



COM-MTHC6

COM Express 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
● COM-MTHC6		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	有害有毒物质或元素					
	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	COM Express, Type 6
CPU	Intel® Core™ Ultra Processors: Intel® Core™ Ultra 9 Processor 185H (16C/22T, up to 5.1 GHz, 45W) Intel® Core™ Ultra 7 Processor 155H (16C/22T, up to 4.8 GHz, 28W) Intel® Core™ Ultra 5 Processor 125H (14C/18T, up to 4.5 GHz, 28W)
Chipset	Integrated with Intel ® SoC
Memory	DDR5 5600MHz Dual-Channel SODIMM x 2, non-ECC, up to 96GB
Onboard Storage	NVMe, up to 256GB, via last PEG [x4] bus (optional)
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)
Security	fTPM/dTPM (default)

Power

Power Requirement	+9V ~ 16V and +5VSB for ATX, +9V ~ 16V for AT
Power Type	AT/ATX
Power Consumption	Intel® Core™ Ultra 9 Processor 185H, 9.13A @+12V

Display

Graphics Controller	Intel® Arc™ Graphics
Video Output	4 Simultaneous Displays: LVDS: up to 1920 x 1080 (default)/eDP: up to 3840 x 2160, switch by BOM DDI 1: DP, up to 3840 x 2160 DDI 2: DP, up to 3840 x 2160 DDI 3: DP, up to 3840 x 2160, co-lay with VGA, auto switch VGA: up to 1920 x 1080, co-lay with DDI 3, auto switch

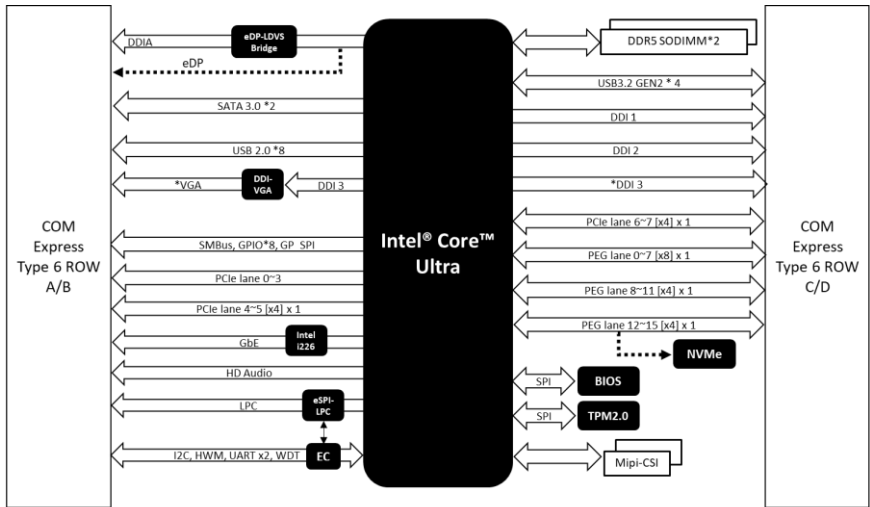
I/O

Ethernet	Intel® Ethernet Controller I226, 2.5GbE x 1
Audio	High Definition Audio Interface
USB	USB 2.0 x 8 USB 3.2 Gen 2 x 4
Serial Port	2-Wire UART x 2 (Tx/Rx)
HDD Interface	SATA 6Gb/s x 2
Expansion	PEG 4.0 [x8] + [x4] + [x4], last PEG [x4] option to be onboard NVMe SSD PCIe 4.0 [x1] x 4 + PCIe [x4] MIPI CSI x 2
GPIO	8-bit
SMBus/I2C	I2C x 1, from EC (default) or CPU, by switch BIOS SMBus x 1, from CPU

Environmental

Operating Temperature	32°F ~ 140°F (0°C ~ 60°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® 11 (64-bit)
	Linux Ubuntu 24.04/Kernel 6.8
Weight	0.25 lb. (0.12Kg)

1.2 Block Diagram



Note 1: VGA (default) co-lay DDI3.

Note 2: *MIPI CSI tested using Innodisk camera.

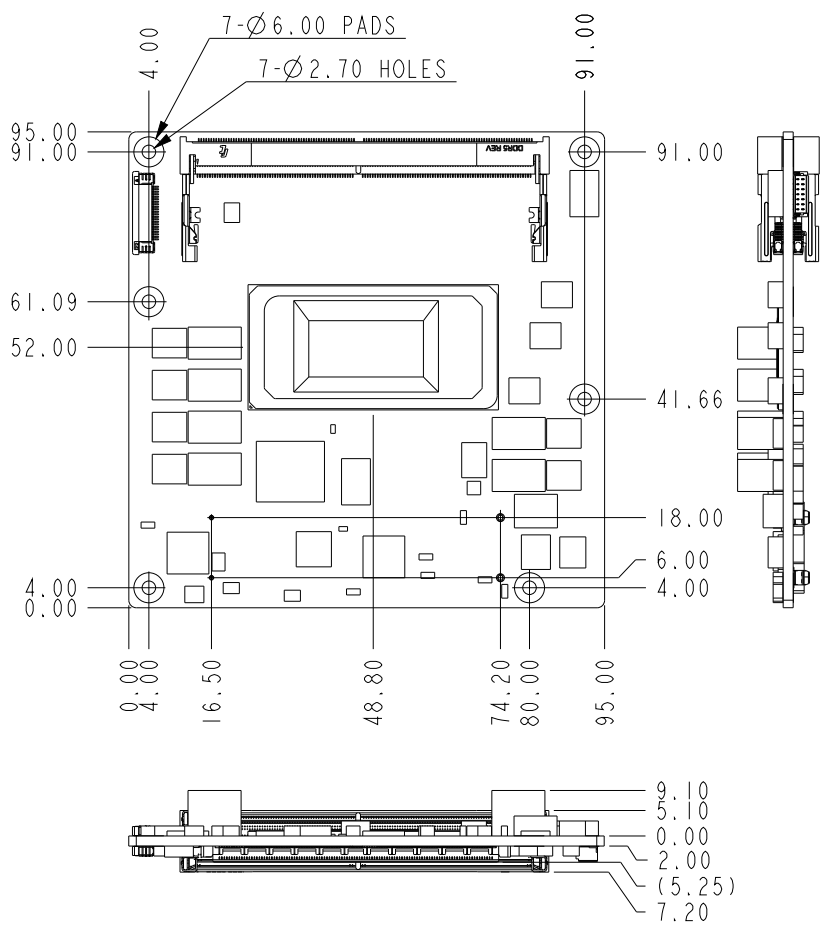
Note 3: Per platform spec, PEG ports do not support bifurcation.

Chapter 2

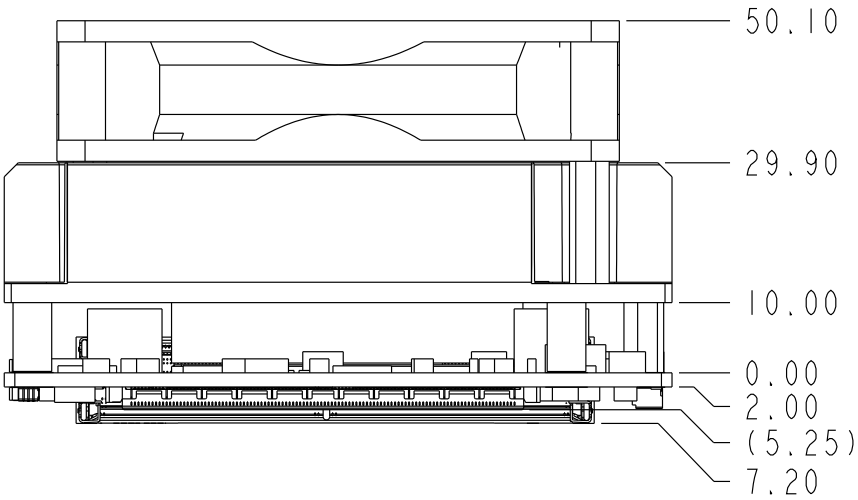
Hardware Information

2.1 Dimensions

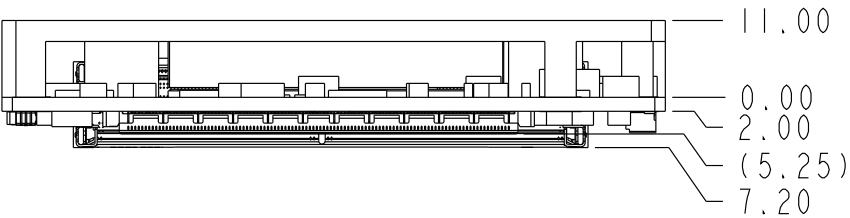
Top Side



With Active Cooling (Part No: COM-MTHC6-FAN01)

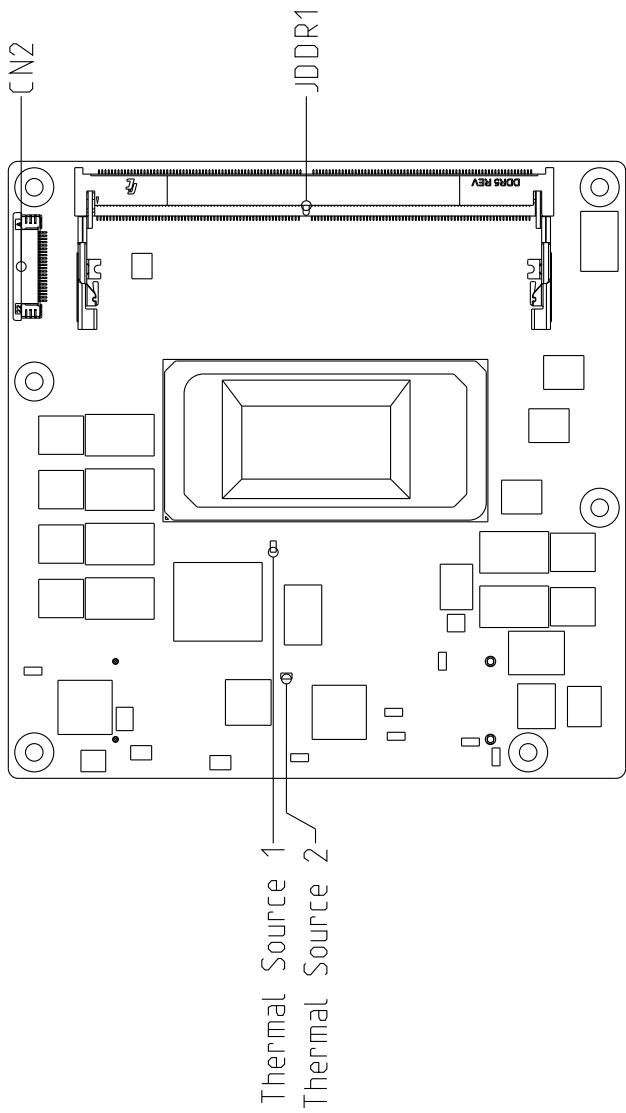


With Heatspreader (Part No: COM-MTHC6-HSP01)

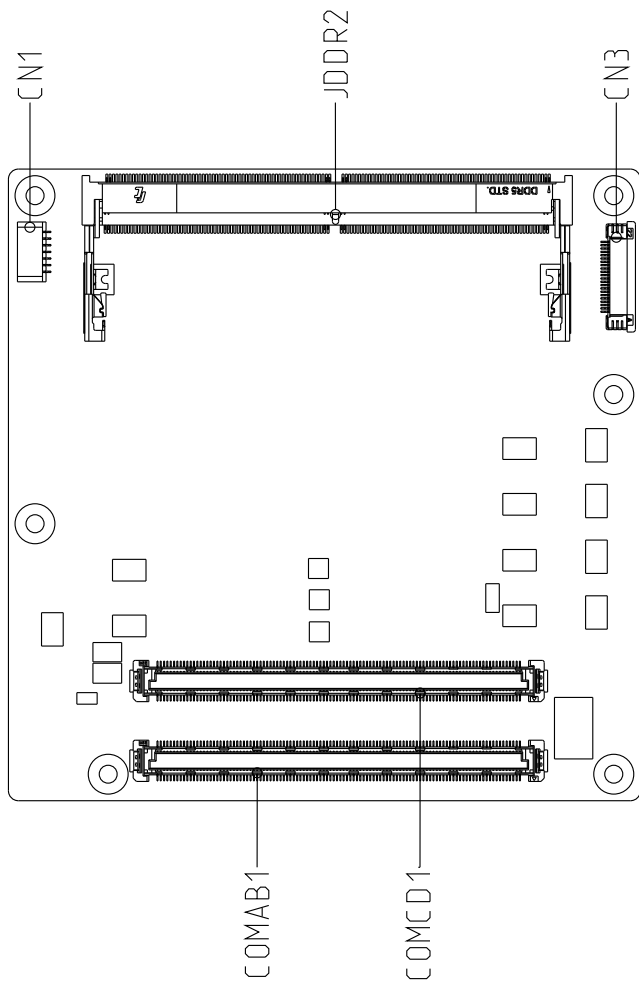


2.2 Jumpers and Connectors

Top Side



Bottom Side

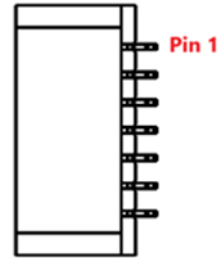
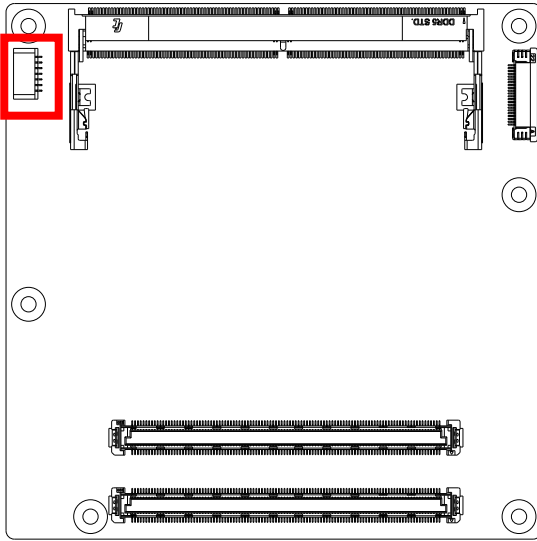


2.3 List of Connectors

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

Label	Function
CN1	SPI ROM Flash
CN2	MIPI CSI CH 1
CN3	MIPI CSI CH 2
CN4	Row A/B
CN5	Row C/D
JDDR1	DDR5 SODIMM A
JDDR2	DDR5 SODIMM B

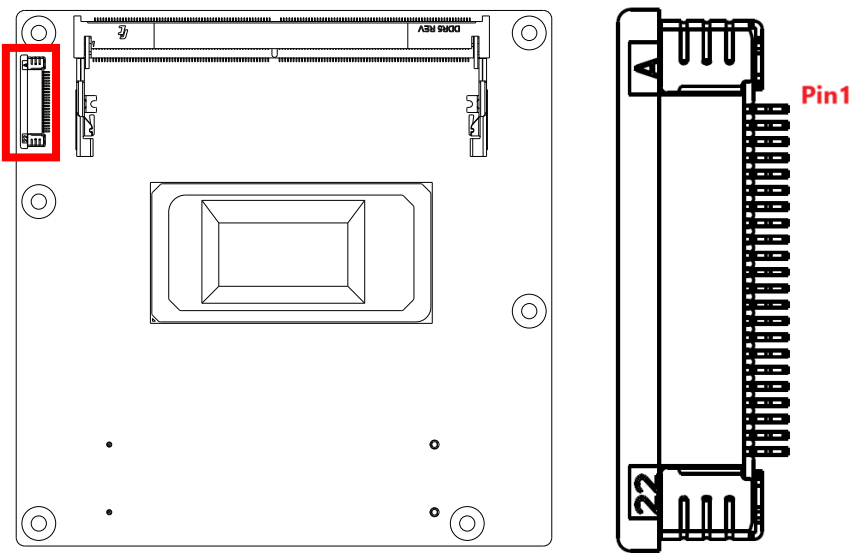
2.3.1 SPI ROM Flash (CN1)



Pin	Signal
1	VCC_3.3V
2	VCC_3.3V
3	GND
4	CSI_DP_0
5	CSI_DN_0
6	GND
7	CSI_DP_1
8	CSI_DN_1
9	GND
10	CSI_DP_2
11	CSI_DN_2
12	CAM_RST#
13	CSI_DP_3
14	CSI_DN_3
15	GND
16	CSI_CLK_P
17	CSI_CLK_N
18	GND
19	I2C_CLK
20	I2C_DAT

