



uCOM-ASL

SMARC Module

User's Manual 2nd Ed

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Packing List

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

Item	Quantity
● uCOM-ASL	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.**

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.

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

QQ4-381 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	SMARC Module
	Intel Atom® x7835RE Processor (8C, up to 3.6 GHz, 12W)
	Intel Atom® x7433RE Processor (4C, up to 3.4 GHz, 9W)
	Intel Atom® x7213RE Processor (2C, up to 3.4 GHz, 9W)
CPU	Intel Atom® x7211RE Processor (2C, up to 3.2 GHz, 6W)
Chipset	Integrated with Intel® SoC
Memory	Onboard LPDDR5(x) 4800MHz, up to 16GB
Storage	eMMC, up to 64GB
BIOS	AMI UEFI
MTBF (Hours)	2,614,335
Wake on LAN	Yes
Watchdog Timer	255 Levels
Real Time Clock	RTC x 1
Boot Select	Module eMMC Flash, SATA, USB
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	Up to 3 Simultaneous Displays: DP++ x 2 / DP++ x 1 HDMI x 1, up to 3840 x 2160 (by SKU) eDP x 1, up to 3840 x 2160

I/O

Ethernet	Intel® Ethernet Controller I226, 2.5GbE x 2
USB	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)
Audio	High Definition Audio Interface (Optional: I2C)
PCIe	PCIe 3.0 [x2] x 1 + [x1] x 2 (Optional: PCIe [x1] x 3)
CANBus	-
MIPI-CSI	MIPI CSI x 2 (by SKU)
GPIO	7-bit (up to 14-bit by customization) Note: Additional 7-bit GPIO through multiplexed pins P108-P114 can be activated by custom BIOS. Please contact the AAEON support team.
Other Interfaces	SATA 6Gb/s x 1 GP_I2C x 1 SMBus x 1

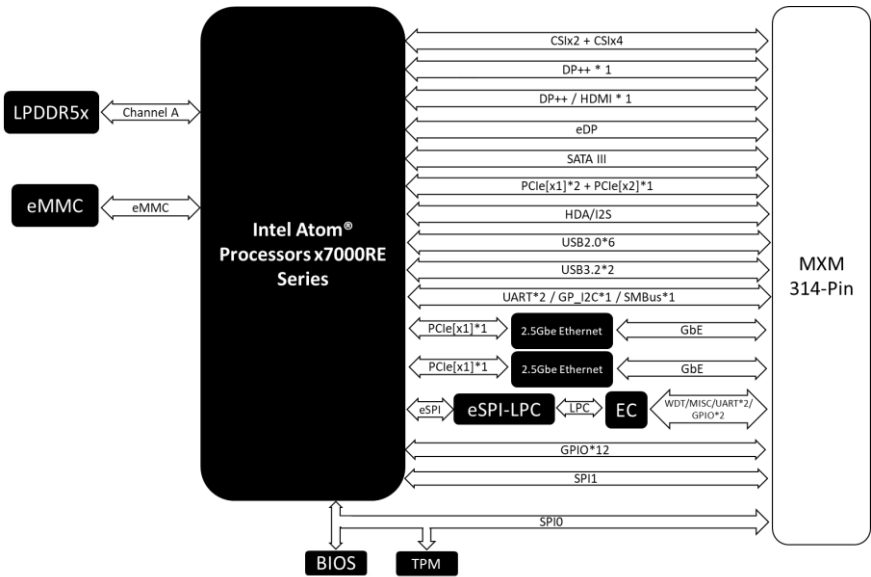
Environmental

Dimensions	3.23" x 1.97" (82mm x 50mm)
Weight	0.14 lb (0.06 kg)

Environmental

Operating Temperature	-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
Certification	CE/FCC Class A
OS Support	Windows® 10 (64-bit) Windows® 11 (64-bit) Linux Ubuntu 24.04/Kernel 6.11
Support Protocol	-

1.2 Block Diagram



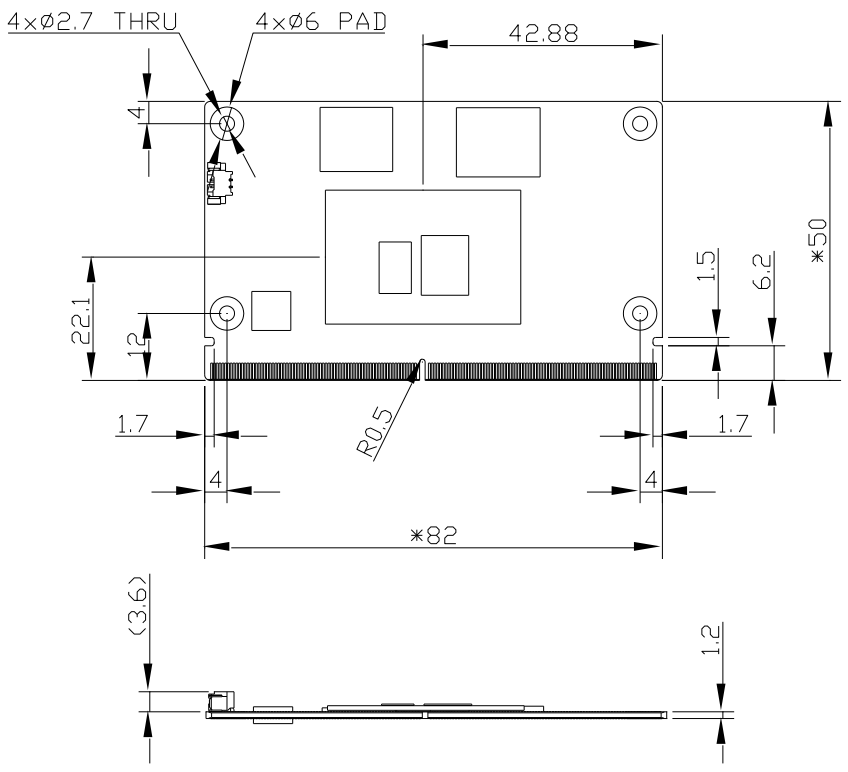
Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.

Chapter 2

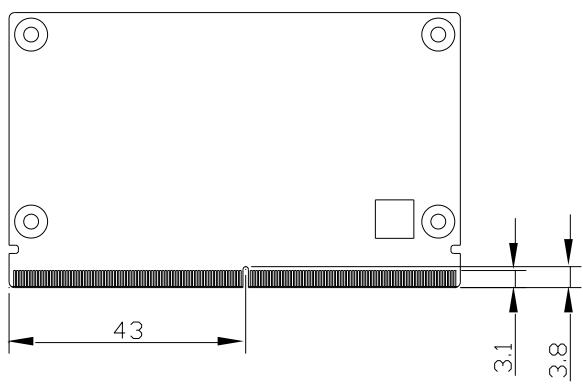
Hardware Information

2.1 Dimensions

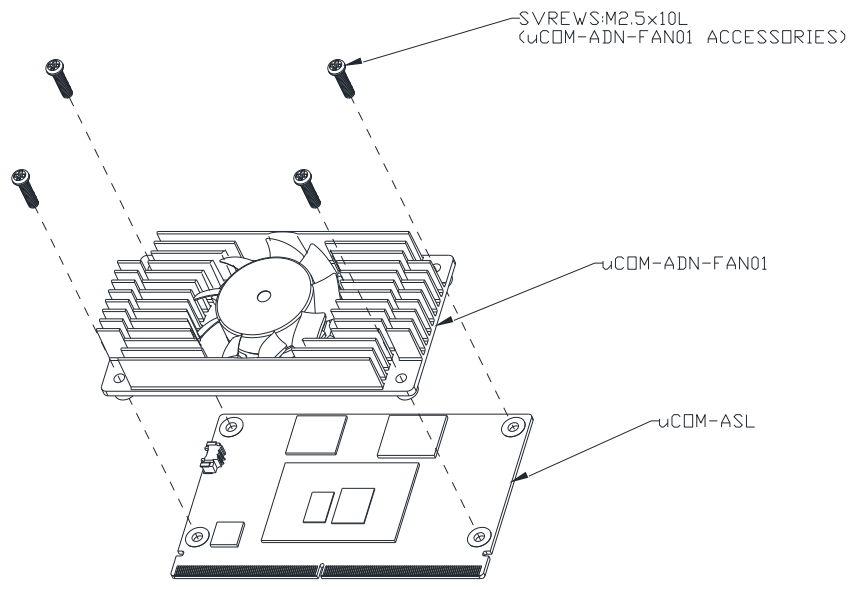
Top Side



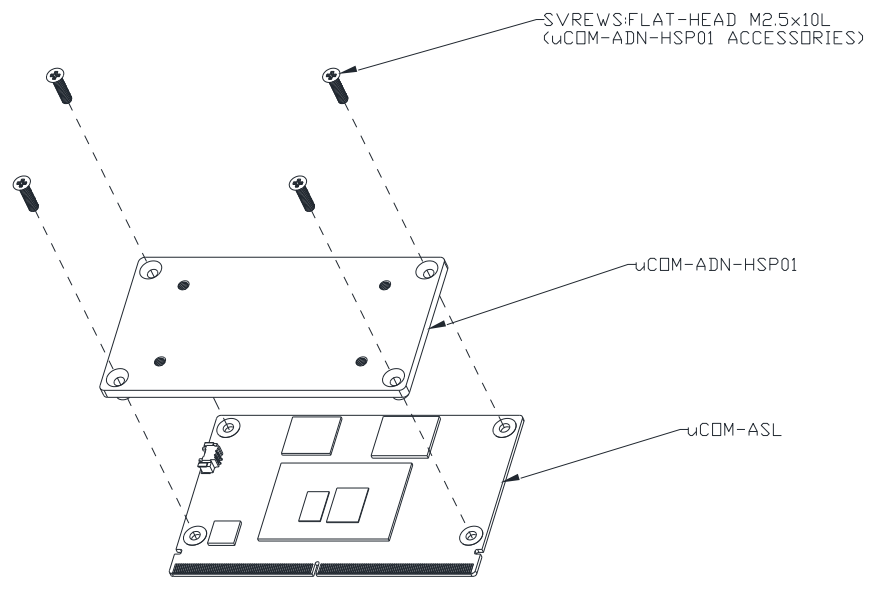
Bottom Side



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

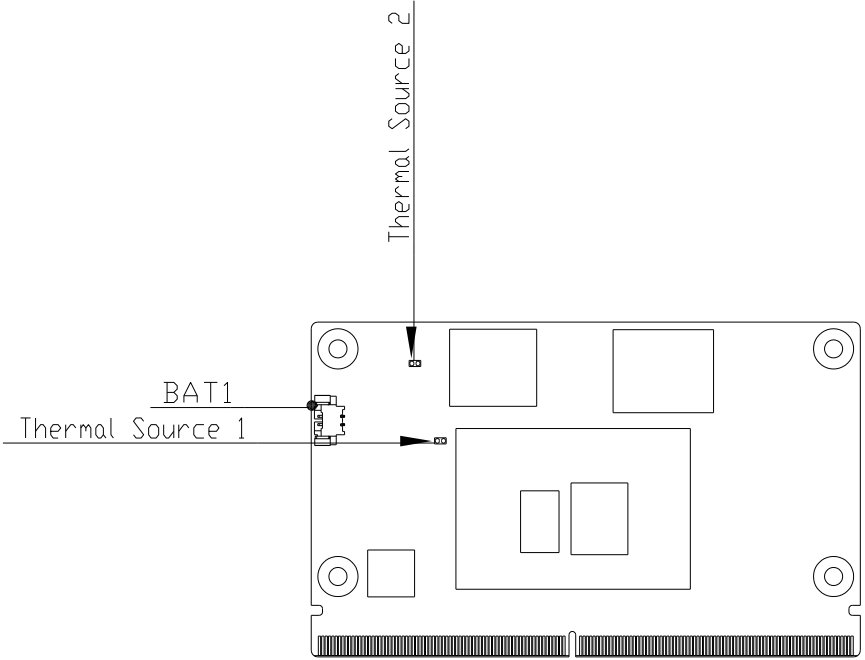


With Heatspreader (Part No: uCOM-ADN-HSP01)

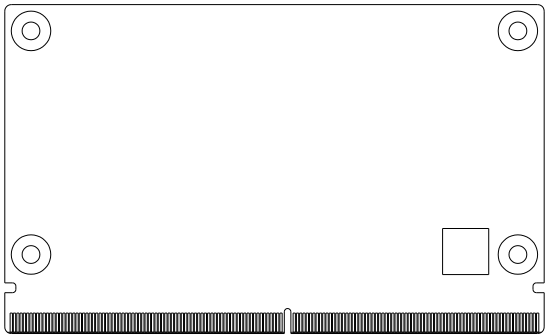


2.2 Jumpers and Connectors

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_HPDP
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_HPDP/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

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-ASL 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 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.

System I/O – Chipset information and configuration.

