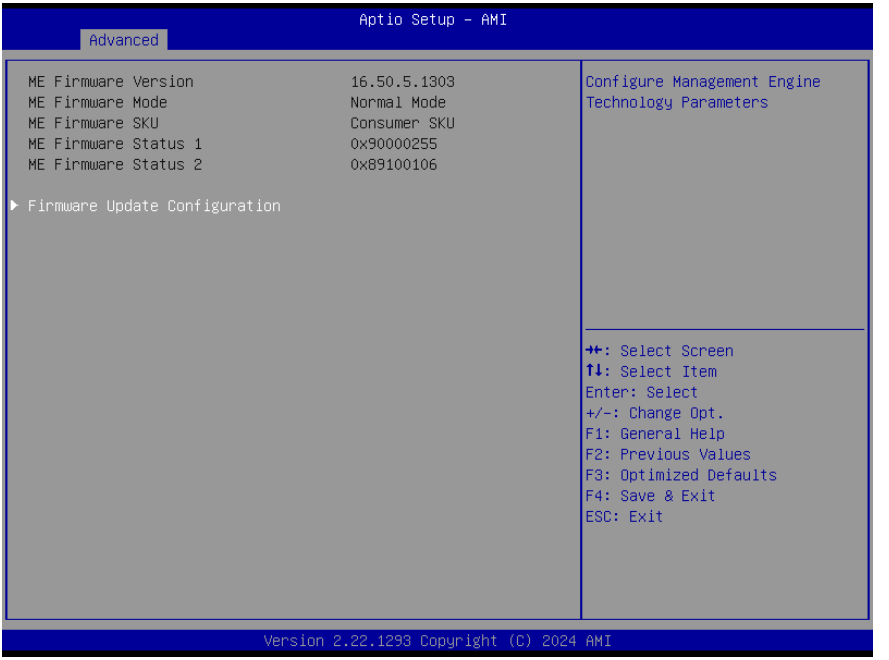
3.4.1 CPU Configuration



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/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.		
C states*	Disabled	
	Enabled	Optimal Default, Failsafe Default

Options Summary
Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized. Note: When using MIPI CSI under Ubuntu, please set C states to "Disabled" for better FPS performance.

3.4.2 PCH-FW Configuration



3.4.2.1 Firmware Update Configuration

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

3.4.3 PTT Configuration

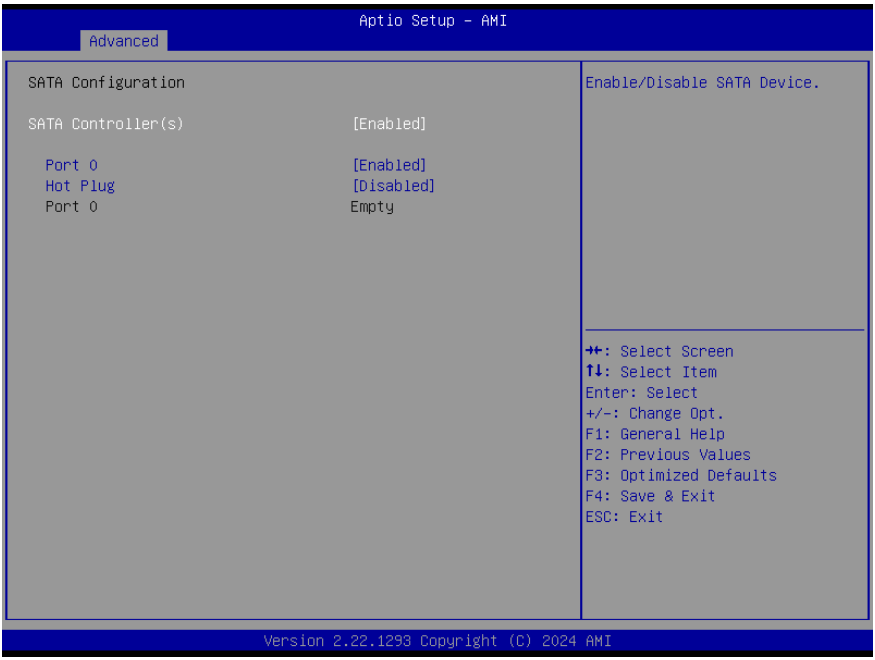
Options Summary		
TPM Device Selection	dTPM	Optimal Default, Failsafe Default
	PTT	
Selects TPM device: PTT or dTPM. PTT – Enables PTT in SkuMgr. dTPM 1.2 – Disables PTT in SkuMgr Warning! PTT/dTPM will be disabled and all data saved on it will be lost.		

3.4.4 Trusted Computing

Options Summary		
Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default
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	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	
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	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Platform Hierarchy.		
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage Hierarchy.		
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsement Hierarchy.		
Physical Presence Spec Version	1.2	
	1.3	Optimal Default, Failsafe Default
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	TPM 1.2	
	TPM 2.0	Optimal Default, Failsafe Default
	Auto	
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.		