Pin	Signal
21	CRD_PWREN
22	IMGCLKOUT

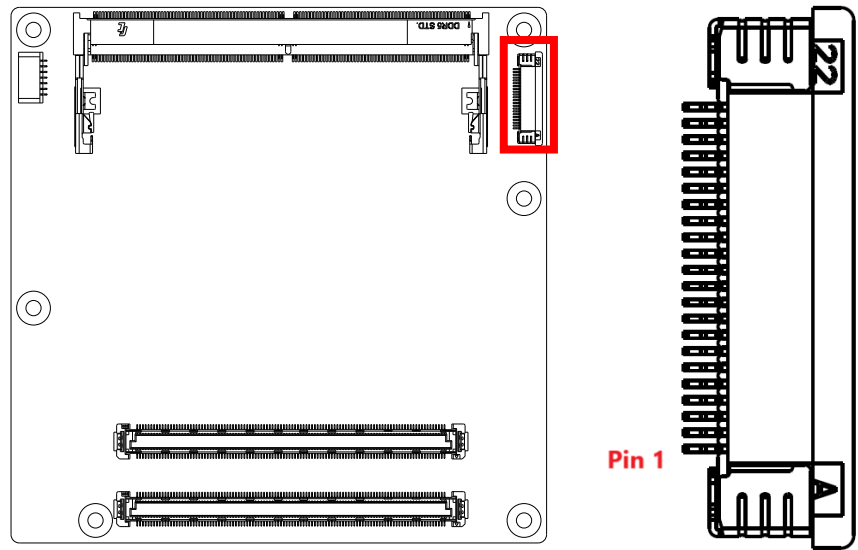
2.3.2 MIPI CSI CH 1 (CN2)



Pin	Signal
1	VCC_3.3V
2	VCC_3.3V
3	GND
4	CSI_DP_0
5	CSI_DN_0
6	GND
7	CSI_DP_1
8	CSI_DN_1
9	GND
10	CSI_DP_2
11	CSI_DN_2
12	CAM_RST#
13	CSI_DP_3
14	CSI_DN_3
15	GND
16	CSI_CLK_P

Pin	Signal
17	CSI_CLK_N
18	GND
19	I2C_CLK
20	I2C_DAT
21	CRD_PWREN
22	IMGCLKOUT

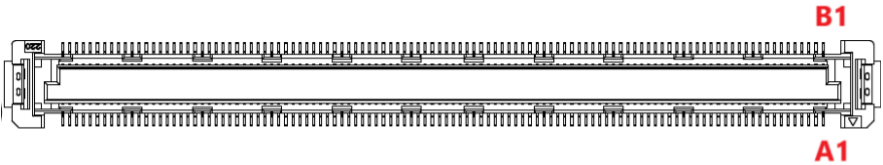
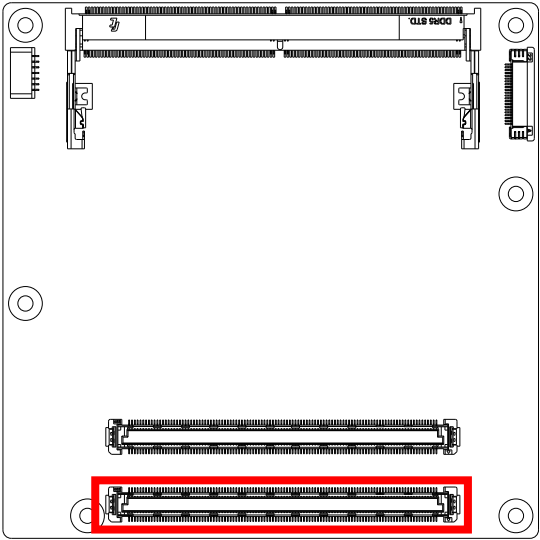
2.3.3 MIPI CSI CH 2 (CN3)



Pin	Signal
1	VCC_3.3V
2	VCC_3.3V
3	GND
4	CSI_DP_0
5	CSI_DN_0
6	GND
7	CSI_DP_1
8	CSI_DN_1
9	GND
10	CSI_DP_2
11	CSI_DN_2
12	CAM_RST#

Pin	Signal
13	CSI_DP_3
14	CSI_DN_3
15	GND
16	CSI_CLK_P
17	CSI_CLK_N
18	GND
19	I2C_CLK
20	I2C_DAT
21	CRD_PWREN
22	IMGCLKOUT

2.3.4 Row A/B Connector (CN4)



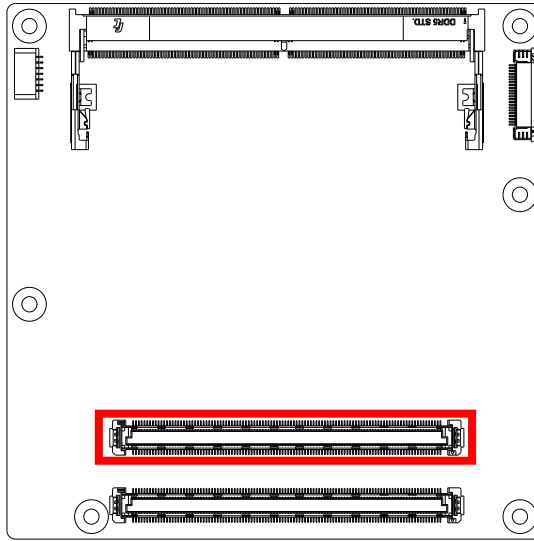
Row A		Row B	
A1	GND (FIXED)	B1	GND (FIXED)
A2	GBE0_MDI3-	B2	GBE0_ACT#

Row A		Row B	
A3	GBE0_MDI3+	B3	LPC_FRAME#
A4	GBE0_LINK1000#	B4	LPC_AD0
A5	GBE0_LINK2500#	B5	LPC_AD1
A6	GBE0_MDI2-	B6	LPC_AD2
A7	GBE0_MDI2+	B7	LPC_AD3
A8	GBE0_LINK	B8	N.C
A9	GBE0_MDI1-	B9	N.C
A10	GBE0_MDI1+	B10	LPC_CLK
A11	GND (FIXED)	B11	GND (FIXED)
A12	GBE0_MDI0-	B12	PWRBTN#
A13	GBE0_MDI0+	B13	SMB_CLK (from SOC)
A14	GBE0_CTREF	B14	SMB_DAT (from SOC)
A15	SUS_S3#	B15	SMB_ALERT# (from SOC)
A16	SATA0_TX+	B16	SATA1_TX+
A17	SATA0_TX-	B17	SATA1_TX-
A18	SUS_S4#	B18	SUS_STAT#
A19	SATA0_RX+	B19	SATA1_RX+
A20	SATA0_RX-	B20	SATA1_RX-
A21	GND (FIXED)	B21	GND (FIXED)
A22	N.C	B22	PCIE_6_CLK_DP (reserve)
A23	N.C	B23	PCIE_6_CLK_DN (reserve)
A24	SUS_S5#	B24	PWR_OK
A25	N.C	B25	N.C
A26	N.C	B26	N.C
A27	BATLOW#	B27	WDT
A28	SATA_ACT#	B28	SNDW0_CLK
A29	HDA_SYNC	B29	SNDW0_DAT
A30	HDA_RST#	B30	HDA_SDIN0
A31	GND (FIXED)	B31	GND (FIXED)
A32	HDA_BITCLK	B32	SPKR
A33	HDA_SDOUT	B33	I2C_CK
A34	BIOS_DIS0#	B34	I2C_DAT
A35	THRMTRIP#	B35	CB_THRM#
A36	USB6-	B36	USB7-
A37	USB6+	B37	USB7+
A38	USB_6_7_OC#	B38	USB_4_5_OC#
A39	USB4-	B39	USB5-
A40	USB4+	B40	USB5+
A41	GND (FIXED)	B41	GND (FIXED)

Row A		Row B	
A42	USB2-	B42	USB3-
A43	USB2+	B43	USB3+
A44	USB_2_3_OC#	B44	USB_0_1_OC#
A45	USB0-	B45	USB1-
A46	USB0+	B46	USB1+
A47	VCC_RTC	B47	N.C
A48	RSMRST_OUT#	B48	N.C
A49	GBE0_SDP	B49	SYS_RESET#
A50	LPC_SERIRQ	B50	CB_RESET#
A51	GND (FIXED)	B51	GND (FIXED)
A52	PCIE_TX5+ (CPU)	B52	PCIE_RX5+ (CPU)
A53	PCIE_TX5- (CPU)	B53	PCIE_RX5- (CPU)
A54	GPIO	B54	GPO1
A55	PCIE_TX4+ (CPU)	B55	PCIE_RX4+ (CPU)
A56	PCIE_TX4- (CPU)	B56	PCIE_RX4- (CPU)
A57	GND	B57	GPO2
A58	PCIE_TX3+ (PCH)	B58	PCIE_RX3+ (PCH)
A59	PCIE_TX3- (PCH)	B59	PCIE_RX3- (PCH)
A60	GND (FIXED)	B60	GND (FIXED)
A61	PCIE_TX2+ (PCH)	B61	PCIE_RX2+ (PCH)
A62	PCIE_TX2- (PCH)	B62	PCIE_RX2- (PCH)
A63	GPIO	B63	GPO3
A64	PCIE_TX1+ (PCH)	B64	PCIE_RX1+ (PCH)
A65	PCIE_TX1- (PCH)	B65	PCIE_RX1- (PCH)
A66	GND	B66	WAKE0# (PCH)
A67	GPIO2_TSYNC0	B67	WAKE1# (EC)
A68	PCIE_TX0+ (PCH)	B68	PCIE_RX0+ (PCH)
A69	PCIE_TX0- (PCH)	B69	PCIE_RX0- (PCH)
A70	GND (FIXED)	B70	GND (FIXED)
A71	LVDS_A0+ / eDP_PAIR2+	B71	LVDS_B0+
A72	LVDS_A0- / eDP_PAIR2-	B72	LVDS_B0-
A73	LVDS_A1+ / eDP_PAIR1+	B73	LVDS_B1+
A74	LVDS_A1- / eDP_PAIR1-	B74	LVDS_B1-
A75	LVDS_A2+ / eDP_PAIR0+	B75	LVDS_B2+
A76	LVDS_A2- / eDP_PAIR0-	B76	LVDS_B2-
A77	LVDS_VDD_EN	B77	LVDS_B3+
A78	LVDS_A3+	B78	LVDS_B3-
A79	LVDS_A3-	B79	LVDS_BKLT_EN / eDP_BKLT_EN
A80	GND (FIXED)	B80	GND (FIXED)

Row A	Row B
A81 LVDS_A_CK+ /eDP_PAIR0+	B81 LVDS_B_CK+
A82 LVDS_A_CK- /eDP_PAIR0-	B82 LVDS_B_CK-
A83 LVDS_I2C_CK /eDP_AUX_DN	B83 LVDS_BKLT_CTRL /eDP_BKLT_CTRL
A84 LVDS_I2C_DAT /eDP_AUX_DP	B84 VCC_5V_SBY
A85 GPI3_TSYNC1	B85 VCC_5V_SBY
A86 GSPI0_MOSI	B86 VCC_5V_SBY
A87 EDP_HPD	B87 VCC_5V_SBY
A88 PCIE0_CK_REF+	B88 BISO_DIS1#
A89 PCIE0_CK_REF-	B89 VGA_RED
A90 GND (FIXED)	B90 GND (FIXED)
A91 SPI_POWER	B91 VGA_GRN
A92 SPI_MISO	B92 VGA_BLU
A93 GPO0	B93 VGA_HSYNC
A94 SPI_CLK	B94 VGA_VSYNC
A95 SPI_MOSI	B95 VGA_I2C_CK
A96 GND	B96 VGA_I2C_DAT
A97 N.C	B97 SPI_CS#
A98 CB_STXD1X	B98 GSPI0_MISO
A99 CB_SRXD1X	B99 GSPI0_CLK
A100 GND (FIXED)	B100 GND (FIXED)
A101 CB_STXD2X	B101 CB_FAN_PWM
A102 CB_SRXD2X	B102 CB_FAN_TACH
A103 LID# (EC)	B103 SLEEP# (EC)
A104 VCC_12V	B104 VCC_12V
A105 VCC_12V	B105 VCC_12V
A106 VCC_12V	B106 VCC_12V
A107 VCC_12V	B107 VCC_12V
A108 VCC_12V	B108 VCC_12V
A109 VCC_12V	B109 VCC_12V
A110 GND (FIXED)	B110 GND (FIXED)

2.3.5 Row C/D Connector (CN5)



Row C		Row D	
C1	GND (FIXED)	D1	GND (FIXED)
C2	GND (FIXED)	D2	GND (FIXED)
C3	USB_SSRX0-	D3	USB_SSTX0-
C4	USB_SSRX0+	D4	USB_SSTX0+
C5	GND (FIXED)	D5	GND (FIXED)
C6	USB_SSRX1-	D6	USB_SSTX1-
C7	USB_SSRX1+	D7	USB_SSTX1+
C8	GND (FIXED)	D8	GND (FIXED)
C9	USB_SSRX2-	D9	USB_SSTX2-
C10	USB_SSRX2+	D10	USB_SSTX2+
C11	GND (FIXED)	D11	GND (FIXED)
C12	USB_SSRX3-	D12	USB_SSTX3-
C13	USB_SSRX3+	D13	USB_SSTX3+
C14	GND (FIXED)	D14	GND (FIXED)
C15	USB4_1_LSTX	D15	DDI1_CTRLCLK_AUX+

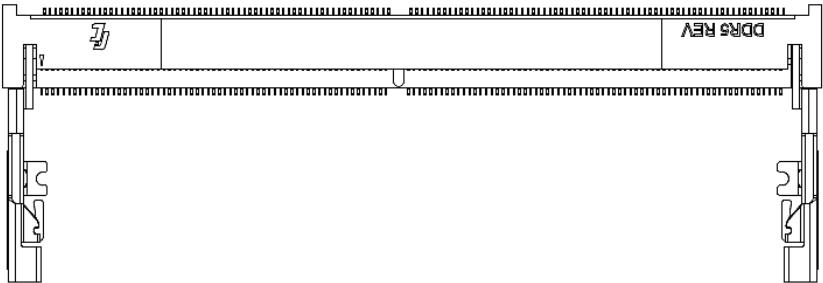
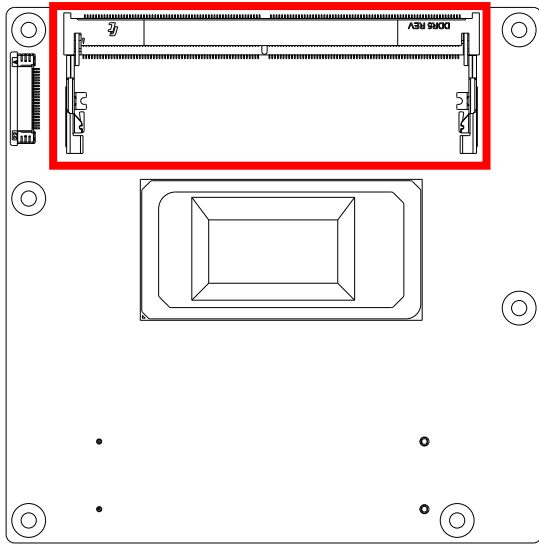
Row C		Row D	
C16	USB4_1_LSRX	D16	DDI1_CTRLDATA_AUX-
C17	USB4_RT_ENA	D17	N.C
C18	GND	D18	USB4_PMCALERT#
C19	PCIE_RX6+ (CPU)	D19	PCIE_TX6+ (CPU)
C20	PCIE_RX6- (CPU)	D20	PCIE_TX6- (CPU)
C21	GND (FIXED)	D21	GND (FIXED)
C22	PCIE_RX7+ (CPU)	D22	PCIE_TX7+ (CPU)
C23	PCIE_RX7- (CPU)	D23	PCIE_TX7- (CPU)
C24	DDI1_HPD	D24	GND
C25	USB4_SML0_CLK	D25	GND
C26	USB4_SML0_DAT	D26	DDI1_PAIR0+
C27	USB4_SML1_CLK	D27	DDI1_PAIR0-
C28	USB4_SML1_DAT	D28	GND
C29	USB4_I2C_CLK	D29	DDI1_PAIR1+
C30	USB4_I2C_DAT	D30	DDI1_PAIR1-
C31	GND (FIXED)	D31	GND (FIXED)
C32	DDI2_CTRLCLK_AUX+	D32	DDI1_PAIR2+
C33	DDI2_CTRLDATA_AUX-	D33	DDI1_PAIR2-
C34	DDI2_DDC_AUX_SEL	D34	DDI1_DDC_AUX_SEL
C35	USB4_2_LSTX	D35	USB4_2_LSRX
C36	DDI3_CTRLCLK_AUX+	D36	DDI1_PAIR3+
C37	DDI3_CTRLDATA_AUX-	D37	DDI1_PAIR3-
C38	DDI3_DDC_AUX_SEL	D38	GND
C39	DDI3_PAIR0+	D39	DDI2_PAIR0+
C40	DDI3_PAIR0-	D40	DDI2_PAIR0-
C41	GND (FIXED)	D41	GND (FIXED)
C42	DDI3_PAIR1+	D42	DDI2_PAIR1+
C43	DDI3_PAIR1-	D43	DDI2_PAIR1-
C44	DDI3_HPD	D44	DDI1_HPD
C45	GSPI0_CS0#	D45	GND
C46	DDI3_PAIR2+	D46	DDI2_PAIR2+
C47	DDI3_PAIR2-	D47	DDI2_PAIR2-
C48	RSVD	D48	GND
C49	DDI3_PAIR3+	D49	DDI2_PAIR3+
C50	DDI3_PAIR3-	D50	DDI2_PAIR3-
C51	GND (FIXED)	D51	GND (FIXED)
C52	PEG_RX0+ (CPU x8) *	D52	PEG_TX0+ (CPU x8) *
C53	PEG_RX0- (CPU x8) *	D53	PEG_TX0- (CPU x8) *
C54	N.C	D54	PEG_LANE_RV#