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

Aptio Setup - AMI

Main Advanced System I/O Security Boot Save & Exit

```
== BIOS Information ==
  uCOM-TWL R1.1 (UTHLAM11)(03/27/2026)

== EC Information ==
  (UCANAE11)(3/23/2026)

== CPU Information ==
  Intel(R) Core(TM) i3-N305

== MEM Information ==
  Total Memory                8192 MB

== SATA Information ==
  Serial ATA Port 0           Empty

System Date                   [Tue 05/05/2026]
System Time                   [03:16:40]

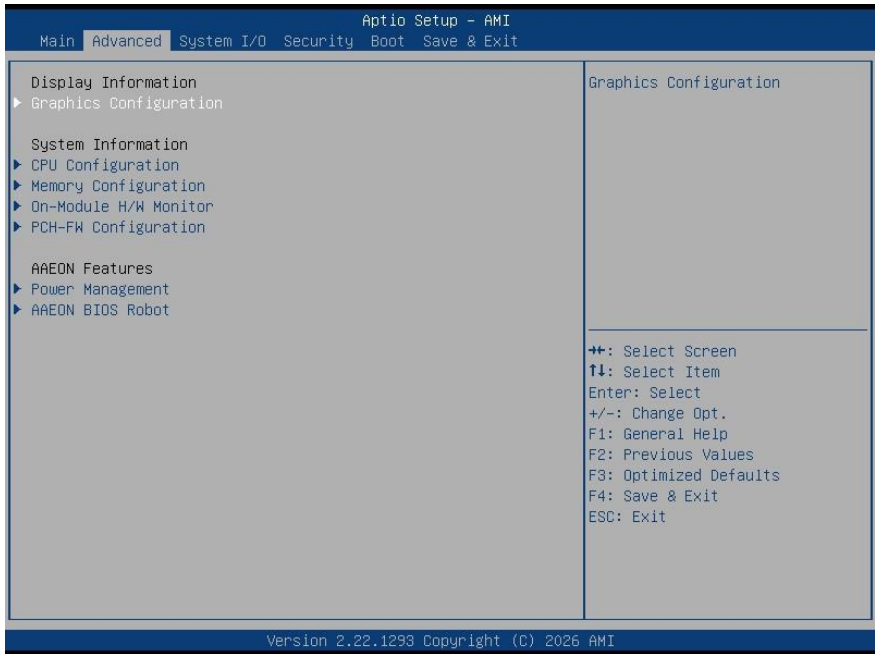
Access Level                   Administrator
```

Set the Date. Use Tab to switch between Date elements.
Default Ranges:
Year: 1998-2199
Months: 1-12
Days: dependent on month

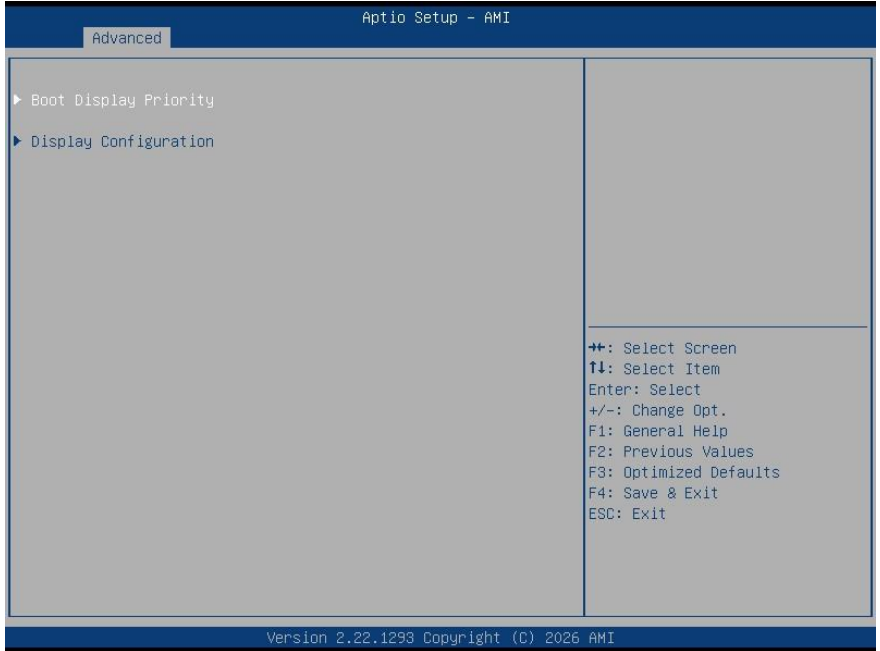
↑↓: Select Screen
F1: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

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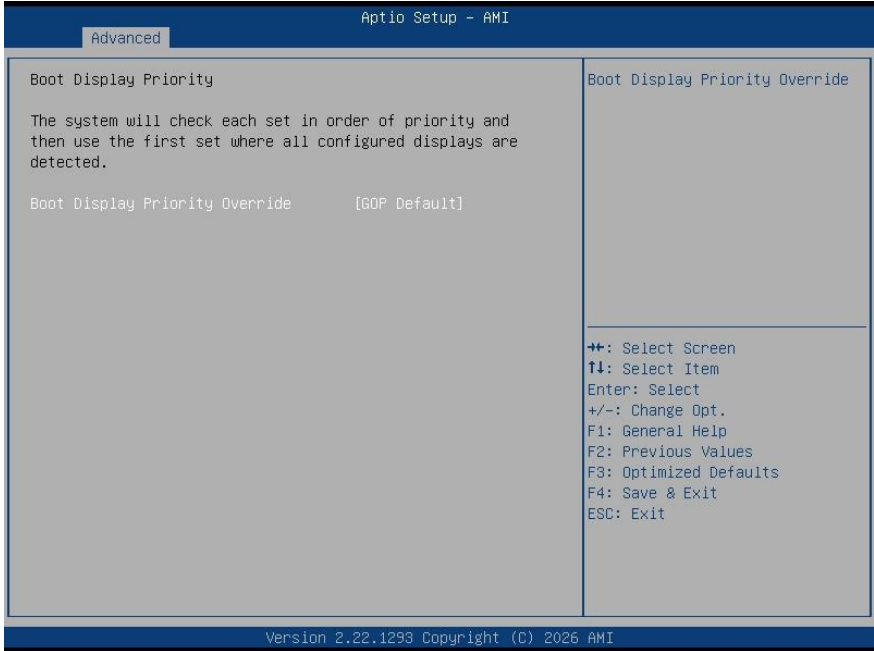
3.4 Setup Submenu: Advanced



3.4.1 Graphics Configuration

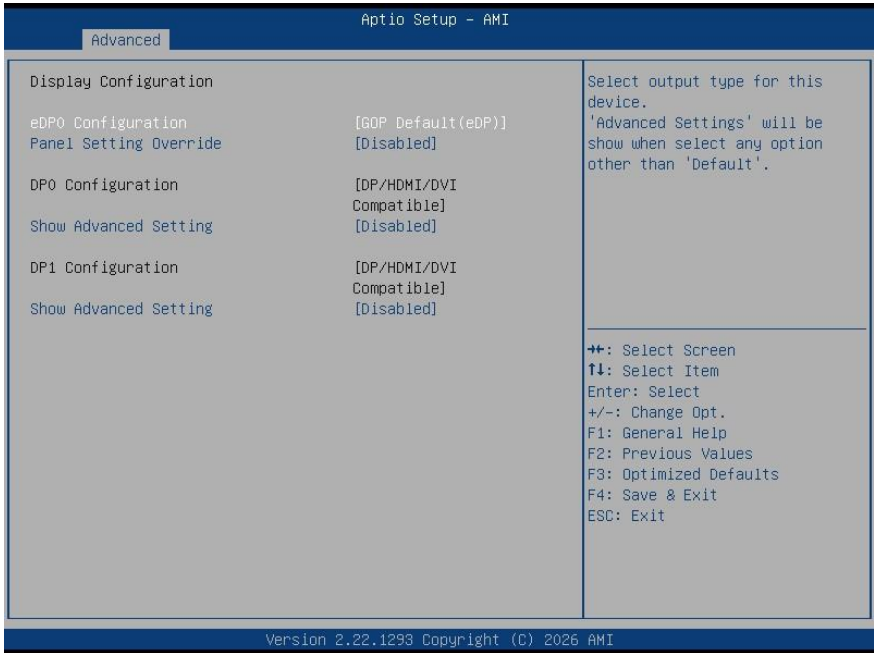


3.4.1.1 Boot Display Priority



Options Summary		
Boot Display Priority	Enabled	
Override	GOP Default	Optimal Default, Failsafe Default
Boot Display Priority Override.		

3.4.1.2 Display Configuration



Options Summary		
eDP0 Configuration	GOP Default(eDP)	Optimal Default, Failsafe Default
	No Device (Disable)	
Select the output type for this device. Selecting any option other than Default will display additional Advanced Settings.		
Panel Setting Override	Enabled	
	Disabled	Optimal Default, Failsafe Default
Panel Setting Override.		
DP0 Configuration	DP/HDMI/DVI Compatible	Optimal Default, Failsafe Default
Select output type for this device.		
DP1 Configuration	DP/HDMI/DVI Compatible	According to HW SKU
	HDMI/DVI	According to HW SKU
Select output type for this device.		

3.4.2 CPU Configuration

Aptio Setup - AMI

Advanced

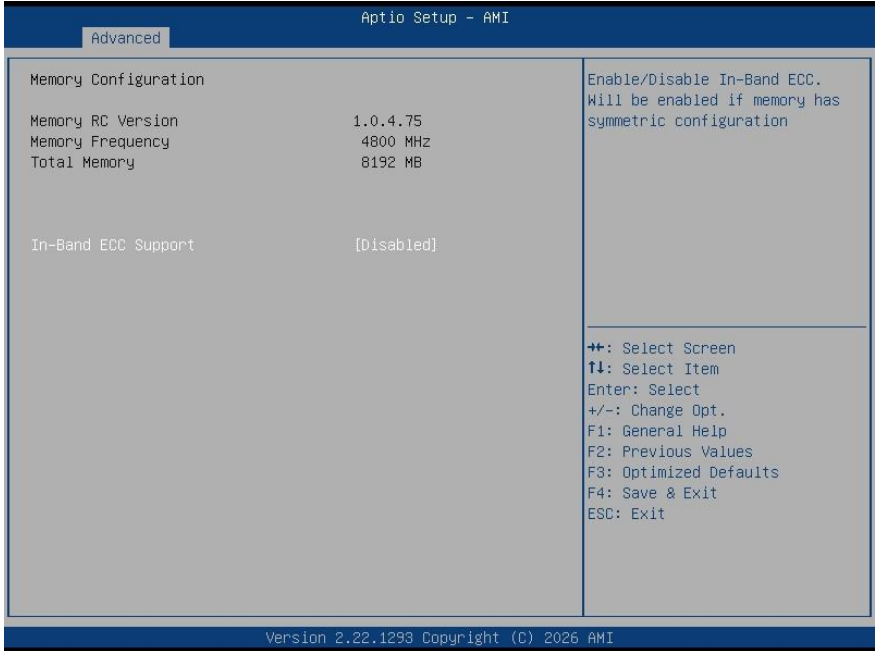
CPU Configuration		When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.
Type	Intel(R) Core(TM) i3-N305	
ID	0xB06E0	
Microcode Revision	21	
Speed	1800 MHz	
VMX	Supported	
SMX/TXT	Not Supported	
L1 Data Cache	32 KB x 8	
L1 Instruction Cache	64 KB x 8	
L2 Cache	2048 KB x 2	
L3 Cache	6 MB	
Intel (VMX) Virtualization Technology	[Enabled]	
Intel(R) SpeedStep(tm)	[Enabled]	
Turbo Mode	[Enabled]	
C states	[Enabled]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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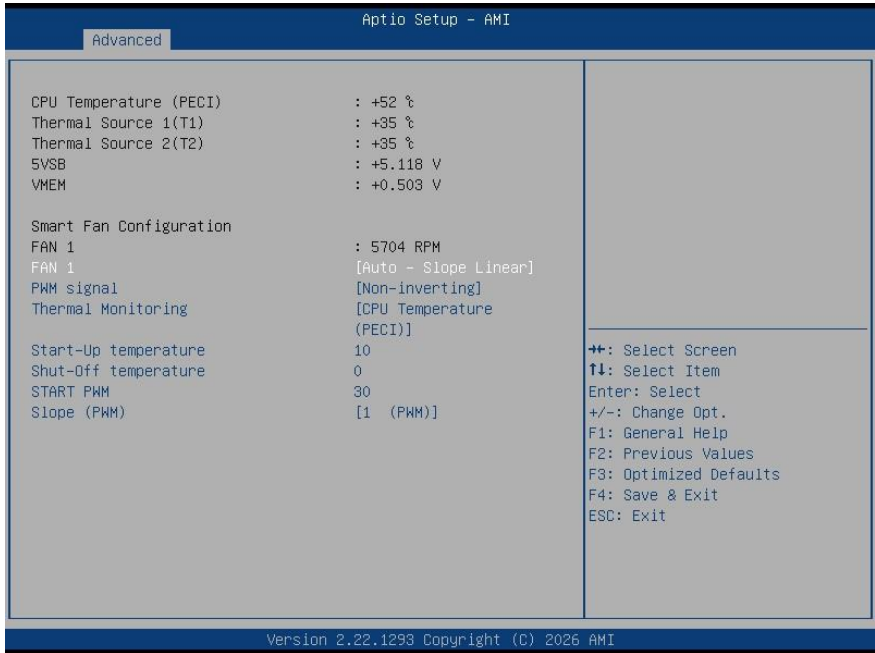
Options Summary		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
Intel(R) SpeedStep(tm)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more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

3.4.3 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		

3.4.4 On-Module H/W Monitor



Options Summary		
Smart Fan	Full Mode	
	Manual Mode	
	Auto – Slope Linear	Optimal Default, Failsafe Default
Select Smart Fan Mode.		
PWM Signal	Non-inverting	Optimal Default, Failsafe Default
	inverting	
Select output PWM of inverting or non-inverting signal.		
Thermal Monitoring	CPU Temperature (PECI)	Optimal Default, Failsafe Default
	Thermal Source 1 (T1)	
	Thermal Source 2 (T2)	
Select the thermal sensor used for temperature monitoring.		
Start-Up temperature	10	
Set the PWM output level when the monitored thermal sensor threshold is exceeded. Range: 0–100%.		
Start-Off temperature	0	

Options Summary

Set the temperature threshold at which PWM output is turned off when the monitored thermal sensor value is less than or equal to the configured setting.