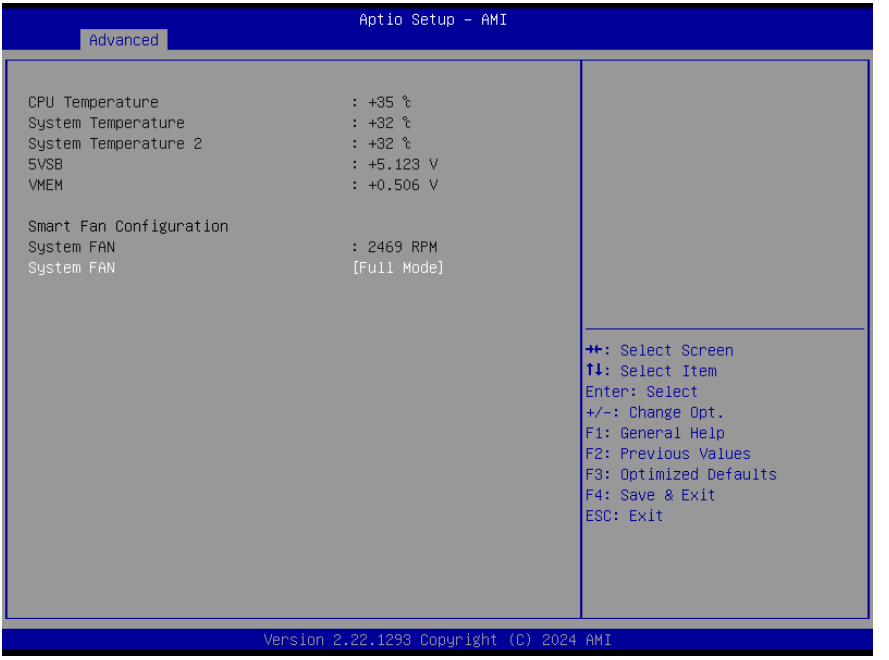
3.4.5 SATA Configuration



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

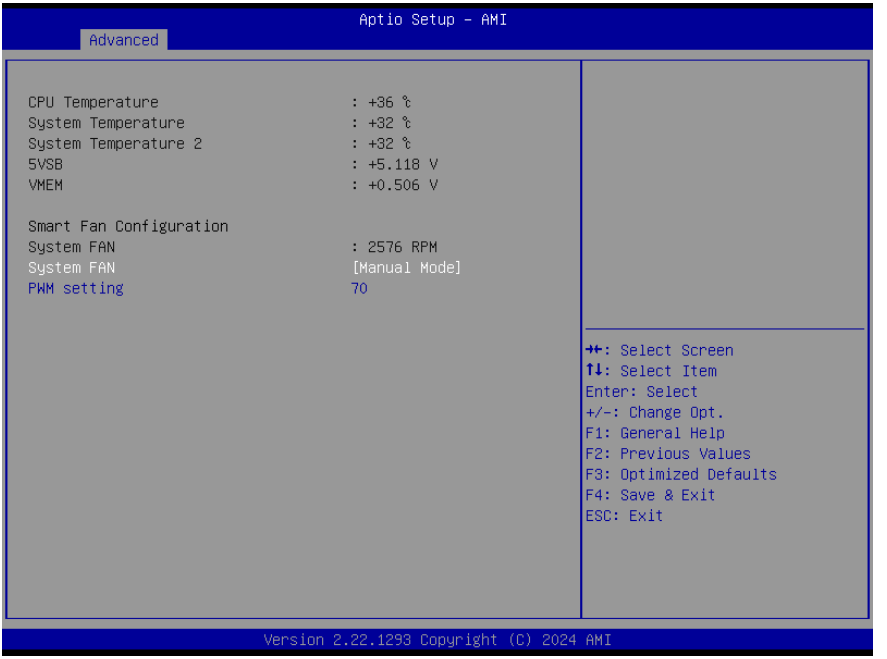
3.4.6 On-Module H/W Monitor

Fan Mode: Full Mode



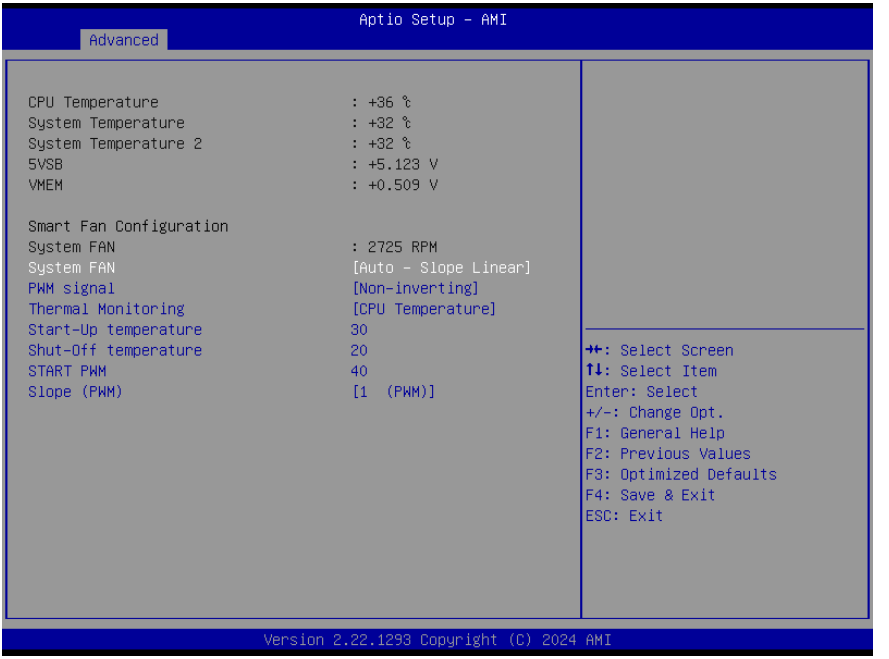
Options Summary		
System Fan	Full Mode	Optimal Default, Failsafe Default
	Manual Mode	
	Auto – Slope Linear	
System Fan mode Select.		

Fan Mode: Manual Mode



Options Summary		
System Fan	Full Mode	
	Manual Mode	Optimal Default, Failsafe Default
	Auto – Slope Linear	
System Fan mode Select.		
PWM Setting	70	
The PWM value of manual mode. Range: 0 – 100.		

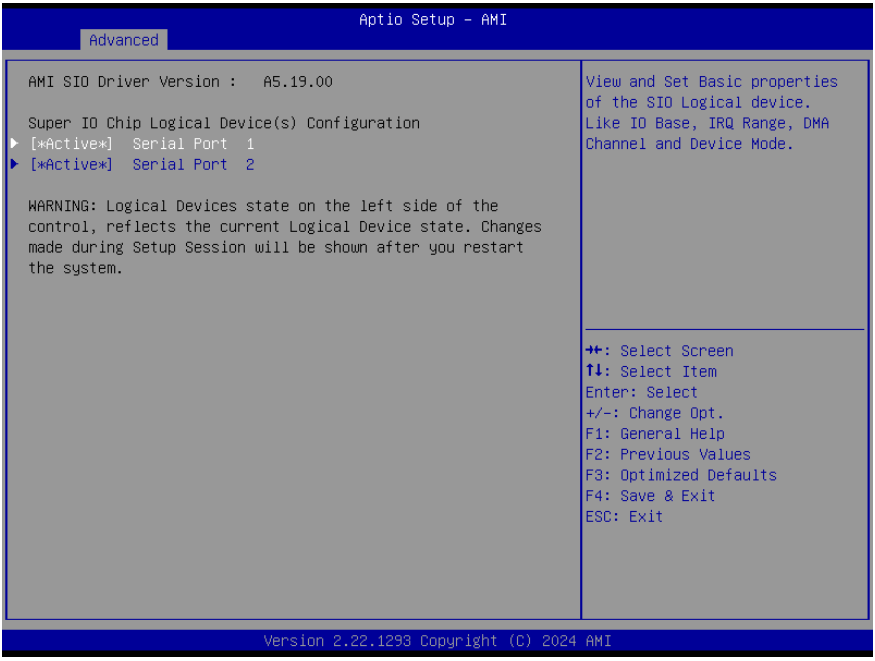
Fan Mode: Auto – Slope Linear



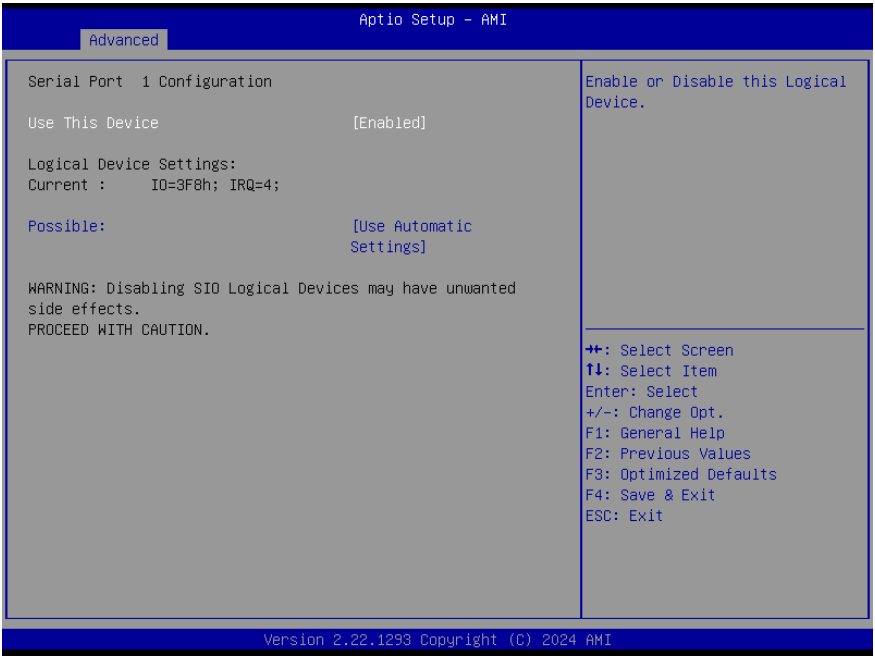
Options Summary		
System Fan	Full Mode	
	Manual Mode	
	Auto – Slope Linear	Optimal Default, Failsafe Default
System Fan mode Select.		
PWM signal	Non-inverting	Optimal Default, Failsafe Default
	Inverting	
Select output PWM of inverting or non-inverting signal.		
Thermal Monitoring	CPU Temperature	Optimal Default, Failsafe Default
	System Temperature	
	System Temperature 2	
Monitoring thermal sensor select.		
Start-Up temperature	30	
PWM output when monitoring thermal sensor is exceeded. Range: 0 - 100		
Shut-Off temperature	20	

Options Summary		
PWM turns off when monitored thermal sensor is less or equal to. Range: 0 – 100		
START PWM	40	
The beginning PWM output value when Start-Up temperature is triggered.		
Slope (PWM)	0 (PWM)	
	1 (PWM)	Optimal Default, Failsafe Default
	2 (PWM)	
	4 (PWM)	
	8 (PWM)	
	16 (PWM)	
	32 (PWM)	
	64 (PWM)	
When the monitored temperature is higher than the Start-Up temperature, the PWM output increases per degree.		