Row C	Row D
C55 PEG_RX1+ (CPU x8) *	D55 PEG_TX1+ (CPU x8) *
C56 PEG_RX1- (CPU x8) *	D56 PEG_TX1- (CPU x8) *
C57 N.C	D57 GND
C58 PEG_RX2+ (CPU x8) *	D58 PEG_TX2+ (CPU x8) *
C59 PEG_RX2- (CPU x8) *	D59 PEG_TX2- (CPU x8) *
C60 GND (FIXED)	D60 GND (FIXED)
C61 PEG_RX3+ (CPU x8) *	D61 PEG_TX3+ (CPU x8) *
C62 PEG_RX3- (CPU x8) *	D62 PEG_TX3- (CPU x8) *
C63 GND	D63 GND
C64 GND	D64 GND
C65 PEG_RX4+ (CPU x8) *	D65 PEG_TX4+ (CPU x8) *
C66 PEG_RX4- (CPU x8) *	D66 PEG_TX4- (CPU x8) *
C67 N.C	D67 GND (FIXED)
C68 PEG_RX5+ (CPU x8) *	D68 PEG_TX5+ (CPU x8) *
C69 PEG_RX5- (CPU x8) *	D69 PEG_TX5- (CPU x8) *
C70 GND (FIXED)	D70 GND (FIXED)
C71 PEG_RX6+ (CPU x8) *	D71 PEG_TX6+ (CPU x8) *
C72 PEG_RX6- (CPU x8) *	D72 PEG_TX6- (CPU x8) *
C73 GND (FIXED)	D73 GND (FIXED)
C74 PEG_RX7+ (CPU x8) *	D74 PEG_TX7+ (CPU x8) *
C75 PEG_RX7- (CPU x8) *	D75 PEG_TX7- (CPU x8) *
C76 GND (FIXED)	D76 GND (FIXED)
C77 GND	D77 GND
C78 PEG_RX8+ (CPU x4_A)	D78 PEG_TX8+ (CPU x4_A)
C79 PEG_RX8- (CPU x4_A)	D79 PEG_TX8- (CPU x4_A)
C80 GND (FIXED)	D80 GND (FIXED)
C81 PEG_RX9+ (CPU x4_A)	D81 PEG_TX9+ (CPU x4_A)
C82 PEG_RX9- (CPU x4_A)	D82 PEG_TX9- (CPU x4_A)
C83 GND	D83 GND
C84 GND (FIXED)	D84 GND (FIXED)
C85 PEG_RX10+ (CPU x4_A)	D85 PEG_TX10+ (CPU x4_A)
C86 PEG_RX10- (CPU x4_A)	D86 PEG_TX10- (CPU x4_A)
C87 GND (FIXED)	D87 GND (FIXED)
C88 PEG_RX11+ (CPU x4_A)	D88 PEG_TX11+ (CPU x4_A)
C89 PEG_RX11- (CPU x4_A)	D89 PEG_TX11- (CPU x4_A)
C90 GND (FIXED)	D90 GND (FIXED)
C91 PEG_RX12+ (CPU x4_B) Default reserve	D91 PEG_TX12+ (CPU x4_B) Default reserve

Row C		Row D	
C92	PEG_RX12- (CPU x4_B) Default reserve	D92	PEG_TX12- (CPU x4_B) Default reserve
C93	GND	D93	GND
C94	PEG_RX13+ (CPU x4_B) Default reserve	D94	PEG_TX13+ (CPU x4_B) Default reserve
C95	PEG_RX13- (CPU x4_B) Default reserve	D95	PEG_TX13- (CPU x4_B) Default reserve
C96	GND (FIXED)	D96	GND (FIXED)
C97	GND	D97	GND
C98	PEG_RX14+ (CPU x4_B)	D98	PEG_TX14+ (CPU x4_B)
C99	PEG_RX14- (CPU x4_B)	D99	PEG_TX14- (CPU x4_B)
C100	GND (FIXED)	D100	GND (FIXED)
C101	PEG_RX15+ (CPU x4_B)	D101	PEG_TX15+ (CPU x4_B)
C102	PEG_RX15- (CPU x4_B)	D102	PEG_TX15- (CPU x4_B)
C103	GND (FIXED)	D103	GND
C104	VCC_12V	D104	VCC_12V
C105	VCC_12V	D105	VCC_12V
C106	VCC_12V	D106	VCC_12V
C107	VCC_12V	D107	VCC_12V
C108	VCC_12V	D108	VCC_12V
C109	VCC_12V	D109	VCC_12V
C110	GND (FIXED)	D110	GND (FIXED)

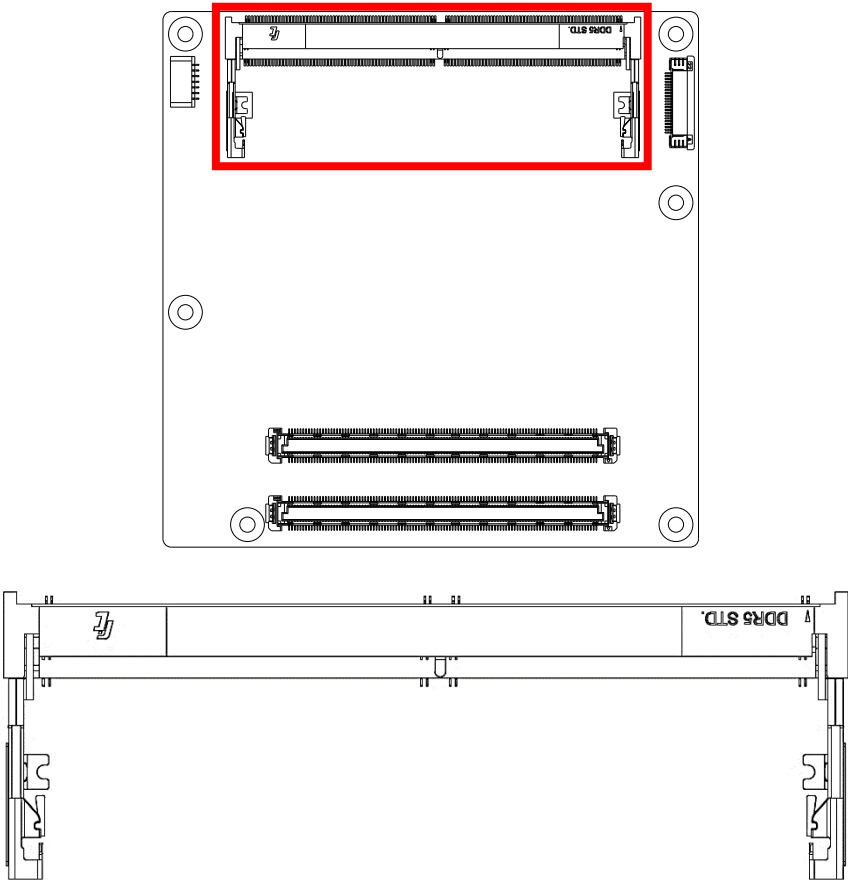
Note: PEG [x4] co-lay onboard NVMe.

2.3.6 DDR5 SODIMM A (JDDR1)



Note: JDDR1 contains a standard DDR5 SODIMM pinout interface.

2.3.7 DDR5 SODIMM B (JDDR2)



Note: JDDR2 contains a standard DDR5 SODIMM pinout interface.

Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The board 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 COM-MTHC6 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.

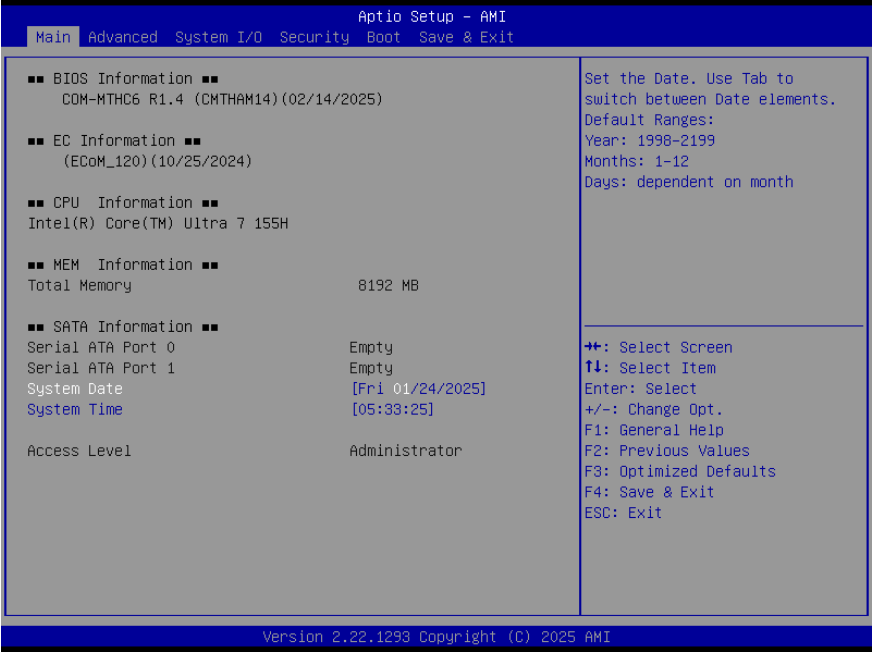
System I/O – Host bridge parameters.

Security – Set administrator password.

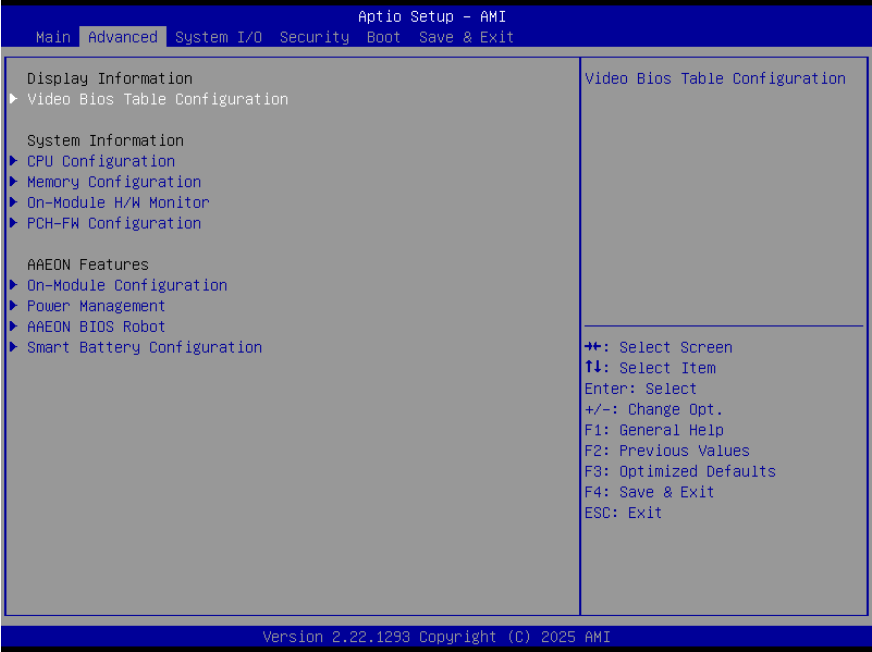
Boot – Enable/disable Quiet Boot option.

Save & Exit – Save changes and exit Setup.

3.3 Setup Submenu: Main



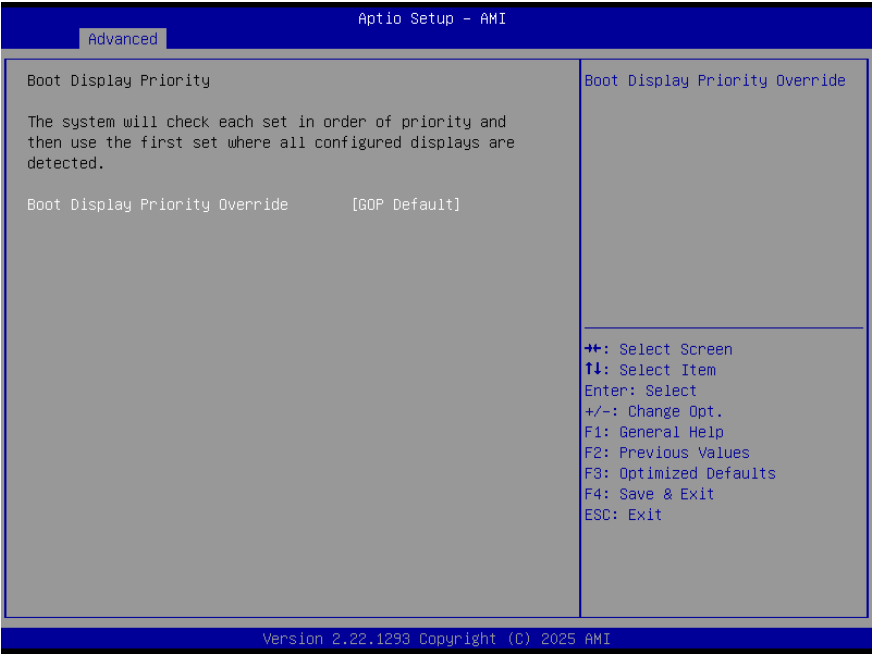
3.4 Setup Submenu: Advanced



3.4.1 Video BIOS Table Configuration

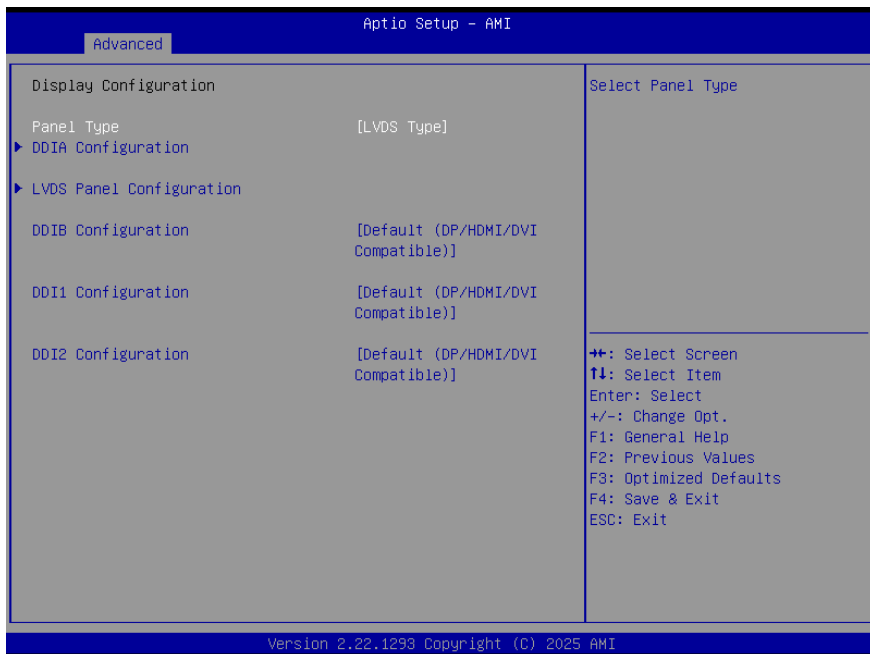


3.4.1.1 Boot Display Priority



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

3.4.1.2 Display Configuration



Options Summary		
Panel Type	eDP Type	
	LVDS Type	Optimal Default, Failsafe Default
Select Panel Type.		
DDIB Configuration	No Device	
	DP	
	DP/HDMI/DV1 Compatible	
	HDMI/DV1	
	Default (DP/HDMI/DV1 Compatible)	Optimal Default, Failsafe Default
Select output type for this device.		
DDI1 Configuration	No Device	
	DP	
	DP/HDMI/DV1 Compatible	
	HDMI/DV1	

Options Summary		
DDI1 Configuration (cont.)	Default (DP/HDMI/DV1 Compatible)	Optimal Default, Failsafe Default
Select output type for this device.		
DDI2 Configuration	No Device	
	DP	
	DP/HDMI/DV1 Compatible	
	HDMI/DV1	
	Default (DP/HDMI/DV1 Compatible)	Optimal Default, Failsafe Default
Select output type for this device.		