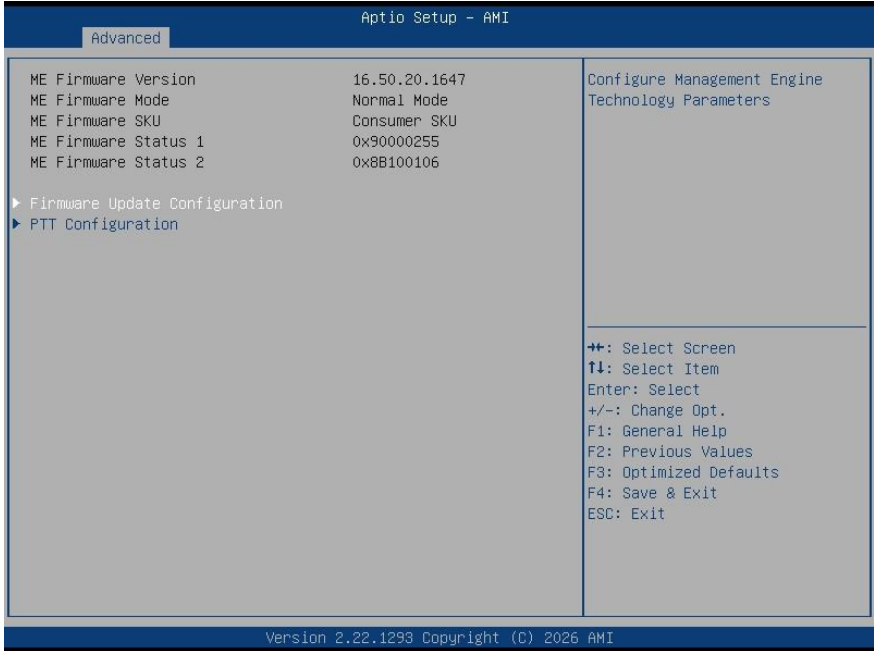
Start PWM	30
------------------	----

Set the initial PWM output value applied when the Start-Up temperature threshold is reached.

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 exceeds the Start-Up temperature, the PWM output increases incrementally per degree.

3.4.5 PCH-FW Configuration



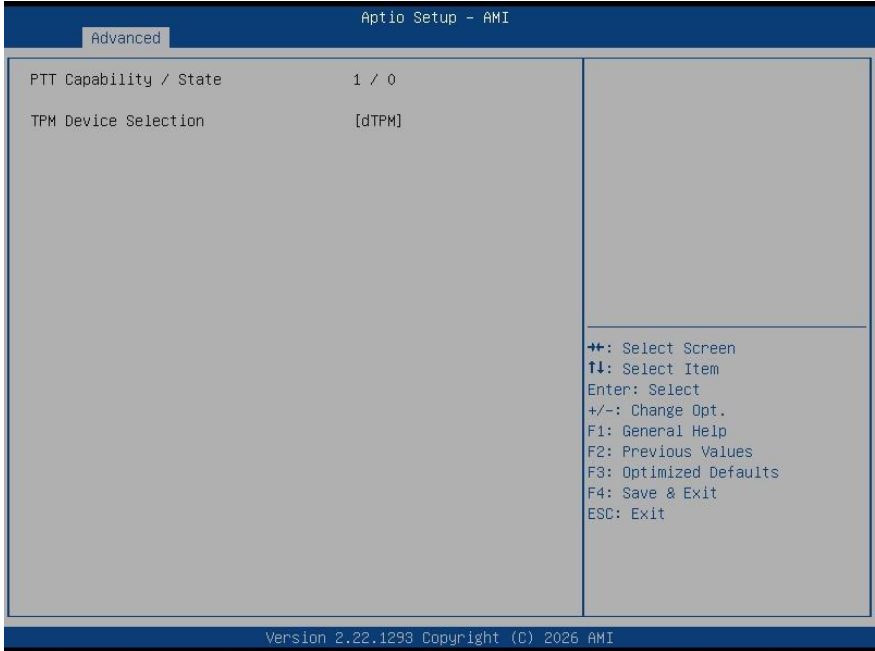
Options Summary		
TPM Device Selection	dTPM	Optimal Default, Failsafe Default
	PTT	
<p>Select the TPM device: PTT or dTPM.</p> <p>PTT – Enables Intel® Platform Trust Technology (PTT) in SkuMgr.</p> <p>dTPM 1.2 – Disables PTT in SkuMgr and enables discrete TPM 1.2 support.</p> <p>Warning: Switching between PTT and dTPM will disable the current TPM device, and all data stored in it will be lost.</p>		

3.4.5.1 Firmware Update Configuration



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

3.4.5.2 PTT Configuration

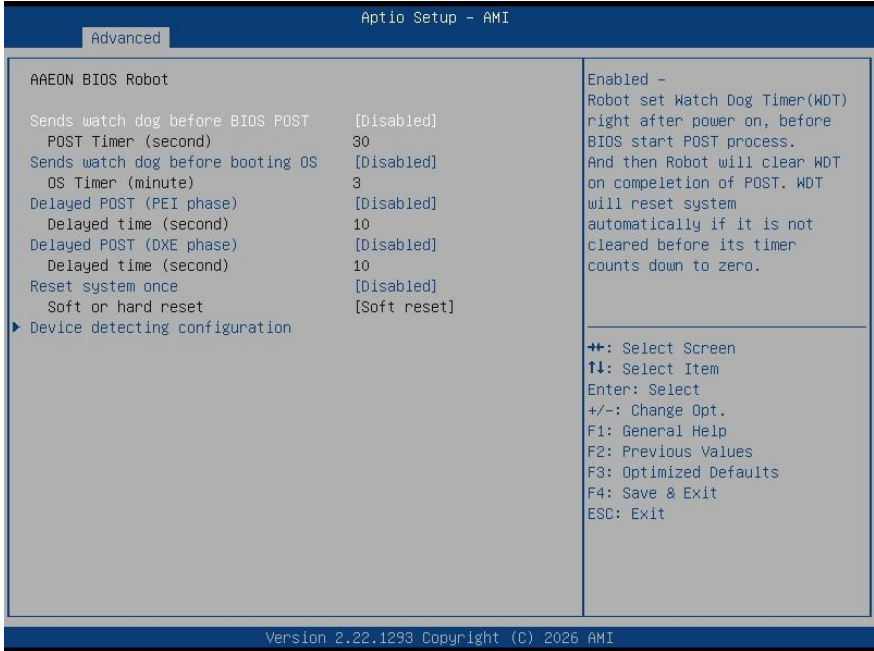


3.4.6 Power Management



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
Restore AC Power Loss.		
Soft-Off (S5) Wake On RTC	Disabled	Optimal Default, Failsafe Default
	By Date	
	By Weekday	
	Bypass	
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.		

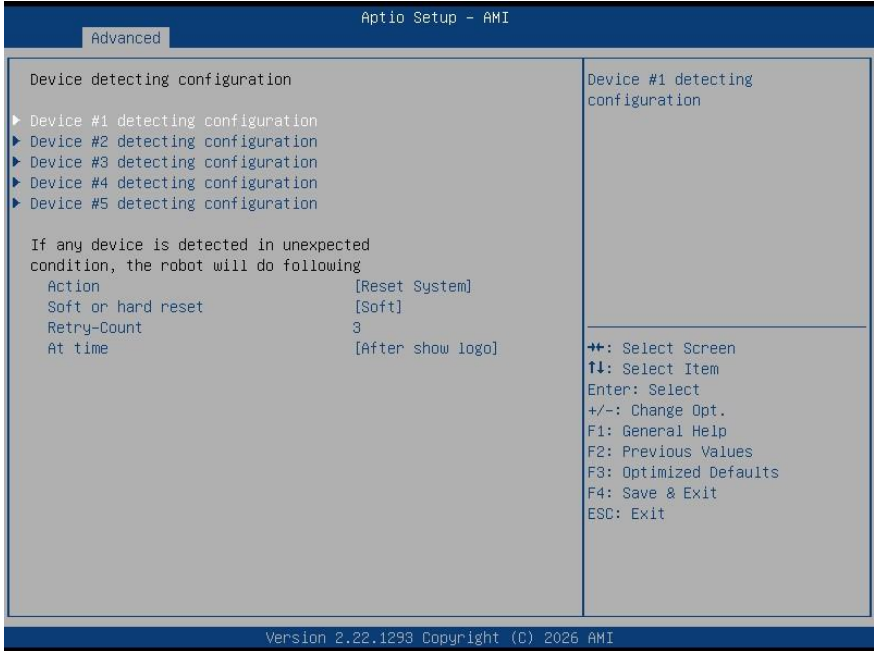
3.4.7 AAEON BIOS Robot



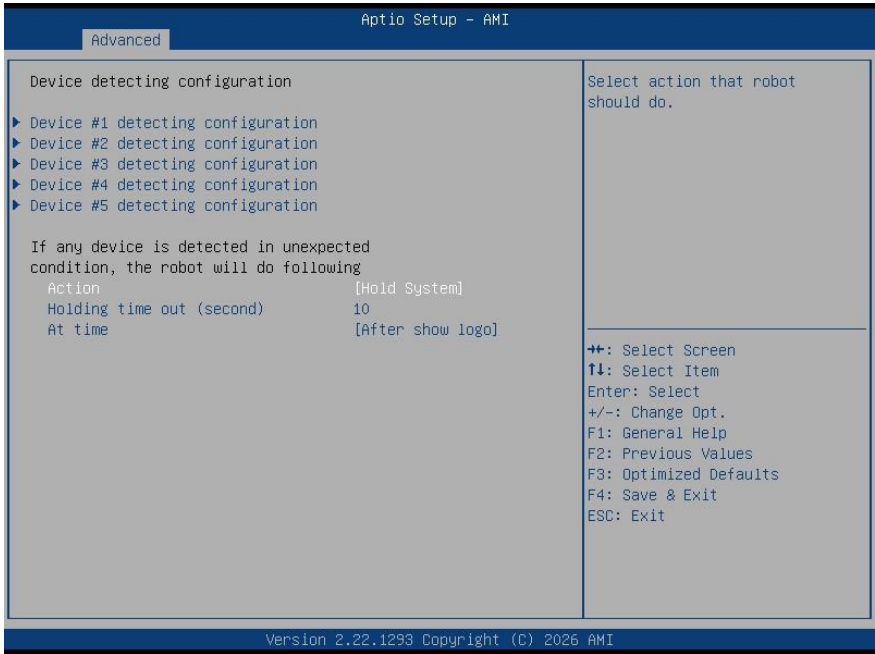
Options Summary		
Sends watch dog before BIOS POST	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled – The robot sets the WDT immediately after power-on, before BIOS starts the POST process, and clears it upon POST completion. If the WDT is not cleared before the timer expires, the system will automatically reset.		
POST Timer (second)	30	Optimal Default, Failsafe Default
Set the Watchdog Timer (WDT) duration for the POST process. Warning: Do not set this value equal to or shorter than the normal POST time, otherwise the system may fail to complete POST unless BIOS settings are cleared. It is recommended to set this value to more than 2× the normal POST time.		
Send watch dog before booting OS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or disable setting the Watchdog Timer (WDT) after POST completion and before control is transferred to the operating system. Enabled – The robot sets the WDT after POST completes, before handing control to the OS. The operating system must include a program responsible for clearing the WDT.		

Options Summary		
Warning: Disable this function during OS updates, as the system may reset if the WDT is not cleared in time.		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Set the Watchdog Timer (WDT) count value used during the OS loading phase.		
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or disable delaying POST during the PEI phase. Enabled – The robot holds BIOS from starting POST immediately after power-on, allowing the system to stabilize or warm up before POST begins. Note: This action occurs 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	
Enable or disable delaying POST during the DXE phase. Enabled – The robot holds BIOS before POST completion, allowing the system to stabilize or warm up during POST execution. Note: This action occurs 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	
Enable or disable performing a one-time system reset on each boot. Enabled – The robot performs a single reset during each boot cycle, sending a soft or hard reset to onboard devices to place them into a more stable state.		
Soft or hard reset	Soft reset	Optimal Default, Failsafe Default
	Hard reset	
Select the type of reset the robot will perform on each boot.		

