

AQ7-ADN

Qseven CPU Module

User's Manual 1st Ed

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Packing List

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

Item		Quantity
●	AQ7-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

Warning!



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)

产品中有害有毒物质或元素名称及含量

AAEON 主板/子板/背板

QQ4-381 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。 ○：表示该有害有毒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	×	○	○	○	○	○
Connector and Cable	×	○	○	○	○	○
The table is prepared in accordance with the provisions of SJ/T 11364. ○: 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.						

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Chapter 1

Product Specifications

1.1 Specifications

System

Form Factor	Qseven Module
CPU	Intel Atom® X Series/Intel® Processor N-series/ Intel® Core™ i3-N305 CPU Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C, up to 3.4 GHz, 12W) Intel® Processor N200 (4C, up to 3.7 GHz, 6W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W) Intel® Processor N50 (2C, up to 3.4 GHz, 6W)
Chipset	Integrated with Intel ® SoC
Memory	LPDDR5x up to 4800MT/s, 8GB
Onboard Storage	eMMC, up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension	2.76" x 2.76" (70mm x 70mm)
Security	TPM 2.0 (Optional)

Power

Power Requirement	+5V +/- 50mV, +3Vrtc
Power Type	AT (default)/ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, LPDDR5x 8GB, 4.5A @+5V

Display

Graphics Controller	Intel® UHD Graphics
Video Output	Dual Display: DP x 1, up to 3840 x 2160 @144Hz 18/24-bit Single/Dual-Channel LVDS or eDP x 1, up to 1920 x 1080/3840 x 2160 @60Hz

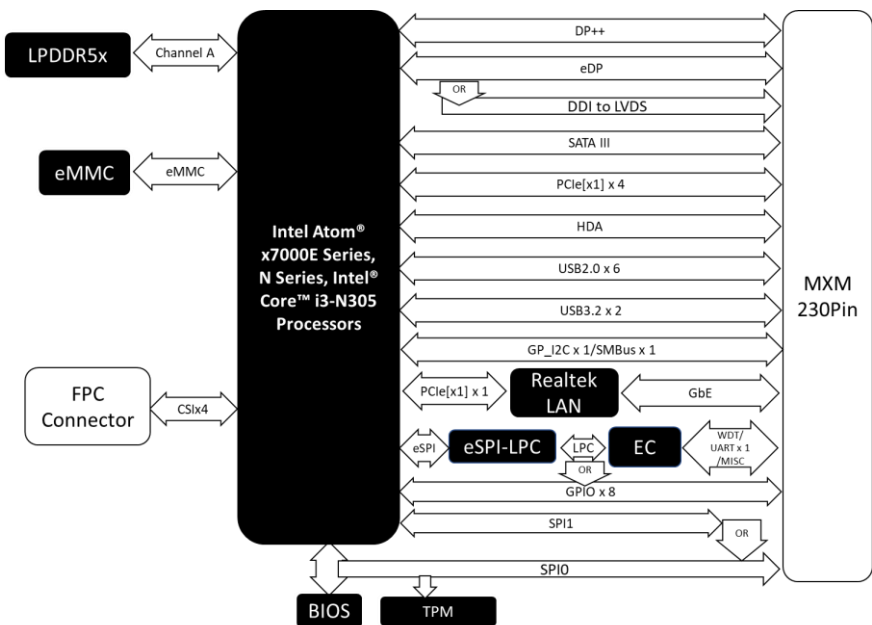
I/O

Ethernet	Realtek RTL8111H-CG 1GbE x 1
Audio	High Definition Audio Interface
USB Port	USB 2.0 x 6 USB 3.2 x 2
Serial Port	4-Wire UART x 1 (Tx/Rx/CTS/RTS)
HDD Interface	SATA 6Gb/s x 1
Expansion	PCIe [x1] x 4 4-lane MIPI-CSI x 1
GPIO	8-bit (Change by BOM)
SMBus/I2C	I2C x 1 SMBus x 1

Environmental

Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°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) Linux Ubuntu 22.04.x/Kernel 5.19.0
Weight	0.26 lb. (0.12Kg)