3.4.1.3 DDIA Configuration

Advanced

Aptio Setup - AMI

DDIA Configuration

Brightness Setting 255
Panel Setting Override [Disabled]

Set Gop Brightness value

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

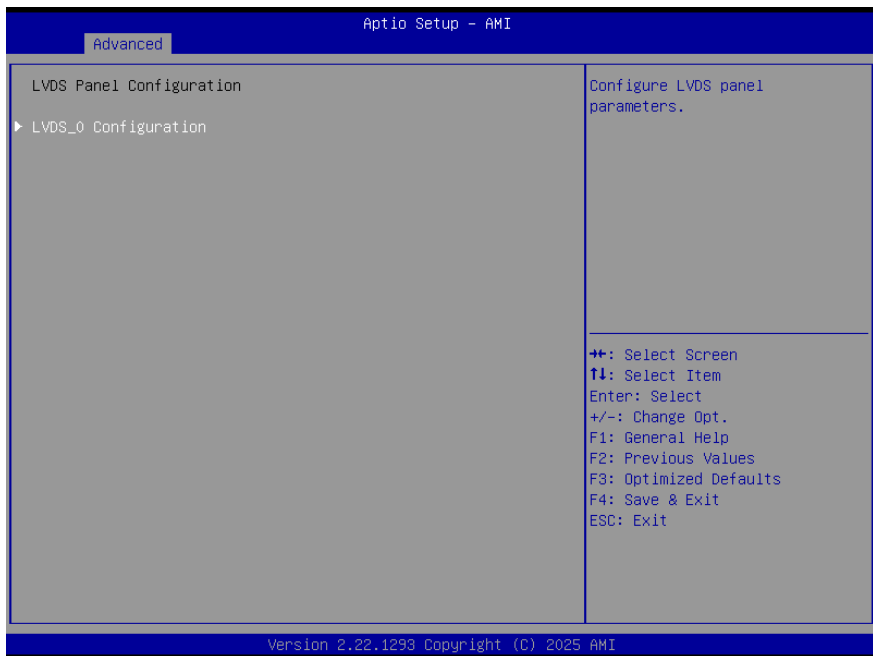
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Options Summary		
Brightness Setting	255	Optimal Default, Failsafe Default
Set Gop Brightness value.		

Options Summary

Panel Setting Override	Enabled	
	Disabled	Optimal Default, Failsafe Default
Panel Setting Override.		

3.4.1.4 LVDS Panel Configuration



Options Summary

Brightness Setting	255	Optimal Default, Failsafe Default
Set Gop Brightness value.		
Panel Setting Override	Enabled	
	Disabled	Optimal Default, Failsafe Default
Panel Setting Override.		

3.4.1.5 LVDS_0 Configuration



Options Summary		
LVDS	Enable	Optimal Default, Failsafe Default
	Disable	
Enable/Disable 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	
	1920x1080@60Hz	
	1920x1200@60Hz	

Options Summary		
Select panel type		
Color depth and data format	VESA 24bit	
	JEIDA 24bits	
	VEAS/JEIDA 18bits	Optimal Default, Failsafe Default
Color depth and data packing format		
If need to set it to 36, 48-bit mode, please set "LVDS mode" to "Dual Mode"		
LVDS mode	Single Mode	Optimal Default, Failsafe Default
	Dual Mode	
Single/Dual Mode		
PTN3460 Slave Addr	0x20	Optimal Default, Failsafe Default
	0x60	
PTN3460 Slave Addr		
Backlight Mode	External	Optimal Default, Failsafe Default
	Internal	
Select the backlight control method. Internal – Via driver, supports windows brightness bar. External Via EAPI.		
Backlight Type	Normal	Optimal Default, Failsafe Default
	Inverted	
Select backlight control method.		
Backlight Level	10%	
	20%	
	30%	
	40%	
	50%	
	60%	
	70%	
	80%	Optimal Default, Failsafe Default
	90%	
	100%	
Select backlight control level		
Backlight PWM Freq	100Hz	
	200 Hz	Optimal Default, Failsafe Default
	220 Hz	
	500 Hz	
	1K Hz	
	2.2K Hz	
	6.5K Hz	
Select PWM Frequency of backlight control signal		

3.4.1.6 Detail Timing Setting

Advanced

Aptio Setup - AMI

Detail timing Setting

[Disabled]

===== Advance setting =====

Pixel clock(MHz)

65

Horizontal Active

1024

Horizontal Blanking

320

Vertical Active

768

Vertical Blanking

38

Horizontal Sync Offset

24

Horizontal Sync Pulse Width

136

Vertical Sync Offset

3

Vertical Sync Pulse Width

6

Horizontal Image Size(mm)

518

Vertical Image Size(mm)

333

Digital Sync Signal Definitions

[Digital Separate Sync]

H-Sync Polarity

[Active low]

V-Sync Polarity

[Active low]

Horizontal Screen Size(cm)

60

Vertical Screen Size(cm)

40

Color Encoding Format

[RGB 4:4:4]

After enabling "Advance setting", you can refer to the currently set EDID value to make detailed adjustments.

++: Select Screen

T1: 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		
Detail timing Setting	Disabled	Optimal Default, Failsafe Default
	Enabled	
After enabling "Advance setting", you can refer to the currently set EDID value to make detailed adjustments.		

3.4.1.7 Detail Timing Setting

Aptio Setup - AMI		
Advanced		
Swap - Main (P/N)	[Non-Swapping]	Main link P/N swapping
Swap - AUX (P/N)	[Non-Swapping]	
DP lane	[2 Lane]	
DP link rate	[HBR and PBR link rate]	
ASSR Support	[Disabled]	
Enhanced Framing support	[Disabled]	
Clock output for dual LVDS mode	[valid clock output on both buses]	
Data Enable polarity	[Active high]	
LVDS differential output swapping level	[250 mv]	
LVDS clock SSC	[No Spreading]	
Swap - Bus	[Non-Swapping]	
Swap - Channel	[Non-Swapping]	
Swap - Differential pair (P/N)	[Non-Swapping]	
Minimum T3	10	
Minimum T12	20	
Minimum T4	0	
T2 delay	[Enabled]	
T5 delay	[Enabled]	

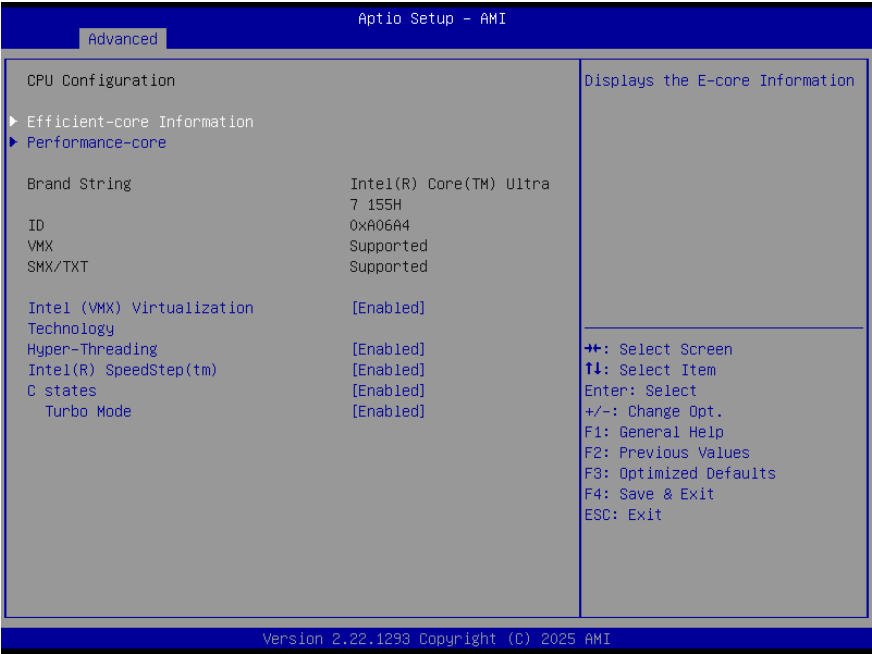
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Options Summary		
Swap - Main (P/N)	Non-Swapping	Optimal Default, Failsafe Default
	Swapping	
Main link P/N swapping		
Swap - AUX (P/N)	Non-Swapping	Optimal Default, Failsafe Default
	Swapping	
AUX P/N swapping		
DP lane	2 Lane	Optimal Default, Failsafe Default
	1 Lane	
DP lane configuration		
DP link rate	HBR and PBR link rate	Optimal Default, Failsafe Default
	PBR link rate only DP lane	
DP link configuration		
ASSR Support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Alternative Scrambler Seed Reset		

Options Summary		
Enhanced Framing support	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enhanced Framing support		
Clock output for dual LVDS mode	valid clock output on even bus only	
	valid clock output on odd bus only	
	valid clock output on both buses	Optimal Default, Failsafe Default
Clock output for dual LVDS mode		
Data Enable polarity	Active high	Optimal Default, Failsafe Default
	Active low	
Data Enable polarity		
LVDS differential output swapping level	150mv	
	200mv	
	250mv	Optimal Default, Failsafe Default
	300mv	
	350mv	
	400mv	
	450mv	
LVDS differential output swapping level		
LVDS clock SSC	No Spreading	Optimal Default, Failsafe Default
	0.5% Spreading	
	1.0% Spreading	
	1.5% Spreading	
	2.0% Spreading	
	2.5% Spreading	
LVDS clock frequency center spreading depth		
Swap - Bus	Non-Swapping	Optimal Default, Failsafe Default
	Swapped	
Odd bus <-> Even Bus		
Swap - Channel	Non-Swapping	Optimal Default, Failsafe Default
	Swapped	
(A ↔ D, B ↔ CLK, C ↔ C)		
Swap - Differential pair (P/N)	Non-Swapping	Optimal Default, Failsafe Default
	Swapped	
Differential pair (P/N) Swapping		
Minimum T3	10	Optimal Default, Failsafe Default
Minimum T3 timing of panel power sequence to enforce (expressed in units of 50ms)		

Options Summary		
Minimum T12	20	Optimal Default, Failsafe Default
Minimum T12 timing of panel power sequence to enforce (expressed in units of 50ms)		
Minimum T4	0	Optimal Default, Failsafe Default
Minimum T4 timing of panel power sequence to enforce (expressed in units of 50ms)		
T2 delay	Disabled	
	Enabled	Optimal Default, Failsafe Default
T2 is delays by 20ms		
T5 delay	Disabled	
	Enabled	Optimal Default, Failsafe Default
T5 is delays by 20ms		

3.4.2 CPU Configuration



Options Summary		
Intel (VMX) Virtualization	Disabled	
Technology	Enabled	Optimal Default, Failsafe Default

Options Summary

When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.

Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default

Enable or Disable Hyper-Threading Technology.

Intel(R) SpeedStep(tm)	Disabled	
	Enabled	Optimal Default, Failsafe Default

Allows more than two frequency ranges to be supported.

C states	Disabled	
	Enabled	Optimal Default, Failsafe Default

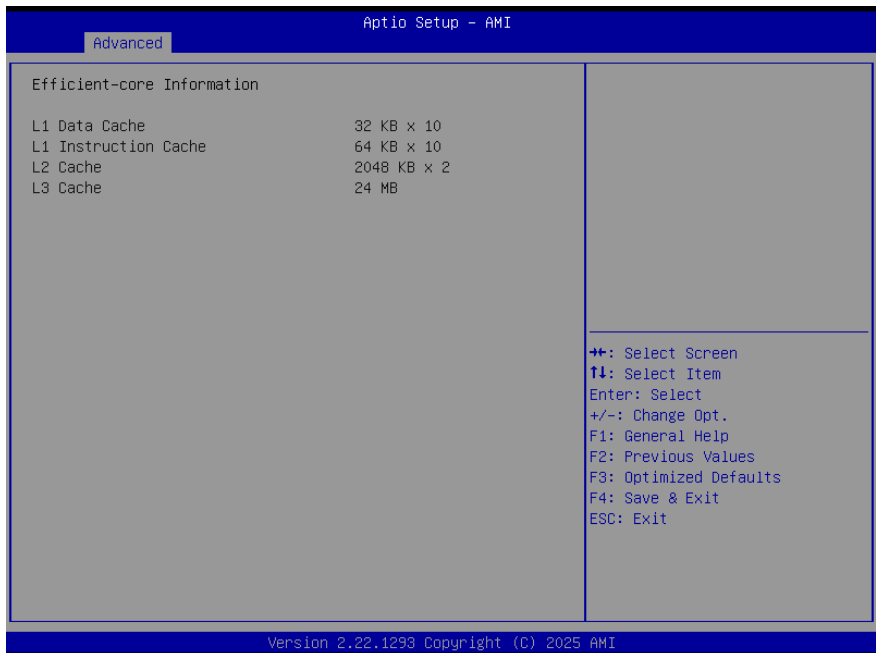
Enable/Disable CPU Power Management.

Allows CPU to go to C states when it's not 100% utilized.

Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default

Enable/Disable processor Turbo Mode.

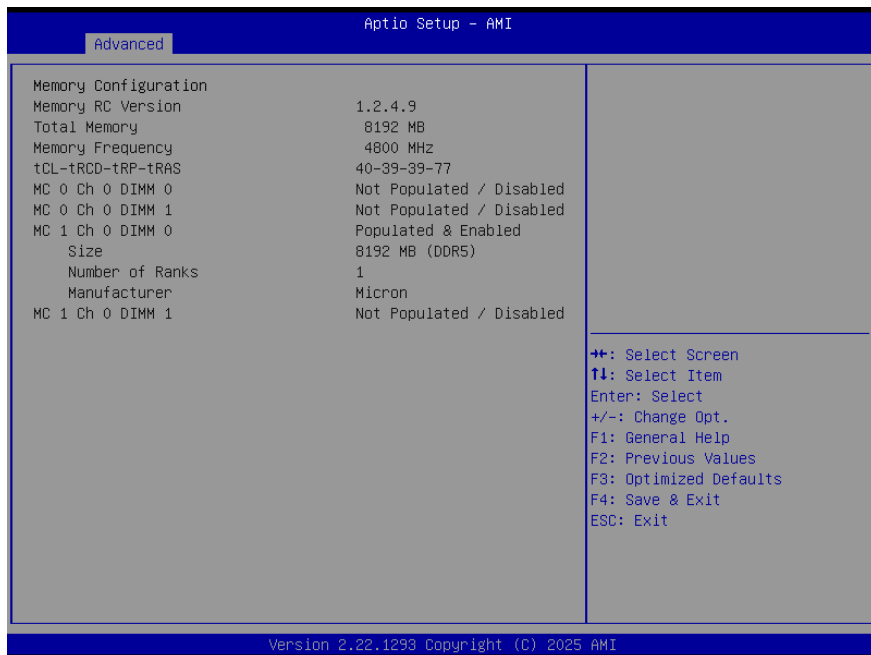
3.4.2.1 Efficient-Core Information



3.4.2.2 Performance-Core Information



3.4.3 Memory Configuration



3.4.4 On-Module H/W Monitor

Apdio Setup - AMI	
Advanced	
CPU Temperature (PECI)	: +38 ℃
Thermal Source 1(T1)	: +29 ℃
Thermal Source 2(T2)	: +29 ℃
5VSB	: +4.991 V
VIN	: +12.053 V
VMEM	: +1.072 V
Smart Fan Configuration	
FAN 1	: 1242 RPM
FAN 1	[Auto - Slope Linear]
PWM signal	[Non-inverting]
Thermal Monitoring	[CPU Temperature (PECI)]
Start-Up temperature	10
Shut-Off temperature	0
START PWM	30
Slope (PWM)	[1 (PWM)]
++: Select Screen T1: 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		
FAN 1	Full Mode	
	Manual Mode	
	Auto – Slope Linear	Optimal Default, Failsafe Default
Smart 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 (PECI)	Optimal Default, Failsafe Default
	Thermal Source 1 (T1)	
	Thermal Source 2 (T2)	
Monitoring thermal sensor select.		
Start-Up temperature	10	Optimal Default, Failsafe Default
PWM output when monitoring thermal sensor is exceeded. Range: 0 – 100.		
Shut-Off temperature	0	Optimal Default, Failsafe Default

Options Summary

PWM turns off when monitored thermal sensor is less or equal to.

Range: 0 – 100.

