GENESYS-CML5

GENESYS Compact Embedded System

User's Manual 1st Ed

Last Updated: January 26, 2022

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Packing List

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

Item	Quantity
GENESYS-CML5	1
CPU Cooler (TH1CML5020)	1
CPU Cooler Backplate (TH6CML5010)	2
Screw (S1D3004031)	4

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

About this Document

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

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

Safety Precautions

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

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

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

FCC Statement

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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON System QO4-381 Rev.A0

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	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	×	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

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。

备注：

一、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。

二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。

三、上述部件物质液晶模块、触控模块仅一体机产品适用。

China RoHS Requirement (EN)

Hazardous and Toxic Materials List

AAEON System QO4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBs)	Polybrominated diphenyl ethers (PBDEs)
PCB and Components	X	O	O	O	O	O
Wires & Connectors for Ext.Connections	X	O	O	O	O	O
Chassis	O	O	O	O	O	O
CPU & RAM	X	O	O	O	O	O
HDD Drive	X	O	O	O	O	O
LCD Module	X	X	O	O	O	O
Optical Drive	X	O	O	O	O	O
Touch Control Module	X	O	O	O	O	O
PSU	X	O	O	O	O	O
Battery	X	O	O	O	O	O

This form is prepared in compliance with the provisions of SJ/T 11364.

O: The level of toxic or hazardous materials present in this component and its parts is below the limit specified by GB/T 26572.

X: The level of toxic of hazardous materials present in the component exceed the limits specified by GB/T 26572, but is still in compliance with EU Directive 2011/65/EU (RoHS 2).

Notes:

1. The Environment Friendly Use Period indicated by labelling on this product is applicable only to use under normal conditions.
2. Individual components including the CPU, RAM/memory, HDD, optical drive, and PSU are optional.
3. LCD Module and Touch Control Module only applies to certain products which feature these components.

Table of Contents

Chapter 1

Product Specifications

1.1 Specifications

System	
Form Factor	3.5" Subcompact Board System
CPU	Intel® 10th Generation Core™ i7/i5/i3/Pentium/Celeron Processor i7-10700TE (8C, 2.0 GHz, up to 4.4 GHz) i5-10500TE (6C, 2.3 GHz, up to 3.7 GHz) i3-10100TE (4C, 2.3 GHz, up to 3.6 GHz) G6400TE (2C, 3.2 GHz) G5900TE (2C, 3.0 GHz)
CPU TDP	35W (all processors)
Chipset	Intel® Q470E/ H420E
Memory Type	DDR4 up to 2933 MHz Dual Channel, SODIMM x 2, up to 64GB, non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions (L x W)	8.27" x 5.28" x 3.23" (210mm x 134mm x 82mm)

Power

Power Requirement	+12V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption (Typical)	Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 5.64A @ +12V(Typical)
Power Consumption (Max)	Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 10.63A @ +12V(Max)

Display

Controller	Intel® HD Graphics 610/630
LVDS/eDP	-
Display Interface	DP++ x 1
	VGA x 1
Multiple Display Support	2 Simultaneous Displays

External I/O

Ethernet	Intel® i210 10/100/1000Base, RJ45 x 1
	Intel® i219, 10/100/1000Base, RJ45 x 1 (support vPro on i5/i7 processors with Q470E)
USB	USB3.2 Gen2 x 2 (Q470E)
	USB3.2 Gen1 x 2 (H420E)
Serial Port	COM RS232/422/485 x 2 (Optional)
Video	DP++ x 1
	VGA x 1

Internal I/O

USB	USB2.0 x 4 (Optional)
Serial Port	-
SATA	SATA III x 2
	+5V SATA Power Connector x 1
SMBus/I2C	I2C/SMBus (Optional)
Touch	-
Fan	4-pin Smart Fan x 1
SIM	-
Front Panel	PWR LED, Power Button
Other	FPC x 1 (Q470E only)