1.2 Block Diagram

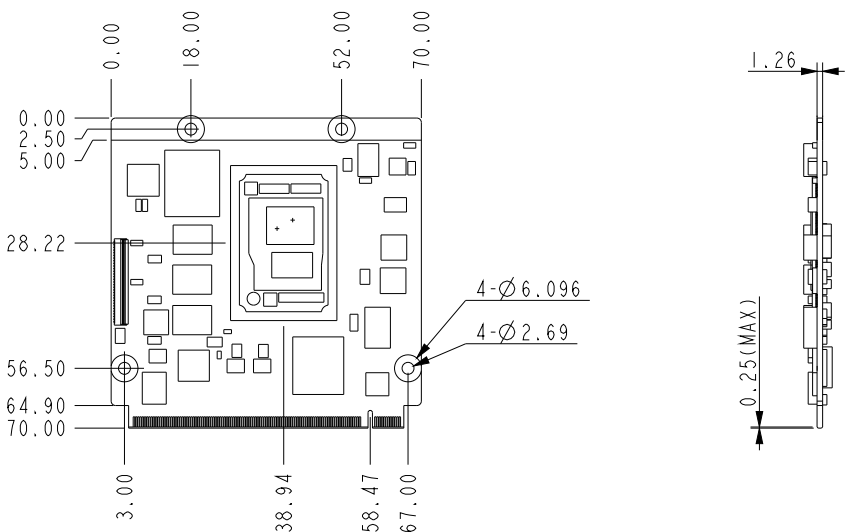


Chapter 2

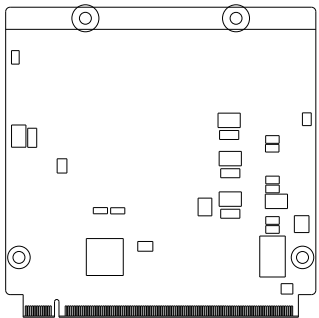
Hardware Information

2.1 Dimensions

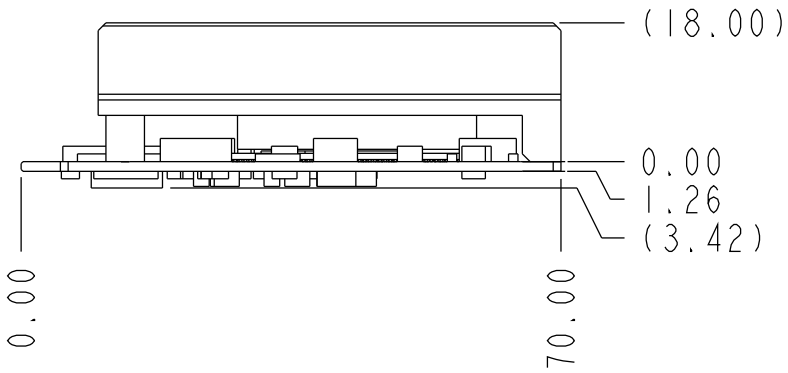
Top Side



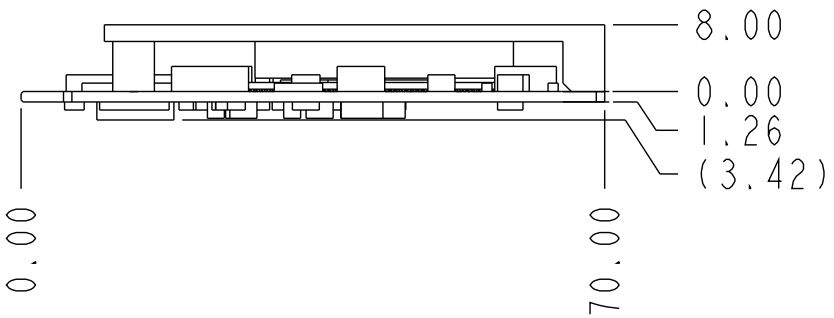
Bottom Side



With Active Cooler

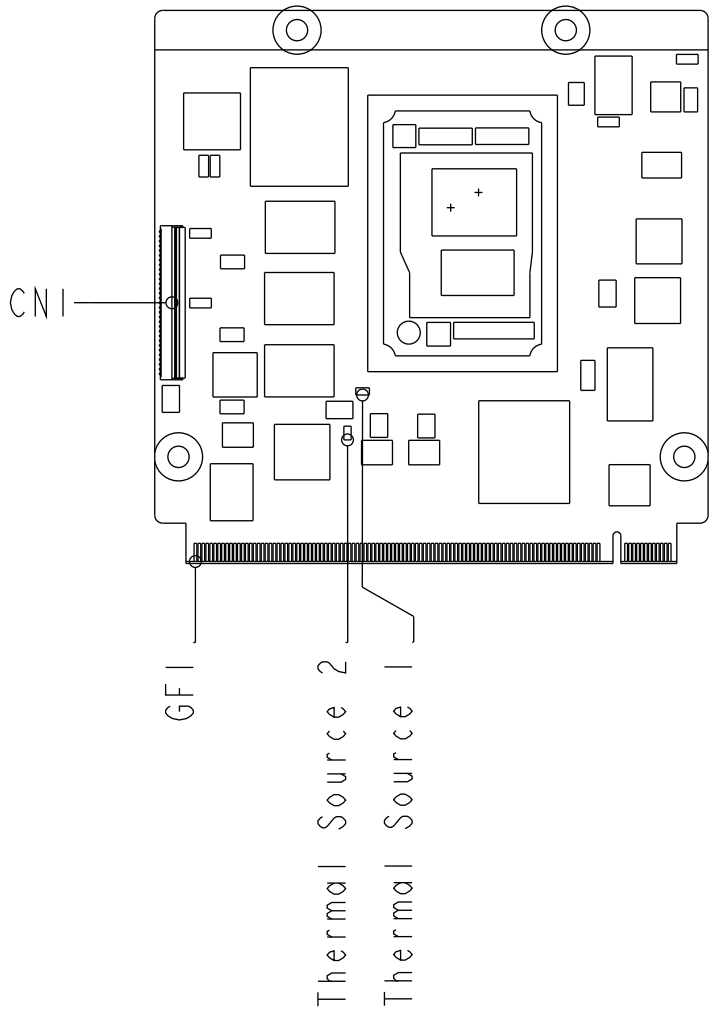


With Heatspreader

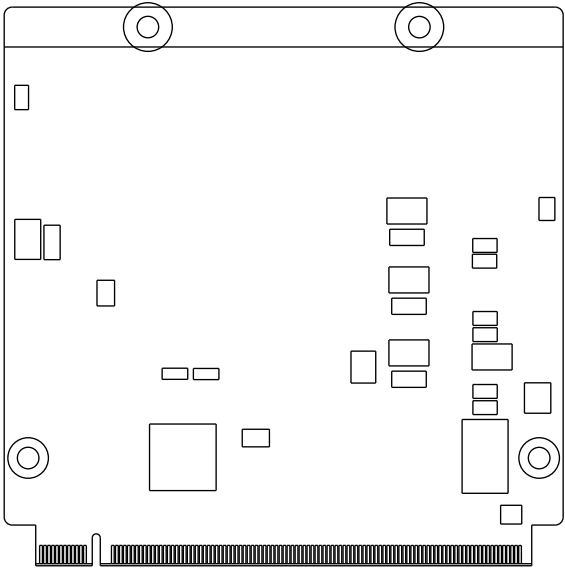


2.2 Jumpers and Connectors

Top Side



Bottom Side

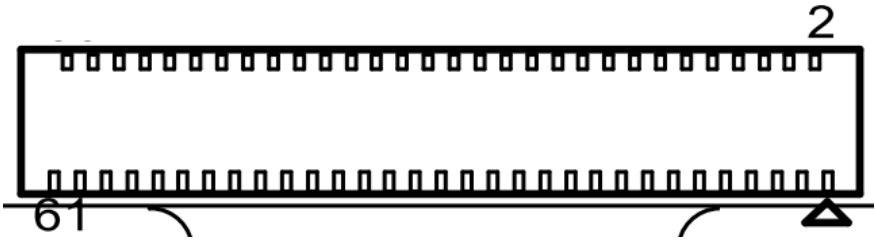


2.3 List of Connectors

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

Label	Function
CN1	MIPI-CSI Connector
GF1	AQ7 MXM Gold Finger

2.3.1 MIPI-CSI Connector (CN1)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	CSI_A_D0_DN	DIFF	
3	CSI_A_D0_DP	DIFF	
4	GND	GND	GND
5	CSI_A_D1_DP	DIFF	
6	CSI_A_D1_DN	DIFF	
7	GND	GND	GND
8	CSI_A_CK_DN	DIFF	
9	CSI_A_CK_DP	DIFF	
10	GND	GND	GND
11	CSI_B_D0_DP	DIFF	
12	CSI_B_D0_DN	DIFF	
13	GND	GND	GND
14	CSI_B_D1_DN	DIFF	
15	CSI_B_D1_DP	DIFF	
16	GND	GND	GND
17	CSI_B_CK_DP	DIFF	
18	CSI_B_CK_DN	DIFF	
19	GND	GND	GND
20	CSI_C_D0_DN	DIFF	
21	CSI_C_D0_DP	DIFF	
22	GND	GND	GND
23	CSI_C_D1_DP	DIFF	

Pin	Pin Name	Signal Type	Signal Level
24	CSI_C_D1_DN	DIFF	
25	GND	GND	GND
26	CSI_C_CK_DN	DIFF	
27	CSI_C_CK_DP	DIFF	
28	GND	GND	GND
29	CSI_D_D0_DP	DIFF	
30	CSI_D_D0_DN	DIFF	
31	GND	GND	GND
32	CSI_D_D1_DN	DIFF	
33	CSI_D_D1_DP	DIFF	
34	GND	GND	GND
35	CSI_D_CK_DP	DIFF	
36	CSI_D_CK_DN	DIFF	
37	GND	GND	GND
38	GND	GND	GND
39	MGCLKOUT1	OUT	
40	MGCLKOUT0	OUT	
41	MGCLKOUT3	OUT	
42	MGCLKOUT2	OUT	
43	CRD1_PWREN	IN	
44	STROBE_CAM	IN	
45	CRD2_PWREN	IN	
46	CAM1_RST#	IN	
47	GPPC_CAM_CLK	IN	
48	CAM2_RST#	IN	
49	GPPC_PRIVACY_CAM2	IN	
50	I2C1_SCL	IN	
51	ISH_INT_GP_CRD_GSB	IN	
52	I2C1_SDA	I/O	
53	GPPC_CAM_SYNC	IN	
54	I2C5_SCL	IN	
55	GPPC_PRIVACY_CAM1	IN	
56	I2C5_SDA	I/O	

Pin	Pin Name	Signal Type	Signal Level
57	+V3P3S	PWR	+3.3V
58	SLP_S3_N	IN	
59	+V3P3S	PWR	+3.3V
60	+V3P3S	PWR	+3.3V
61	+V3P3S	PWR	+3.3V

2.3.2 AQ7 MXM Gold Finger (GF1)

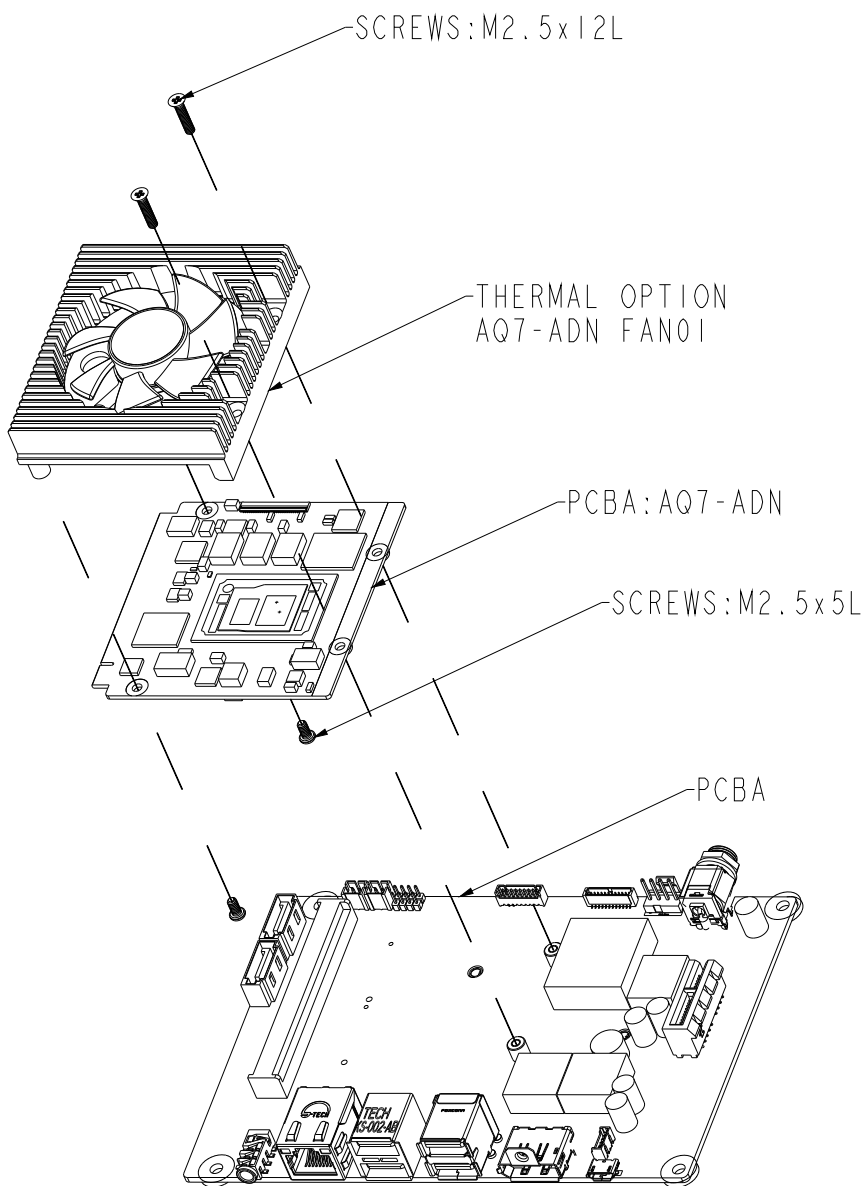
Pin	Pin Name	Pin	Pin Name
1	GND	2	GND
3	GBE_MDI3-	4	GBE_MDI2-
5	GBE_MDI3+	6	GBE_MDI2+
7	GBE_LINK100#	8	GBE_LINK1000#
9	GBE_MDI1-	10	GBE_MDI0-
11	GBE_MDI1+	12	GBE_MDI0+
13	GBE_LINK#	14	GBE_ACT#
15	GBE_CTREF	16	SUS_S5#
17	WAKE#	18	SUS_S3#
19	GPO0	20	PWRBTN#
21	SLP_BTN# / GPII1	22	LID_BTN# / GPII0
23	GND	24	GND
	KEY		KEY
25	GND	26	PWGIN
27	BATLOW# / GPII2	28	RSTBTN#
29	SATA0_TX+	30	SATA1_TX+
31	SATA0_TX-	32	SATA1_TX-
33	SATA_ACT#	34	GND
35	SATA0_RX+	36	SATA1_RX+
37	SATA0_RX-	38	SATA1_RX-
39	GND	40	GND
41	BIOS_DISABLE# / BOOT_ALT#	42	SDIO_CLK#
43	SDIO_CD#	44	reserved