3.4.7 SIO Configuration

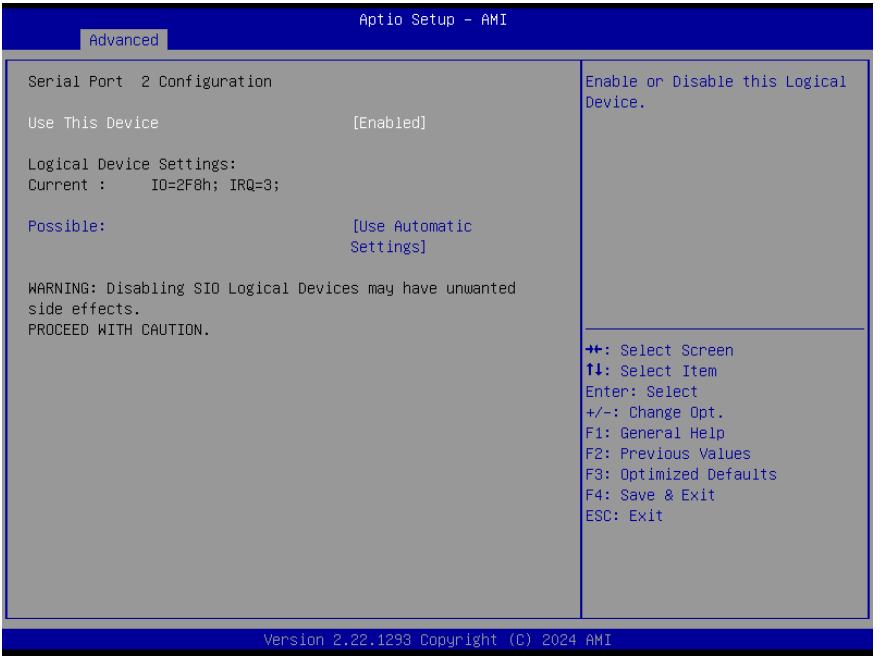


3.4.7.1 Serial Port 1



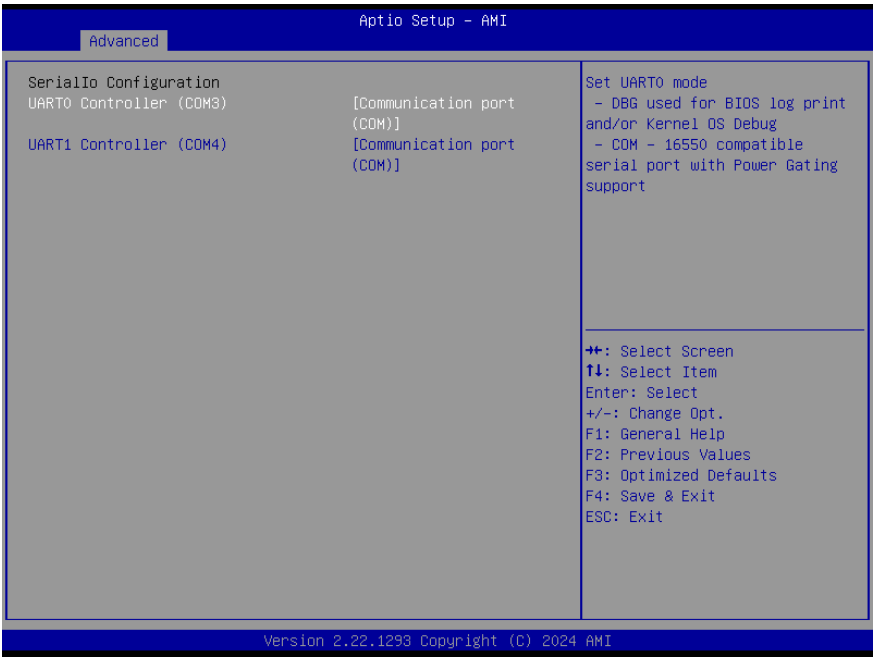
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4; DMA;	
	IO=2C8h; IRQ=11; DMA;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

3.4.7.2 Serial Port 2



Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3; DMA;	
	IO=2D8h; IRQ=10; DMA;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

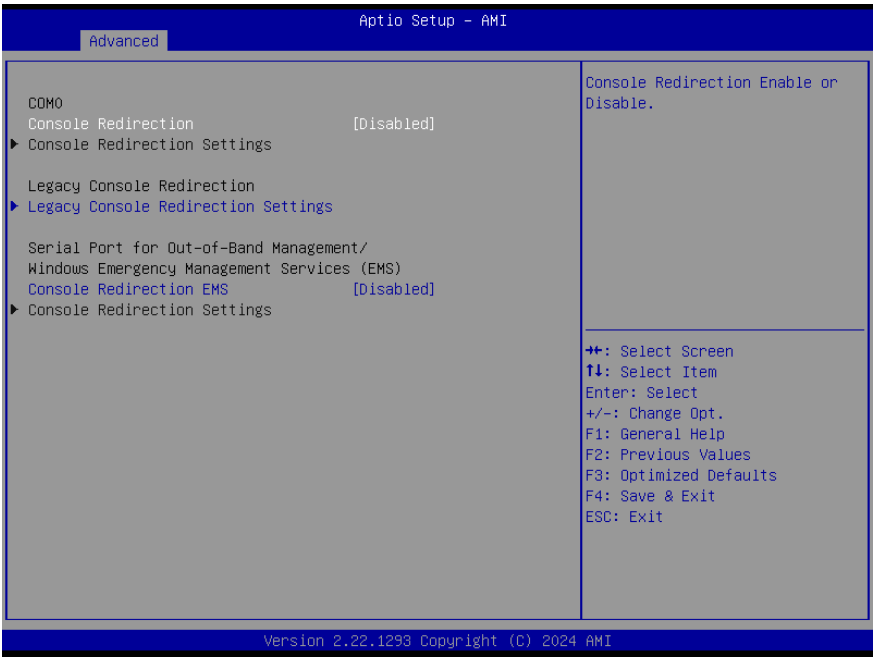
3.4.8 Serial I/O Configuration



Options Summary		
UART0 Controller (COM3)	Disabled	
	Communication port (COM)	Optimal Default, Failsafe Default
Set UART0 mode - DBG used for BIOS log print and/or Kernel OS Debug. - COM – 16550 compatible serial port with Power Gating support.		
UART1 Controller (COM4)	Disabled	
	Communication port (COM)	Optimal Default, Failsafe Default

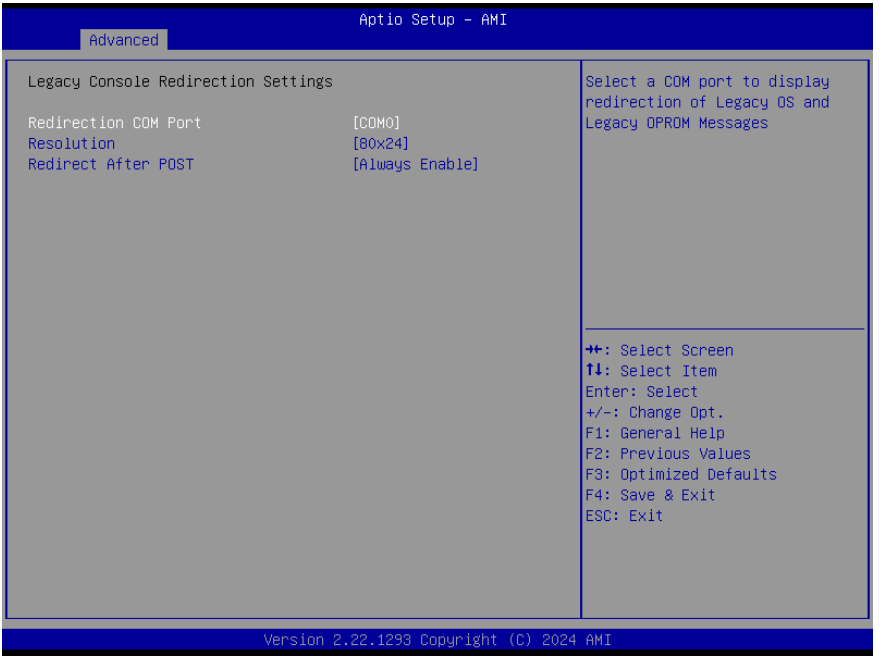
Options Summary
Enables/Disables Seriallo Controller. If given device is Function 0 PSF disabling is skipped. PSF default will remain and device PCI CFG Space will still be visible. This is needed to allow PCI enumerator access functions above 0 in a multifunction device. The following devices depend on each other: I2C0 and I2C1,2,3 UART0 and UART1,SPI0,1 UART2 and I2C4,5 UART 0 (00:30:00) cannot be disabled when: 1. Child device is enabled like CNVi Bluetooth (_SB.PC00.UA00.BTH0) UART 0 (00:30:00) cannot be enabled when: 1. I2S Audio codec is enabled (_SB.PC00.I2C0.HDAC)