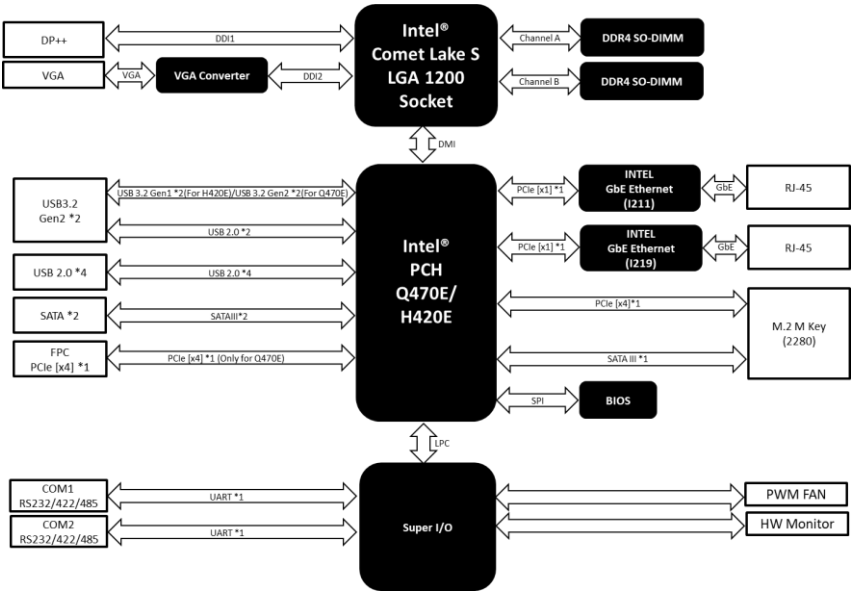
Expansion

Mini PCIe/mSATA	-
M.2	M-Key 2280 x 1 (PCIe [x4], SATA)
Other	-

Environment

Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	380,571
EMC	CE/FCC Class A

1.2 Function Block Diagram

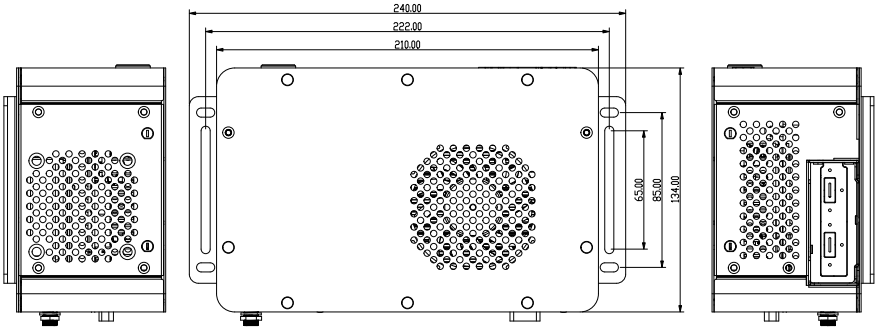


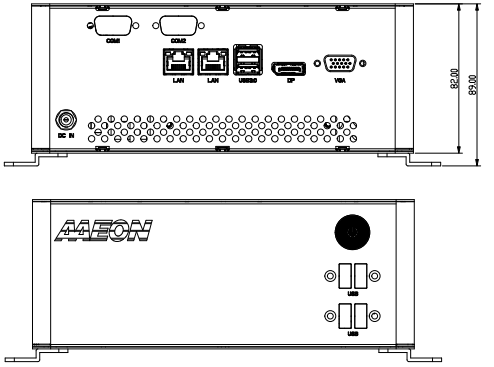
Chapter 2

Hardware Information

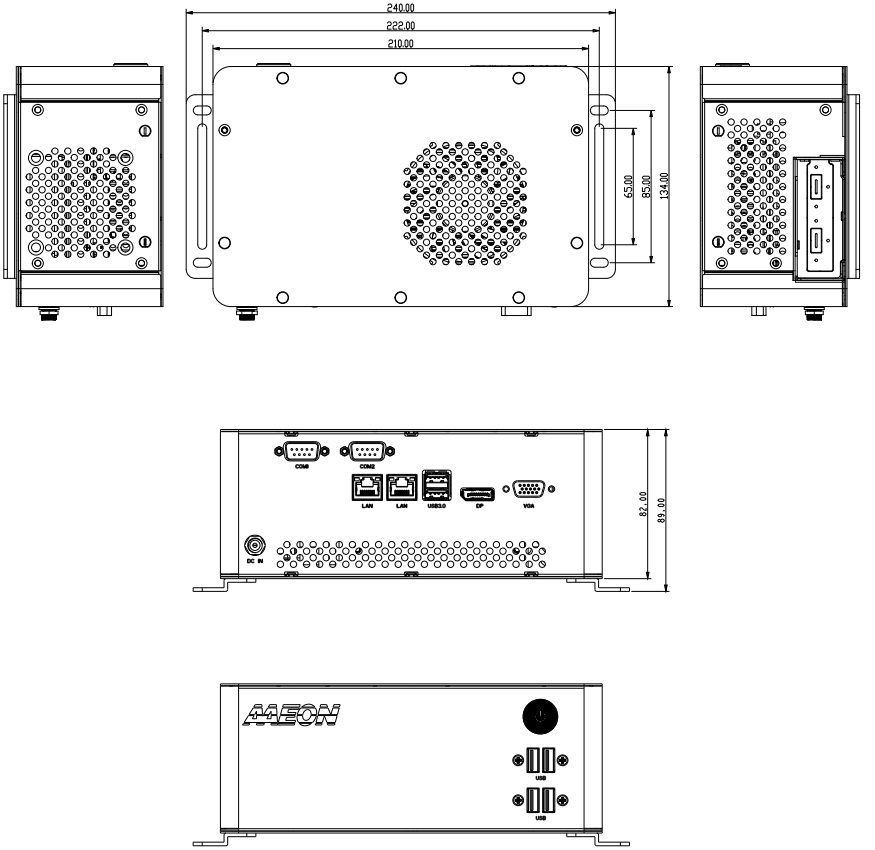
2.1 Dimensions

System – Standard Version

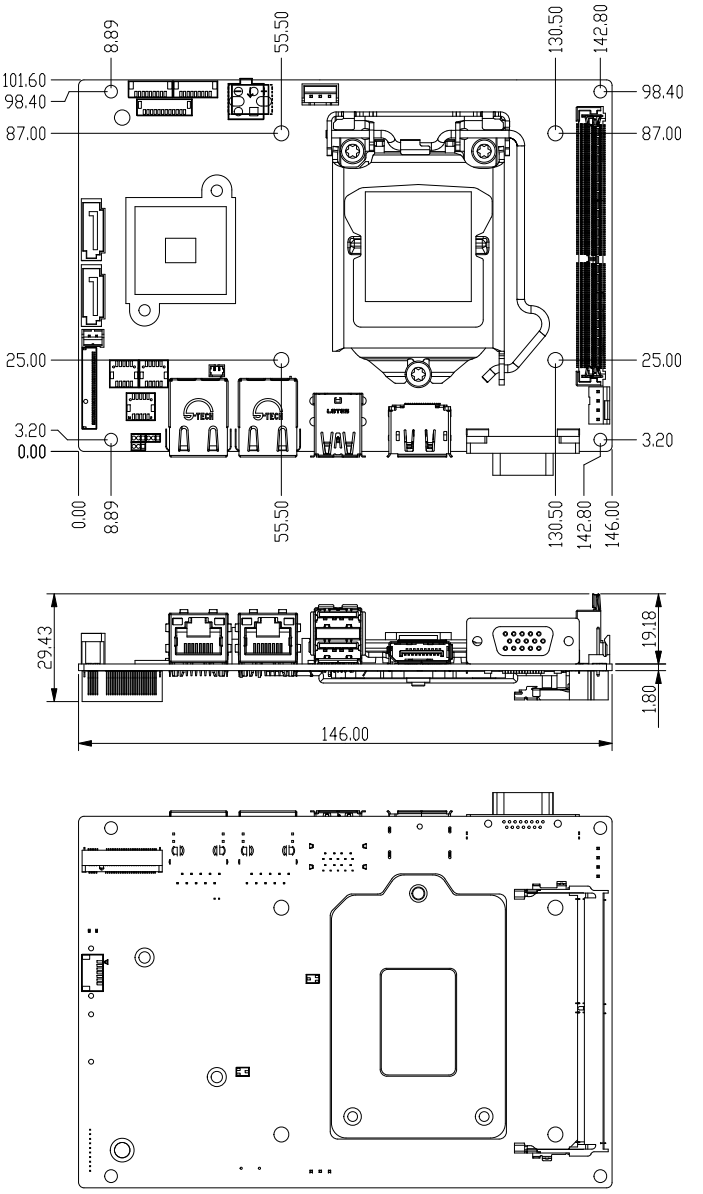




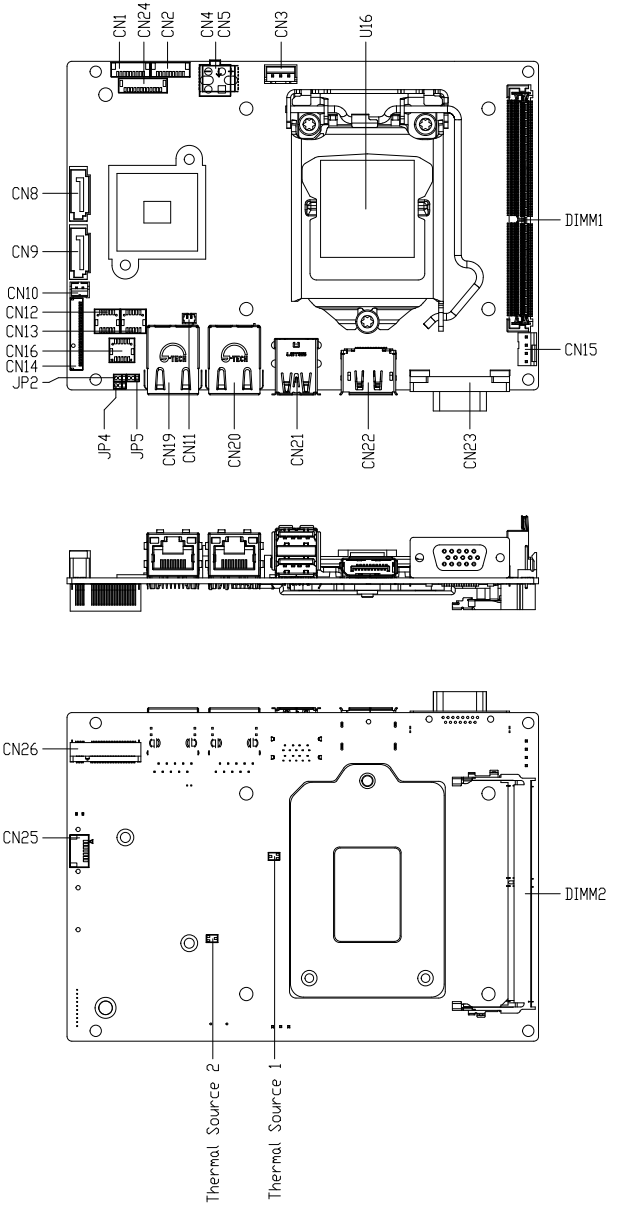
System – Full Version



Board


8.89
55.50
130.50
142.80
101.60
98.40
87.00
98.40
87.00
25.00
25.00
3.20
0.00
3.20
0.00
8.89
55.50
130.50
142.80
146.00
29.43
19.18
1.80
146.00

2.2 Jumpers and Connectors

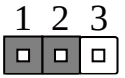


2.3 List of Jumpers

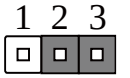
Please refer to the table below for all of the board's jumpers that you can configure for your application

Label	Function
JP2	Auto Power Button Enable/Disable Selection
JP5	Clear CMOS

2.3.1 Auto Power Button Enable/Disable Selection (JP2)



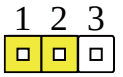
Disable/ATX (**Default**)



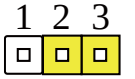
Enable/AT

Note: When disabled, Power Button must be used to power on the system.

2.3.2 Clear CMOS Jumper (JP5)



Normal (**Default**)



Clear CMOS

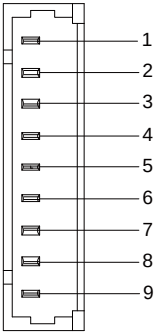
2.4 List of Connectors

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

Label	Function
CN1	COM Port 2
CN2	COM Port 1
CN3	External +5VSB Input
CN5	External Power Input
CN8	SATA Port