3.4.7.1 Device Detecting Configuration

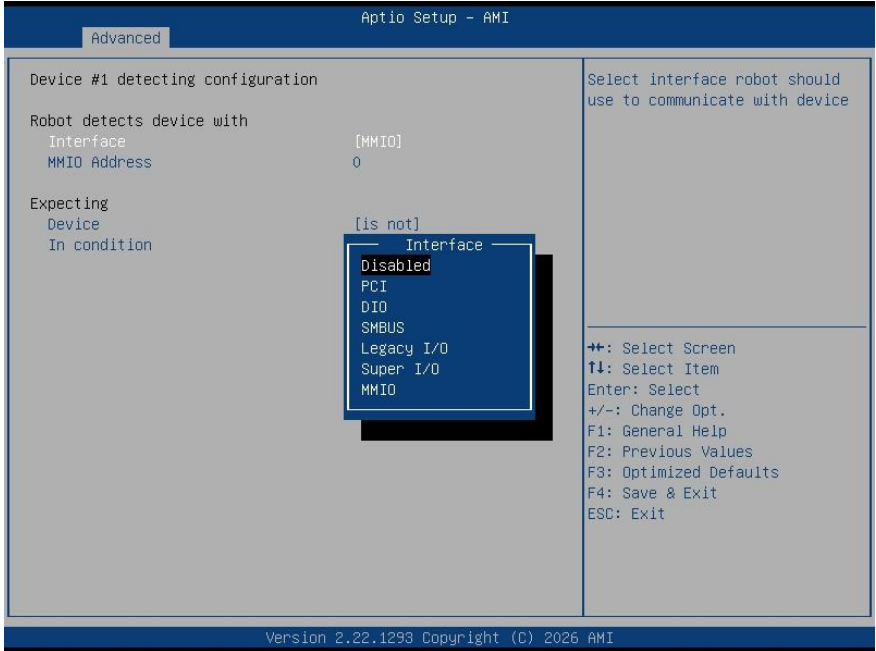


Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select the action the robot should perform.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	Optimal Default, Failsafe Default
Set the maximum number of retry attempts. The robot will reset the system up to the specified count, and then allow the system to continue POST normally.		
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select when the robot should perform its action during the boot process. After Show Logo – The robot performs the action after the logo is displayed; system devices are mostly initialized and ready. Before Show Logo – The robot performs the action earlier in the boot process, before the logo appears; some devices may not yet be ready.		

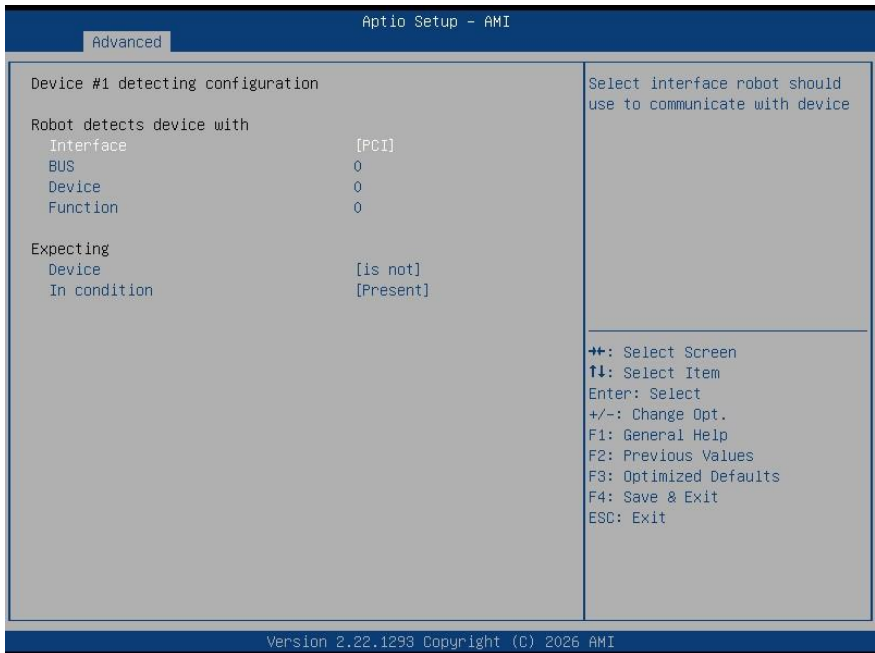


Options Summary		
Action	Reset System	
	Hold System	Optimal Default, Failsafe Default
Select the action the robot should perform.		
Holding time out (second)	10	Optimal Default, Failsafe Default
Set the maximum time the robot will hold the system. The system will be held no longer than the configured timeout value, after which it will continue POST automatically.		
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select when the robot should perform its action during system boot. After Show Logo – The robot performs the action after the boot logo is displayed; system devices are mostly initialized and ready. Before Show Logo – The robot performs the action earlier in the boot process, before the logo appears; some devices may not yet be ready.		

3.4.7.2 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.		



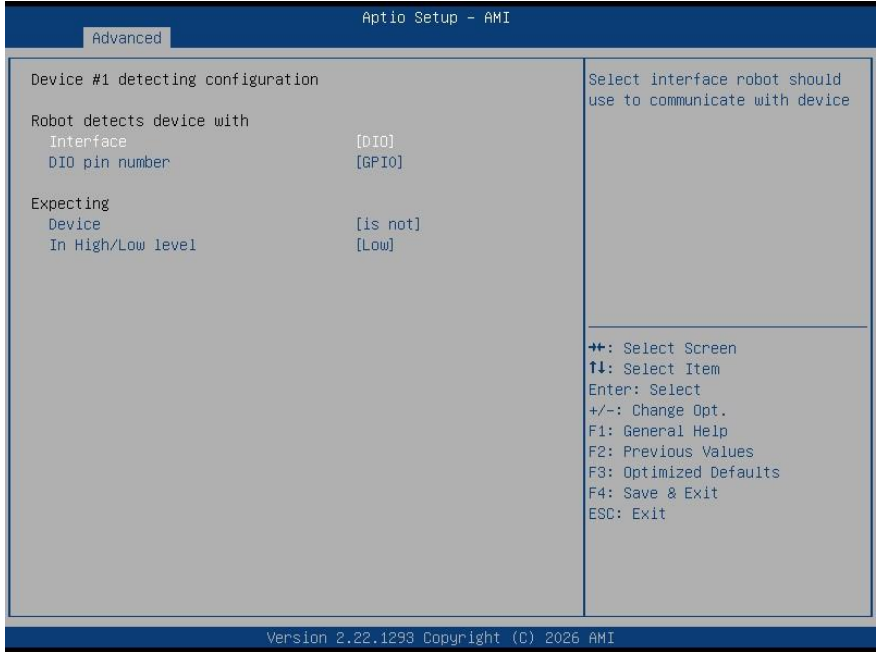
Interface item set to "PCI"		
Options Summary		
BUS	0	Optimal Default, Failsafe Default
Enter the PCI bus number for the selected device in hexadecimal format. Range: 00–FF.		
Device	0	Optimal Default, Failsafe Default
Enter the PCI device number for the selected PCI device in hexadecimal format. Range: 0 – FF.		
Function	0	Optimal Default, Failsafe Default
Enter the PCI function number for the selected PCI device in hexadecimal format. Range: 0 – FF.		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select whether the robot should perform the action when the specified condition is met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition the robot uses to determine device presence. Present – The device is considered present if it is detected.		

Interface item set to "PCI"

Options Summary

The robot determines presence when the register value read from the device is not 0xFF.

According to Register – The robot checks the device based on the configured register value.



Interface item set to "DIO"

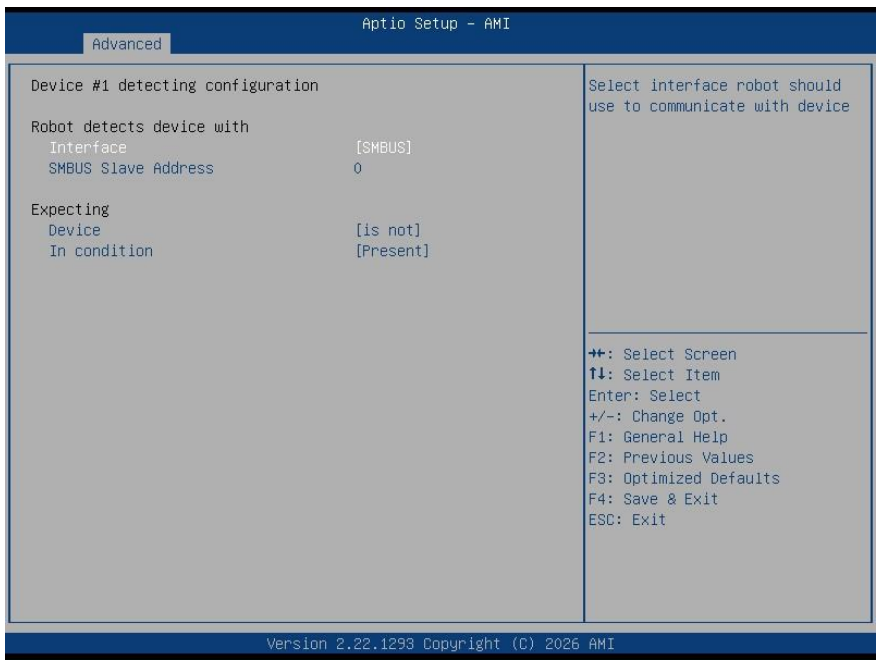
Options Summary

DIO pin number	GPIO 0	Optimal Default, Failsafe Default
	GPIO *	

Enter the DIO pin number to be used.
 0 = DIO0
 1 = DIO1
 etc.
 For COM Express products:
 0–3 = GPIO–GPI3
 4–7 = GPO0–GPO3

Device	is	
	is not	Optimal Default, Failsafe Default

Interface item set to "DIO"		
Options Summary		
Select whether the robot should perform the action when the specified condition is met.		
In High/Low level	Low	Optimal Default, Failsafe Default
	High	
Select the signal level the robot should use for the DIO pin when performing the action. High – Set the DIO pin to a high logic level. Low – Set the DIO pin to a low logic level.		

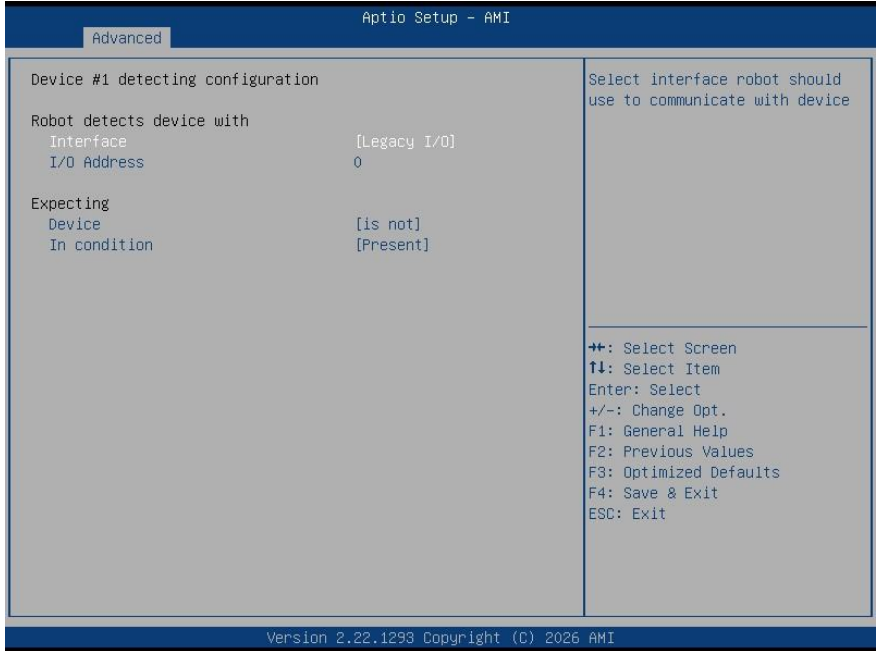


Interface item set to "SMBUS"		
Options Summary		
SMBUS Slave Address	0	Optimal Default, Failsafe Default
Enter the SMBus device slave address in hexadecimal format. Range: 0 – FF		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select whether the robot should perform the action when the specified condition is met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	

Interface item set to "SMBUS"

Options Summary

Select how the robot determines whether the device is present.
 Present – The device is considered present when it is detected. The robot treats the device as present if the read data is not 0xFF.
 According to Register – The robot determines device presence based on the configured register value read from the device.



Interface item set to "Legacy I/O"

Options Summary

I/O Address	0	Optimal Default, Failsafe Default
--------------------	---	-----------------------------------

Enter the I/O port address that the device responds to. Range: 0~FFFF

Device	is	
	Is not	Optimal Default, Failsafe Default

Select whether the robot should perform the action when the specified condition is met.