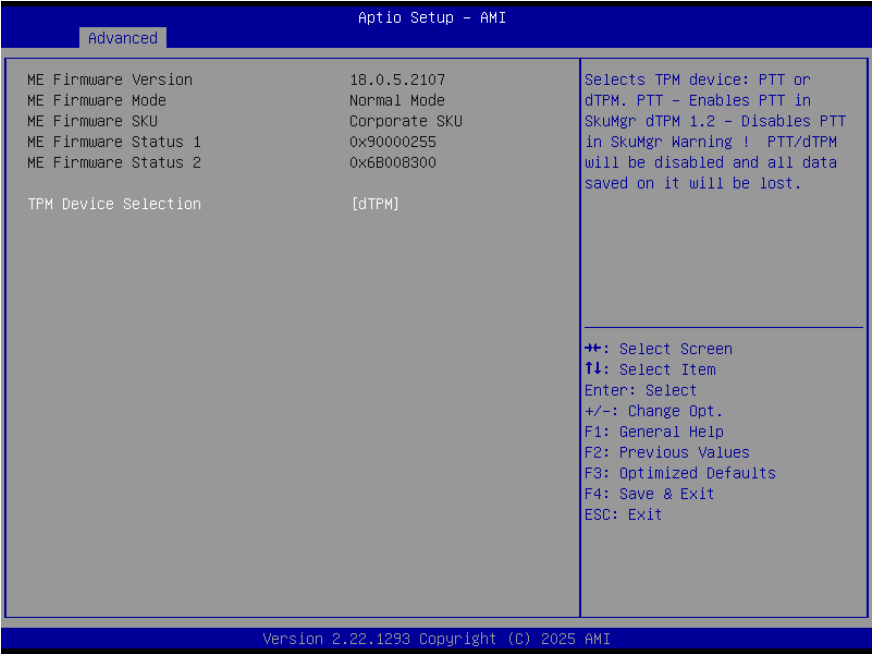
START PWM	30	Optimal Default, Failsafe Default
------------------	----	-----------------------------------

The beginning PWM output value when Start-Up temperature is triggered

Slope (PWM)	0 (PWM)	
	1 (PWM)	Optimal Default, Failsafe Default
	2 (PWM)	
	4 (PWM)	
	8 (PWM)	
	16 (PWM)	
	32 (PWM)	
	64 (PWM)	

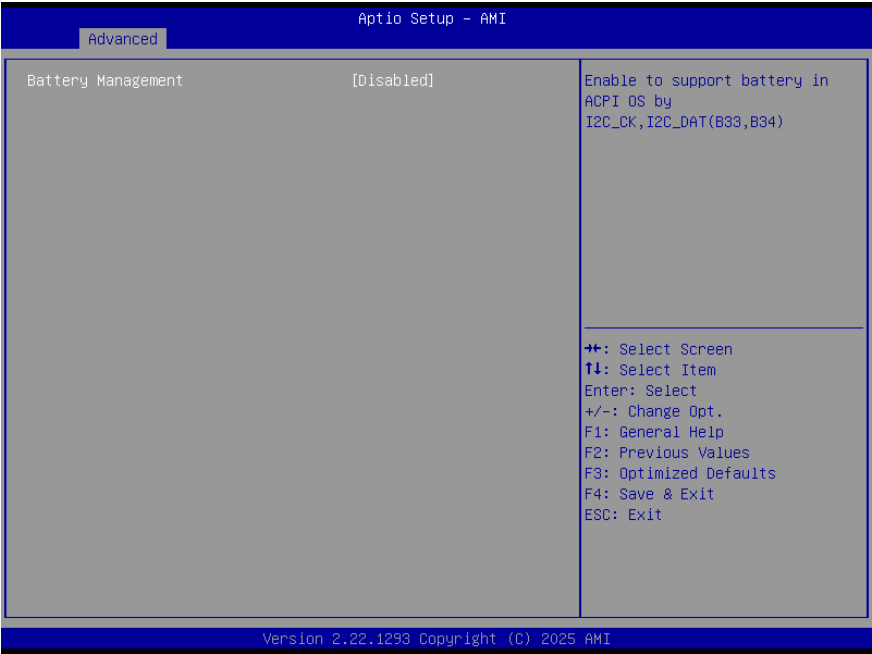
When the monitored temperature is higher than the Start-Up temperature, the PWM output increases per degree.

3.4.5 PCH-FW Configuration



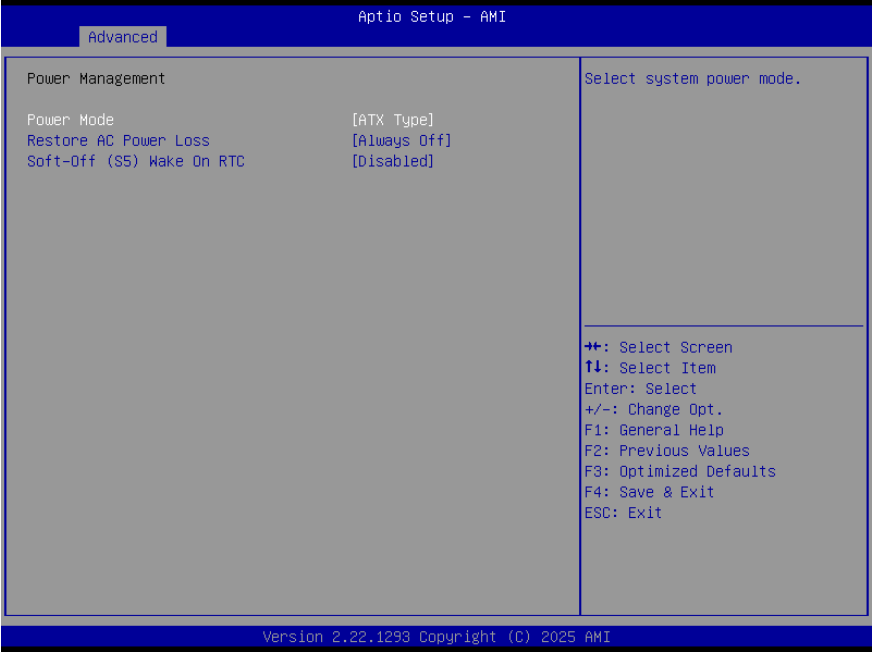
Options Summary		
TPM Device Selection	dTPM	Optimal Default, Failsafe Default
	PTT	
Selects TPM device: PTT or dTPM. PTT - Enables PTT in SkuMgr. dTPM 1.2 - Disables PTT in SkuMgr. Warning: PTT/dTPM will be disabled and all data saved on it will be lost.		

3.4.6 On-Module Configuration



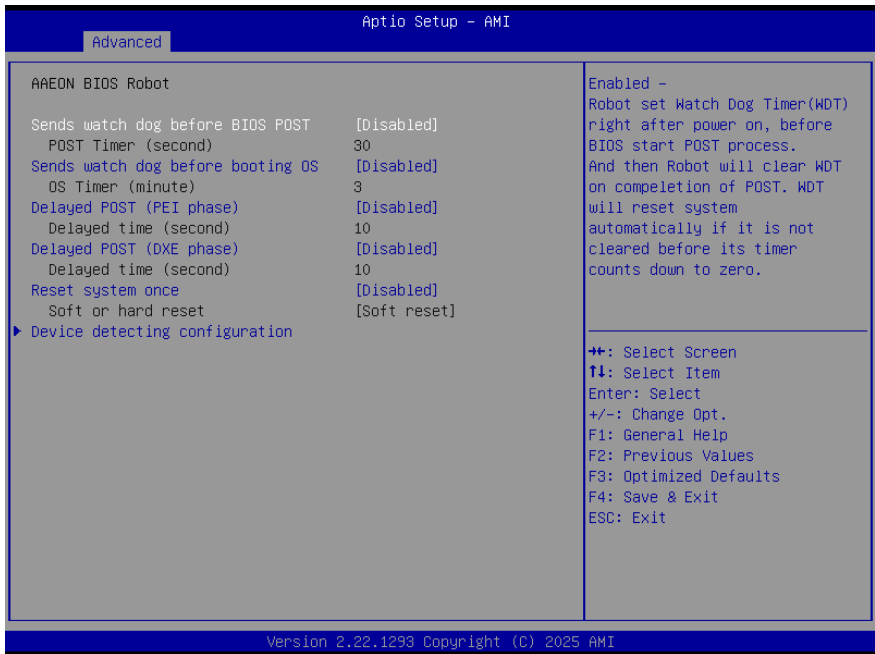
Options Summary		
Battery Management	Disabled	Optimal Default, Failsafe Default
	One Battery	
Enable to support battery in ACPI OS by I2C_CK, I2C_DAT (B33, B34)		

3.4.7 Power Management



Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode.		
Restore AC Power Loss	Last State	
	Always On	
	Always Off	Optimal Default, Failsafe Default
IO Restore AC power Loss.		
Soft-Off (S5) Wake On RTC	Disable	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.		

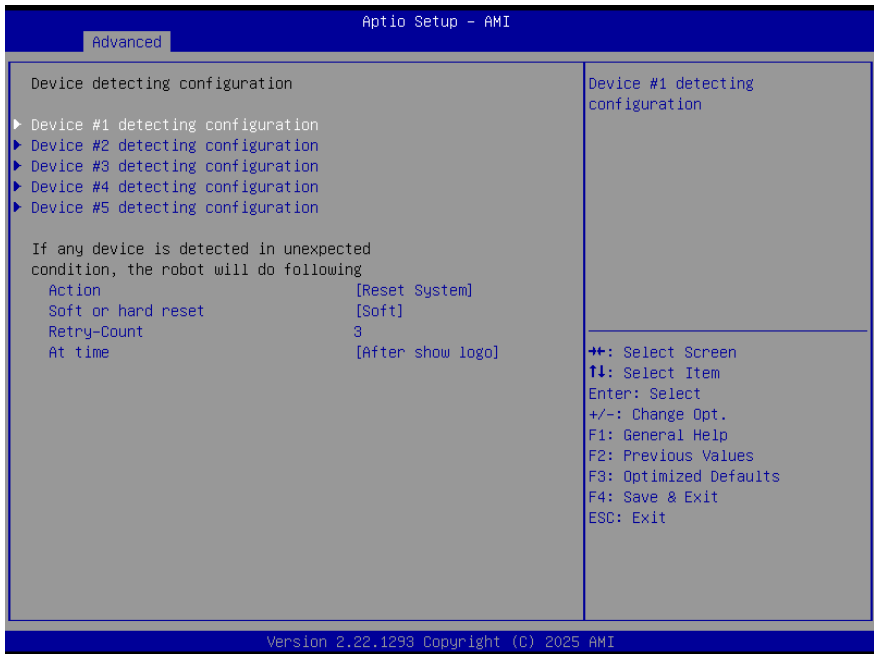
3.4.8 AAEON BIOS Robot



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.		

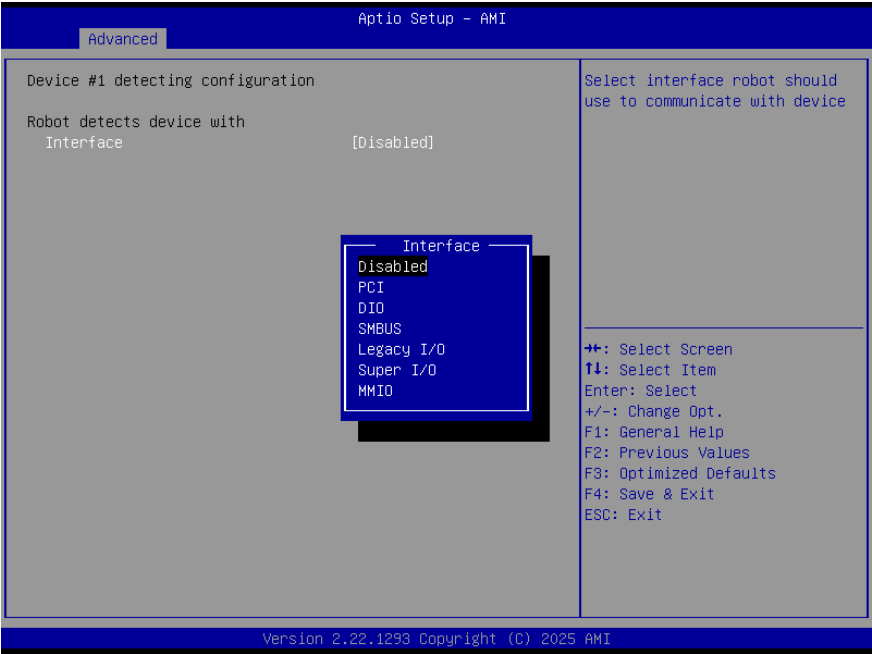
Options Summary		
OS Timer (minute)	3	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for OS loading.		
Delayed POST (PEI phase)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start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

3.4.8.1 Device Detecting Configuration



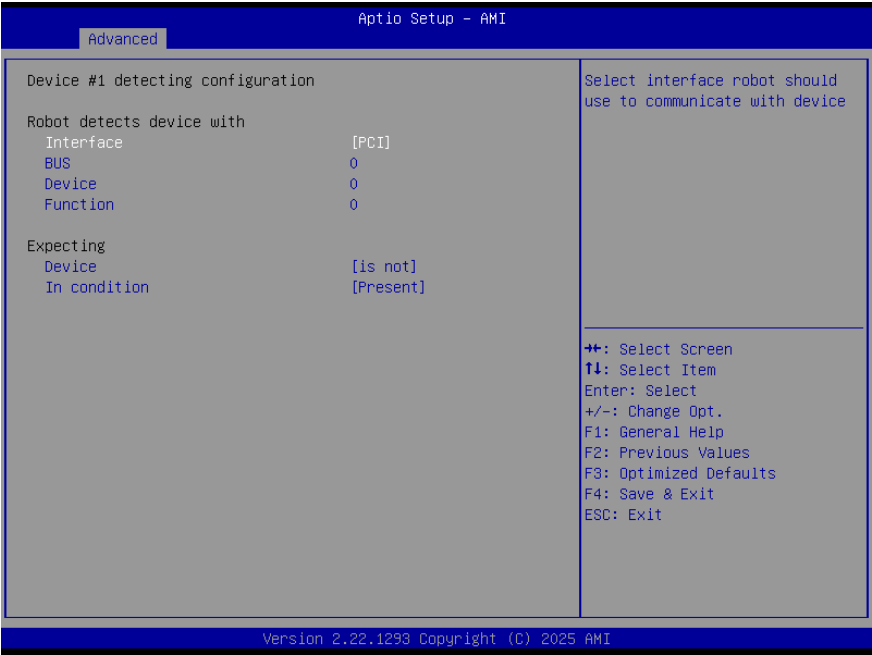
Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robot should do.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	Optimal Default, Failsafe Default
Fill retry counter 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.		

3.4.8.1.1 Device #1 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.		

Set to PCI



Options Summary		
When interface item set to "PCI" will show below items		
DIO pin number	GPIO 1	Optimal Default, Failsafe Default
	GPIO *	
Fill DIO pin number, DIO, DIO1, and so on. For COM express product: 0-3 - GPIO0-3\ n4-7 - GPO0-3.		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
BUS	0	Optimal Default, Failsafe Default
Fill BUS number to a PCI device, in hexadecimal. Range: 0 – FF.		
Device	0	Optimal Default, Failsafe Default
Fill DEVICE number to a PCI device, in hexadecimal. Range: 0 – FF.		
Function	0	Optimal Default, Failsafe Default
Fill FUNCTION number to a PCI device, in hexadecimal. Range: 0 – FF.		
Device	is	
	Is not	Optimal Default, Failsafe Default

Options Summary

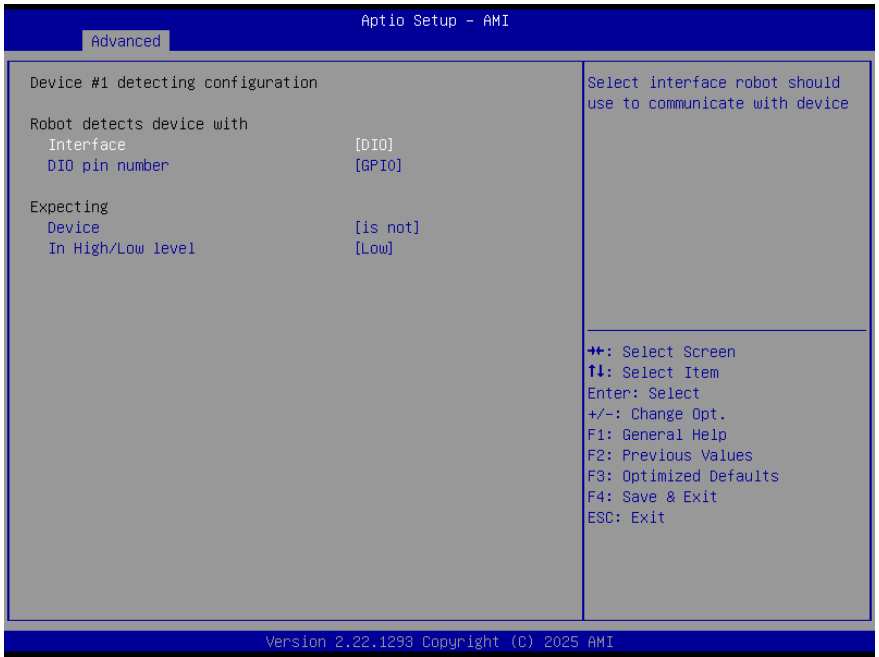
When interface item set to "PCI" will show below items

Select that robot should or should not do action if condition met.