Pin	Pin Name	Pin	Pin Name
45	SDIO_CMD	46	SDIO_WP
47	SDIO_PWR#	48	SDIO_DAT1
49	SDIO_DAT0	50	SDIO_DAT3
51	SDIO_DAT2	52	reserved
53	reserved	54	reserved
55	reserved	56	USB_OTG_PEN
57	GND	58	GND
59	HDA_SYNC / I2S_WS	60	SMB_CLK / GP1_I2C_CLK
61	HDA_RST# / I2S_RST#	62	SMB_DAT / GP1_I2C_DAT
63	HDA_BITCLK / I2S_CLK	64	SMB_ALERT#
65	HDA_SDI / I2S_SDI	66	GP0_I2C_CLK
67	HDA_SDO / I2S_SDO	68	GP0_I2C_DAT
69	THRM#	70	WDTRIG#
71	THRMTRIP#	72	WDOUT
73	GND	74	GND
75	USB_P7- / USB_SSTX0-	76	USB_P6- / USB_SSRX0-
77	USB_P7+ / USB_SSTX0+	78	USB_P6+ / USB_SSRX0+
79	USB_6_7_OC#	80	USB_4_5_OC#
81	USB_P5- / USB_SSTX2-	82	USB_P4- / USB_SSRX2-
83	USB_P5+ / USB_SSTX2+	84	USB_P4+ / USB_SSRX2+
85	USB_2_3_OC#	86	USB_0_1_OC#
87	USB_P3-	88	USB_P2-
89	USB_P3+	90	USB_P2+
91	USB_VBUS	92	USB_ID
93	USB_P1-	94	USB_P0-
95	USB_P1+	96	USB_P0+
97	GND	98	GND
99	eDP0_TX0+ / LVDS_A0+	100	eDP1_TX0+ / LVDS_B0+
101	eDP0_TX0- / LVDS_A0-	102	eDP1_TX0- / LVDS_B0-
103	eDP0_TX1+ / LVDS_A1+	104	eDP1_TX1+ / LVDS_B1+
105	eDP0_TX1- / LVDS_A1-	106	eDP1_TX1- / LVDS_B1-
107	eDP0_TX2+ / LVDS_A2+	108	eDP1_TX2+ / LVDS_B2+
109	eDP0_TX2- / LVDS_A2-	110	eDP1_TX2- / LVDS_B2-

Pin	Pin Name	Pin	Pin Name
111	LVDS_PPEN	112	LVDS_BLEN
113	eDP0_TX3+ / LVDS_A3+	114	eDP1_TX3+ / LVDS_B3+
115	eDP0_TX3- / LVDS_A3-	116	eDP1_TX3- / LVDS_B3-
117	GND	118	GND
119	eDP0_AUX+ / LVDS_A_CLK+	120	eDP1_AUX+ / LVDS_B_CLK+
121	eDP0_AUX- / LVDS_A_CLK-	122	eDP1_AUX- / LVDS_B_CLK-
123	LVDS_BLT_CTRL/GP_PWM_OUT0	124	GP_1-Wire_Bus / HDMI_CEC
125	GP2_I2C_DAT/LVDS_DID_DAT	126	eDP0_HPD#/LVDS_BLC_DAT
127	GP2_I2C_CLK / LVDS_DID_CLK	128	eDP1_HPD#/LVDS_BLC_CLK
129	CAN0_TX	130	CAN0_RX
131	DP_LANE3+ / TMDS_CLK+	132	USB_SSTX1-
133	DP_LANE3- / TMDS_CLK-	134	USB_SSTX1+
135	GND	136	GND
137	DP_LANE1+ / TMDS_LANE1+	138	DP_AUX+
139	DP_LANE1- / TMDS_LANE1-	140	DP_AUX-
141	GND	142	GND
143	DP_LANE2+ / TMDS_LANE0+	144	USB_SSRX1-
145	DP_LANE2- / TMDS_LANE0-	146	USB_SSRX1+
147	GND	148	GND
149	DP_LANE0+ / TMDS_LANE2+	150	HDMI_CTRL_DAT
151	DP_LANE0- / TMDS_LANE2-	152	HDMI_CTRL_CLK
153	HDMI_HPD#	154	DP_HPD#
155	PCIE_CLK_REF+	156	PCIE_WAKE#
157	PCIE_CLK_REF-	158	PCIE_RST#
159	GND	160	GND
161	PCIE3_TX+	162	PCIE3_RX+
163	PCIE3_TX-	164	PCIE3_RX-
165	GND	166	GND
167	PCIE2_TX+	168	PCIE2_RX+
169	PCIE2_TX-	170	PCIE2_RX-
171	UART0_TX	172	UART0_RTS#
173	PCIE1_TX+	174	PCIE1_RX+
175	PCIE1_TX-	176	PCIE1_RX-

Pin	Pin Name	Pin	Pin Name
177	UART0_RX	178	UART0_CTS#
179	PCIE0_TX+	180	PCIE0_RX+
181	PCIE0_TX-	182	PCIE0_RX-
183	GND	184	GND
185	LPC_AD0 / GPIO0	186	LPC_AD1 / GPIO1
187	LPC_AD2 / GPIO2	188	LPC_AD3 / GPIO3
189	LPC_CLK / GPIO4	190	LPC_FRAME# / GPIO5
191	SERIRQ / GPIO6	192	LPC_LDRQ# / GPIO7
193	VCC_RTC	194	SPKR / GP_PWM_OUT2
195	FAN_TACHOIN / GP_TIMER_IN	196	FAN_PWMOUT/GP_PWM_OUT1
197	GND	198	GND
199	SPI_MOSI	200	SPI_CS0#
201	SPI_MISO	202	SPI_CS1#
203	SPI_SCK	204	MFG_NC4
205	VCC_5V_SB	206	VCC_5V_SB
207	MFG_NC0	208	MFG_NC2
209	MFG_NC1	210	MFG_NC3
211	NC	212	NC
213	NC	214	NC
215	NC	216	NC
217	NC	218	NC
219	VCC	220	VCC
221	VCC	222	VCC
223	VCC	224	VCC
225	VCC	226	VCC
227	VCC	228	VCC
229	VCC	230	VCC

2.4 Thermal Solution



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 or <ESC> 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 – Enable/ Disable boot option for legacy network devices

Chipset – Host bridge parameters.

Security – The setup administrator password can be set here

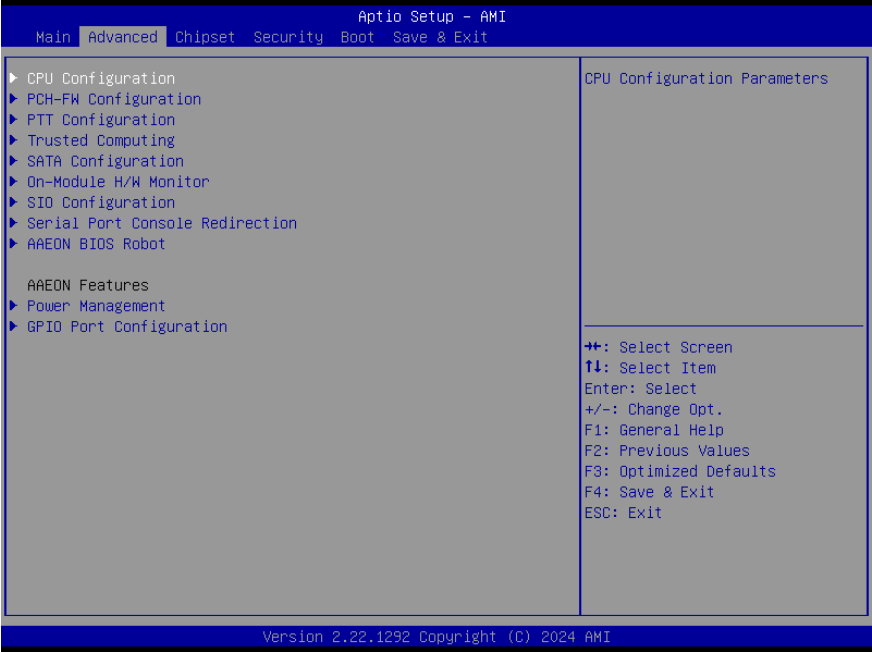
Boot – Enable/ Disable quiet Boot Option

Save & Exit – Save your changes and exit the program

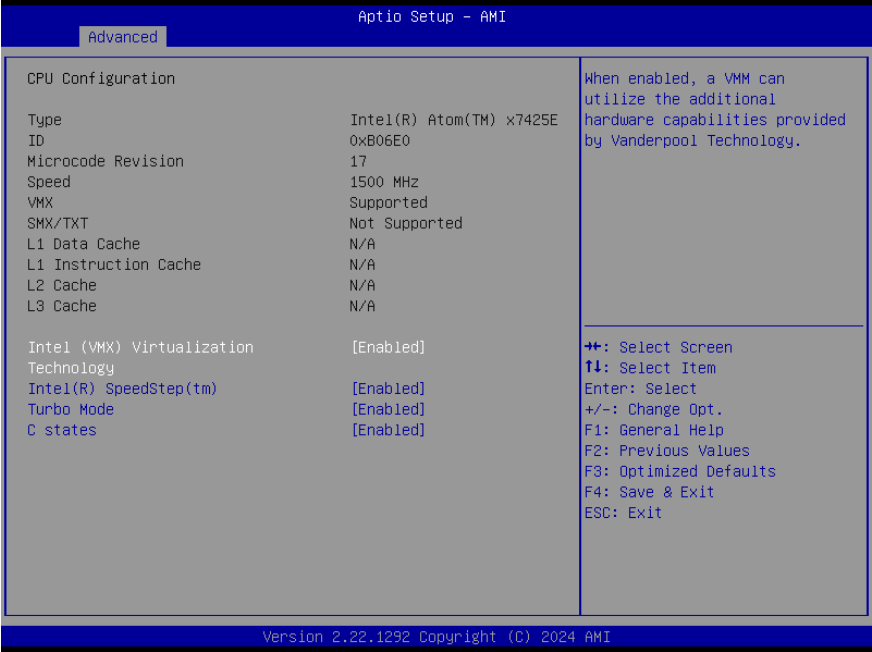
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced

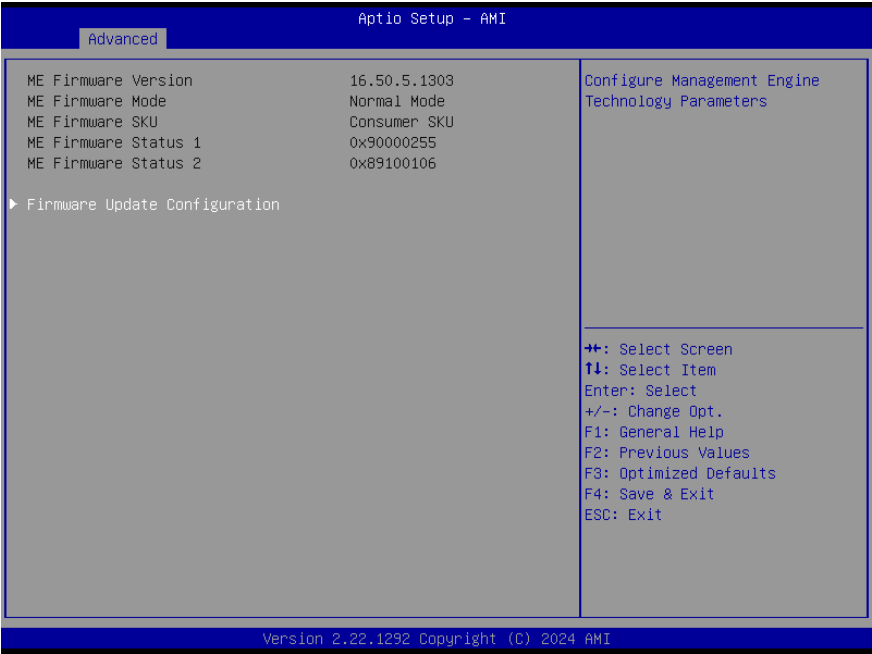


3.4.1 CPU Configuration

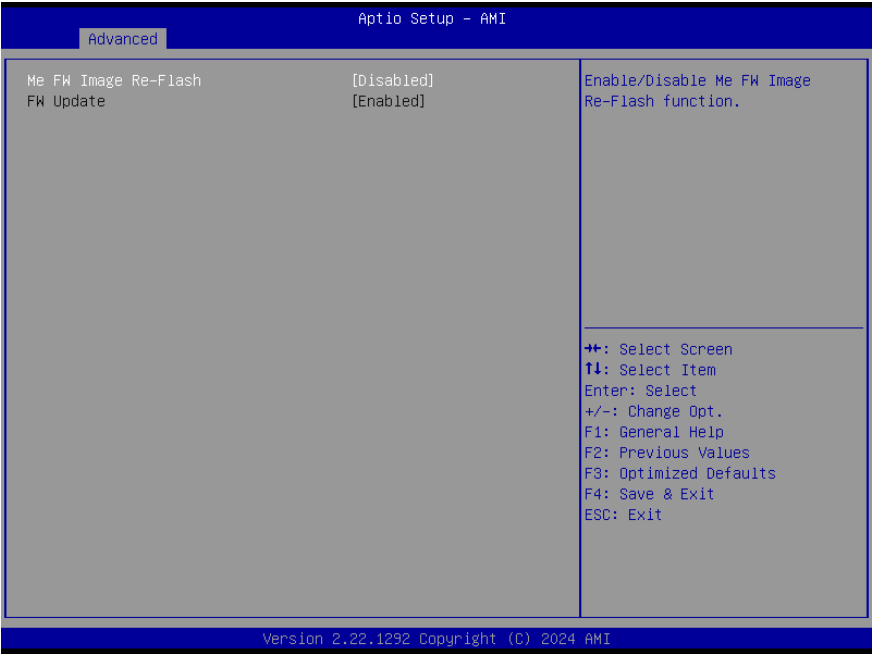


Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Intel® SpeedStep™	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than two frequency ranges to be supported.		
Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable processor Turbo Mode (require EMTTM enabled 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



3.4.2.1 Firmware Update Configuration



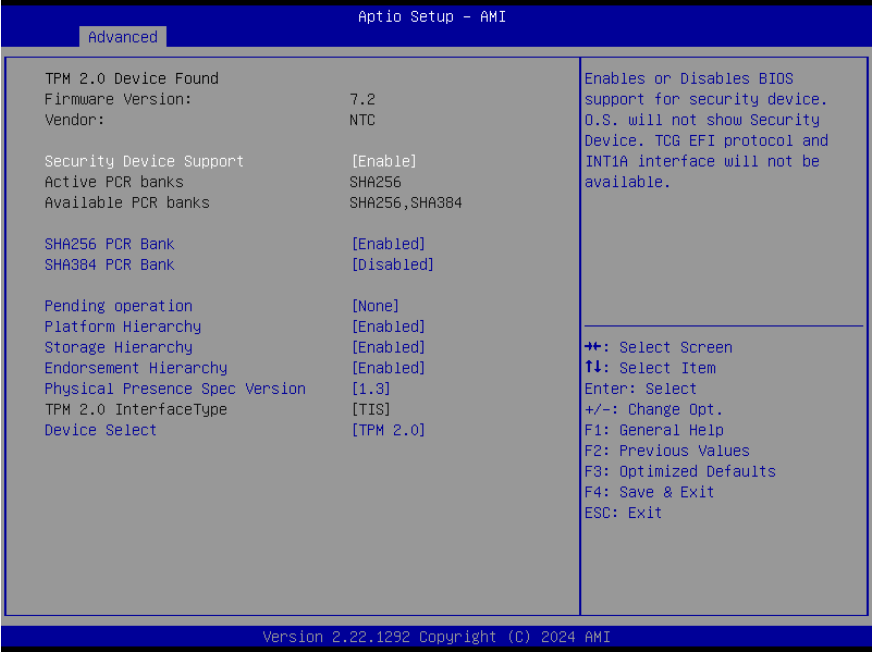
Options Summary		
Me FW Image Re-Flash	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable Me FW Image Re-Flash function.		
FW Update	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable ME FW Update function.		

3.4.3 PTT Configuration



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

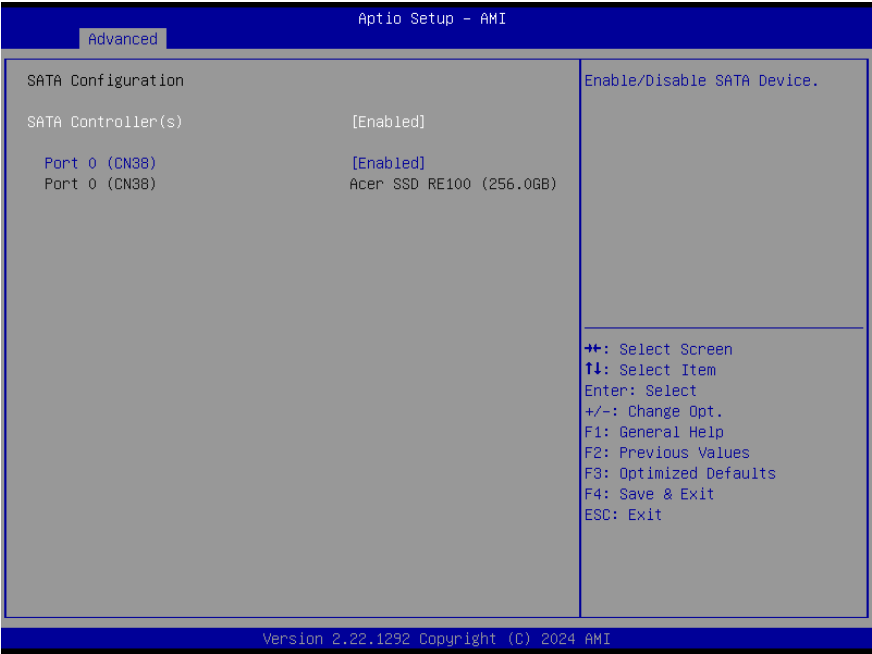
3.4.4 Trusted Computing



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	

Options Summary		
Schedule an Operation for the Security Device. Note: Your Computer will reboot during restart in order to change State of Security Device.		
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.		

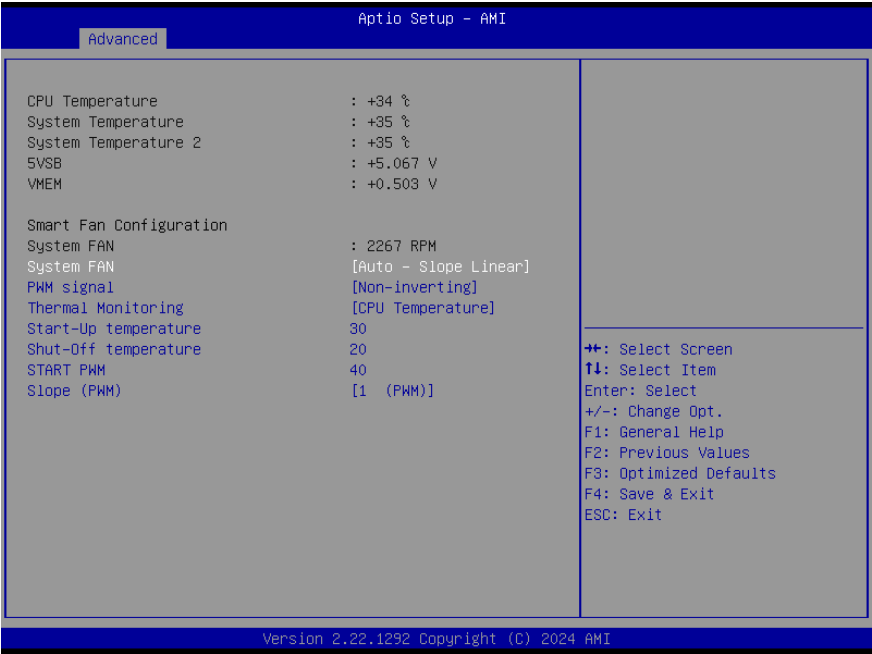
3.4.5 SATA Configuration



Options Summary		
SATA Controller(s)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable SATA Device.		
Port 0 (CN38)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port.		