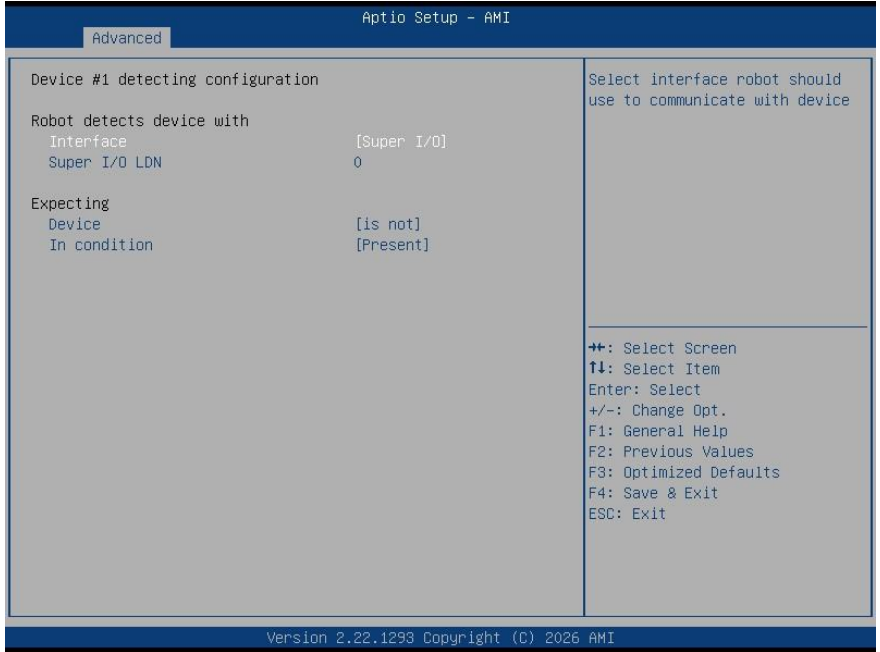
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	

Select how the robot determines device presence.
 Present – The device is considered present when it is detected. The robot treats the

Interface item set to "Legacy I/O"

Options Summary

device as present if the read data is not 0xFF.
 According to Register – The robot determines presence based on the configured register value read from the device.

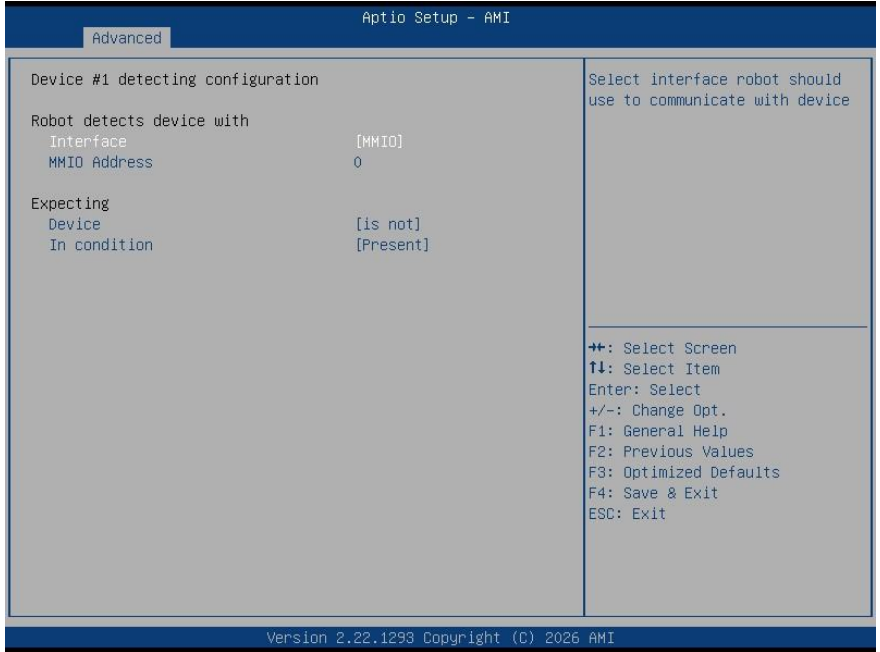


Interface item set to "Super I/O"

Options Summary

Super I/O LDN	0	Optimal Default, Failsafe Default
Enter the Logical Device Number (LDN) for the Super I/O device. Range: 0~FF.		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select whether the robot should perform the action when the specified condition is met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition used by the robot to determine device presence.		
Present – The device is considered present when it is detected; the robot treats it as present if the read data is not 0xFF.		

Interface item set to "Super I/O"
Options Summary
 According to Register – The robot determines presence based on the configured register value read from the device.

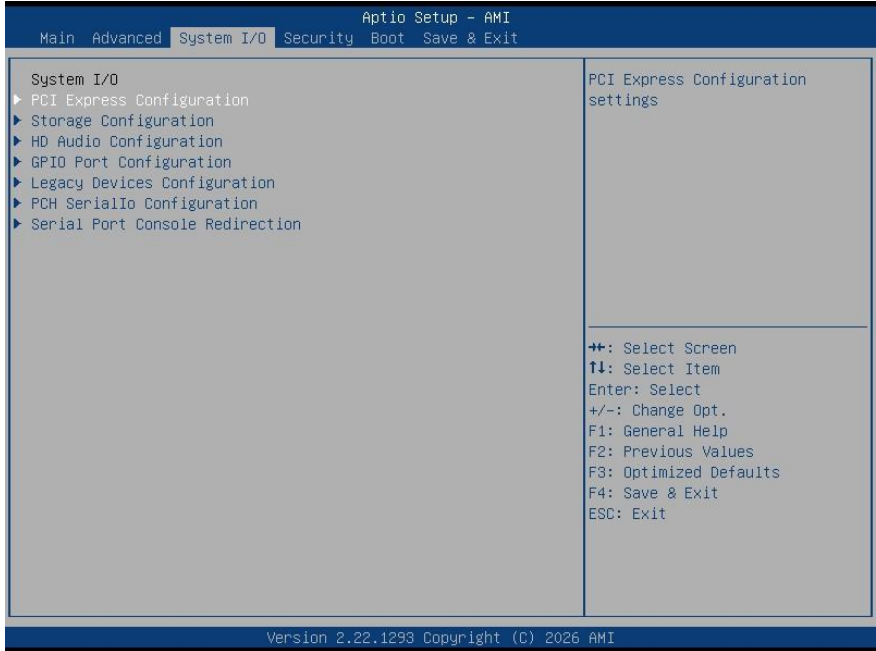


Interface item set to "MMIO"
Options Summary

MMIO Address	0	Optimal Default, Failsafe Default
Enter the MMIO address that the device responds to. Range: 0~FFFFFFFF.		
Device	Is	
	Is not	Optimal Default, Failsafe Default
Select whether the robot should perform the action when the specified condition is met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	

Select how the robot determines whether the device is present.
 Present – The device is considered present when detected. The robot marks it as present if the read data is not 0xFF.
 According to Register – The robot determines presence based on the configured register value read from the device.

3.5 Setup Submenu: System I/O



3.5.1 PCI Express Configuration

Aptio Setup - AMI

System I/O

PCH PCIe Configuration		PCIe Ref Pll SSC Percentatge. AUTO - Keep hw default, no BIOS override. Range is 0.0%-0.5%
Pcie Ref Pll SSC	[Disabled]	
PCIe A_B Select	[x2]	
PCIe_A	[Enabled]	
PCIe Speed	[Auto]	
Hot Plug	[Disabled]	
PCIe_C	[Enabled]	
PCIe Speed	[Auto]	
Hot Plug	[Disabled]	
PCIe_D	[Enabled]	
PCIe Speed	[Auto]	
Hot Plug	[Disabled]	

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Options Summary		
Pcie Ref Pll SSC	Auto	
	0.0%	
	0.1%	
	0.2%	
	0.3%	
	0.4%	
	0.5%	
	Disable	Optimal Default, Failsafe Default
Select the Spread Spectrum Clcking (SSC) percentage for the PCIe reference PLL. Auto – Keeps hardware default; no BIOS override. 0.0% – 0.5% – Manually sets SSC percentage within range. Disable – Turns off SSC. Optimal Default, Failsafe Default Range: 0.0%–0.5%		
PCIe_A C D	Disable	
	Enable	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		

Options Summary		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
	Gen4	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable PCI Express Hot Plug.		

3.5.2 Storage Configuration

The screenshot shows the 'System I/O' menu in the Aptio Setup - AMI BIOS. The 'NVMe Configuration' section is expanded, showing the following settings:

- eMMC 5.1 Controller: [Enabled]
- SATA Controller(s): [Enabled]
- SATA Speed: [Auto]
- Serial ATA Port 0: Empty
- Software Preserve: Unknown
- Port 0: [Enabled]
- Hot Plug: [Disabled]
- Configured as eSATA: Hot Plug supported
- SATA Device Type: [Hard Disk Drive]

The 'NVMe Device Options Settings' section is currently empty. A legend at the bottom right of the screen provides navigation instructions:

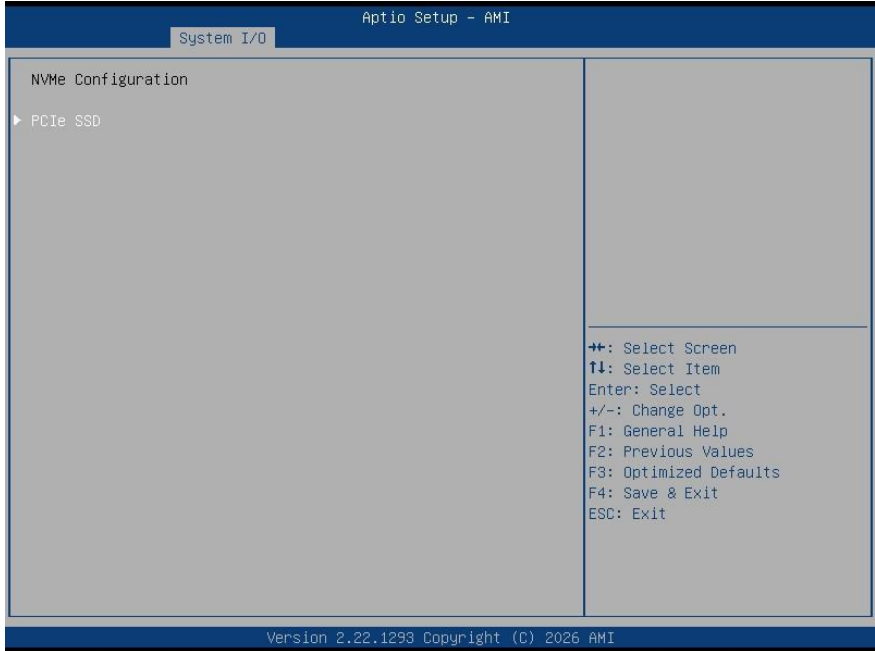
- ↔: Select Screen
- ↑↓: Select Item
- Enter: Select
- +/-: Change Opt.
- F1: General Help
- F2: Previous Values
- F3: Optimized Defaults
- F4: Save & Exit
- ESC: Exit

At the bottom of the screen, the version information is displayed: Version 2.22.1293 Copyright (C) 2026 AMI.

Options Summary		
eMMC 5.1 Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SCS eMMC 5.1 Controller		
SATA Controller (s)	Disable	
	Enable	Optimal Default, Failsafe Default

Options Summary		
Enable/Disable SATA Device.		
SATA Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure the maximum supported PCIe speed. Gen1 – 1.5 Gb/s Gen2 – 3.0 Gb/s Gen3 – 6.0 Gb/s Select the highest generation the system is allowed to operate at.		
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.		
SATA Device Type	Hard Disk Drive	Optimal Default, Failsafe Default
	Solid State Drive	
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.		

3.5.2.1 NVMe Configuration



3.5.2.11 PCIe SSD

Aptio Setup - AMI

System I/O

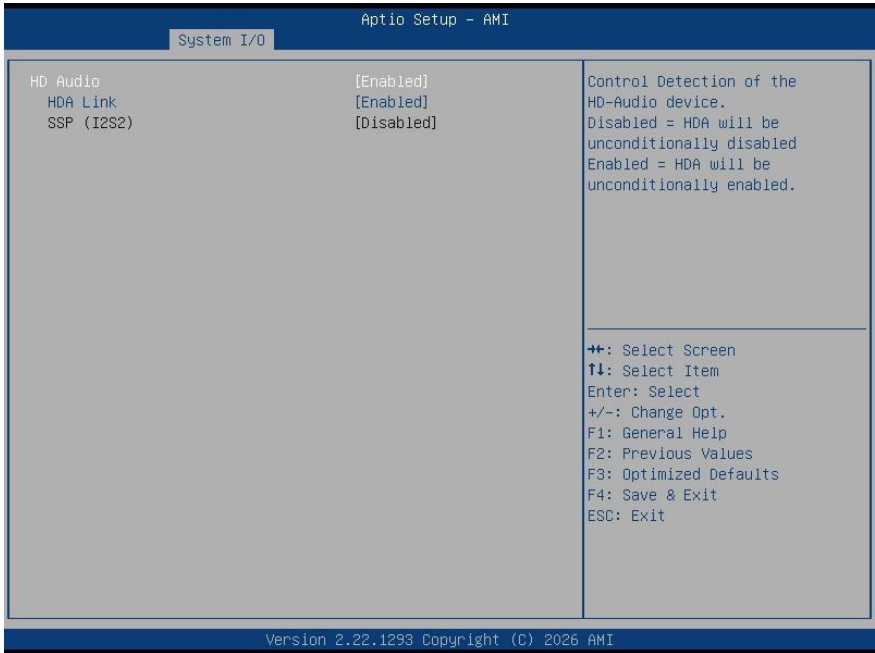
Seg:Bus:Dev:Func	00:02:00:00	Select either Short or Extended Self Test. Short option will take couple of minutes and extended option will take several minutes to complete.
Model Number	PCIe SSD	
Total Size	256.0 GB	
Vendor ID	1987	
Device ID	5013	
Namespace: 1		
Size: 256.0 GB		
Device Self Test:		
Self Test Option	[Short]	
Self Test Action	[Controller Only Test]	
Run Device Self Test		
Short Device Selftest Result	[Not Available]	
Extended Device Selftest Result	[Not Available]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options Summary		
Self Test Option	Short	Optimal Default, Failsafe Default
	Extended	
Select the type of self-test to perform. Short – Takes a few minutes to complete. Extended – Takes several minutes to complete for a more thorough test.		
Self Test Action	Controller only test	Optimal Default, Failsafe Default
	Controller and NameSpace test	
Select what components to include in the self-test. Controller Only – Tests only the device controller. Controller and Namespace – Tests both the controller and namespace; this option takes significantly longer to complete.		