CN9	SATA Port
CN10	+5V Output for SATA HDD
CN11	Battery Connector
CN12	USB 2.0 Port
CN13	USB 2.0 Port
CN14	FPC
CN15	FAN CONN
CN16	Front Panel header
CN19	LAN (RJ-45) Port 2
CN20	LAN (RJ-45) Port 1
CN21	USB3.2 Gen2 Port 1/ Port 2 (Dual Port)
CN22	DP++ Port
CN23	VGA Port
CN24	LPC Port
CN25	BIOS Debug Port
CN26	M.2 M-Key
DIMM1	DDR4 SO-DIMM Slot
DIMM2	DDR4 SO-DIMM Slot

2.4.1 COM Port 1/ Port 2 (CN1/CN2)

Note: CN1 is COM Port 2; and CN2 is COM Port 1.



RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	DSR	IN	
3	RX	IN	
4	RTS	OUT	
5	TX	OUT	
6	CTS	IN	
7	DTR	OUT	
8	RI	IN	
9	GND	GND	

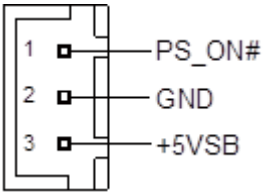
RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_ D-	I/O	
2	NC		
3	RS485_D+	I/O	
4	NC		
5	NC		
6	NC		
7	NC		
8	NC		
9	GND	GND	

RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	
2	NC		
3	RS422_TX+	OUT	
4	NC		
5	RS422_RX+	IN	
6	NC		
7	RS422_RX-	IN	
8	NC		
9	GND	GND	

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

Note 2: Pin#8 function can be set by configuring resistance for dedicated COM port (as COM1 on CN2 and COM2 on CN1). Maximum current in power supply mode is 0.5A.

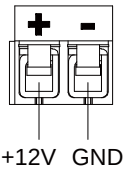
2.4.2 External +5VSB Input (CN3)



Pin	Pin Name	Signal Type	Signal Level
1	PS_ON#	OUT	+5V
2	GND	GND	
3	+V5A_SB_IN	PWR	+5V

Note: +V5A_SB_IN max driving current is 3A.

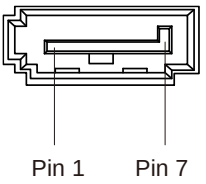
2.4.3 External Power Input (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	+VIN_EXT	PWR	12V
2	GND	GND	

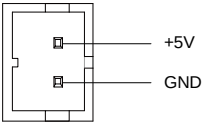
Note: +VIN_EXT max driving current is 8A.