3.4.6 On-Module H/W Monitor

Fan Mode: Auto – Slope Linear



Options Summary		
System FAN	Full Mode	
	Manual Mode	
	Auto – Slope Linear	Optimal Default, Failsafe Default
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	

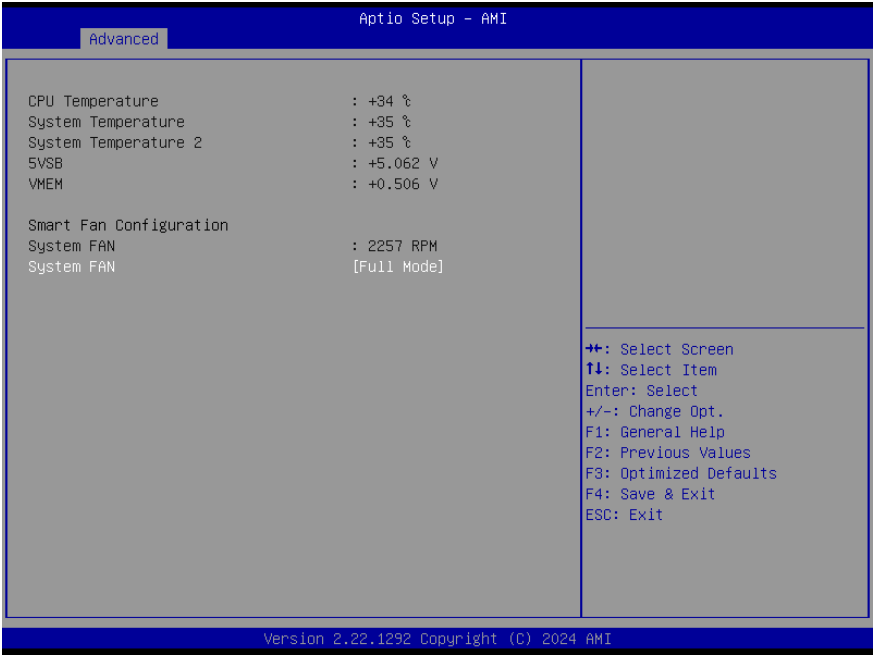
Options Summary

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)	

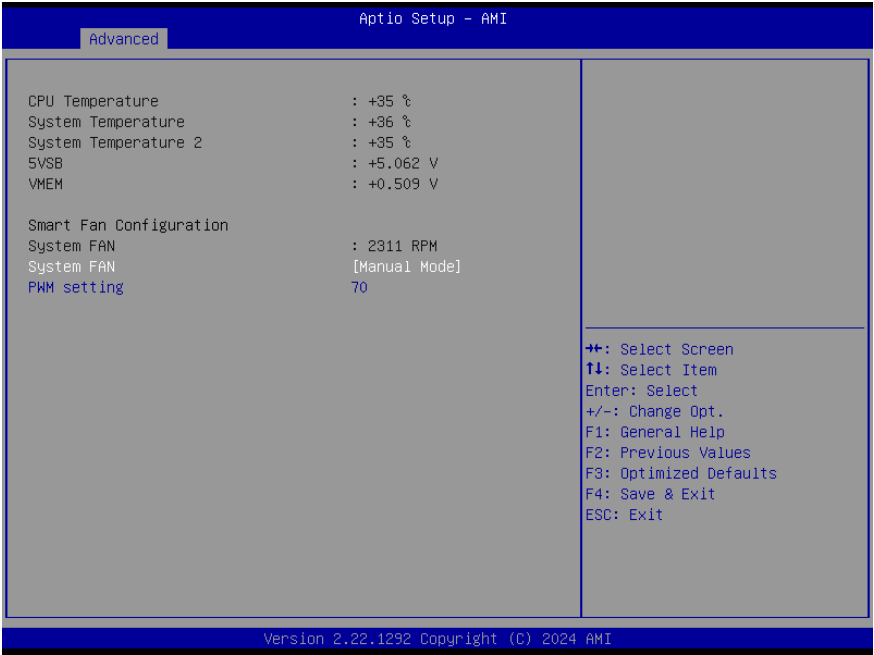
When the monitored temperature is higher than the Start-Up temperature, the PWM output increases per degree.

Fan Mode: Full Mode



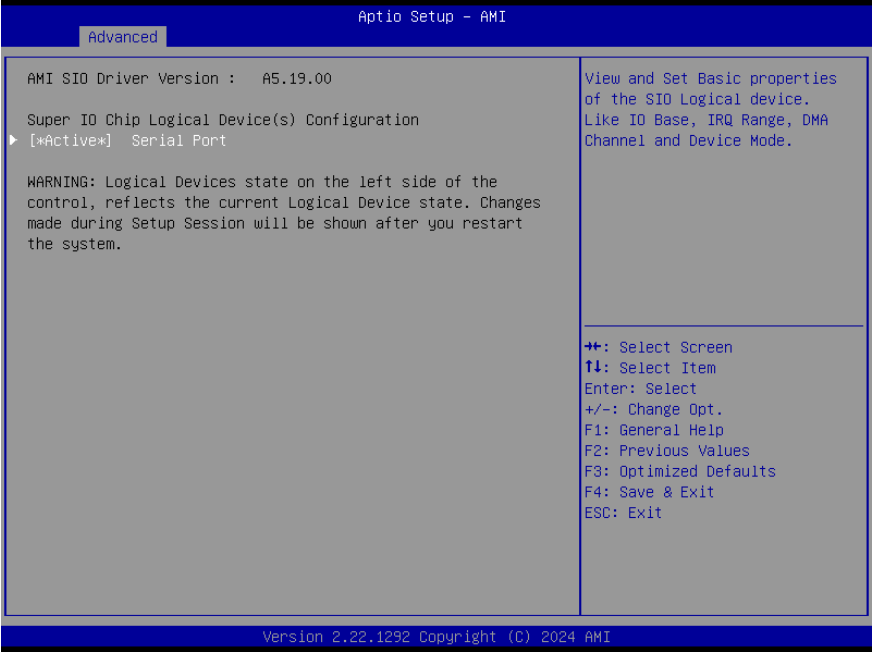
Options Summary		
System FAN	Full Mode	Optimal Default, Failsafe Default
	Manual Mode	
	Auto – Slope Linear	
Fan Mode select.		

Fan Mode: Manual Mode

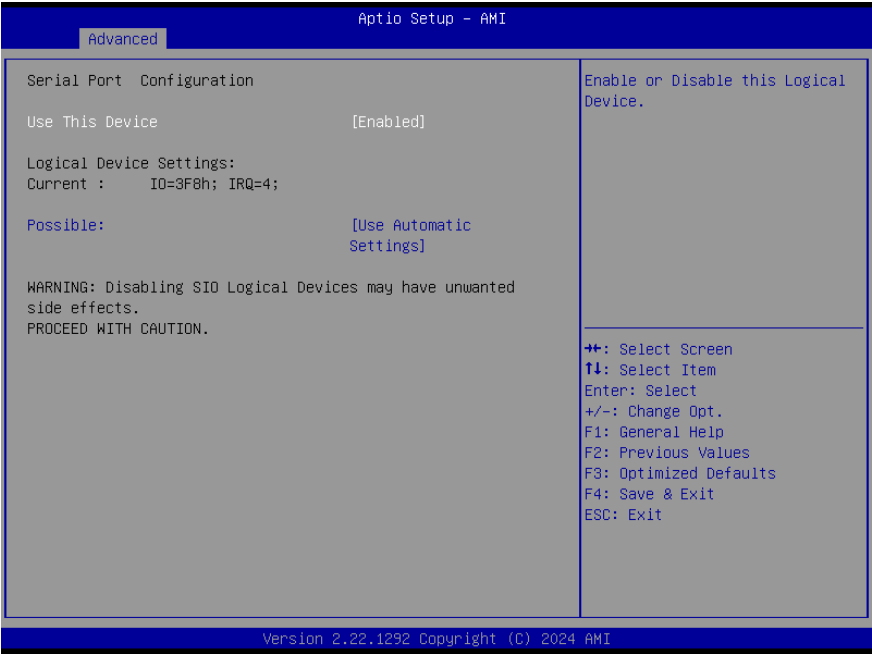


Options Summary		
System FAN	Full Mode	
	Manual Mode	Optimal Default, Failsafe Default
	Auto – Slope Linear	
Fan Mode select.		
PWM setting	70	
The PWM value of manual mode. Range: 0 – 100		

3.4.7 SIO Configuration

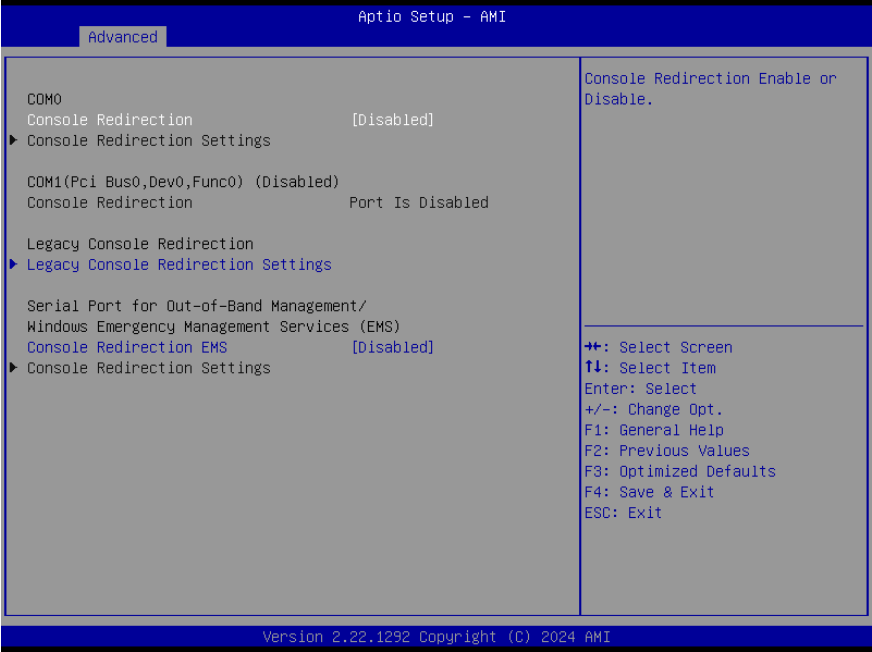


3.4.7.1 Serial Port



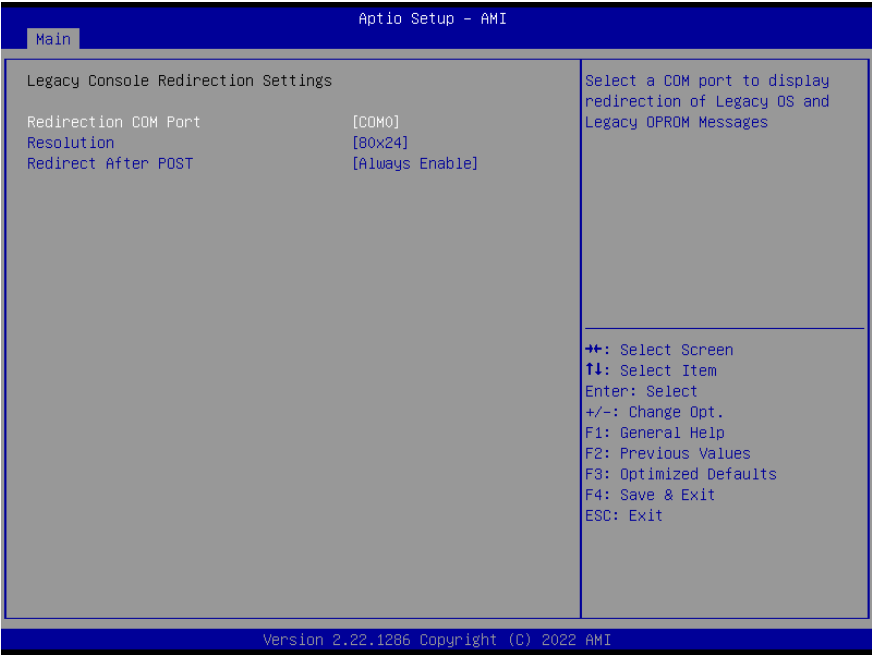
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4; DMA;	
	IO=2C8h; IRQ=11; DMA;	
Allows the user to change the device resource settings. New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

3.4.8 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.		