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.		

3.4.9.1 Legacy Console Redirection Settings



Options Summary		
Redirection COM Port	COM0	Optimal Default, Failsafe Default
Select a COM port to display redirection of Legacy OS and Legacy OPROM Messages.		
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.		

3.4.10 AAEON BIOS Robot

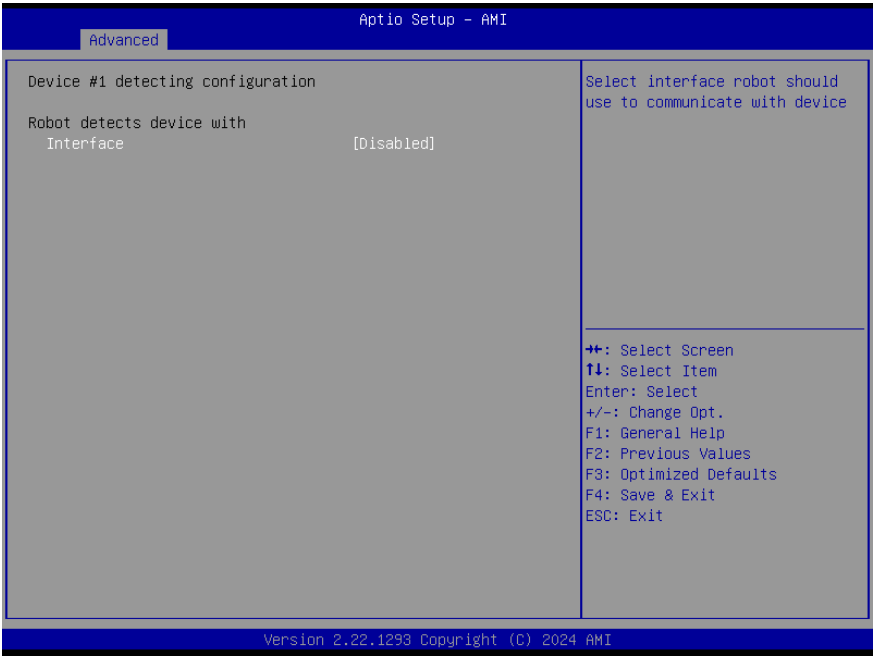
Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not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

3.4.10.1 Device Detecting Configuration

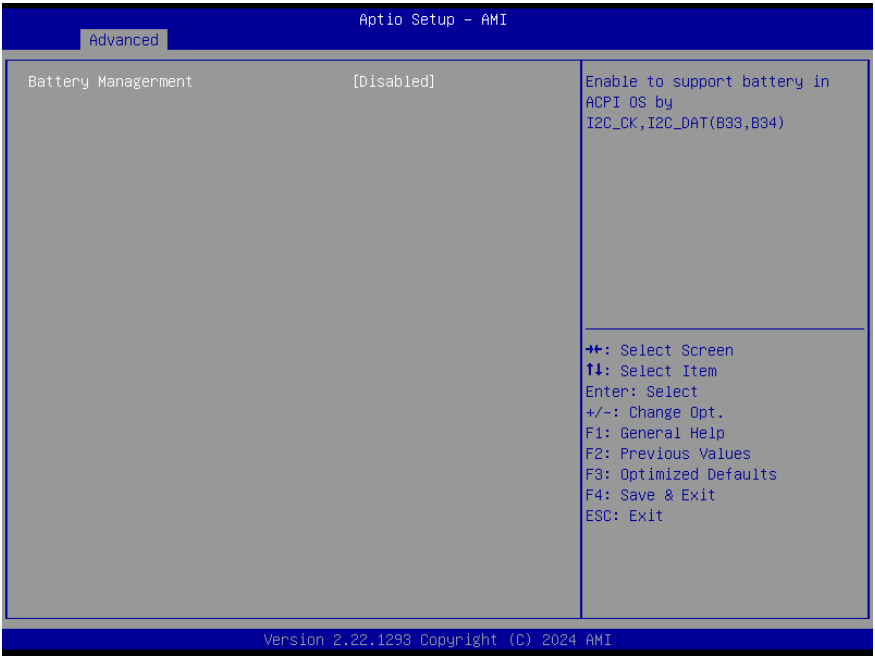
Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robot should do.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	Optimal Default, Failsafe Default
Fill retry counter here. Robot will reset system at most counter times, and then let system continue its POST.		
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time: After show logo - Robot will do action after logo is displayed. System devices are almost ready. Before show logo - Robot will do action earlier before logo, but some devices may not be ready.		

3.4.10.2 Device #* Detecting Configuration



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

3.4.11 On-Module Configuration



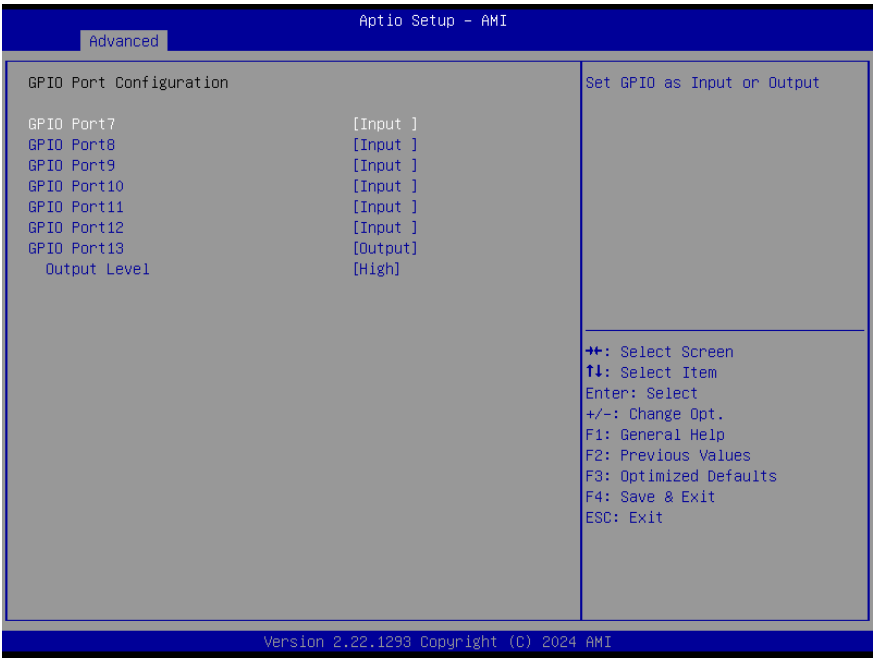
Options Summary		
Battery Management	Disabled	Optimal Default, Failsafe Default
	One Battery	
Enable to support battery in ACPI OS by I2C_CK, I2C_DAT(B33, B34).		