2.4.4 SATA Port (CN8/CN9)



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

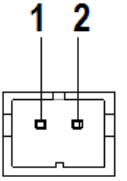
2.4.5 +5V Output for SATA HDD (CN10)



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

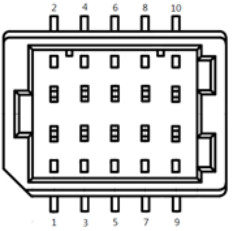
Note: SATA HDD +V5S max driving current is 2A

2.4.6 Battery Connector (CN11)



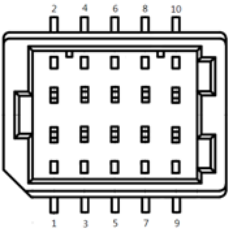
Pin	Pin Name	Signal Type	Signal level
1	+3.3V	PWR	3.3V
2	GND	GND	

2.4.7 USB 2.0 Port (CN12)



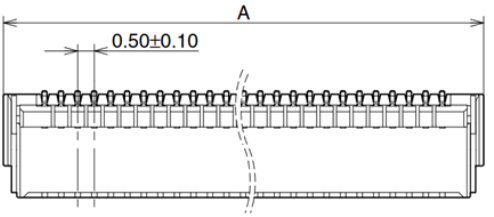
Pin	Pin Name	Signal Type	Signal Level
1	+V5A_USB_3	PWR	+5V
2	+V5A_USB_3	PWR	+5V
3	USBD5-	DIFF	
4	USBD6-	DIFF	
5	USBD5+	DIFF	
6	USBD6+	DIFF	
7	GND	GND	
8	GND	GND	
9	GND	GND	
10	GND	GND	

2.4.8 USB 2.0 Port (CN13)



Pin	Pin Name	Signal Type	Signal Level
1	+V5A_USB_2	PWR	+5V
2	+V5A_USB_2	PWR	+5V
3	USBD3-	DIFF	
4	USBD4-	DIFF	
5	USBD3+	DIFF	
6	USBD4+	DIFF	
7	GND	GND	
8	GND	GND	
9	GND	GND	
10	GND	GND	

2.4.9 FPC (CN14)



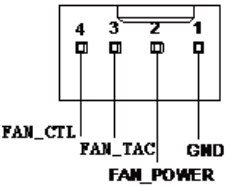
Pin	Pin Name	Signal Type	Signal Level
1	+V3P3S	PWR	+3.3V
2	+V3P3S	PWR	+3.3V
3	+V3P3S	PWR	+3.3V
4	SMB_DATA	I/O	
5	SMB_CLK	I/O	
6	BUF_PLT_RST#	I/O	
7	+V3P3A	PWR	+3.3V
8	GND	GND	
9	PCIE_18_RXP	DIFF	
10	PCIE_18_RXN	DIFF	
11	GND	GND	
12	PCIE_20_RXP	DIFF	
13	PCIE_20_RXN	DIFF	
14	GND	GND	
15	PCIE_19_RXP	DIFF	
16	PCIE_19_RXN	DIFF	
17	GND	GND	
18	PCIE_17_RXP	DIFF	

Pin	Pin Name	Signal Type	Signal Level
19	PCIE_17_RXN	DIFF	
20	GND	GND	
21	PCIE_20_TXN	DIFF	
22	PCIE_20_TXP	DIFF	
23	GND	GND	
24	PCIE_19_TXN	DIFF	
25	PCIE_19_TXP	DIFF	
26	GND	GND	
27	PCIE_18_TXN	DIFF	
28	PCIE_18_TXP	DIFF	
29	GND	GND	
30	CLK_PCIE_FPC_N	DIFF	
31	CLK_PCIE_FPC_P	DIFF	
32	GND	GND	
33	PCIE_17_TXN	DIFF	
34	PCIE_17_TXP	DIFF	
35	GND	GND	
36	+V12S	PWR	
37	+V12S	PWR	
38	+V12S	PWR	
39	+V12S	PWR	
40	+V12S	PWR	

Note: +V12S max driving current is 2A. +V3P3S max driving current is 1.5A.

+V3P3A max driving current is 0.5A

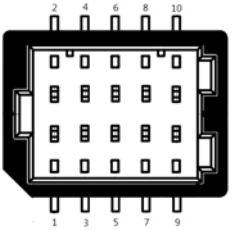
2.4.10 CPU Fan (CN15)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	FAN_POWER	PWR	+12V
3	FAN_TAC	OUT	
4	FAN_CTL	IN	

Note: FAN Connector FAN_POWER max driving current is 1A

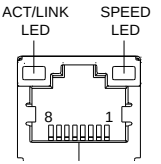
2.4.11 Front Panel Header (CN16)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	EXT_PWRBTN#	I/O	
3	FP_HDLED-	I/O	

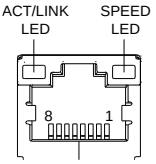
Pin	Pin Name	Signal Type	Signal Level
4	FP_HDLED+	I/O	
5	FP_SPKR-	I/O	
6	+V5S	PWR	
7	GND	GND	
8	PWRLED+	I/O	
9	GND	GND	
10	HWRST#	I/O	

2.4.12 LAN (RJ-45) Port 1 (CN19)



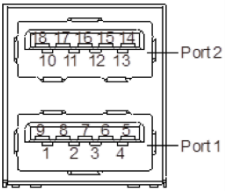
Pin	Pin Name	Signal Type	Signal level
1	LAN2_MDI0+	DIFF	
2	LAN2_MDI0-	DIFF	
3	LAN2_MDI1+	DIFF	
4	LAN2_MDI2+	DIFF	
5	LAN2_MDI2-	DIFF	
6	LAN2_MDI1-	DIFF	
7	LAN2_MDI3+	DIFF	
8	LAN2_MDI3-	DIFF	