3.5.3 HD Audio Configuration



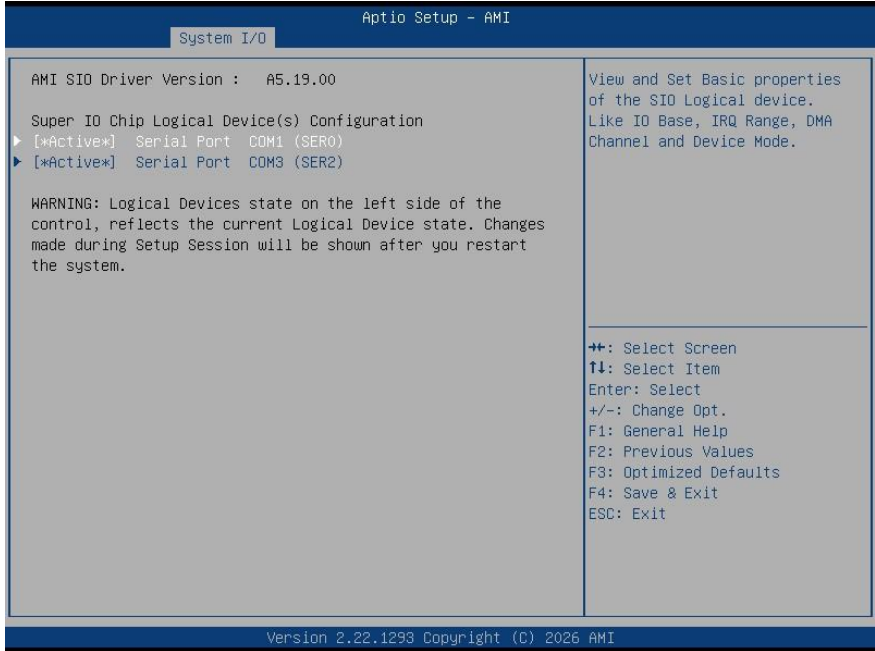
Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.		
HAD Link	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or disable the HAD (High Definition Audio) link. Note: Uses muxed interfaces: HDA / SSP (I2S2).		
SSP (I2S2)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or disable the SSP (I2S2) interface. Note: This interface is muxed with HDA (High Definition Audio).		

3.5.4 GPIO Port Configuration

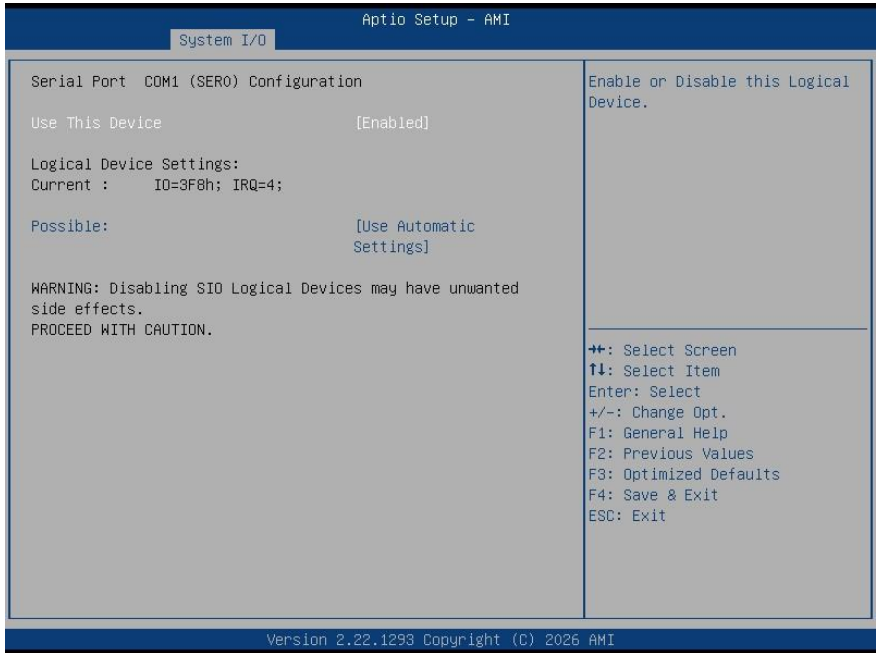


Options Summary		
GPIO 7-13	Input	Optimal Default, Failsafe Default
	Output	
Set GPIO as Input or Output.		
Output Level	High	
	Low	Optimal Default, Failsafe Default
Set output level when GPIO pin is output.		

3.5.5 Legacy Devices Configuration

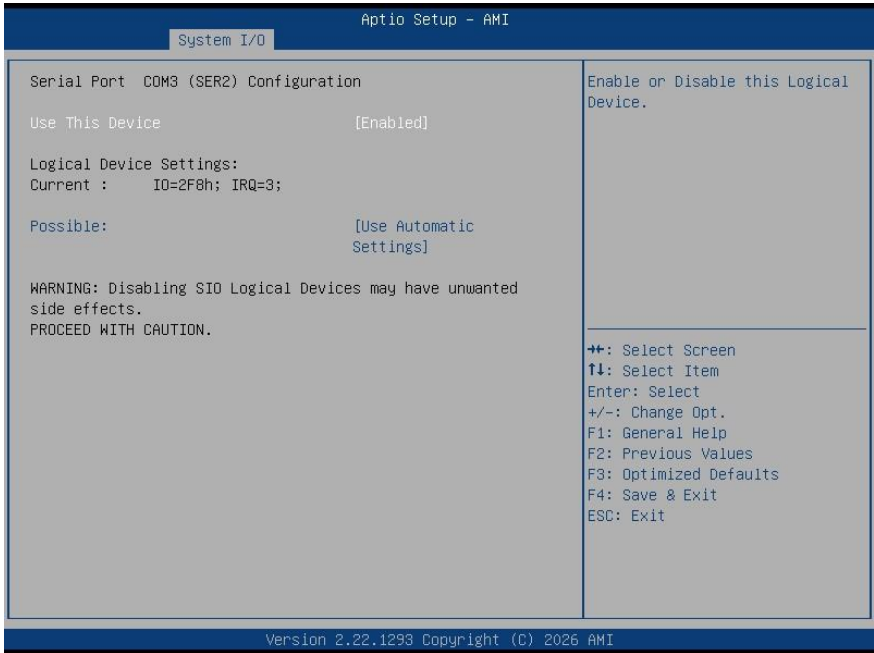


3.5.5.1 Serial Port COM1 Configuration (SER0)



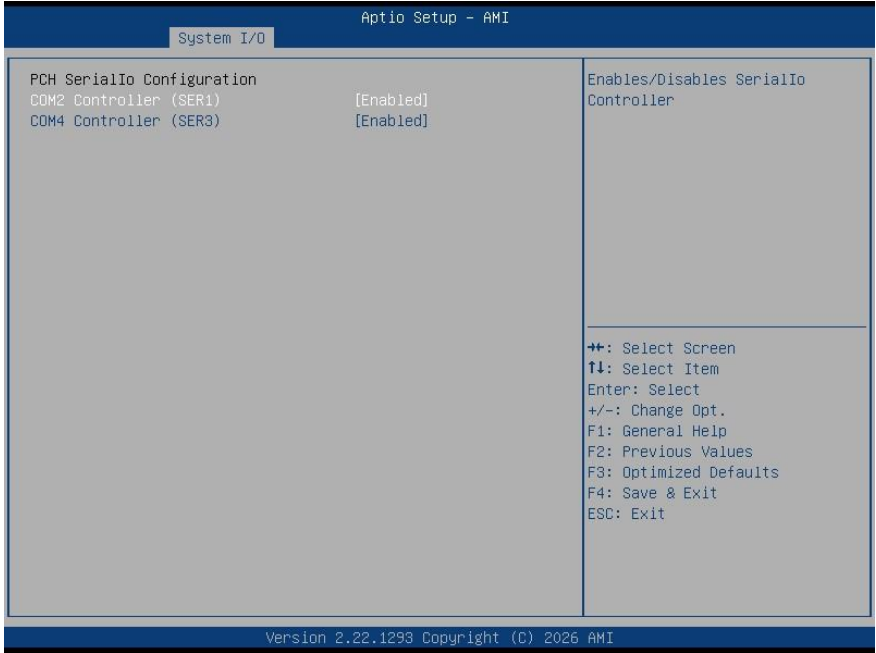
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4; DMA;	
	IO=2C8h; IRQ=11; DMA;	
Allows the user to change the device resource settings. New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

3.5.5.2 Serial Port COM3 Configuration (SER2)



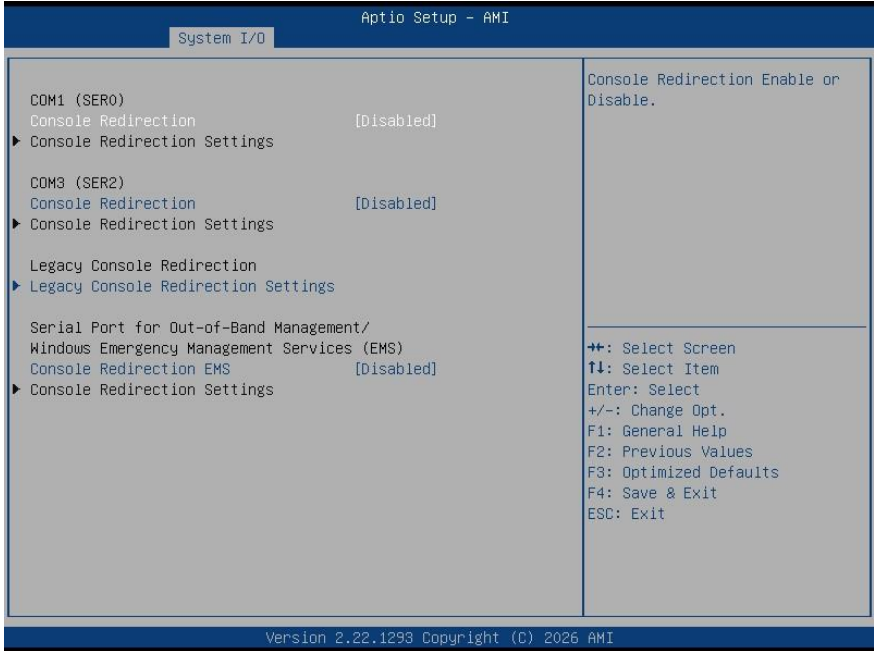
Options Summary		
Use This Device	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3; DMA;	
	IO=2d8h; IRQ=10; DMA;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

3.5.6 PCH Serial IO Configuration



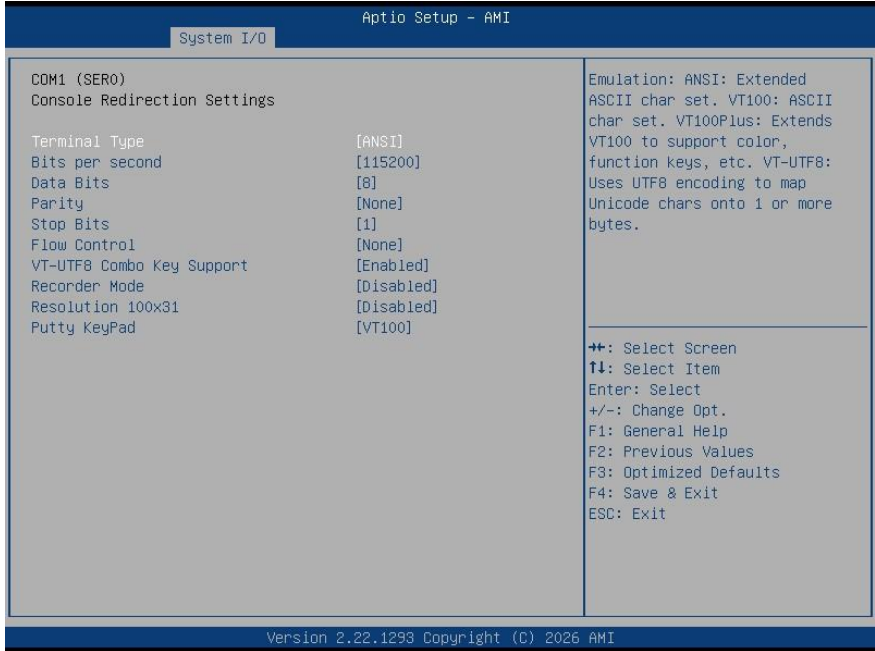
Options Summary		
COM2 Controller (SER1)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Console Redirection.		
COM4 Controller (SER3)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disables Serial IO Controller.		