3.4.12 Power Management

Options Summary		
Power Mode	ATX Type	
	AT Type	Optimal Default, Failsafe Default
Select system power mode.		
Restore AC Power Loss	Last State	
	Always On	
	Always Off	Optimal Default, Failsafe Default
SIO Restore AC Power Loss: To decide the behavior after system power cut then re-supply. Note: The CMOS battery must present.		
Soft-Off (S5) Wake On RTC	Disabled	Optimal Default, Failsafe Default
	By Date	
	By Weekday	
	Bypass	

Options Summary
By Date: System will wake on the day 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.

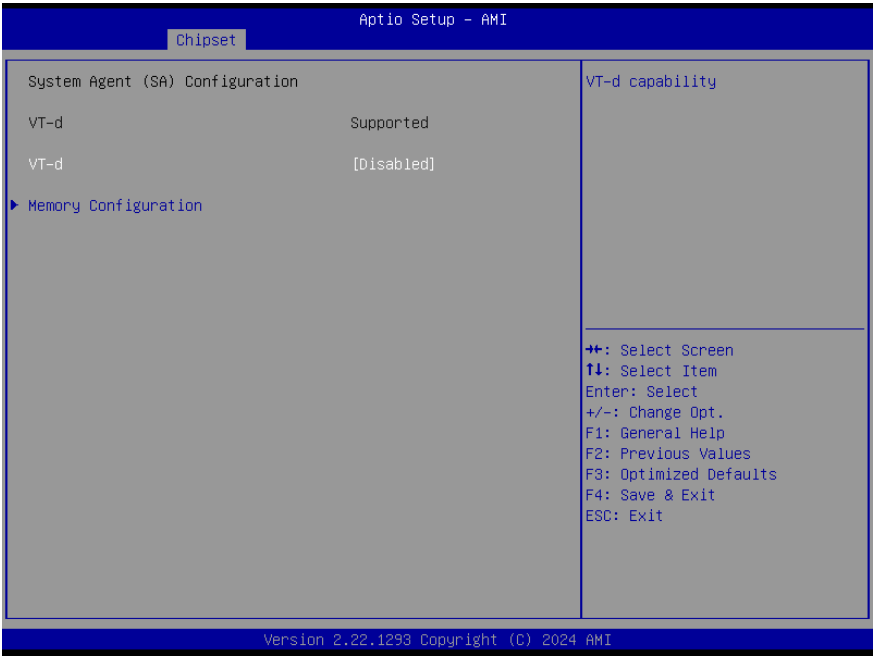
3.4.13 GPIO Port Configuration



Options Summary		
GPIO Port 7 - 12	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		
GPIO Port 13	Input	
	Output	Optimal Default, Failsafe Default
Set GPIO as Input or Output.		
Output Level	Low	
	High	Optimal Default, Failsafe Default
Set output level when GPIO pin is output.		

3.5 Setup Submenu: Chipset

3.5.1 System Agent (SA) Configuration

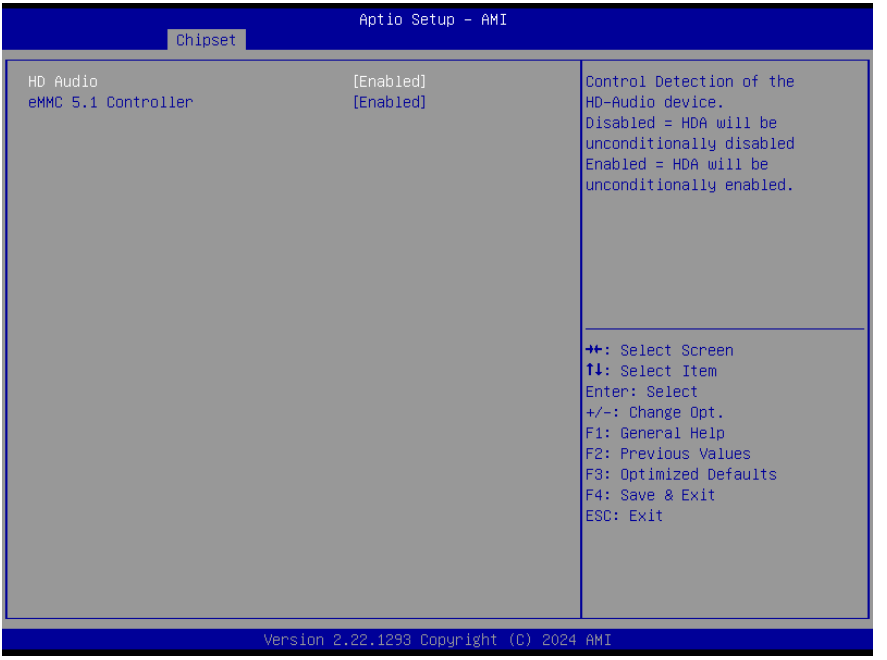


Options Summary		
VT-d	Disabled	Optimal Default, Failsafe Default
	Enabled	
VT-d capability.		

3.5.1.1 Memory Configuration

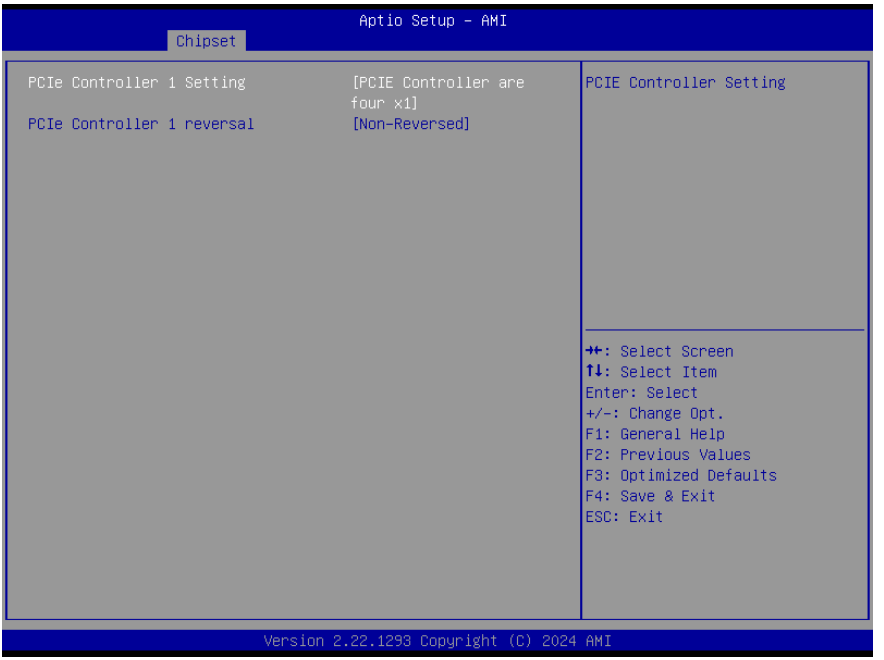
Options Summary		
In-Band ECC Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable In-Band ECC. Will be enabled if memory has symmetric configuration.		

3.5.2 PCH-IO Configuration



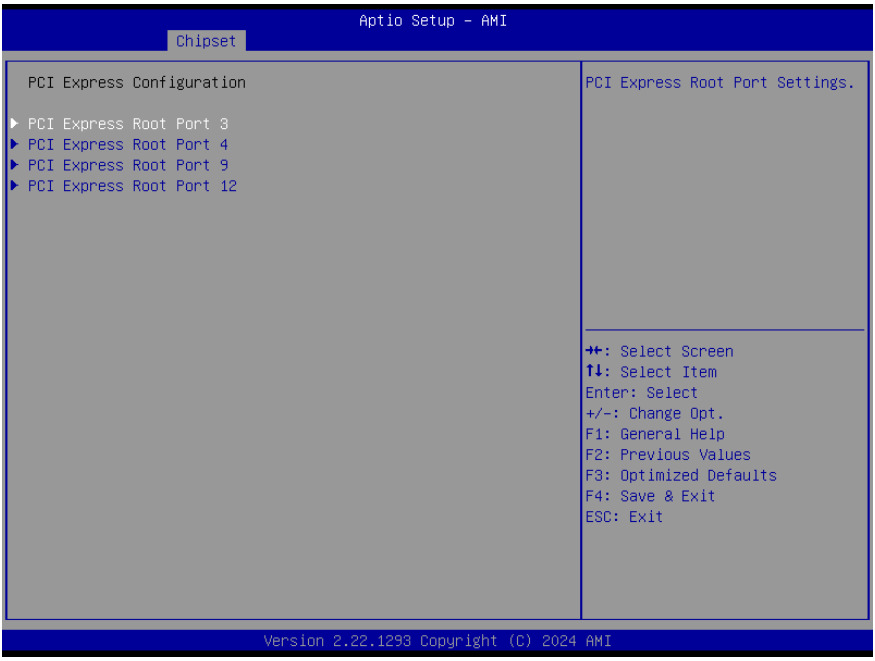
Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HAD will be unconditionally enabled.		
eMMC 5.1 Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SCS eMMC 5.1 Controller.		