2.4.13 LAN (RJ-45) Port 2 (CN20)



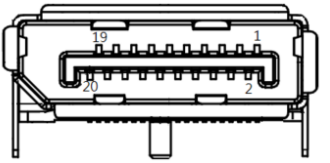
Pin	Pin Name	Signal Type	Signal level
1	LAN1_MDI0+	DIFF	
2	LAN1_MDI0-	DIFF	
3	LAN1_MDI1+	DIFF	
4	LAN1_MDI2+	DIFF	
5	LAN1_MDI2-	DIFF	
6	LAN1_MDI1-	DIFF	
7	LAN1_MDI3+	DIFF	
8	LAN1_MDI3-	DIFF	

2.4.14 USB 3.2 Gen 2 Port 1/ Port 2 (Dual Port) (CN21)



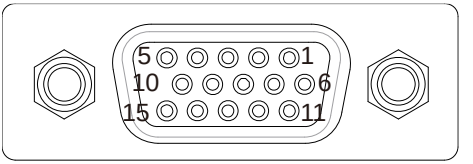
Pin	Pin Name	Signal Type	Signal Level
1	+V5A_USB_1	PWR	+5V
2	USBD2-	DIFF	
3	USBD2+	DIFF	
4	GND	GND	
5	USB3_RX2_CON_N	DIFF	
6	USB3_RX2_CON_P	DIFF	
7	GND	GND	
8	USB3_TX2_CON_N	DIFF	
9	USB3_TX2_CON_P	DIFF	
10	+V5A_USB_0	PWR	+5V
11	USBD1-	DIFF	
12	USBD1+	DIFF	
13	GND	GND	
14	USB3_RX1_CON_N	DIFF	
15	USB3_RX1_CON_P	DIFF	
16	GND	GND	
17	USB3_TX1_CON_N	DIFF	
18	USB3_TX1_CON_P	DIFF	

2.4.15 DP++ Port (CN22)



Pin	Pin Name	Signal Type	Signal Level
1	DDI1_TX0_DP	DIFF	
2	GND	GND	
3	DDI1_TX0_DN	DIFF	
4	DDI1_TX1_DP	DIFF	
5	GND	GND	
6	DDI1_TX1_DN	DIFF	
7	DDI1_TX2_DP	DIFF	
8	GND	GND	
9	DDI1_TX2_DN	DIFF	
10	DDI1_TX3_DP	DIFF	
11	GND	GND	
12	DDI1_TX3_DN	DIFF	
13	DDI1_AUX_EN	IO	
14	GND	GND	
15	DDI1_DP_CTRLCLK_AUX_DP	DIFF	
16	GND	GND	
17	DDI1_DP_CTRLDATA_AUX_DN	DIFF	
18	DDI1_DP_HPD	DDI1_DP_HPD	
19	GND	GND	
20	+V3P3S	PWR	

2.4.16 VGA Port (CN23)

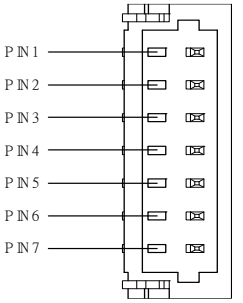


Pin	Pin Name	Signal Type	Signal Level
1	VGA_RED_CON	OUT	
2	VGA_GREEN_CON	OUT	
3	VGA_BLUE_CON	OUT	
4	NC		
5	GND	GND	
6	RED_GND_RTN	GND	
7	GREEN_GND_RTN	GND	
8	BLUE_GND_RTN	GND	
9	+5V	PWR	+5V
10	NC		
11	NC		
12	VGA_DDCDAT_CON	I/O	+5V
13	VGA_HSYNC_CON	OUT	
14	VGA_VSYNC_CON	OUT	
15	VGA_DDCCLK_CON	I/O	+5V

2.4.17 LPC Port (CN24)

Pin	Pin Name	Signal Type	Signal Level
1	LPC_AD0	I/O	
2	LPC_AD1	I/O	
3	LPC_AD2	I/O	
4	LPC_AD3	I/O	
5	+V3P3S	PWR	+3.3V
6	LPC_FRAME#	IN	
7	BUF_PLT_RST#	OUT	
8	GND	GND	
9	CLK_LPCC_25M	OUT	
10	I2C0_SDA	I/O	
11	I2C0_SCL	OUT	
12	INT_SERIRQ	GND	

2.4.18 BIOS Debug Port (CN25)



Pin	Pin Name	Signal Type	Signal Level
1	SPI_SO_F	OUT	
2	GND	GND	
3	SPI_CLK_F	IN	
4	+V3P3A_SPI	PWR	+3.3V
5	SPI_SI_F	IN	
6	SPI_CE0#_F	IN	
7	NC		

2.4.19 M.2 M-Key 2280 (CN26)

Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	+V3P3S	PWR	+3.3V
3	GND	GND	
4	+V3P3S	PWR	+3.3V
5	PCIE_8_RXN	DIFF	
6	CARD_PWR_OFF_R	IN	
7	PCIE_8_RXP	DIFF	

Pin	Pin Name	Signal Type	Signal Level
8	N.C		
9	GND	GND	
10	SSD_LED#	OUT	
11	PCIE_8_TXN_C	DIFF	
12	+V3P3S	PWR	+3.3V
13	PCIE_8_TXP_C	DIFF	
14	+V3P3S	PWR	+3.3V
15	GND	GND	
16	+V3P3S	PWR	+3.3V
17	PCIE_7_RXN	DIFF	
18	+V3P3S	PWR	+3.3V
19	PCIE_7_RXP	DIFF	
20	N.C		
21	GND	GND	
22	N.C		
23	PCIE_7_TXN_C	DIFF	
24	N.C		
25	PCIE_7_TXP_C	GND	
26	N.C		
27	GND	GND	
28	N.C		
29	PCIE_6_RXN	DIFF	
30	N.C		
31	PCIE_6_RXP	DIFF	
32	N.C		
33	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
34	N.C		
35	PCIE_6_TXN_C	DIFF	
36	N.C		
37	PCIE_6_TXP_C	DIFF	
38	SATA_DEVSLP0	IN	
39	GND	GND	
40	SMB_CLK_KMB	IN	
41	M2M_A_RXP	DIFF	
42	N.C		
43	M2M_A_RXN	DIFF	
44	N.C		
45	GND	GND	
46	N.C		
47	M2M_A_TXN_C	DIFF	
48	N.C		
49	M2M_A_TXP_C	DIFF	
50	BUF_PLT_RST#	IN	
51	GND	GND	
52	M2M_CLKREQ#	IN	
53	CLK_PCIE_M2M_N_R		
54	PCIE_WAKE#	IN	
55	CLK_PCIE_M2M_P_R		
56	N.C		
57	GND	GND	
58	N.C		
67	N.C		