3.4.8.1 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 OPRM 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.		

3.4.9 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.		

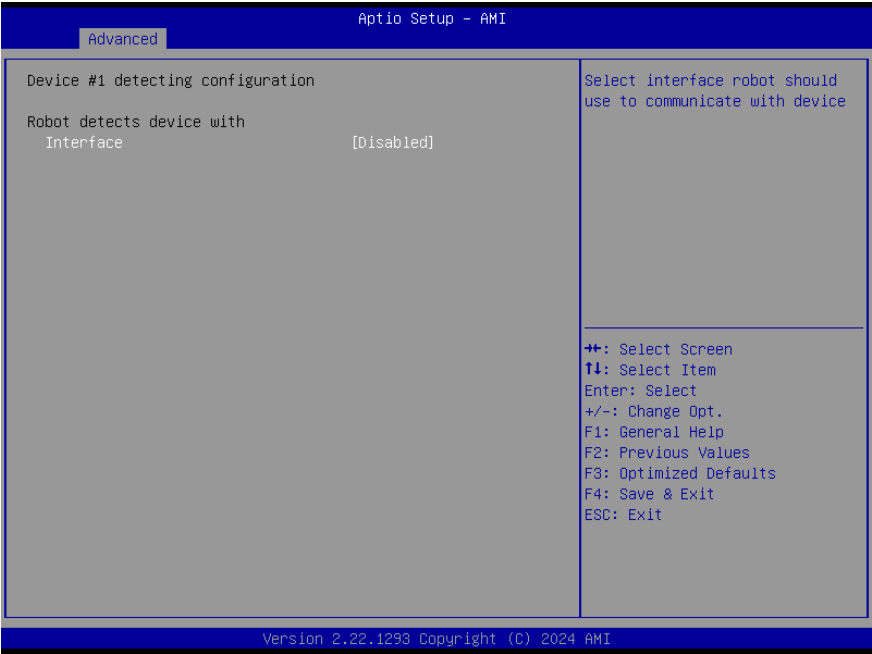
Options Summary		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for OS loading.		
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start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

3.4.9.1 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.		

3.4.9.2 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.		

3.4.10 Power Management

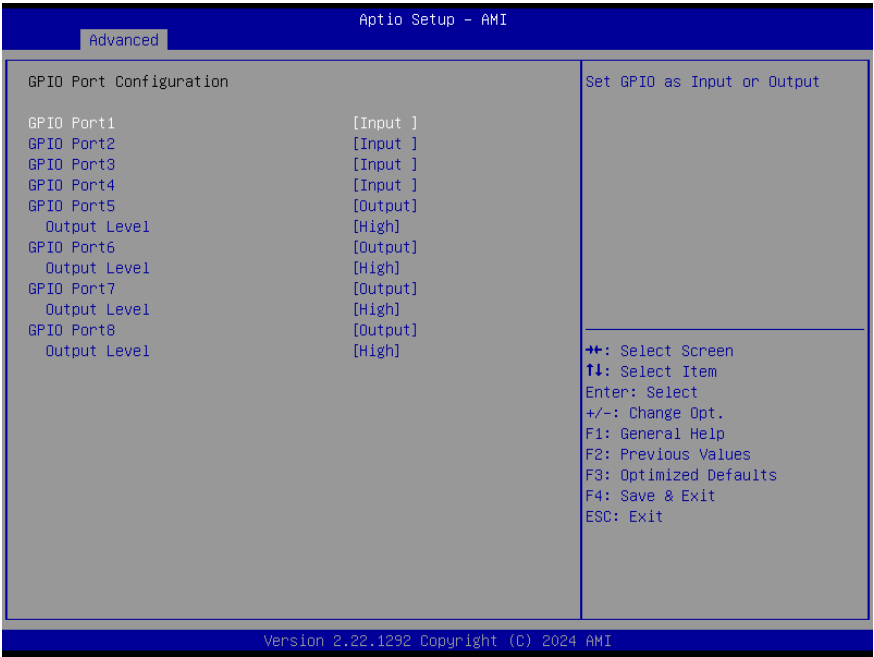


Options Summary		
Power Mode	ATX Type	
	AT Type	Optimal Default, Failsafe Default
Select system power mode.		
Restore AC Power Loss	Last State	
	Always On	
	Always Off	Optimal Default, Failsafe Default
SIO Restore AC Power Loss: To decide the behavior after system power cut then resupply. Note: The CMOS 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.

3.4.11 GPIO Port Configuration



Options Summary

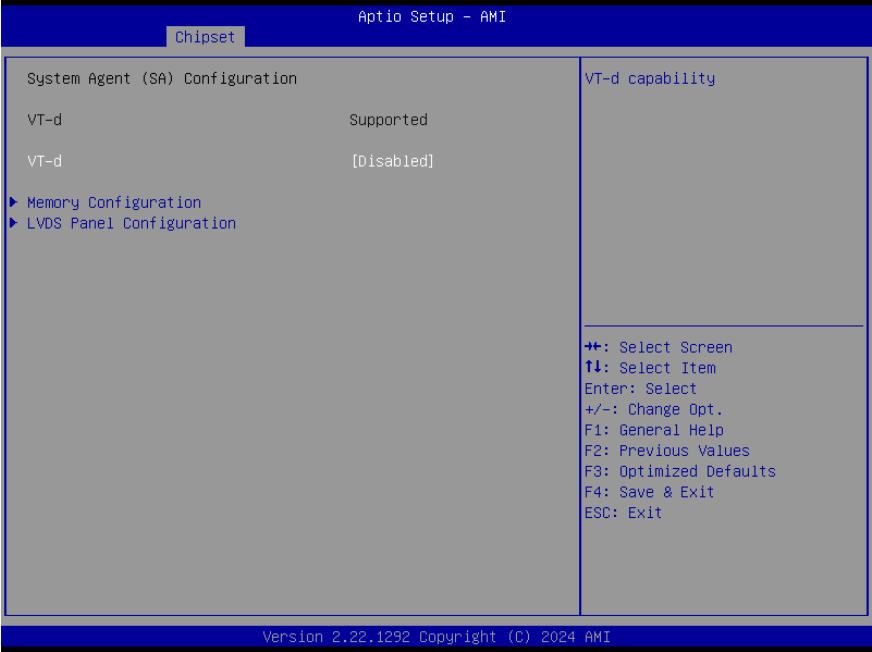
GPIO Port 1	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		
GPIO Port 2	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		
GPIO Port 3	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		

Options Summary		
GPIO Port 4	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		
GPIO Port 5	Input	
	Output	Optimal Default, Failsafe Default
Set GPIO as Input or Output.		
GPIO Port 6	Input	
	Output	Optimal Default, Failsafe Default
Set GPIO as Input or Output.		
GPIO Port 7	Input	
	Output	Optimal Default, Failsafe Default
Set GPIO as Input or Output.		
GPIO Port 8	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

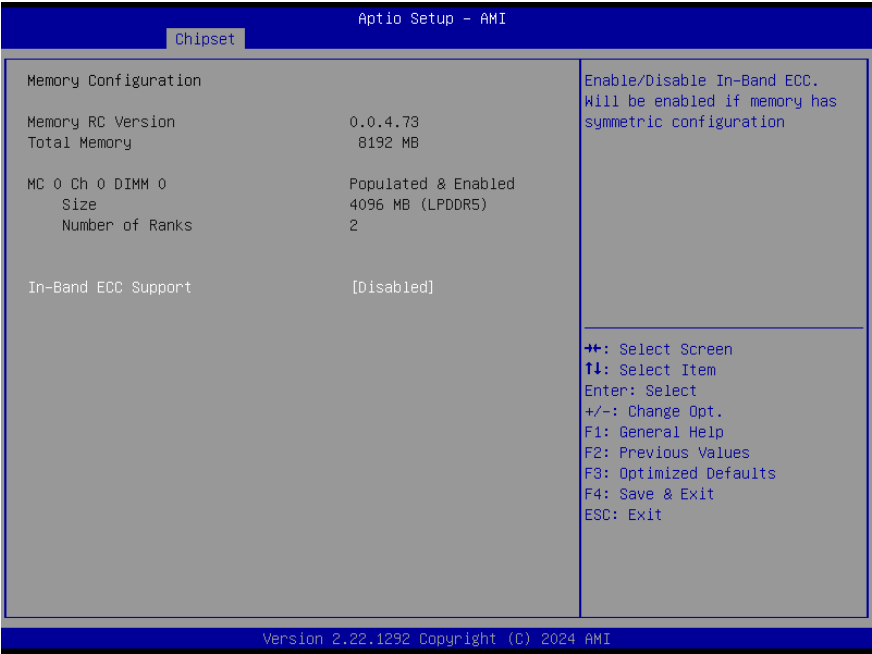


3.5.1 System Agent (SA) Configuration



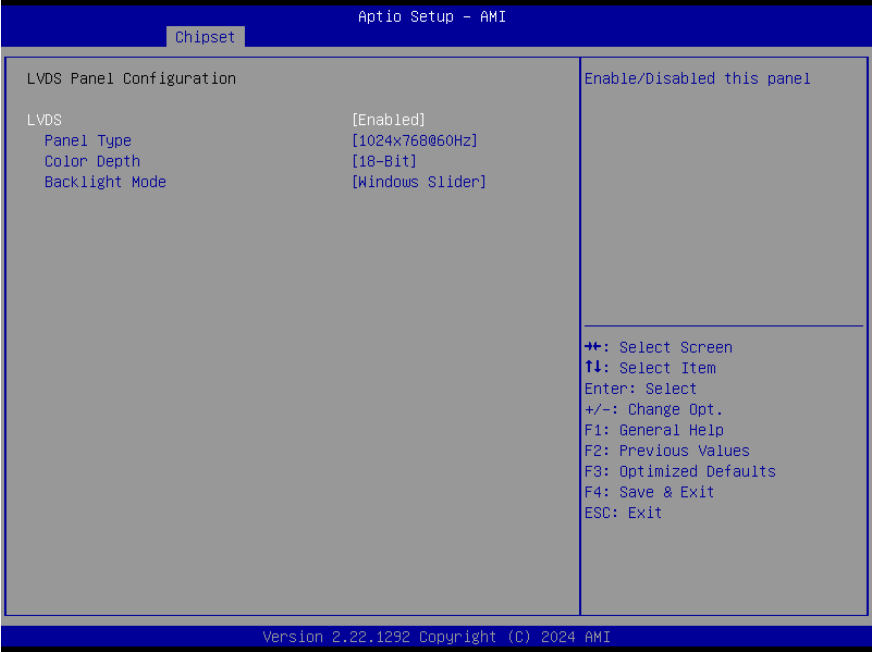
Options Summary		
VT-d	Disabled	Optimal Default, Failsafe Default
	Enabled	
VT-d capability.		