3.5.3 HSIO Configuration

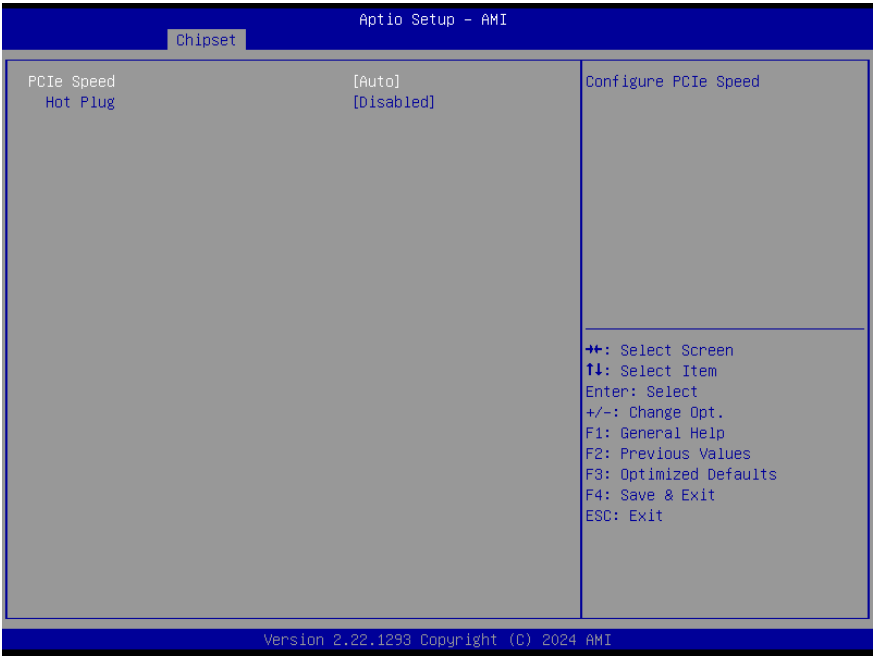


Options Summary		
PCIe Controller 1 Setting	PCIE Controller are four x1	Optimal Default, Failsafe Default
	PCIE Controller are two x2	
PCIE Controller Setting.		
PCIe Controller 1 reversal	Non-Reversed	Optimal Default, Failsafe Default
	Reversed	
PCIE LANE REVERSAL.		

3.5.4 PCI Express Configuration

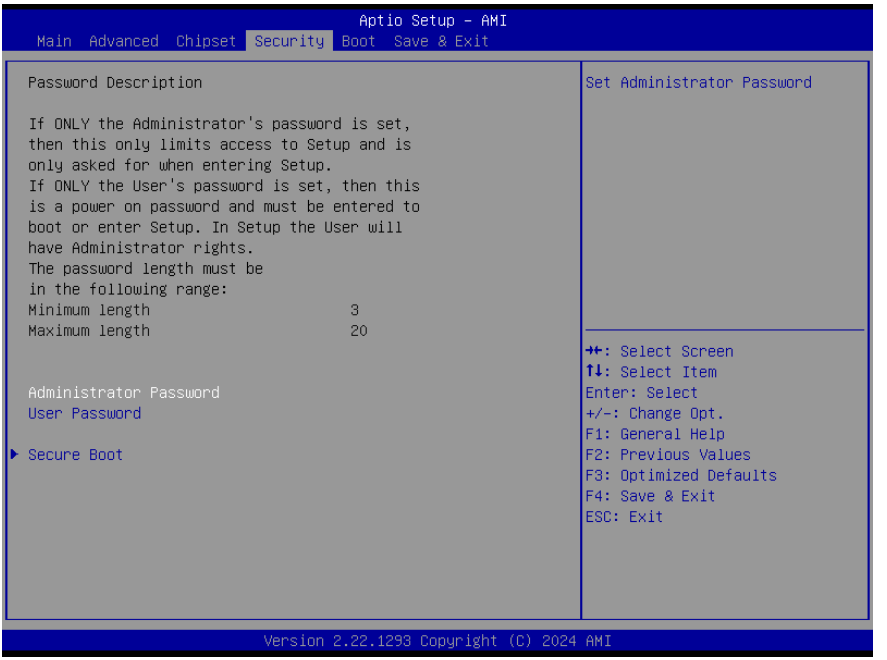


3.5.4.1 PCI Express Root Port *



Options Summary		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		

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

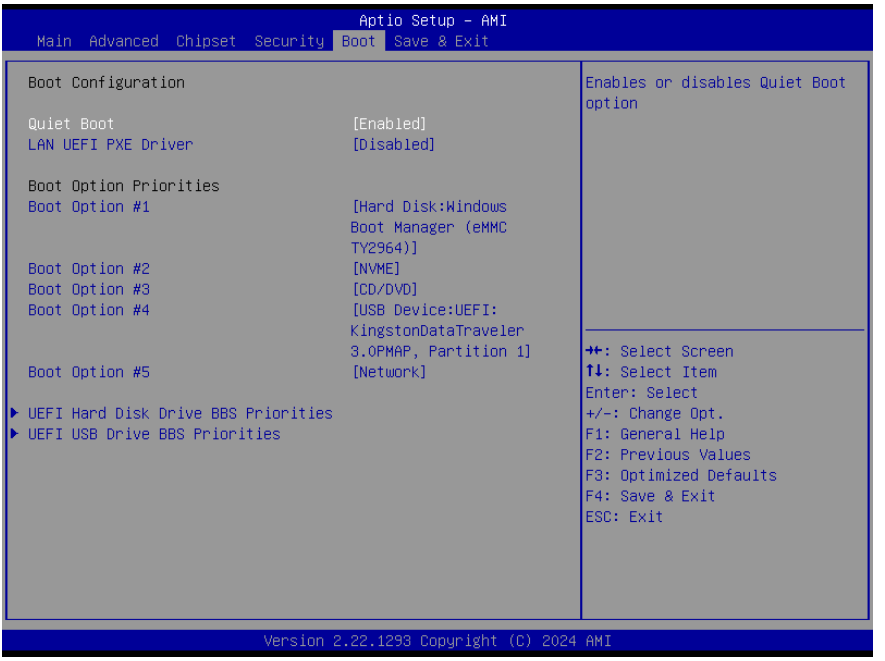
Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset.		
Secure Boot Mode	Standard	
	Custom	Optimal Default, Failsafe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

3.6.1.1 Key Management

Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.		
Restore Factory Keys	Force system to user mode. Install factory default Secure Boot key databases.	
Enroll EFI Image	Allow EFI image to run in Secure Boot mode. Enroll SHA256 hash certificate of a PE image into Authorized Signature Database (db).	
Platform Key(PK)		
Key Exchange Keys		
Authorized Signatures		
Forbidden Signatures		
Authorized TimeStamps		
OsRecovery Signatures		

Options Summary
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
Enables or disables Quiet Boot option.		
LAN UEFI PXE Driver	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable LAN UEFI PXE Driver.		