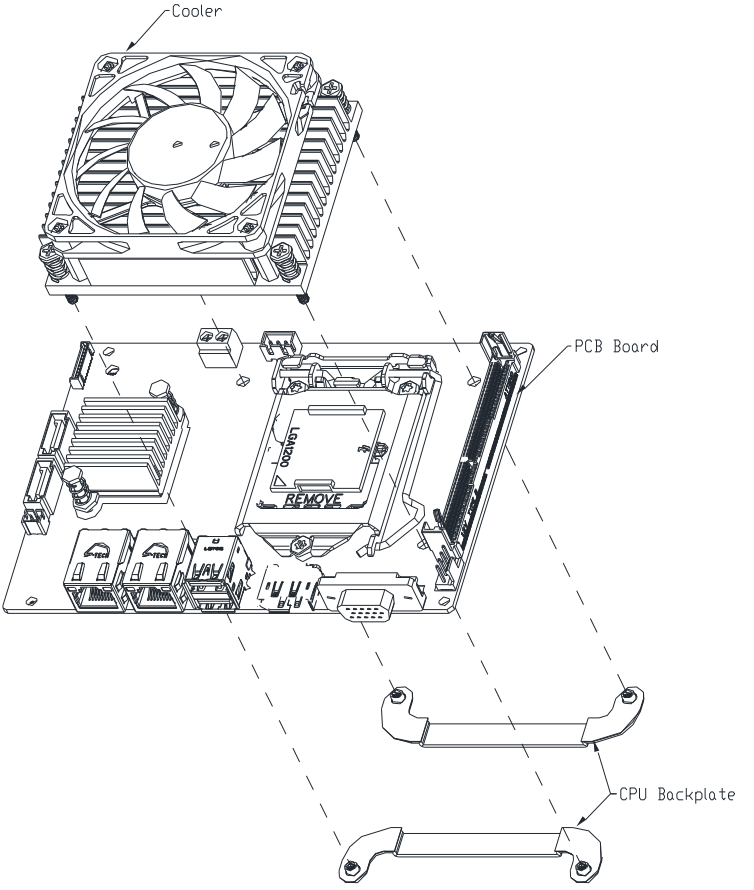
Pin	Pin Name	Signal Type	Signal Level
68	SUS_CLK_M2M	IN	
69	PEDET_R	OUT	
70	+V3P3S	PWR	+3.3V
71	GND	GND	
72	+V3P3S	PWR	+3.3V
73	GND	GND	
74	+V3P3S	PWR	+3.3V
75	GND	GND	

2.4.20 DDR4 SO-DIMM Slot (DIMM1/ DIMM2)

Standard Specifications

2.5 Thermal Solutions

GENESYS-CML5 CPU Cooler Assembly



2.6 Hardware Assembly Guide

This section details the steps to installing various hardware onto your system, including 2.5" SSD, RAM modules, external COM and USB ports, and PCI Express card. Read instructions carefully before assembly and ensure that you have the required parts before proceeding. If you need any support or assistance, please contact your AAEON representative, or visit the support page at AAEON.com to contact our team.

Before You Start

Before starting the assembly steps in this section, ensure the system is powered off (not in sleep or standby mode) and the power cable/adapter is disconnected from the system. Failure to do so can result in damage to the system and/or personal injury.

Parts List

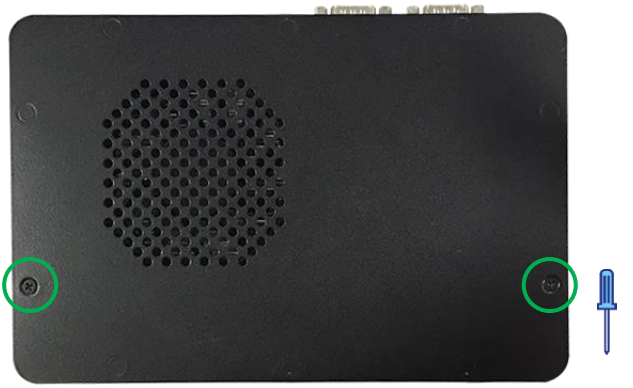
Make sure you have the following parts before starting:

Item	Part Number	Quantity
GENESYS-CML5 System	M1CML50010	1
COM Port Kit (Single Port)	GENESYS-CML5-COM1	1
USB2.0 Kit (Dual Port)	GENESYS-CML5-USB1	1
HDD Kit (cable only)	GENESYS-CML5-HDD1	1
Wall Mount Kit.	GENESYS-CML5-WMT1	1
VESA Mount Kit	GENESYS-CML5-VESA1	1
SODIMM RAM Module DDR4 2933/2666/2400MHz up to 32GB (total of 64GB)	-	1
PCI Express [x4] Expansion Card (Optional)	-	1

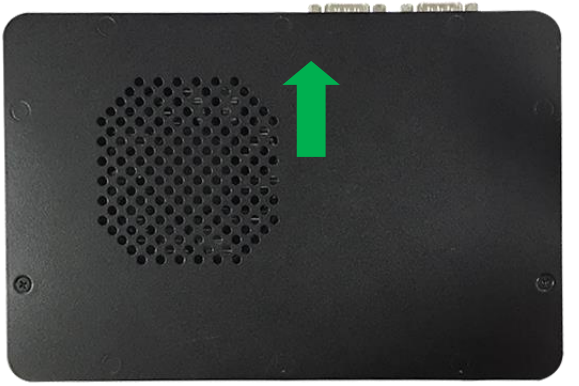
2.6.1 Opening the System

Hardware installation for the GENESYS-CML5 requires accessing both the top and bottom panels of the system. However, some steps only require accessing one side at a time. AAEON recommends reattaching the top or bottom panel when not accessing that side of the system or board; to prevent dust and/or damage.

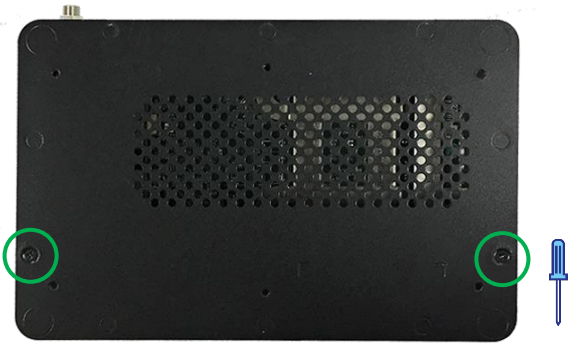
Step 1: Remove the two screws from the top panel (with circular fan opening) of the system.