In condition	Present	Optimal Default, Failsafe Default
	Specified register data	

Select the condition that robot should check for device. Present - device is detected.
According to register - Robot read register according to configuration. Note: Device will be considered 'Present' by Robot, when data read from device is not 0xFF.

Set to DIO



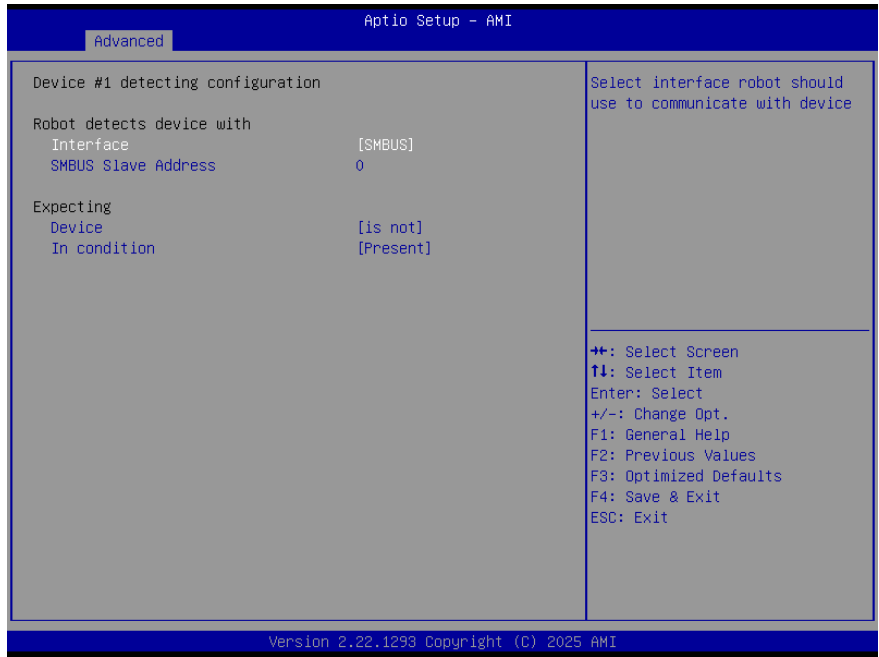
Options Summary

When interface item set to "DIO" will show below items

DIO pin number	GPI 0	Optimal Default, Failsafe Default
	GPI 1	
	GPI 2	
	GPI 3	
	GPO 0	
	GPO 1	

Options Summary		
When interface item set to "DIO" will show below items		
DIO pin number (cont.)	GPO 2	
	GPO 3	
Fill DIO pin number, DIO, DIO1, and so on. For COM express product: 0-3 - GPIO-3 4-7 - GPO0-3		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
In High/Low level	Low	Optimal Default, Failsafe Default
	High	
Select High/Low level of the DIO pin that robot should do action.		

Set to SMBus



Options Summary		
When interface item set to "SMBUS" will show below items		
SMBUS Slave Address	0	Optimal Default, Failsafe Default
Fill slave address to a SMBUS device, in hexadecimal. Range: 0 - FF		

Options Summary		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device.		
Present - device is detected		
According to register - Robot read register according to configuration.		
Note: Device will be considered 'Present' by Robot, when data read from device is not 0xFF.		

Set to Legacy I/O

Aptio Setup - AMI

Advanced

Device #1 detecting configuration

Robot detects device with

Interface [Legacy I/O]

I/O Address 0

Expecting

Device [is not]

In condition [Present]

Select interface robot should use to communicate with device

0

F1: General Help

F2: Previous Values

F3: Optimized Defaults

F4: Save & Exit

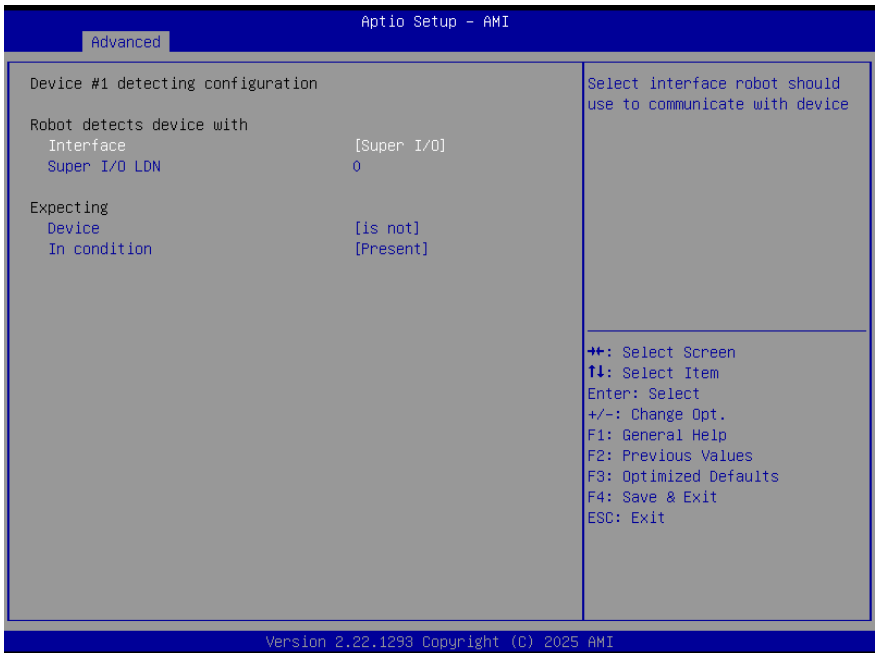
ESC: Exit

Version 2.22.1293 Copyright (C) 2025 AMI

Options Summary		
When interface item set to "Legacy I/O" will show below items		
I/O Address	0	Optimal Default, Failsafe Default
Fill I/O address device is responding to. Range: 0~FFFF.		

Options Summary		
Device	is	
	Is not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device. Present - device is detected. According to register - Robot read register according to configuration. Note: Device will be considered 'Present' by Robot, when data read from device is not 0xFF.		

Set to Super I/O



Options Summary		
When interface item set to "Super I/O" will show below items		
Super I/O LDN	0	Optimal Default, Failsafe Default
Fill LDN number to a Super I/O device. Range: 0~FF.		

Options Summary		
When interface item set to "Super I/O" will show below items		
Device	Is	
	Is not	Optimal Default, Failsafe Default
Select that robot should or should not do action if condition met.		
In condition	Present	Optimal Default, Failsafe Default
	Specified register data	
Select the condition that robot should check for device. Present - device is detected. According to register - Robot read register according to configuration. Note: Device will be considered 'Present' by Robot, when data read from device is not 0xFF.		

Set to MMIO

Aptio Setup - AMI		
Advanced		
Device #1 detecting configuration		Select interface robot should use to communicate with device
Robot detects device with		
Interface	[MMIO]	
MMIO Address	0	
Expecting		
Device	[is not]	
In condition	[Present]	
		++: Select Screen
		f1: 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) 2025 AMI		

Options Summary		
When interface item set to "MMIO" will show below items		
MMIO Address	0	Optimal Default, Failsafe Default
Fill Memory Mapped I/O address device is responding to. Range:		

Options Summary

When interface item set to "MMIO" will show below items

0~FFFFFFFF.

Device	is	
	Is not	Optimal Default, Failsafe Default

Select that robot should or should not do action if condition met.

In condition	Present	Optimal Default, Failsafe Default
	Specified register data	

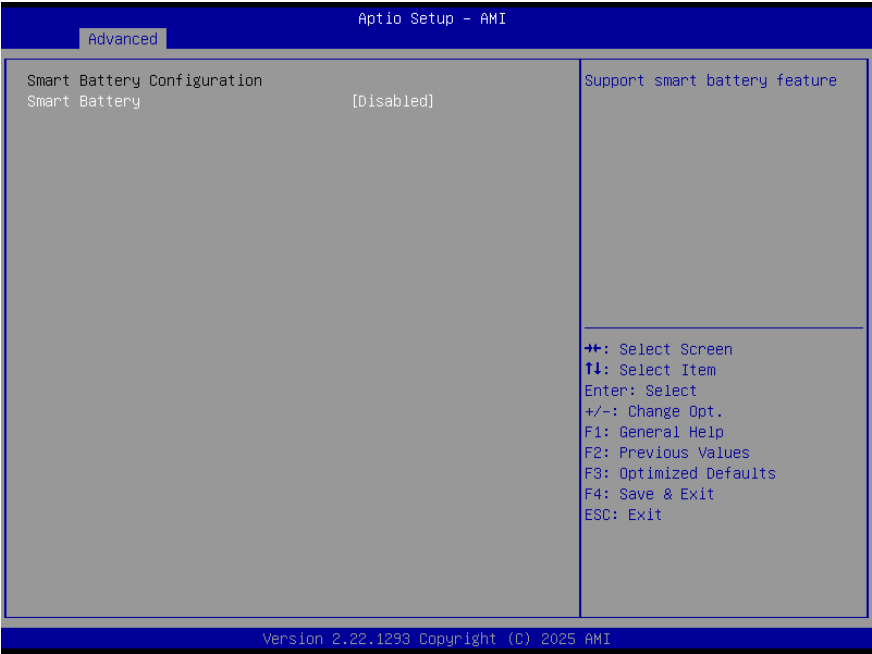
Select the condition that robot should check for device.

Present - device is detected.

According to register - Robot read register according to configuration.

Note: Device will be considered 'Present' by Robot, when data read from device is not 0xFF.

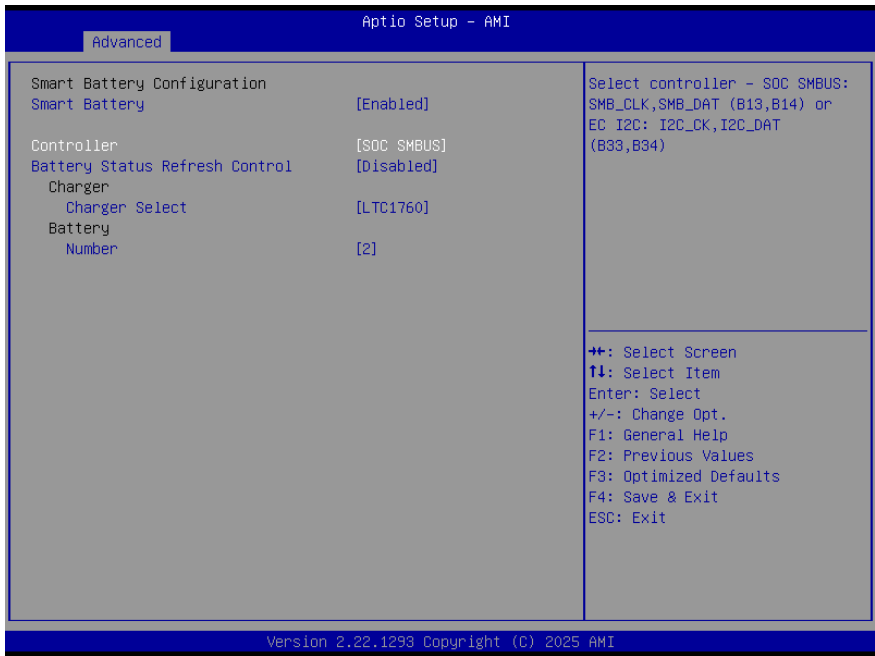
3.4.9 Smart Battery Configuration



Options Summary

When interface item set to "Disable" will show below items

Smart Battery	Disable	Optimal Default, Failsafe Default
	Enable	
Support smart battery feature		

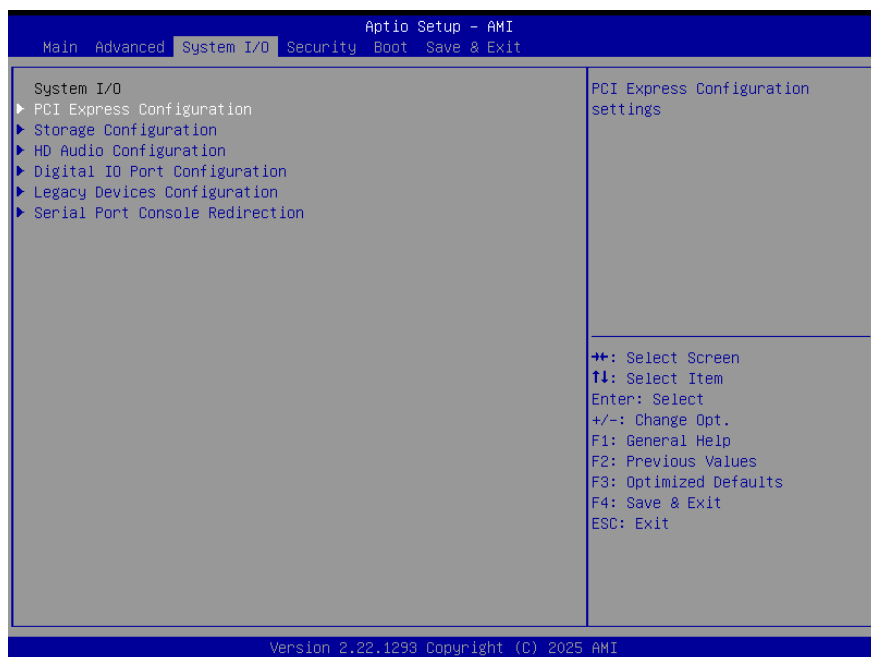


Options Summary

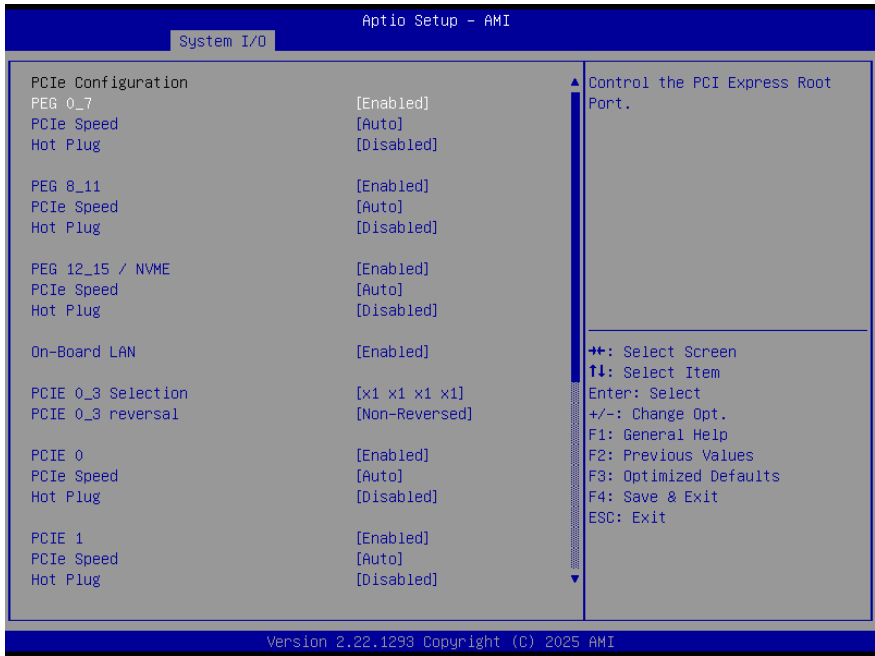
When interface item set to "Enable" will show below items

Controller	SOC SMBUS	Optimal Default, Failsafe Default
	EC I2C	
Select controller - SOC SMBUS: SMB_CLK, SMB_DAT (B13, B14) or EC I2C: I2C_CLK, I2C_DAT (B33, B34)		
Battery Status Refresh Control	Disable	Optimal Default, Failsafe Default
	SMBALERT#	
Select source to actively refresh the battery status on Windows		
Charger Select	LTC1706	Optimal Default, Failsafe Default
Select Charger support		
Number	0	
	1	
	2	Optimal Default, Failsafe Default
Select maximum number of devices supported		

3.5 Setup Submenu: System I/O



3.5.1 PCI Express Configuration



Options Summary		
PEG 0_7	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
	Gen4	
	Gen5	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		
PEG 8_11	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		