3.5.7 Serial Port Console Redirection



Options Summary		
COM1 (SER0) Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable Console Redirection.		
COM3 (SER2) Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable Console Redirection.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable Console Redirection.		

3.5.7.1 COM1 (SER0) Console Redirection Settings



Options Summary		
Terminal Type	VT100	
	VT100Plus	
	VT-UTF8	
	ANSI	Optimal Default, Failsafe Default
<p>Select the terminal emulation type for console redirection.</p> <p>ANSI – Uses extended ASCII character set.</p> <p>VT100 – Uses standard ASCII character set.</p> <p>VT100+ (VT100Plus) – Extends VT100 with support for colors and function keys.</p> <p>VT-UTF8 – Uses UTF-8 encoding to support Unicode characters using one or more bytes.</p>		
Bits per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
	230400	

Options Summary		
Bits per second (Cont.)	460800	
	921600	
Select the terminal communication speed for the serial port. The selected value must match the settings on the connected device. Lower speeds are recommended for long or noisy communication lines to improve stability.		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits.		
Parity	None	Optimal Default, Failsafe Default
	Even	
	Odd	
	Mark	
	Space	
<p>A parity bit can be sent with the data bits to detect some transmission errors. Select the parity mode used for serial communication error detection.</p> <p>None – No parity bit is used.</p> <p>Even – Parity bit is 0 if the number of 1's in the data bits is even.</p> <p>Odd – Parity bit is 0 if the number of 1's in the data bits is odd.</p> <p>Mark – Parity bit is always 1 (no error detection).</p> <p>Space – Parity bit is always 0 (no error detection).</p> <p>Note: Mark and Space parity do not provide error detection and can be used as an additional data bit.</p>		
Stop Bits	1	Optimal Default, Failsafe Default
	2	
Stop bits indicate the end of a data packet (the start bit indicates the beginning). The standard setting is 1 stop bit. Some slower devices may require more than 1 stop bit for reliable communication.		
Flow Control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
<p>Flow control helps manage data transmission when the receiving buffer is full by sending a stop signal to pause data flow and a start signal to resume when ready.</p> <p>None – No flow control is used.</p> <p>Hardware (RTS/CTS) – Uses dedicated hardware lines (two wires) to manage start/stop flow control signals.</p>		
VT-UTF8 Combo Key Support	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals		
Recorder Mode	Disabled	Optimal Default, Failsafe Default
	Enabled	

Options Summary

With this mode enabled only text will be sent. This is to capture Terminal data.

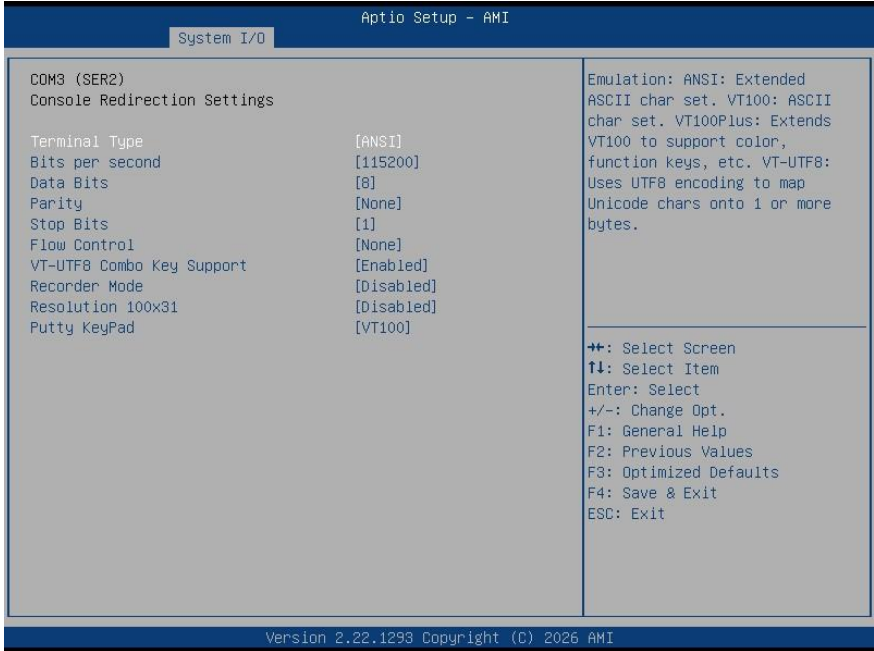
Resolution 100x31	Disabled	Optimal Default, Failsafe Default
	Enabled	

Enables or disables extended terminal resolution.

Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SCO	
	ESCN	
	VT400	

Select FunctionKey and KeyPad on Putty

3.5.7.2 COM3 (SER2) Console Redirection Settings

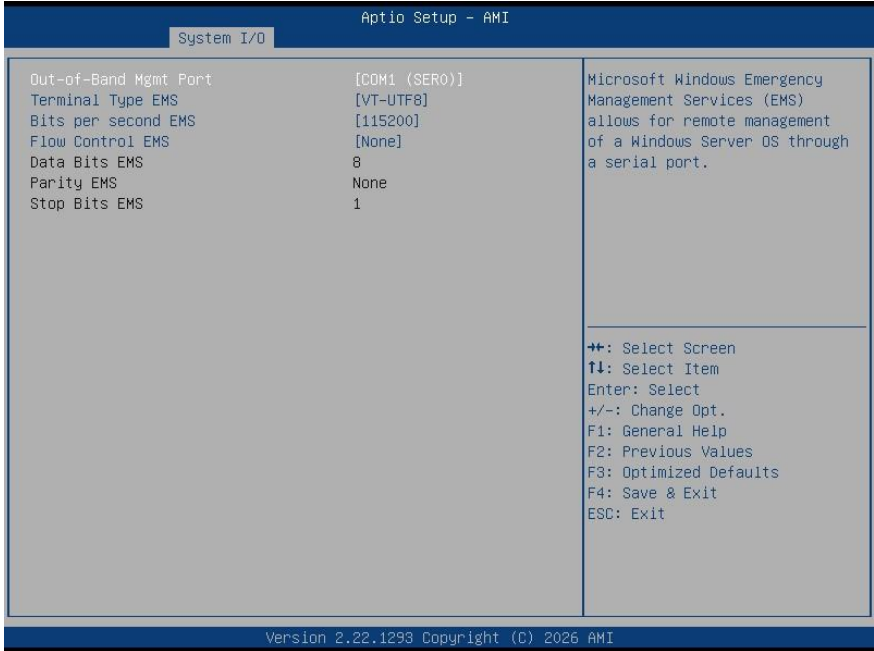


Options Summary		
Terminal Type	VT100	
	VT100Plus	
	VT-UTF8	
	ANSI	Optimal Default, Failsafe Default
<p>Select the terminal emulation type used for serial console display.</p> <p>ANSI – Uses extended ASCII character set.</p> <p>VT100 – Uses standard ASCII character set.</p> <p>VT100+ (VT100Plus) – Extends VT100 with support for colors and function keys.</p> <p>VT-UTF8 – Uses UTF-8 encoding to represent Unicode characters using one or more bytes.</p>		
Bits per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
	230400	

Options Summary		
Bits per second (Cont.)	460800	
	921600	
Select the terminal communication speed for the serial port. The selected value must match the settings on the connected device. Lower speeds are recommended for long or noisy communication lines to improve stability.		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Data Bits		
Parity	None	Optimal Default, Failsafe Default
	Even	
	Odd	
	Mark	
	Space	
A parity bit can be sent with the data bits to detect some transmission errors. Select the parity mode used for serial communication error detection. None – No parity bit is used. Even – Parity bit is 0 if the number of 1's in the data bits is even. Odd – Parity bit is 0 if the number of 1's in the data bits is odd. Mark – Parity bit is always 1 (no error detection). Space – Parity bit is always 0 (no error detection). Note: Mark and Space parity do not provide error detection and can be used as an additional data bit.		
Stop Bits	1	Optimal Default, Failsafe Default
	2	
Stop bits indicate the end of a data packet (the start bit indicates the beginning). The standard setting is 1 stop bit. Some slower devices may require more than 1 stop bit for reliable communication.		
Flow Control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
Flow control helps manage data transmission when the receiving buffer is full by sending a stop signal to pause data flow and a start signal to resume when ready. None – No flow control is used. Hardware (RTS/CTS – Uses dedicated hardware lines (two wires) to manage start/stop flow control signals.		
VT-UTF8 Combo Key Support	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.		

Options Summary		
Recorder Mode	Disabled	Optimal Default, Failsafe Default
	Enabled	
With this mode enabled only text will be sent. This is to capture Terminal data.		
Resolution 100x31	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enables or disables extended terminal resolution.		
Putty KeyPad	VT100	Optimal Default, Failsafe Default
	LINUX	
	XTERMR6	
	SCO	
	ESCN	
	VT400	
Select FunctionKey and KeyPad on Putty.		

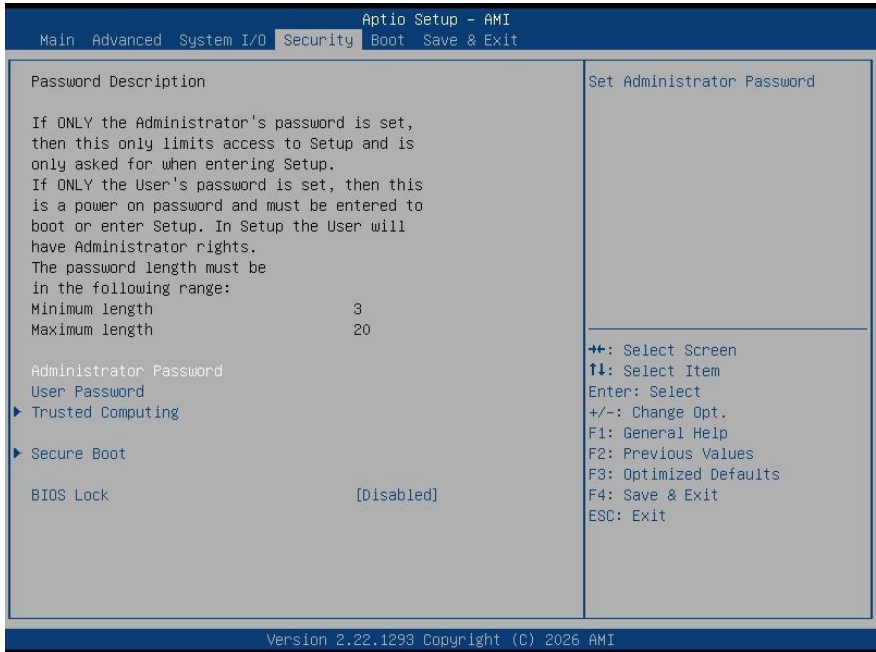
3.5.7.3 Console Redirection Settings



Options Summary		
Out-of-Band Mgmt Port	COM1	
	COM2	Optimal Default, Failsafe Default
<p>Enable or disable Microsoft Windows Emergency Management Services. EMS allows remote management of a Windows Server operating system through a serial port connection.</p>		
Terminal Type EMS	VT100	
	VT100Plus	
	VT-UTF8	Optimal Default, Failsafe Default
	ANSI	
<p>VT-UTF8 is the preferred terminal type for out-of-band management. The next best option is VT100+, followed by VT100. Refer to the Console Redirection Settings page for additional help on terminal type/emulation selection.</p>		
Bits per second EMS	9600	
	19200	
	57600	

Options Summary		
Bits per second EMS (Cont.)	115200	Optimal Default, Failsafe Default
	230400	
	460800	
	921600	
<p>Select the transmission speed for the serial port. The selected speed must match the remote device. For long or noisy communication lines, lower speeds may improve reliability.</p>		
Flow Control EMS	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
	Software Xon/Xoff	
<p>Select the method used to manage serial data flow and prevent buffer overflow. Flow control helps avoid data loss by pausing transmission when the receiving buffer is full and resuming when it is available. None – No flow control is used. Software (XON/XOFF) – Uses software control signals to start/stop data flow. Hardware (RTS/CTS) – Uses dedicated hardware lines (two wires) for start/stop flow control signals.</p>		

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.

Options Summary

BIOS Lock	Disabled	
	Enabled	Optimal Default, Failsafe Default

Enable/Disable the PCH BIOS Lock Enable feature.
 Required to be enabled to ensure SMM protection of flash.

3.6.1 Trusted Computing

Aprio Setup - AMI

Security

TPM 2.0 Device Found Firmware Version: 7.2 Vendor: NTC	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.
Security Device Support [Enabled] Active PCR banks SHA256 Available PCR banks SHA256,SHA384	
SHA256 PCR Bank [Enabled] SHA384 PCR Bank [Disabled]	
Pending operation [None] Platform Hierarchy [Enabled] Storage Hierarchy [Enabled] Endorsement Hierarchy [Enabled] Physical Presence Spec Version [1.3] TPM 2.0 InterfaceType [TIS] Device Select [TPM 2.0] Disable Block Sid [Disabled]	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.22.1293 Copyright (C) 2026 AMI

Options Summary

Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default

Enable or disable BIOS support for the security device.
 When Disabled, the operating system will not display the security device, and both the TCG EFI protocol and INT1A interface will not be available.