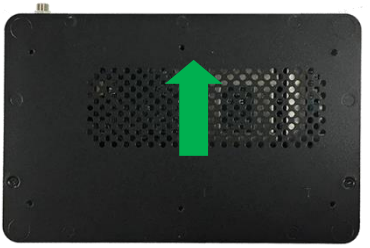
Step 2: Slide the panel towards the rear (I/O side) of the system and lift off.



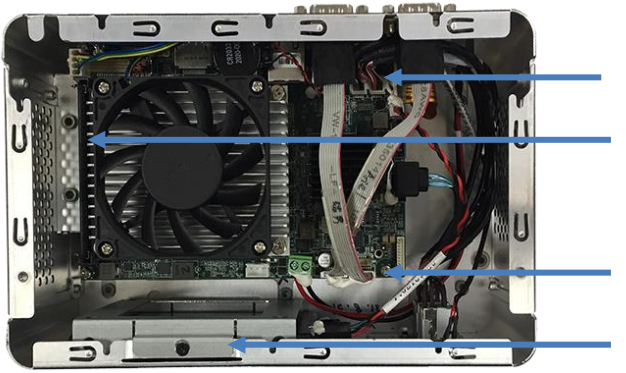
Step 3: Remove the two screws from the bottom panel (with rectangular opening) of the system.

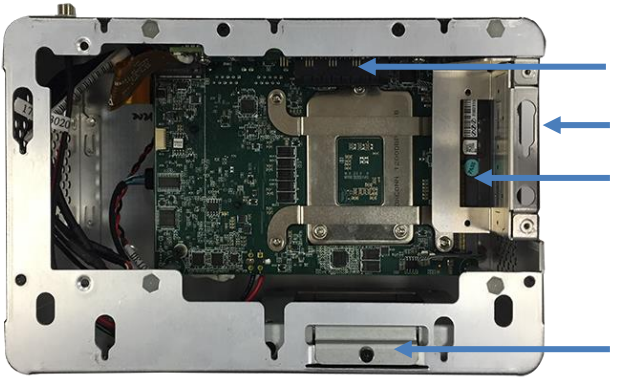


Step 4: Slide the panel towards the rear (I/O side) of the system and lift off.



Before continuing, take a moment to familiarize yourself with the location of ports and connectors that will be used in the assembly process.

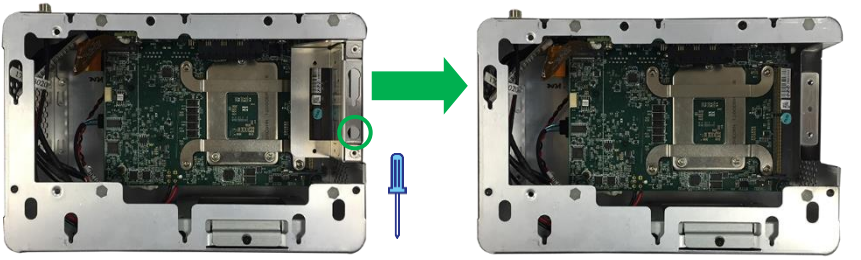




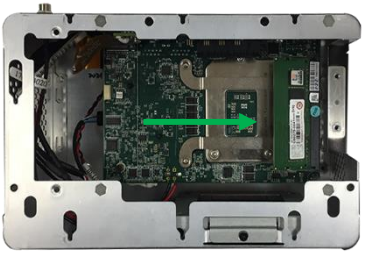
2.6.2 RAM Module Installation

Step 1: Install the memory RAM module into the top side slot. Insert at an angle (~30° from vertical) and then gently push towards vertical until it is secured in place (you will hear a click).

Step 2: For the bottom RAM module, remove the I/O bracket. First remove the retaining screw, then slide to detach.



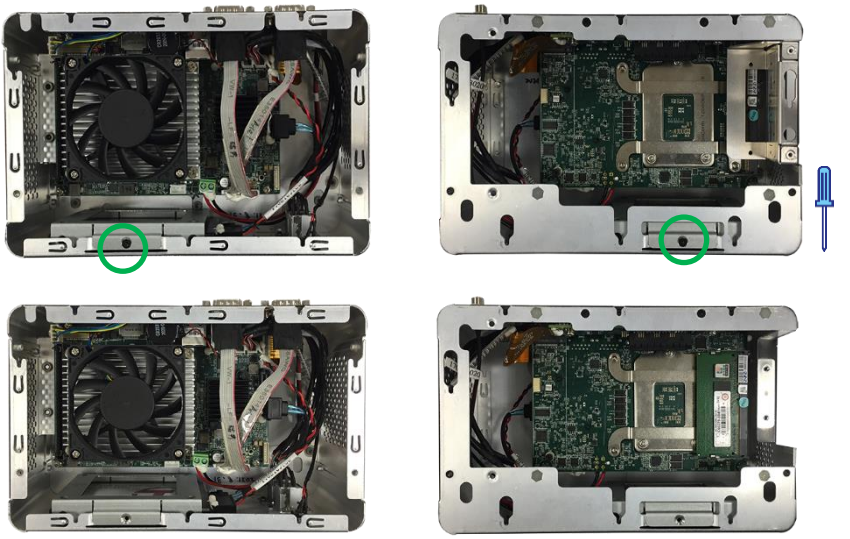
Step 3: Install the memory RAM module into the bottom side slot. Insert at an angle (~30°) and then gently push down until it is secured in place (you will hear a click).



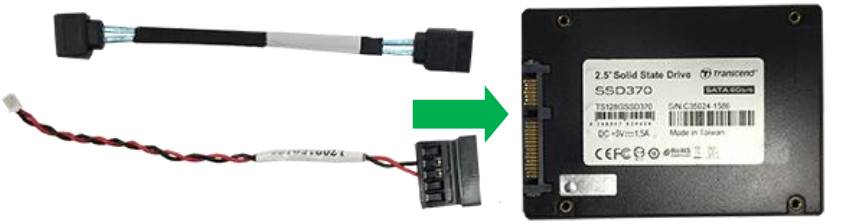
2.6.3 2.5" SATA Drive Installation

Step 1: Before beginning, note the location and orientation of the SATA drive cage, and how it is slotted into the bottom chassis. You will need to reinstall the assembly in this configuration.