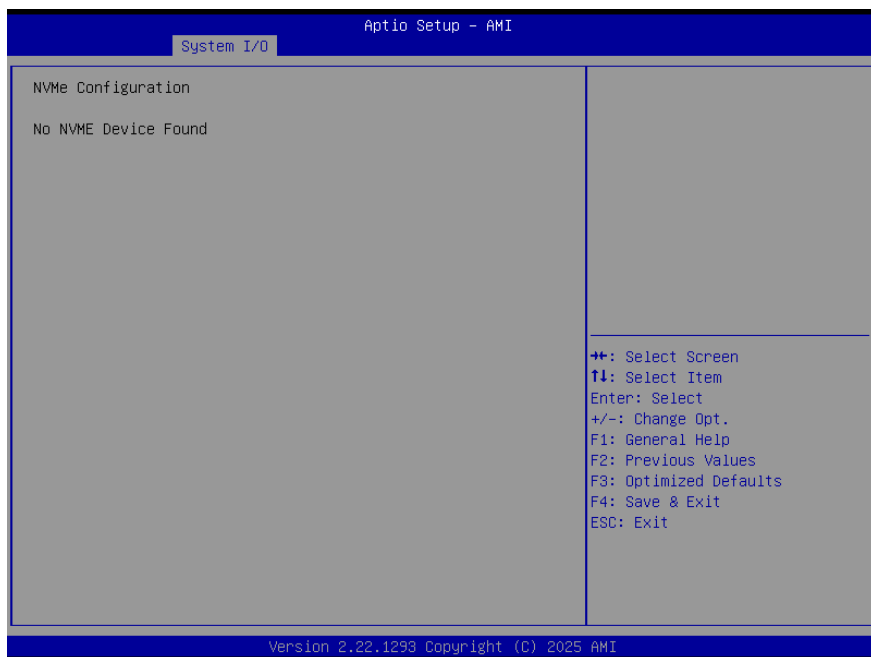
Options Summary		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
	Gen4	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		
PEG12_15	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
	Gen4	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		
PCIe 0_3 Selection	x1 x1 x1 x1	Optimal Default, Failsafe Default
	X2 x1 x1	
	x2 x2	
	x4	
PCIe Controller Setting		
PCIe 0_3 reversal	Non-Reversed	Optimal Default, Failsafe Default
	Reversed	
PCIe LANE REVERSAL		
PCIe 0~3	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		
PCIe Speed (PCIe 0~3)	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Speed.		
Hot Plug (PCIe 0~3)	Disabled	Optimal Default, Failsafe Default
	Enabled	

Options Summary		
PCI Express Hot Plug Enable/Disable.		
PCIE 4_7 reversal	Non-Reversed	Optimal Default, Failsafe Default
	Reversed	
PCIE LANE REVERSAL		
PCIE 4	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		
PCle Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		

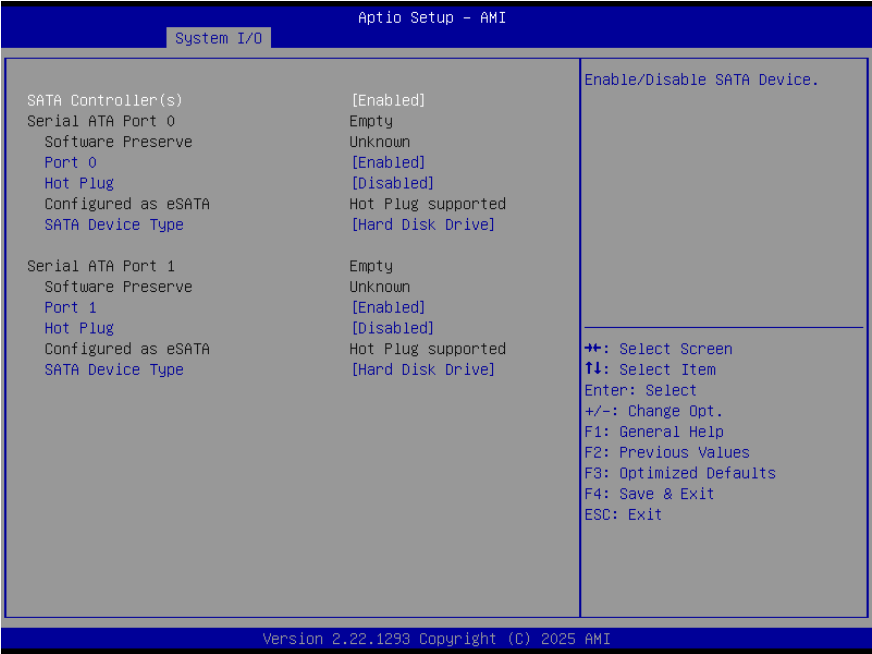
3.5.2 Storage Configuration



3.5.2.1 NVMe Configuration

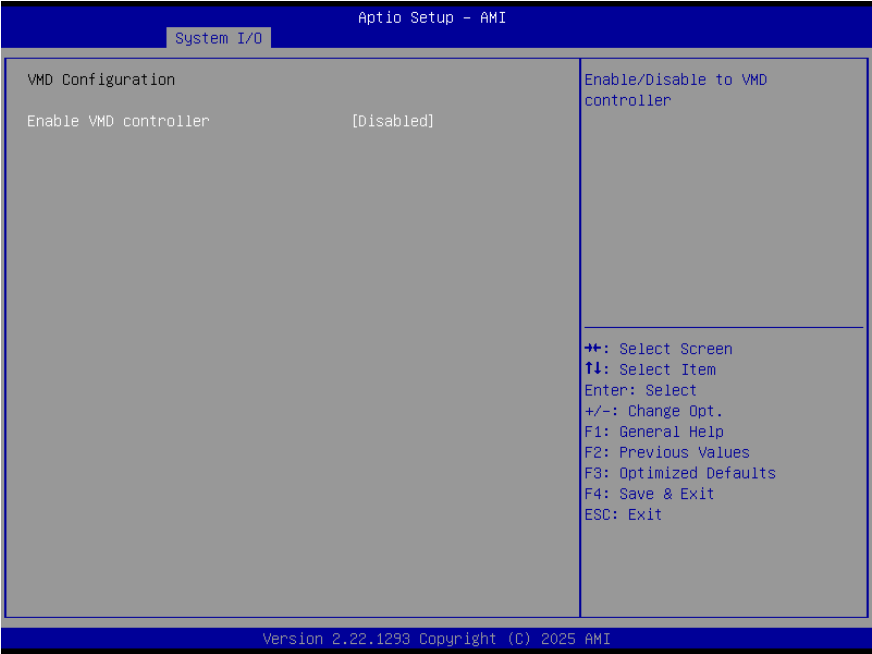


3.5.2.2 SATA Configuration

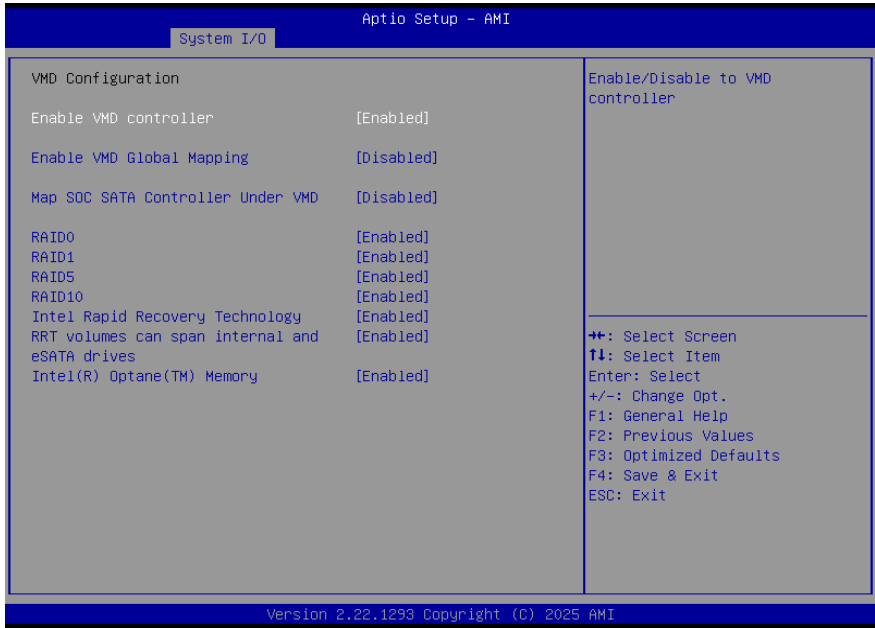


Options Summary		
SATA Controller(s)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable SATA Device.		
Port 0~1	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot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

3.5.2.3 VMD Setup Menu



Options Summary		
Enable VMD controller	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable to VMD controller		



Options Summary		
Enable VMD Global Mapping	Disable	Optimal Default, Failsafe Default
	Enable	
Enable/Disable to Global Mapping.		
Map SOC SATA Controller Under VMD	Disable	Optimal Default, Failsafe Default
	Enable	
Map/UnMap this Root Port to VMD.		
RAID0	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable RAID0 support.		
RAID1	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable RAID1 support.		
RAID5	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable RAID5 support.		
RAID10	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable RAID10 support.		

Options Summary		
Intel Rapid Recovery Technology	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable Intel Rapid Recovery Technology.		
RRT volumes can span internal and eSATA drives	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable RRT volumes can span internal and eSATA drives.		
Intel(R) Optane(TM) Memory	Disable	
	Enable	Optimal Default, Failsafe Default
Enable/Disable System Acceleration with Intel® Optane™		

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.		

3.5.4 Digital IO Port Configuration

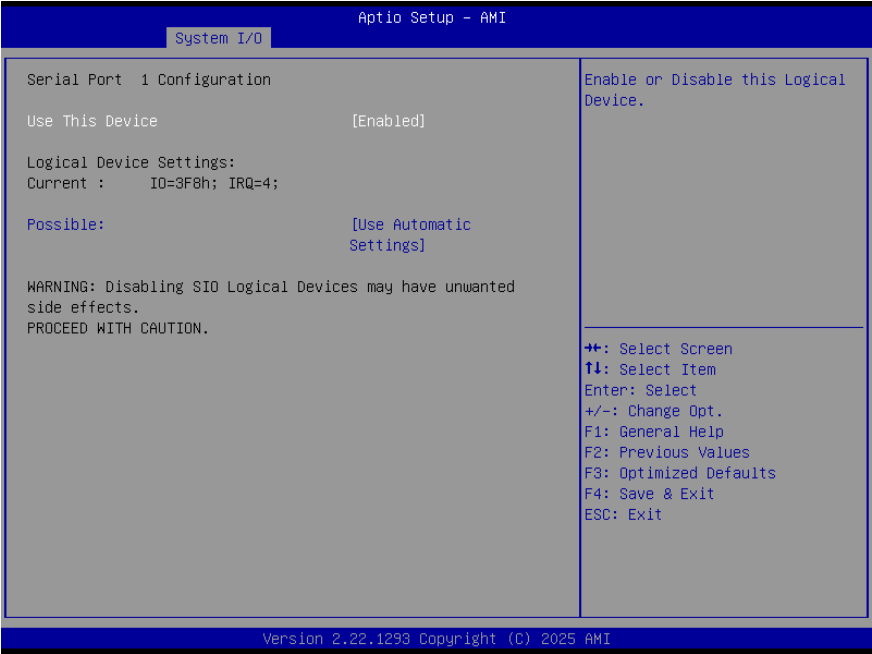


Options Summary		
GPI 0~3	Output	
	Input	Optimal Default, Failsafe Default
Set DIO as Input or Output.		
GPO 0~3	Output	Optimal Default, Failsafe Default
	Input	
Set DIO as Input or Output.		
Output Level	High	Optimal Default, Failsafe Default
	Low	
Set output level when DIO pin is output.		

3.5.5 Legacy Logical Devices Configuration

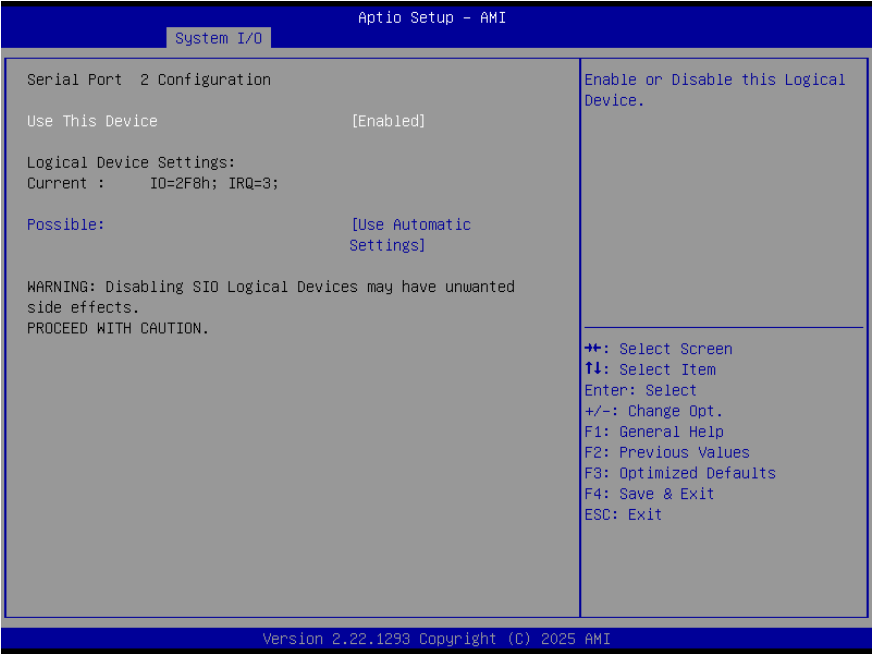


3.5.5.1 Serial Port 1 Configuration



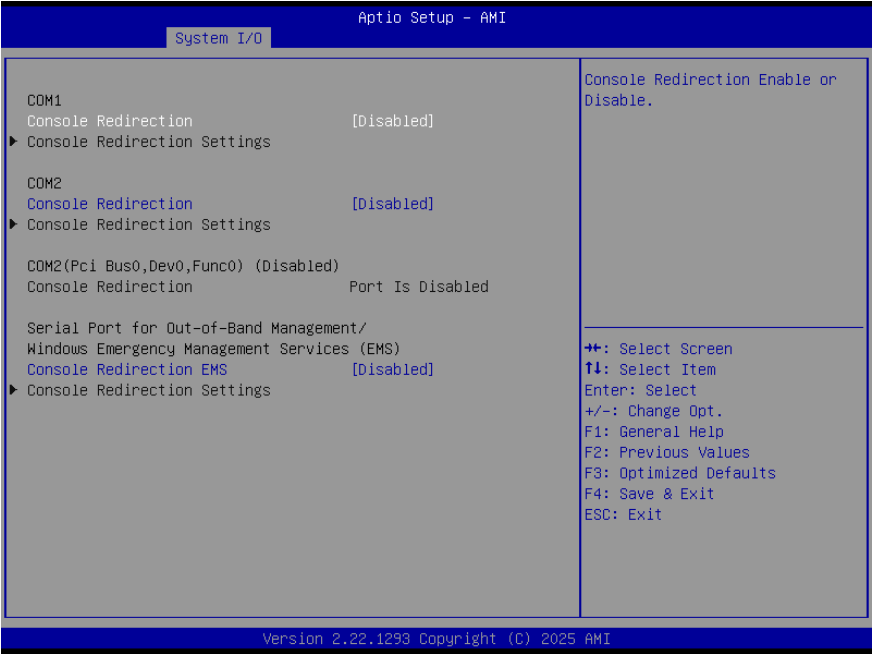
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4; DMA;	
	IO=2C8h; IRQ=11; DMA;	
Allows user to change the device resource settings. New settings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

3.5.5.2 Serial Port 2 Configuration



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

3.5.6 Serial Port Console Redirection



Options Summary		
Console Redirection (COM1)	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection (COM2)	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.		

3.6 Setup Submenu: Security



Change Administrator/User Password

You can set an Administrator password. If you set an Administrator password, you can then set a User password. User passwords do not have access to many of the features in the Setup utility.

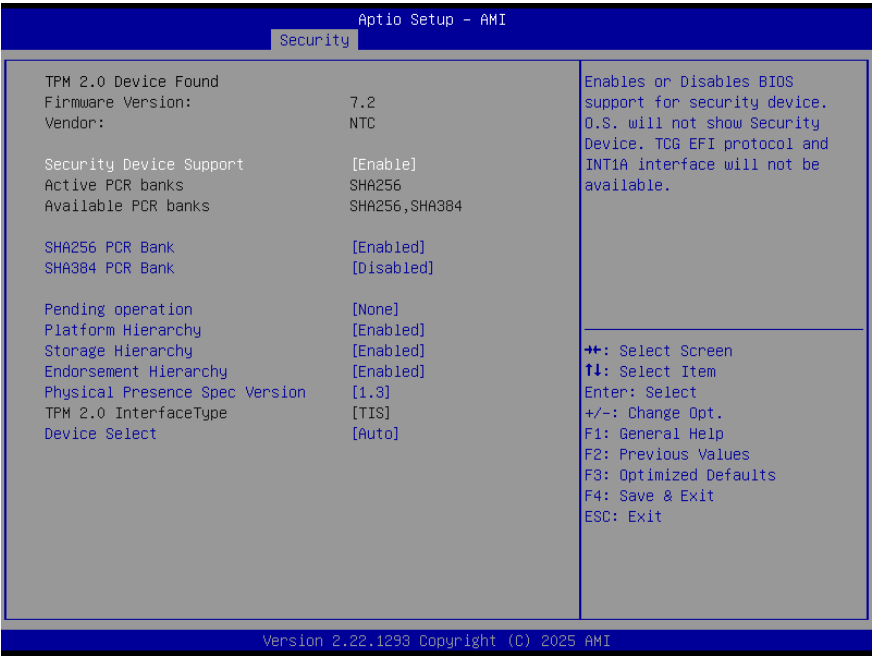
Select the password you want to set and press <Enter>. A dialog box will appear which lets you set the password. Passwords must be between 3 and 20 letters or numbers. Press <Enter> and re-enter the password into the next dialog box that appears. Press <Enter> after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Remove Password

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

Options Summary		
BIOS Lock	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable the PCH BIOS Lock Enable feature. Required to be enabled to ensure SMM protection of flash.		