3.8 Setup Submenu: Save & Exit

Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

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

https://www.aaeon.com/en/product/detail/com-express-cpu-modules-ucom-adn/download

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

Chipset Driver

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

Graphics Driver

1. Open the folder where you unzipped the **Graphics Drivers**
2. Run the **gfx_win_101.4644.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

LAN Drivers

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

Install Audio Drivers

Note: Ensure Intel Smart Sound Driver (**v10.29.00.7919**) is installed before the Realtek Audio driver (**Realtek Audio 6.0.9034.2**)

Install Intel Smart Sound Driver

1. Open the **Audio** folder
2. Open the **10.29.00.8102** subfolder
3. Follow the setup information within the file to manually install driver.

Install Realtek Audio Driver

1. Open the **Audio** folder
2. Open the **Realtek Audio 6.0.9034.2** folder
3. Run the **Setup.exe** file in the folder
4. Follow the instructions
5. Driver will be installed automatically

Install ME Driver

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

Install Serial IO Driver

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

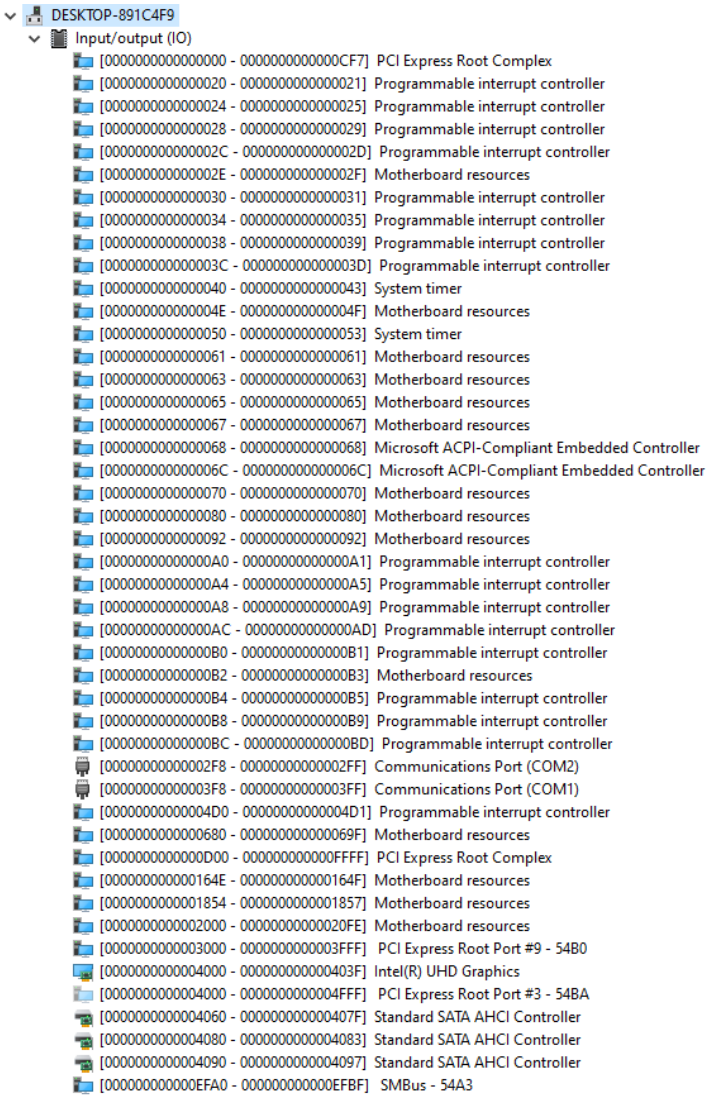
Install Camera Driver

1. Open the **Camera Drivers** folder
2. Follow the instructions in the setup guides provided to manually install driver(s)