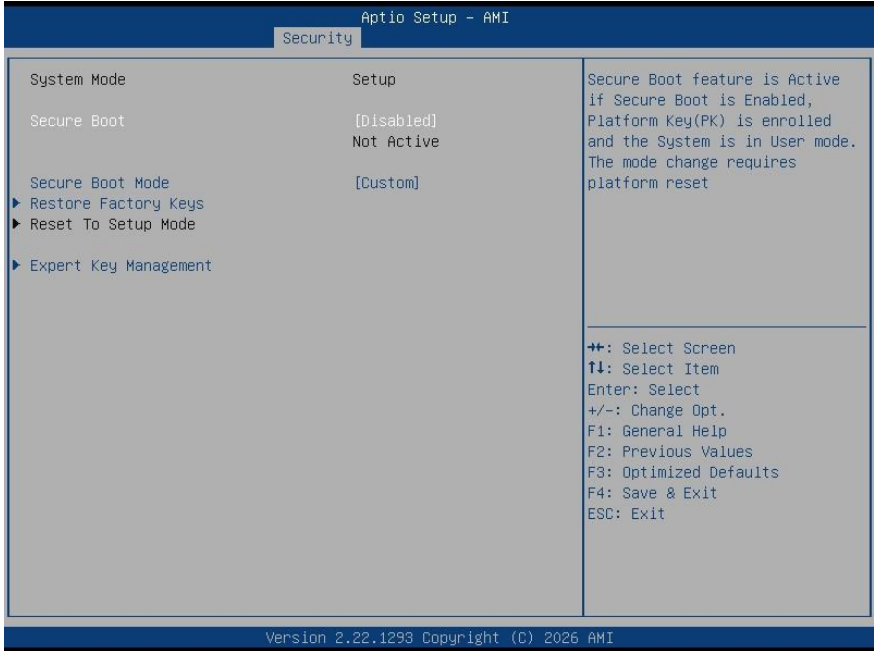
SHA 256 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default

Enable or Disable SHA256 PCR Bank.

SHA 384 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	

Options Summary		
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		
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	
	Auto	Optimal Default, Failsafe Default
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices if not found. TPM 1.2 devices will be enumerated.		

3.6.2 Secure Boot



Options Summary		
Secure Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset		
Secure Boot Mode	Custom	Optimal Default, Failsafe Default
	Standard	
Secure Boot mode options: Standard or Custom. In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication		
Restore Factory Keys	Force system to user mode. Install factory default Secure Boot key databases.	
Restore To Setup Mode	Force System Delete all Secure Boot key databases from NVRAM.	

3.6.2.1 Expert 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.	
Export Secure Boot variables	Save NVRAM content of Secure Boot variable to a file.	
Enroll Efi Image	Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).	
Platform Key (PK)	Details	
	Export	
	Update	
	Delete	
Key Exchange Keys (KEK)	Details	

Options Summary

Key Exchange Keys (KEK) (Cont.)	Export
	Update
	Append
	Delete
Authorized Signatures (db)	Details
	Export
	Update
	Append
	Delete
Forbidden Signatures (dbx)	Details
	Export
	Update
	Append
	Delete
Authorized TimeStamps (dbt)	Update
	Append
OsRecovery Signatures (dbr)	Update
	Append

Enroll factory default keys or load certificates from a file.

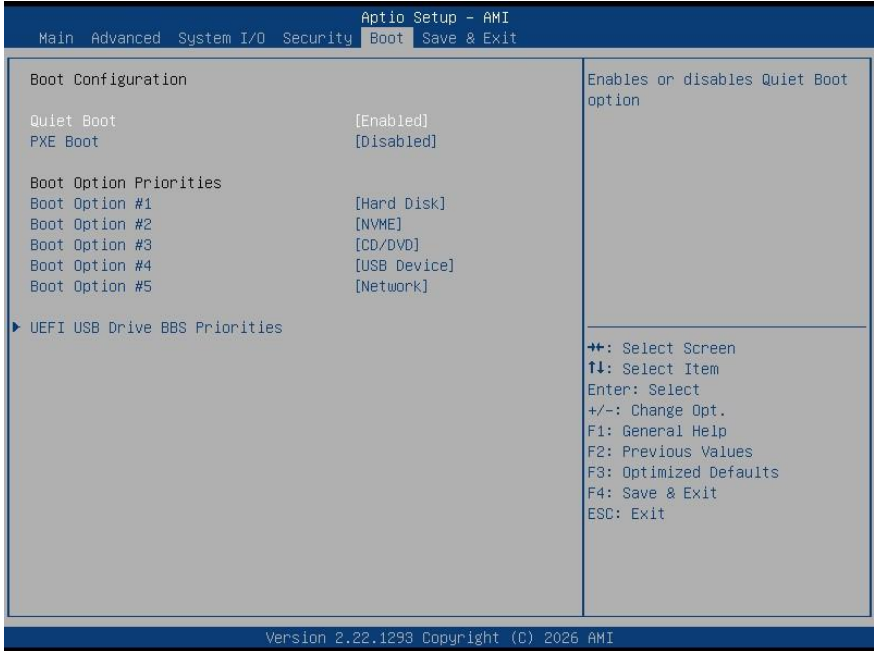
Supported key types include:

1. Public Key Certificate
 - EFI_SIGNATURE_LIST
 - EFI_CERT_X509 (DER)
 - EFI_CERT_RSA2048 (bin)
 - EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

Key Source Options:

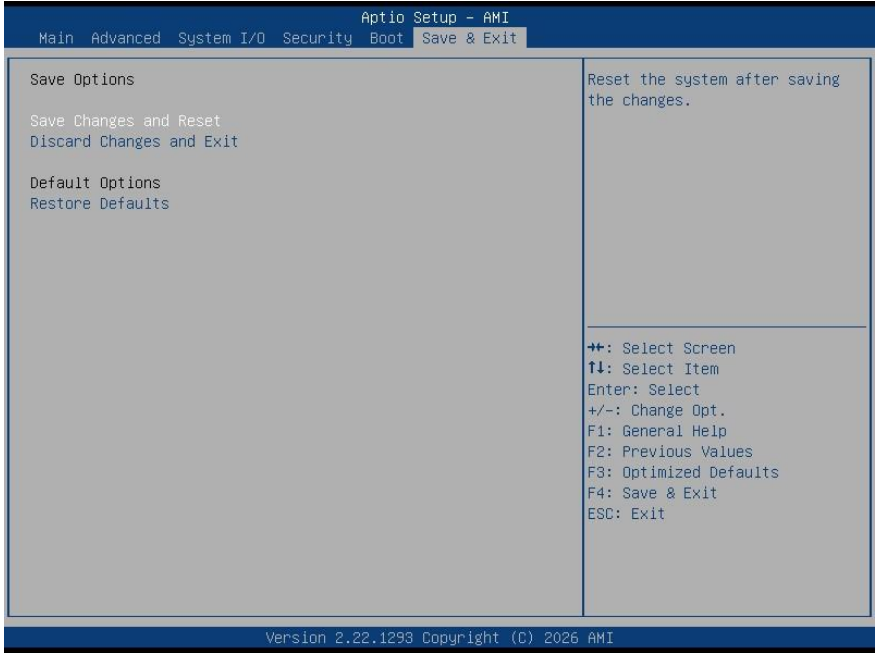
- Factory
- Modified
- Mixed

3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or disables Quiet Boot option.		
PXE Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Controls the execution of UEFI and Legacy Network OpROM.		

3.8 Setup Submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the uCOM-ASL 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-asl/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_101.5762.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

LAN Driver

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

Install Audio Drivers

Note: Ensure Intel Smart Sound Driver (**v10.29.00.10981**) 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 **v10.29.00.10981** 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

Address Range	Device Name
[0000000000000000 - 00000000000000CF7]	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
[0000000000000068 - 0000000000000068]	Microsoft ACPI-Compliant Embedded Controller
[000000000000006C - 000000000000006C]	Microsoft ACPI-Compliant Embedded Controller
[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
[00000000000002F8 - 00000000000002FF]	Communications Port (COM3)
[00000000000003F8 - 00000000000003FF]	Communications Port (COM1)
[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
[0000000000000680 - 000000000000069F]	Motherboard resources
[0000000000000D00 - 0000000000000FFF]	PCI Express Root Complex
[000000000000164E - 000000000000164F]	Motherboard resources
[0000000000001854 - 0000000000001857]	Motherboard resources
[0000000000002000 - 00000000000020FE]	Motherboard resources
[0000000000003000 - 0000000000003FFF]	PCI Express Root Port #9 - 54B0
[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




















































Address Range	Device Name
[0000000000A0000 - 0000000000BFFFFF]	PCI Express Root Complex
[0000000080400000 - 0000000080DFFFFF]	PCI Express Root Port #9 - 54B0
[0000000080400000 - 00000000BFFFFFFF]	PCI Express Root Complex
[0000000080E00000 - 0000000080EFFFFFFF]	Intel(R) Ethernet Controller I226-IT
[0000000080E00000 - 0000000080FFFFFFF]	PCI Express Root Port #10 - 54B1
[0000000080F00000 - 0000000080F03FFF]	Intel(R) Ethernet Controller I226-IT
[0000000081000000 - 00000000810FFFFFFF]	Intel(R) Ethernet Controller I226-IT #2
[0000000081000000 - 00000000811FFFFFFF]	PCI Express Root Port #7 - 54BE
[0000000081100000 - 0000000081103FFF]	Intel(R) Ethernet Controller I226-IT #2
[0000000081200000 - 0000000081201FFF]	Standard SATA AHCI Controller
[0000000081202000 - 00000000812027FF]	Standard SATA AHCI Controller
[0000000081203000 - 00000000812030FF]	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
[00000000FE03E000 - 00000000FE03E007]	Communications Port (COM2)
[00000000FE03E008 - 00000000FE03EFFF]	Motherboard resources
[00000000FE03F000 - 00000000FE03FFFF]	Motherboard resources
[00000000FE040000 - 00000000FE040007]	Communications Port (COM4)
[00000000FE040008 - 00000000FE040FFF]	Motherboard resources
[00000000FE041000 - 00000000FE041FFF]	Motherboard resources
[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 - 00000000FEEFFFFFFF]	Motherboard resources
[0000004000000000 - 000000400FFFFFFF]	Intel(R) UHD Graphics
[0000006000000000 - 000000600099FFFF]	PCI Express Root Port #9 - 54B0
[0000006001000000 - 0000006001FFFFFFF]	Intel(R) UHD Graphics
[0000006002100000 - 000000600210FFFFFFF]	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
[0000006002110000 - 0000006002117FFF]	Intel(R) Platform Monitoring Technology Driver
[0000006002118000 - 00000060021180FF]	SMBus - 54A3
[0000006002119000 - 0000006002119FFF]	Intel SD Host Controller
[0000007FFFEF6000 - 0000007FFFEF6FFF]	Intel(R) Serial IO I2C Host Controller - 54C5
[0000007FFFEF7000 - 0000007FFFEF7FFF]	Intel(R) Management Engine Interface #1
[0000007FFFEF8000 - 0000007FFFEF8FFF]	Intel(R) Serial IO I2C Host Controller - 54B8
[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 I2C Host Controller - 54C6
[0000007FFFEFC000 - 0000007FFFEFCFFF]	High Definition Audio Controller
[0000007FFFEFD000 - 0000007FFFEFDFFF]	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) 0x00000003 (03)	Communications Port (COM3)
		(ISA) 0x00000004 (04)	Communications Port (COM1)
		(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INTC1057
		(ISA) 0x00000010 (16)	Communications Port (COM2)
		(ISA) 0x00000011 (17)	Communications Port (COM4)
		(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
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 (ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
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 (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
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 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
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 (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
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 (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
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 (ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
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 (ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
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 (ISA) 0x000000C7 (199)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C8 (200)	Microsoft ACPI-Compliant System



























 (ISA) 0x000000C9 (201)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System

 (ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
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 (ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
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 (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) 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) 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) 0xFFFFFFF1 (-15)	Intel(R) Management Engine Interface #1
	(PCI) 0xFFFFFFF2 (-14)	Intel(R) Ethernet Controller I226-IT #2
	(PCI) 0xFFFFFFF3 (-13)	Intel(R) Ethernet Controller I226-IT #2
	(PCI) 0xFFFFFFF4 (-12)	Intel(R) Ethernet Controller I226-IT #2
	(PCI) 0xFFFFFFF5 (-11)	Intel(R) Ethernet Controller I226-IT #2
	(PCI) 0xFFFFFFF6 (-10)	Intel(R) Ethernet Controller I226-IT #2
	(PCI) 0xFFFFFFF7 (-9)	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
	(PCI) 0xFFFFFFF8 (-8)	Intel(R) UHD Graphics
	(PCI) 0xFFFFFFF9 (-7)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF A (-6)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF B (-5)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF C (-4)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF D (-3)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF E (-2)	Standard SATA AHCI Controller