3.6.1 Trusted Computing



Options Summary		
Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default

Options Summary		
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	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Disable	Optimal Default, Failsafe Default
	Enable	
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.		

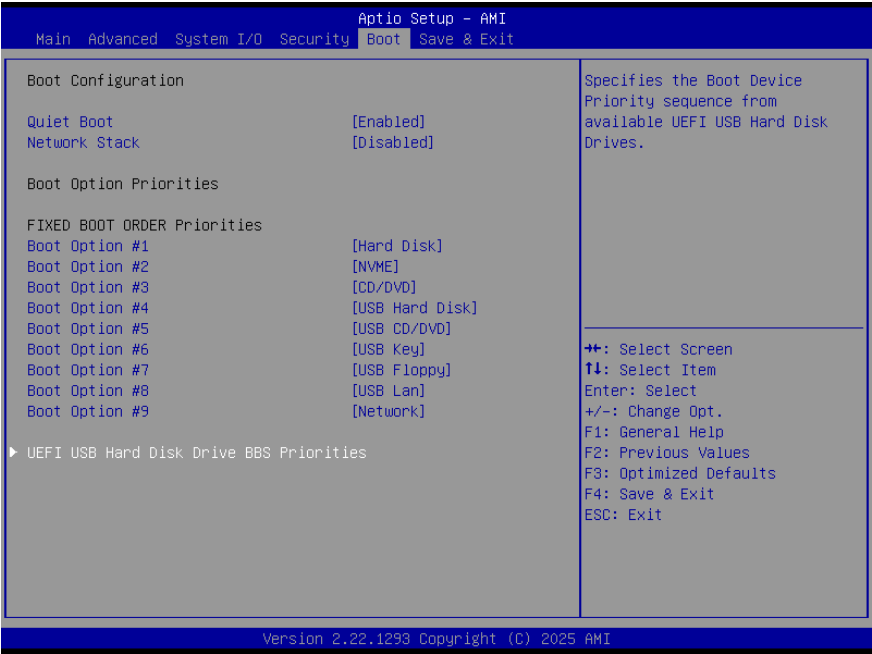
3.6.2.1 Key Management



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.		
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	

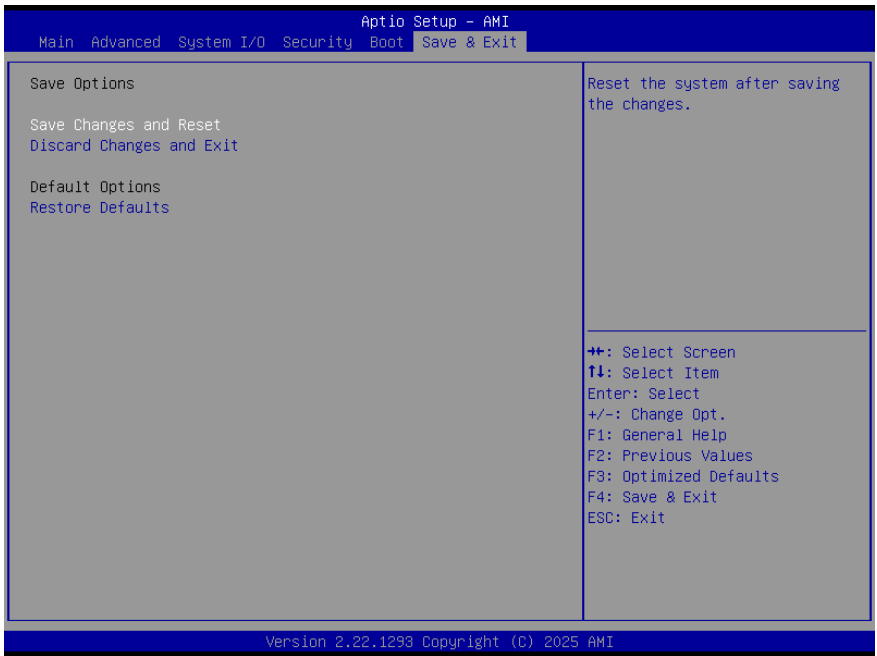
Options Summary	
Platform Key (PK)	Delete
Key Exchange Keys (KEK)	Details
	Export
	Update
	Append
	Delete
Authorized Signatures (db)	Details
	Export
	Update
	Append
	Delete
Forbidden Signatures (dbx)	Details
	Export
	Update
	Append
	Delete
Authorized TimeStamps (dbt)	Update
	Append
OsRecovery Signatures (dbr)	Update
	Append
Enroll Factory Defaults or load certificates from a file: Public Key Certificate: a) EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX Authenticated UEFI Variable EFI PE/COFF Image (SHA256) Key Source: Factory, Modified, Mixed.	

3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or Disables Quite Boot option.		
Network Stack	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack.		

3.8 Setup Submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the COM-MTHC6 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 **gfx_win_101.5762.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. Right-click the ZIP file and select Extract All
3. Right-click the Start button and select Device Manager.
4. Right-click on the device and select **Update driver**.
5. Follow the prompts to complete the installation.

Install Audio Drivers

Note: Ensure Intel Audio Driver (ADSP-20.40.10149.8) is installed before the Realtek Audio driver (Realtek Audio 6.0.9034.2)

Intel Audio DSP (ADSP) Driver

1. Open the **Audio** folder
2. Open the **ADSP-20.40.10149.8** subfolder
3. Right-click the Start button and select Device Manager.
4. Right-click on the device and select **Update driver**.
5. Follow the prompts to complete the installation.

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 Intel NPU Driver

1. Open the **Intel NPU Driver** folder
2. Right-click the ZIP file and select Extract All
3. Right-click the Start button and select Device Manager.
4. Right-click on the device and select **Update driver**.
5. Follow the prompts to complete the installation.

Install Intel Platform Monitoring Technology Driver

1. Open the **Intel Platform Monitoring Technology** folder
2. Right-click the ZIP file and select Extract All
3. Right-click the Start button and select Device Manager.
4. Right-click on the device and select **Update driver**.
5. Follow the prompts to complete the installation.

Install Intel RAID Driver

1. Open the **Intel RST** folder
2. Right-click the ZIP file and select Extract All
3. Right-click the Start button and select Device Manager.
4. Right-click on the device and select **Update driver**.
5. Follow the prompts to complete the installation.

Install Camera Drivers

1. Open the **Camera Driver** folder
2. Right-click the ZIP file and select Extract All
3. Right-click the Start button and select Device Manager.
4. Right-click on the device (see required installation order below) and select **Update driver**.
5. Follow the prompts to complete the installation.

Note: To enable HDMI Capture function, MIPI Camera driver and I2S Audio driver is required. MIPI Camera driver refers to **"Intel Camera-63.22000.3.12713"**

To install camera driver correctly, run installation of the following driver strictly in sequence:

- 1: "iaisp64.inf"
- 2: "iacamera64.inf"
- 3: "iactrllogic64.inf"
- 4: "lt6911uxc.inf"

Audio Driver-refers to **"ADSP-10.29.00.8854"**

Appendix A

I/O Information

A.1 I/O Address Map

▼	DESKTOP-BQ707M0
▼	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
	[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
	[00000000000000F8 - 00000000000000FF] Communications Port (COM2)
	[00000000000000F8 - 00000000000000FF] Communications Port (COM1)
	[00000000000000D0 - 00000000000000D1] Programmable interrupt controller
	[00000000000000680 - 0000000000000069F] Motherboard resources
	[00000000000000D00 - 00000000000000FFF] PCI Express Root Complex
	[0000000000000164E - 0000000000000164F] Motherboard resources
	[00000000000001854 - 00000000000001857] Motherboard resources
	[00000000000002000 - 000000000000020FE] Motherboard resources
	[00000000000003020 - 0000000000000303F] Standard SATA AHCI Controller
	[00000000000003040 - 00000000000003043] Standard SATA AHCI Controller
	[00000000000003050 - 00000000000003057] Standard SATA AHCI Controller
	[0000000000000EFA0 - 0000000000000EFBF] Intel(R) SMBus - 7E22

A.2 Memory Address Map

▼	Memory
	[0000000000000000 - 000000000000FFFF] Motherboard resources
	[0000000000000000 - 000000000000FFFF] Motherboard resources
	[0000000000A0000 - 00000000000BFFFF] PCI Express Root Complex
	[0000000080000000 - 00000000800FFFFF] Intel(R) Ethernet Controller I226-IT
	[0000000080000000 - 00000000801FFFFF] PCI Express Root Port
	[0000000080000000 - 00000000BFFFFFFF] PCI Express Root Complex
	[0000000080100000 - 0000000080103FFF] Intel(R) Ethernet Controller I226-IT
	[0000000080200000 - 0000000080201FFF] Standard SATA AHCI Controller
	[0000000080202000 - 00000000802027FF] Standard SATA AHCI Controller
	[0000000080203000 - 00000000802030FF] Standard SATA AHCI Controller
	[00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
	[00000000E0D10000 - 00000000E0D1FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083
	[00000000E0D20000 - 00000000E0D2FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083
	[00000000E0D30000 - 00000000E0D3FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083
	[00000000E0D40000 - 00000000E0D4FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083
	[00000000E0D50000 - 00000000E0D5FFFF] Intel(R) Serial IO GPIO Host Controller - INTC1083
	[00000000FC800000 - 00000000FC81FFFF] Motherboard resources
	[00000000FE010000 - 00000000FE010FFF] Intel(R) SPI - 7E23
	[00000000FED00000 - 00000000FED003FF] High precision event timer
	[00000000FED20000 - 00000000FED7FFFF] Motherboard resources
	[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
	[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
	[00000000FEDC0000 - 00000000FEDC7FFF] Motherboard resources
	[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
	[0000000400000000 - 0000000400FFFFFF] Intel(R) Graphics
	[0000000401000000 - 00000004010FFFFF] Intel(R) Graphics
	[00000004020240000 - 0000000402024FFFF] Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
	[00000004020250000 - 0000000402025FFFF] Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
	[00000004020268000 - 000000040202680FF] Intel(R) SMBus - 7E22
	[00000004020269000 - 00000004020269FFF] Intel(R) Management Engine Interface #1
	[0000000402026A000 - 0000000402026AFFF] Intel(R) Serial IO I2C Host Controller - 7E79
	[0000000402026B000 - 0000000402026BFFF] Intel(R) Serial IO I2C Host Controller - 7E78
	[000003FFB0000000 - 000003FFB7FFFFFF] Intel(R) AI Boost
	[000003FFBFC00000 - 000003FFBFDFFFFFF] Intel® Smart Sound Technology BUS
	[000003FFBFFBB000 - 000003FFBFFBBFFF] Intel(R) AI Boost
	[000003FFBFFBC000 - 000003FFBFFBFFF] Intel® Smart Sound Technology BUS
	[000003FFBFFC0000 - 000003FFBFFFFFFFF] Intel(R) Platform Monitoring Technology (PMT) Driver

A.3 Large Memory Address Map

- ▼  Large Memory
 -  [0000004000000000 - 000003FFBFFFFFFF] PCI Express Root Complex

A.4 IRQ Mapping Chart

▼		Interrupt request (IRQ)	
		(ISA) 0x00000000 (00)	System timer
		(ISA) 0x00000003 (03)	Communications Port (COM2)
		(ISA) 0x00000004 (04)	Communications Port (COM1)
		(ISA) 0x0000000E (14)	Intel(R) Serial IO GPIO Host Controller - INTC1083
		(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
 (ISA) 0x000000C4 (196)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C5 (197)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C6 (198)	Microsoft ACPI-Compliant System
 (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
 (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
 (ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System

 (ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
 (ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
 (ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
 (ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010D (269)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
 (ISA) 0x00000110 (272)	Microsoft ACPI-Compliant System
 (ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
 (ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
 (ISA) 0x00000113 (275)	Microsoft ACPI-Compliant System
 (ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
 (ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
 (ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
 (ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
 (ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
 (ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
 (ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
 (ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
 (ISA) 0x00000121 (289)	Microsoft ACPI-Compliant System
 (ISA) 0x00000122 (290)	Microsoft ACPI-Compliant System
 (ISA) 0x00000123 (291)	Microsoft ACPI-Compliant System
 (ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
 (ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
 (ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System

 (ISA) 0x00000127 (295)	Microsoft ACPI-Compliant System
 (ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
 (ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012D (301)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System
 (ISA) 0x0000012F (303)	Microsoft ACPI-Compliant System
 (ISA) 0x00000130 (304)	Microsoft ACPI-Compliant System
 (ISA) 0x00000131 (305)	Microsoft ACPI-Compliant System
 (ISA) 0x00000132 (306)	Microsoft ACPI-Compliant System
 (ISA) 0x00000133 (307)	Microsoft ACPI-Compliant System
 (ISA) 0x00000134 (308)	Microsoft ACPI-Compliant System
 (ISA) 0x00000135 (309)	Microsoft ACPI-Compliant System
 (ISA) 0x00000136 (310)	Microsoft ACPI-Compliant System
 (ISA) 0x00000137 (311)	Microsoft ACPI-Compliant System
 (ISA) 0x00000138 (312)	Microsoft ACPI-Compliant System
 (ISA) 0x00000139 (313)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013A (314)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013B (315)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013E (318)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
 (ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
 (ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
 (ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
 (ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
 (ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
 (ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
 (ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
 (ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System

 (ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
 (ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014B (331)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
 (ISA) 0x0000014F (335)	Microsoft ACPI-Compliant System
 (ISA) 0x00000150 (336)	Microsoft ACPI-Compliant System
 (ISA) 0x00000151 (337)	Microsoft ACPI-Compliant System
 (ISA) 0x00000152 (338)	Microsoft ACPI-Compliant System
 (ISA) 0x00000153 (339)	Microsoft ACPI-Compliant System
 (ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
 (ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
 (ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
 (ISA) 0x00000157 (343)	Microsoft ACPI-Compliant System
 (ISA) 0x00000158 (344)	Microsoft ACPI-Compliant System
 (ISA) 0x00000159 (345)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015A (346)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
 (ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
 (ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
 (ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System
 (ISA) 0x00000162 (354)	Microsoft ACPI-Compliant System
 (ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
 (ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
 (ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
 (ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
 (ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
 (ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System

 (ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
 (ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
 (ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
 (ISA) 0x00000172 (370)	Microsoft ACPI-Compliant System
 (ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
 (ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
 (ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
 (ISA) 0x00000176 (374)	Microsoft ACPI-Compliant System
 (ISA) 0x00000177 (375)	Microsoft ACPI-Compliant System
 (ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
 (ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
 (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
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 (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
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 (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
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 (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) 0x00000020 (32)	Intel(R) Serial IO I2C Host Controller - 7E78
 (PCI) 0x00000021 (33)	Intel(R) Serial IO I2C Host Controller - 7E79
 (PCI) 0xFFFFFEE6 (-26)	Intel® Smart Sound Technology BUS
 (PCI) 0xFFFFFEE7 (-25)	Intel(R) AI Boost
 (PCI) 0xFFFFFEE8 (-24)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEE9 (-23)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEEA (-22)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEEB (-21)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEEC (-20)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEED (-19)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEEF (-18)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFEFF (-17)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFFF0 (-16)	Intel(R) Ethernet Controller I226-IT
 (PCI) 0xFFFFFFF1 (-15)	Intel(R) Ethernet Controller I226-IT

	(PCI) 0xFFFFFFF2 (-14)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF3 (-13)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF4 (-12)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF5 (-11)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF6 (-10)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF7 (-9)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF8 (-8)	Intel(R) Ethernet Controller I226-IT
	(PCI) 0xFFFFFFF9 (-7)	Intel(R) Graphics
	(PCI) 0xFFFFFFFA (-6)	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
	(PCI) 0xFFFFFFF8 (-5)	Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
	(PCI) 0xFFFFFFFC (-4)	Intel(R) Management Engine Interface #1
	(PCI) 0xFFFFFFF8 (-3)	Standard SATA AHCI Controller
	(PCI) 0xFFFFFFF8 (-2)	PCI Express Root Port