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.		

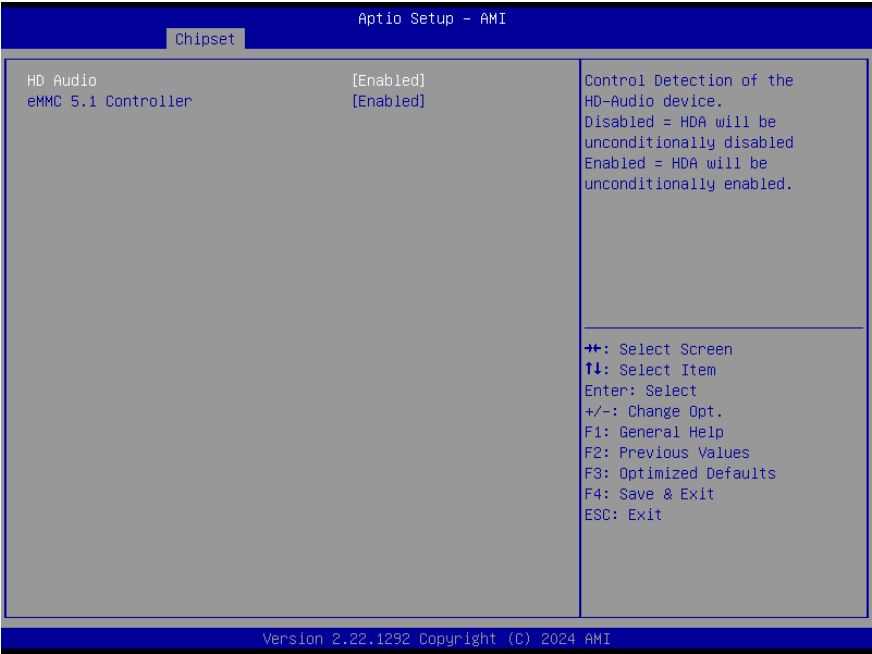
3.5.1.2 LVDS Panel Configuration



Options Summary		
LVDS	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disabled this panel		
Panel Type	640x480@60Hz	
	800x480@60Hz	
	800x600@60Hz	
	1024x600@60Hz	
	1024x768@60Hz	Optimal Default, Failsafe Default
	1280x768@60Hz	
	1280x800@60Hz	
	1280x1024@60Hz	
	1366x768@60Hz	
	1440x900@60Hz	
	1600x1200@60Hz	

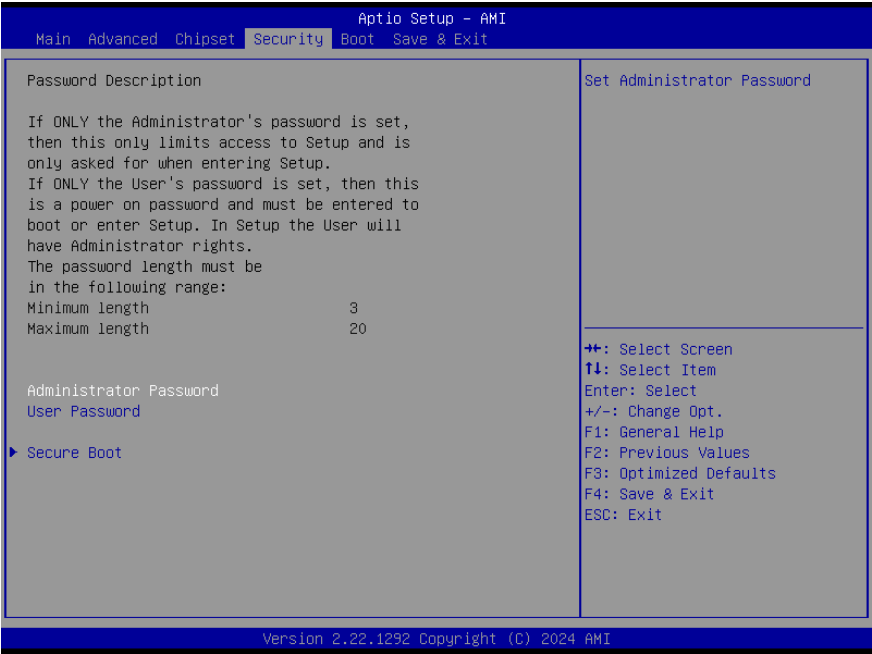
Options Summary		
Panel Type	1920x1080@60Hz	
	1920x1200@60Hz	
Select panel type		
Color Depth	18-Bit	Optimal Default, Failsafe Default
	24-Bit	
	36-Bit	
	48-Bit	
Select Color Depth		
Backlight Mode	BIOS & Application	
	Windows Slider	Optimal Default, Failsafe Default
Select backlight control signal type		

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 = HDA will be unconditionally enabled.		
eMMC 5.1 Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SCS eMMC 5.1 Controller.		

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.	
Reset to Setup Mode	Delete all Secure Boot key databases from NVRAM	
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 hash of a PE image into Authorized Signature Database (db).	
Export Secure Boot variables	Save NVRAM content of Secure Boot variable to a file.	
Platform Key (PK)	Update	
Key Exchange Keys (KEK)	Update	
	Append	
Authorized Signatures (db)	Update	

Options Summary

	Append	
Forbidden Signatures (dbx)	Update	
	Append	
Authorized TimeStamps (dbt)	Update	
	Append	
OsRecovery Signatures (dbr)	Update	
	Append	

Enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:

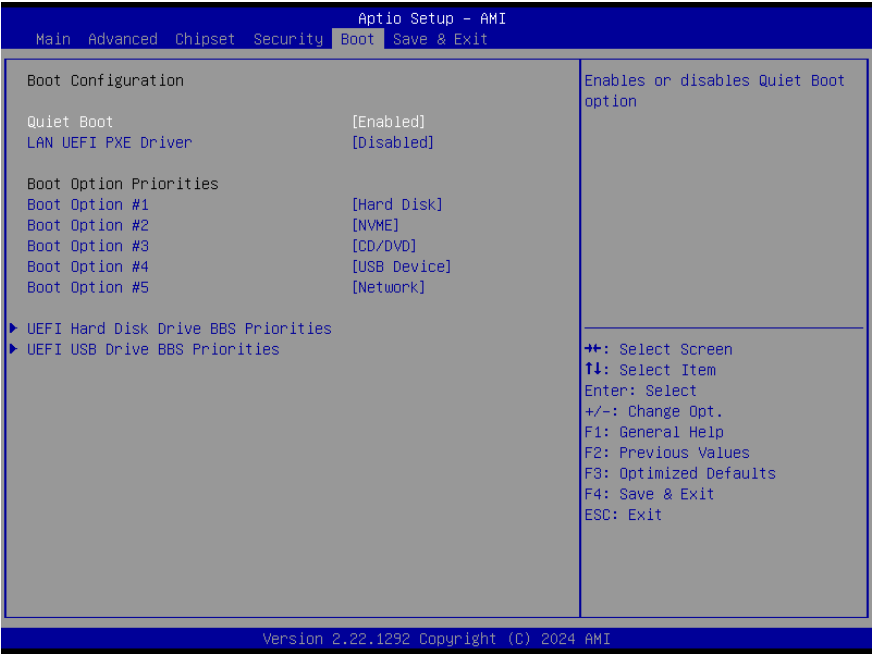
- a) EFI_SIGNATURE_LIST
- b) EFI_CERT_X509 (DER)
- c) EFI_CERT_RSA2048 (bin)
- d) EFI_CERT_SHAXXX

2. Authenticated UEFI Variable

3. EFI PE/COFF Image (SHA256)

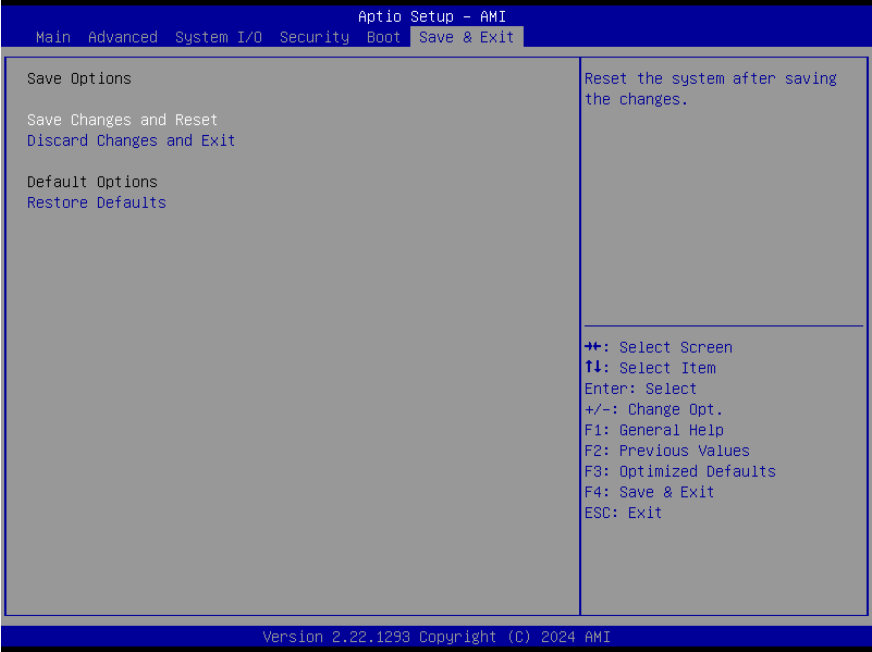
Key Source: Factory, External, Mixed

3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
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 AQ7-ADN can be downloaded from the product page on the AAEON website by following this link:

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

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

Chipset Driver

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

Graphics Driver

1. Open the folder where you unzipped the **Graphics Drivers**
2. Run the **Installer.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 **Install_Win10_10064_04252023.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Install Audio Drivers

Note: Ensure Intel Smart Sound Driver (**Intel(R)_SST_ADL_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 **Intel(R)_SST_ADL_v10.29.00.7919** 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 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 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

Appendix A

I/O Information

A.1 I/O Address Map

▼	DESKTOP-V765M83	
▼	Input/output (I/O)	
	[0000000000000000 - 000000000000CF7]	PCI Express Root Complex
	[0000000000000020 - 0000000000000021]	Programmable interrupt controller
	[0000000000000024 - 0000000000000025]	Programmable interrupt controller
	[0000000000000028 - 0000000000000029]	Programmable interrupt controller
	[000000000000002C - 000000000000002D]	Programmable interrupt controller
	[000000000000002E - 000000000000002F]	Motherboard resources
	[0000000000000030 - 0000000000000031]	Programmable interrupt controller
	[0000000000000034 - 0000000000000035]	Programmable interrupt controller
	[0000000000000038 - 0000000000000039]	Programmable interrupt controller
	[000000000000003C - 000000000000003D]	Programmable interrupt controller
	[0000000000000040 - 0000000000000043]	System timer
	[000000000000004E - 000000000000004F]	Motherboard resources
	[0000000000000050 - 0000000000000053]	System timer
	[0000000000000061 - 0000000000000061]	Motherboard resources
	[0000000000000063 - 0000000000000063]	Motherboard resources
	[0000000000000065 - 0000000000000065]	Motherboard resources
	[0000000000000067 - 0000000000000067]	Motherboard resources
	[0000000000000070 - 0000000000000070]	Motherboard resources
	[0000000000000080 - 0000000000000080]	Motherboard resources
	[0000000000000092 - 0000000000000092]	Motherboard resources
	[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
	[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
	[00000000000000A8 - 00000000000000A9]	Programmable interrupt controller
	[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
	[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
	[00000000000000B2 - 00000000000000B3]	Motherboard resources
	[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
	[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000000F8 - 00000000000000FF]	Communications Port (COM1)
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[0000000000000680 - 000000000000069F]	Motherboard resources
	[0000000000000D00 - 000000000000FFFF]	PCI Express Root Complex
	[000000000000164E - 000000000000164F]	Motherboard resources
	[0000000000001854 - 0000000000001857]	Motherboard resources
	[0000000000002000 - 00000000000020FE]	Motherboard resources
	[0000000000003000 - 00000000000030FF]	Realtek PCIe GbE Family Controller #2
	[0000000000003000 - 0000000000003FFF]	PCI Express Root Port #7 - 54BE
	[0000000000004000 - 000000000000403F]	Intel(R) UHD Graphics
	[0000000000004060 - 000000000000407F]	Standard SATA AHCI Controller

	[0000000000004080 - 0000000000004083]	Standard SATA AHCI Controller
	[0000000000004090 - 0000000000004097]	Standard SATA AHCI Controller
	[000000000000EFA0 - 000000000000EFBF]	SMBus - 54A3

A.2 Memory Address Map

▼	Memory
	[0000000000A0000 - 0000000000BFFFF] PCI Express Root Complex
	[0000000080400000 - 0000000080403FFF] Realtek PCIe GbE Family Controller #2
	[0000000080400000 - 000000008040FFFF] PCI Express Root Port #7 - 54BE
	[0000000080400000 - 00000000BFFFFFFF] PCI Express Root Complex
	[0000000080404000 - 0000000080404FFF] Realtek PCIe GbE Family Controller #2
	[0000000080500000 - 0000000080501FFF] Standard SATA AHCI Controller
	[0000000080502000 - 00000000805027FF] Standard SATA AHCI Controller
	[0000000080503000 - 00000000805030FF] Standard SATA AHCI Controller
	[00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
	[00000000FD690000 - 00000000FD69FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1057
	[00000000FD6A0000 - 00000000FD6AFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1057
	[00000000FD6D0000 - 00000000FD6DFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1057
	[00000000FD6E0000 - 00000000FD6EFFFF] Intel(R) Serial IO GPIO Host Controller - INTC1057
	[00000000FE010000 - 00000000FE010FFF] SPI (flash) Controller - 54A4
	[00000000FED00000 - 00000000FED003FF] High precision event timer
	[00000000FED20000 - 00000000FED7FFFF] Motherboard resources
	[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
	[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
	[00000000FED90000 - 00000000FED93FFF] Motherboard resources
	[00000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
	[00000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
	[00000000FEDC0000 - 00000000FEDC7FFF] Motherboard resources
	[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
	[0000004000000000 - 0000004000FFFFF] Intel(R) UHD Graphics
	[0000006000000000 - 0000006000FFFFF] Intel(R) UHD Graphics
	[0000006001100000 - 000000600110FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
	[0000006001110000 - 0000006001117FFF] Performance Monitor
	[0000006001128000 - 00000060011280FF] SMBus - 54A3
	[000000600112B000 - 000000600112BFFF] Intel SD Host Controller
	[0000007FFFEF6000 - 0000007FFFEF6FFF] Intel(R) Serial IO UART Host Controller - 54A8
	[0000007FFFEF7000 - 0000007FFFEF7FFF] Intel(R) Serial IO I2C Host Controller - 54C5
	[0000007FFFEF8000 - 0000007FFFEF8FFF] Intel(R) Management Engine Interface #1
	[0000007FFFEF9000 - 0000007FFFEF9FFF] Intel(R) Serial IO I2C Host Controller - 54E9
	[0000007FFFEFA000 - 0000007FFFEFAFFF] Intel(R) Serial IO I2C Host Controller - 54E8
	[0000007FFFEFB000 - 0000007FFFEFBFFF] Intel(R) Serial IO SPI Host Controller - 54AA
	[0000007FFFEFC000 - 0000007FFFEFFFFF] High Definition Audio Controller
	[0000007FFFF00000 - 0000007FFFF0FFFF] High Definition Audio Controller

A.3 Large Memory Address Map

- ▼  Large Memory
 -  [0000004000000000 - 0000007FFFFFFFFF] PCI Express Root Complex

A.4 IRQ Mapping Chart

▼		Interrupt request (IRQ)	
		(ISA) 0x00000000 (00)	System timer
		(ISA) 0x00000004 (04)	Communications Port (COM1)
		(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INTC1057
		(ISA) 0x00000037 (55)	Microsoft ACPI-Compliant System
		(ISA) 0x00000038 (56)	Microsoft ACPI-Compliant System
		(ISA) 0x00000039 (57)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003A (58)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003B (59)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003C (60)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003D (61)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003E (62)	Microsoft ACPI-Compliant System
		(ISA) 0x0000003F (63)	Microsoft ACPI-Compliant System
		(ISA) 0x00000040 (64)	Microsoft ACPI-Compliant System
		(ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System
		(ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System
		(ISA) 0x00000043 (67)	Microsoft ACPI-Compliant System
		(ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System
		(ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System
		(ISA) 0x00000046 (70)	Microsoft ACPI-Compliant System
		(ISA) 0x00000047 (71)	Microsoft ACPI-Compliant System
		(ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System
		(ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004B (75)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004C (76)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004D (77)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004E (78)	Microsoft ACPI-Compliant System
		(ISA) 0x0000004F (79)	Microsoft ACPI-Compliant System
		(ISA) 0x00000050 (80)	Microsoft ACPI-Compliant System
		(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
		(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
		(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
		(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
		(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System

 (ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
 (ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
 (ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
 (ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
 (ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
 (ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
 (ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
 (ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
 (ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
 (ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
 (ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
 (ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
 (ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
 (ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
 (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
 (ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
 (ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
 (ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
 (ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
 (ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
 (ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
 (ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
 (ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
 (ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
 (ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System

 (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
 (ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
 (ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
 (ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
 (ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
 (ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
 (ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
 (ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
 (ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
 (ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
 (ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
 (ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
 (ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
 (ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
 (ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
 (ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
 (ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System

 (ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C0 (192)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C1 (193)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C2 (194)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C3 (195)	Microsoft ACPI-Compliant System
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 (ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
 (ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
 (ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
 (ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
 (ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
 (ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
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	(ISA) 0x00000131 (305)	Microsoft ACPI-Compliant System
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	(ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
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	(ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
 (ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
 (ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
 (ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
 (ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
 (ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System

 (ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
 (ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
 (ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
 (ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
 (ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
 (ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
 (ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
 (ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
 (ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
 (ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
 (ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
 (ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
 (ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
 (ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
 (ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System

	(ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
	(ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
	(ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C1 (449)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C2 (450)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C5 (453)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C6 (454)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CE (462)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CF (463)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D0 (464)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D1 (465)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D2 (466)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D3 (467)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D4 (468)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D5 (469)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D6 (470)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D7 (471)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D8 (472)	Microsoft ACPI-Compliant System

 (ISA) 0x000001D9 (473)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DE (478)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DF (479)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E0 (480)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
 (ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
 (PCI) 0x00000010 (16)	Intel SD Host Controller
 (PCI) 0x00000010 (16)	Intel(R) Serial IO UART Host Controller - 54A8
 (PCI) 0x00000013 (19)	High Definition Audio Controller

	(PCI) 0x0000001B (27)	Intel(R) Serial IO I2C Host Controller - 54E8
	(PCI) 0x0000001F (31)	Intel(R) Serial IO I2C Host Controller - 54C5
	(PCI) 0x00000024 (36)	Intel(R) Serial IO SPI Host Controller - 54AA
	(PCI) 0x00000028 (40)	Intel(R) Serial IO I2C Host Controller - 54E9
	(PCI) 0xFFFFF0FA (-6)	Intel(R) Management Engine Interface #1
	(PCI) 0xFFFFF0FB (-5)	Intel(R) UHD Graphics
	(PCI) 0xFFFFF0FC (-4)	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
	(PCI) 0xFFFFF0FD (-3)	Realtek PCIe GbE Family Controller #2
	(PCI) 0xFFFFF0FE (-2)	Standard SATA AHCI Controller