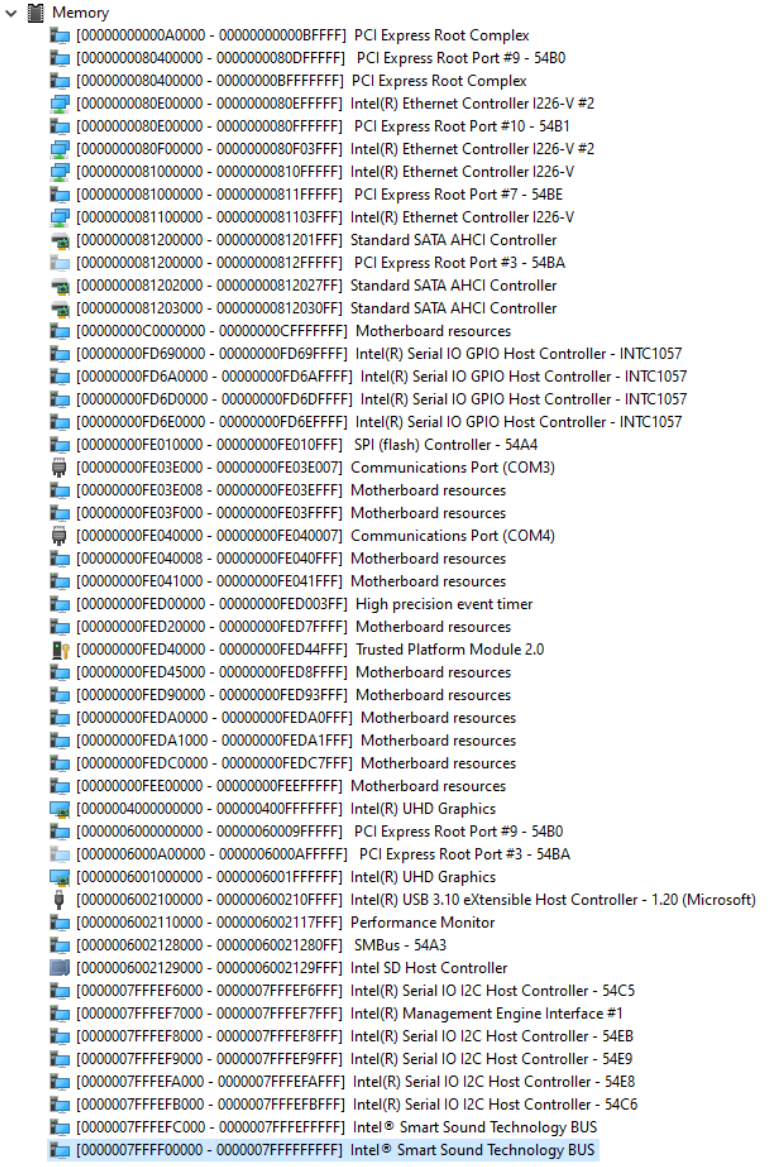
Appendix A

I/O Information

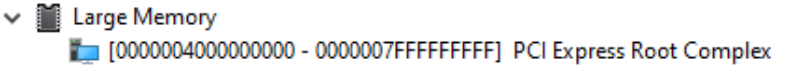
A.1 I/O Address Map



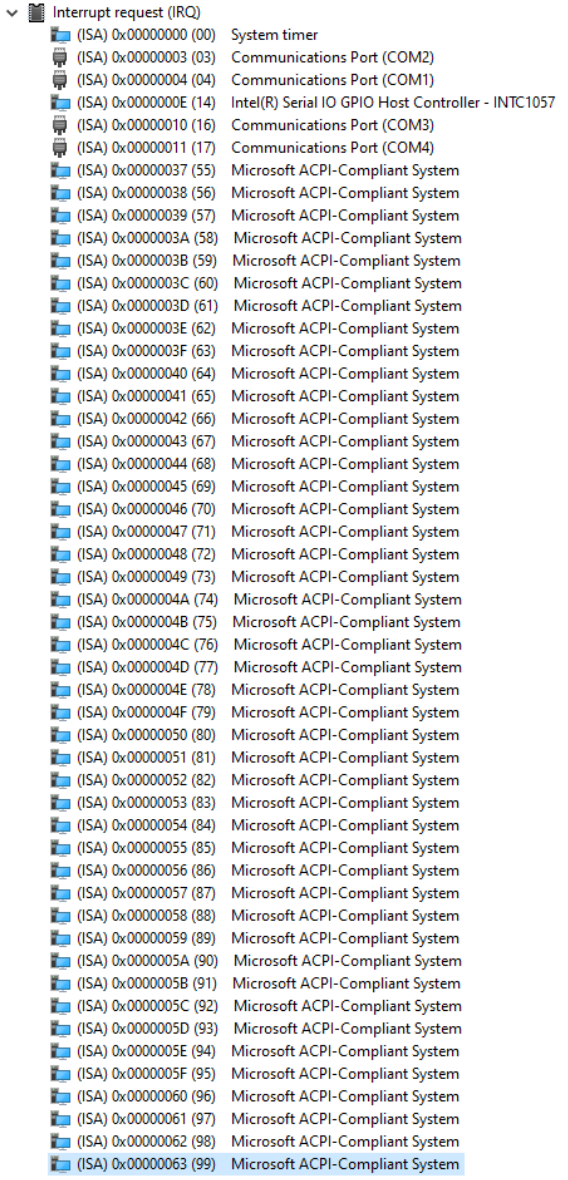
A.2 Memory Address Map



A.3 Large Memory Address Map



A.4 IRQ Mapping Chart



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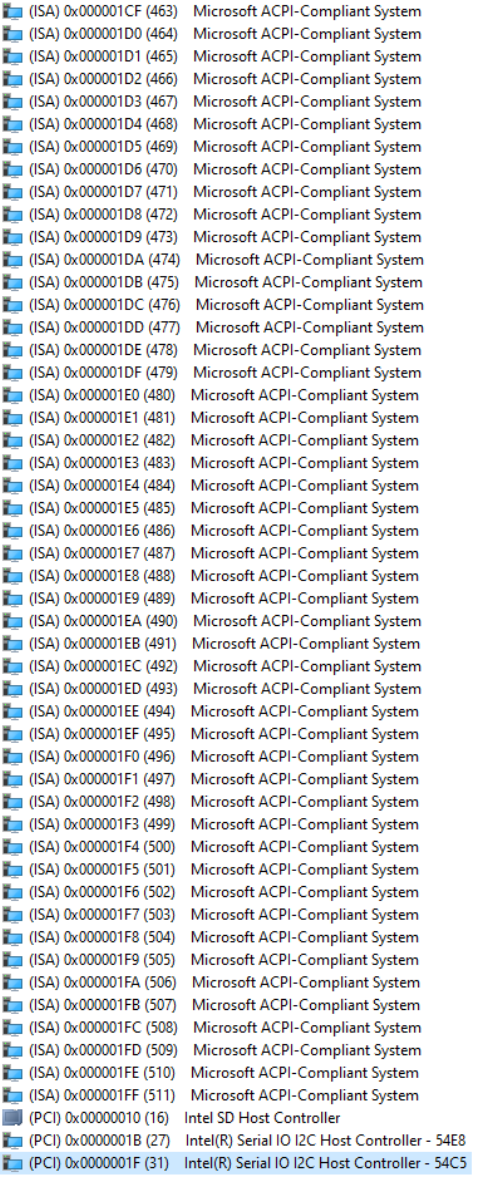
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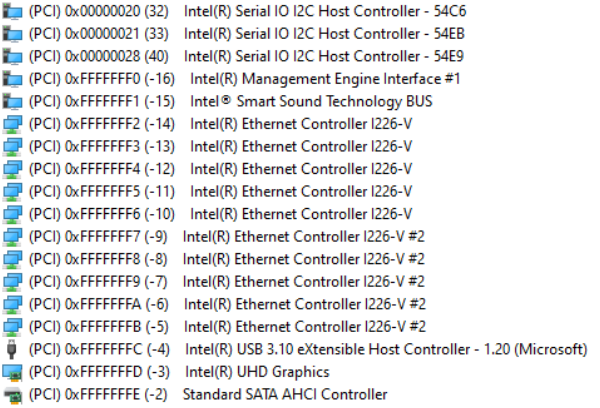
(ISA) 0x000001E2 (482) Microsoft ACPI-Compliant System
(ISA) 0x000001E3 (483) Microsoft ACPI-Compliant System
(ISA) 0x000001E4 (484) Microsoft ACPI-Compliant System
(ISA) 0x000001E5 (485) Microsoft ACPI-Compliant System
(ISA) 0x000001E6 (486) Microsoft ACPI-Compliant System
(ISA) 0x000001E7 (487) Microsoft ACPI-Compliant System
(ISA) 0x000001E8 (488) Microsoft ACPI-Compliant System
(ISA) 0x000001E9 (489) Microsoft ACPI-Compliant System
(ISA) 0x000001EA (490) Microsoft ACPI-Compliant System
(ISA) 0x000001EB (491) Microsoft ACPI-Compliant System
(ISA) 0x000001EC (492) Microsoft ACPI-Compliant System
(ISA) 0x000001ED (493) Microsoft ACPI-Compliant System
(ISA) 0x000001EE (494) Microsoft ACPI-Compliant System
(ISA) 0x000001EF (495) Microsoft ACPI-Compliant System
(ISA) 0x000001F0 (496) Microsoft ACPI-Compliant System
(ISA) 0x000001F1 (497) Microsoft ACPI-Compliant System
(ISA) 0x000001F2 (498) Microsoft ACPI-Compliant System
(ISA) 0x000001F3 (499) Microsoft ACPI-Compliant System
(ISA) 0x000001F4 (500) Microsoft ACPI-Compliant System
(ISA) 0x000001F5 (501) Microsoft ACPI-Compliant System
(ISA) 0x000001F6 (502) Microsoft ACPI-Compliant System
(ISA) 0x000001F7 (503) Microsoft ACPI-Compliant System
(ISA) 0x000001F8 (504) Microsoft ACPI-Compliant System
(ISA) 0x000001F9 (505) Microsoft ACPI-Compliant System
(ISA) 0x000001FA (506) Microsoft ACPI-Compliant System
(ISA) 0x000001FB (507) Microsoft ACPI-Compliant System
(ISA) 0x000001FC (508) Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509) Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x00000010 (16) Intel SD Host Controller
(PCI) 0x0000001B (27) Intel(R) Serial IO I2C Host Controller - 54E8
(PCI) 0x0000001F (31) Intel(R) Serial IO I2C Host Controller - 54C5


(PCI) 0x00000020 (32) Intel(R) Serial IO I2C Host Controller - 54C6
(PCI) 0x00000021 (33) Intel(R) Serial IO I2C Host Controller - 54EB
(PCI) 0x00000028 (40) Intel(R) Serial IO I2C Host Controller - 54E9
(PCI) 0xFFFFFFF0 (-16) Intel(R) Management Engine Interface #1
(PCI) 0xFFFFFFF1 (-15) Intel® Smart Sound Technology BUS
(PCI) 0xFFFFFFF2 (-14) Intel(R) Ethernet Controller I226-V
(PCI) 0xFFFFFFF3 (-13) Intel(R) Ethernet Controller I226-V
(PCI) 0xFFFFFFF4 (-12) Intel(R) Ethernet Controller I226-V
(PCI) 0xFFFFFFF5 (-11) Intel(R) Ethernet Controller I226-V
(PCI) 0xFFFFFFF6 (-10) Intel(R) Ethernet Controller I226-V
(PCI) 0xFFFFFFF7 (-9) Intel(R) Ethernet Controller I226-V #2
(PCI) 0xFFFFFFF8 (-8) Intel(R) Ethernet Controller I226-V #2
(PCI) 0xFFFFFFF9 (-7) Intel(R) Ethernet Controller I226-V #2
(PCI) 0xFFFFFFFA (-6) Intel(R) Ethernet Controller I226-V #2
(PCI) 0xFFFFFFFB (-5) Intel(R) Ethernet Controller I226-V #2
(PCI) 0xFFFFFFFC (-4) Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFFD (-3) Intel(R) UHD Graphics
(PCI) 0xFFFFFFFE (-2) Standard SATA AHCI Controller