Step 2: Remove both screws from the top and bottom of the drive cage and remove it from the system.



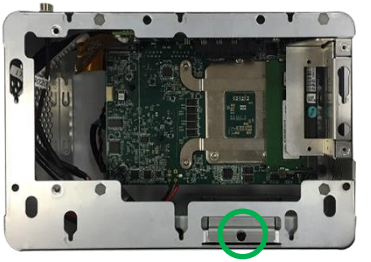
Step 3: Attach the SATA and SATA Power cables to the SATA drive.



Step 4: Insert the SATA drive into the drive cage and secure with four screws along the side of the drive/cage. Make sure the cables are to the side where the arrow is pointing.

Step 5: Attach the SATA Power and SATA cables to the board (on the top/cooler side).

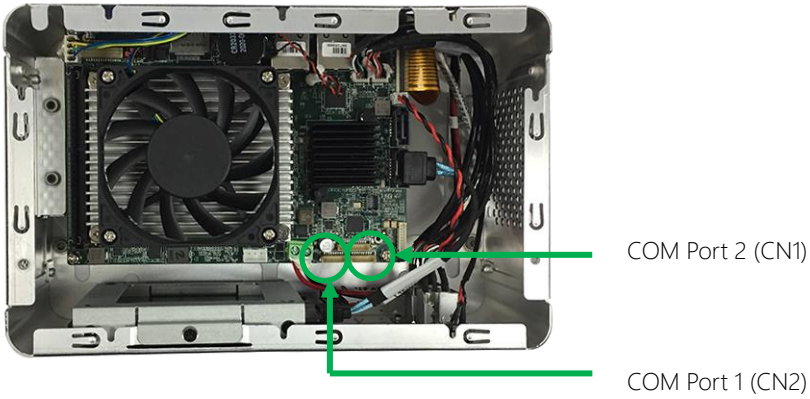
Step 6: Slide the assembly into place and secure with the screws removed in Step 9. Note the orientation of the assembly's bracket over the chassis.



2.6.4 External COM Port Installation

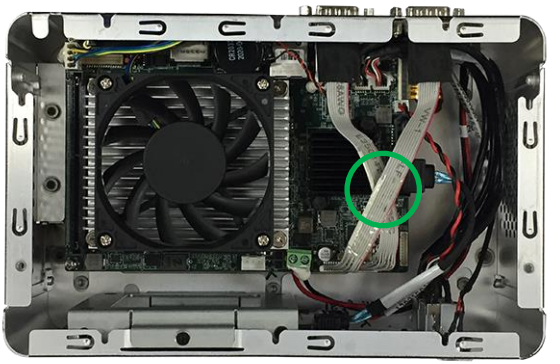
Step 1: Remove the COM Port punchouts by hand or with a tool.

Step 2: Note the location of the COM1 and COM2 port headers on the top side of the board.



Step 3: Attach and secure the COM DB9 connectors to the rear I/O panel.

Step 4: Connect the COM1 and COM2 cables to the port headers. Note that the connectors are reversed from the rear I/O locations, so the cables will cross as shown.

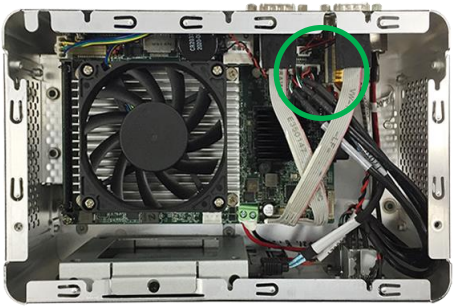


2.6.5 External USB2.0 Port Installation

Step 1: Remove the USB2.0 Port punchouts by hand or with a tool.

Step 2: Attach the USB2.0 Port connectors to the front panel with four screws. Note the orientation of the tab. (While the orientation is not as important, AAEON suggests using this direction).

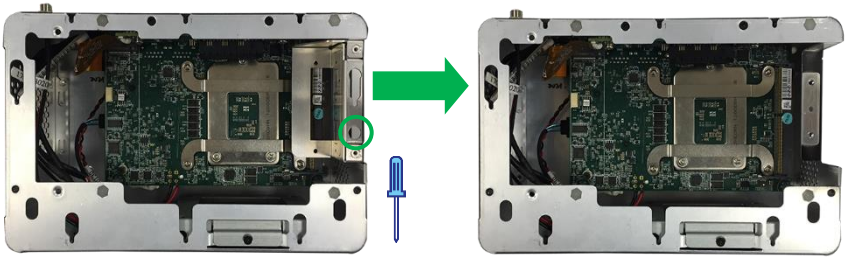
Step 3: Connect the USB2.0 cables to the USB2.0 headers on the board. Each header is a dual USB port and correlates to one set of dual USB ports.



Note: The orientation/assignment of each header to USB port is not vital for correct installation. However, if port assignment is important for your application, be sure to take note which ports are connected to which header.

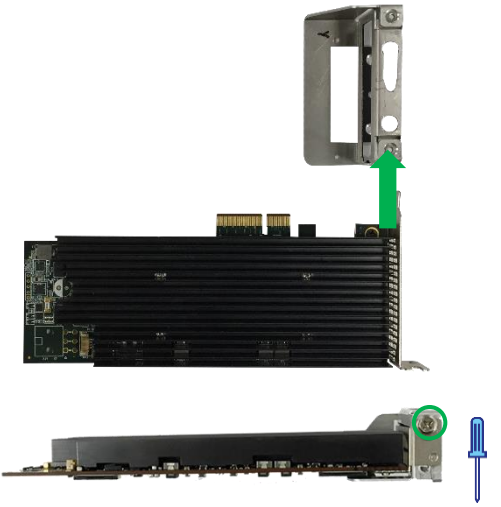
2.6.6 PCI Express (PCIe [x4]) Card Installation (Optional)

Step 1: To install a PCI Express (PCIe) [x4] card, you will first need to remove the side I/O bracket. If you are installing all of the hardware at once, you should have removed this in Step 6 for RAM Installation. Otherwise, remove the retaining screw and slide the bracket off.

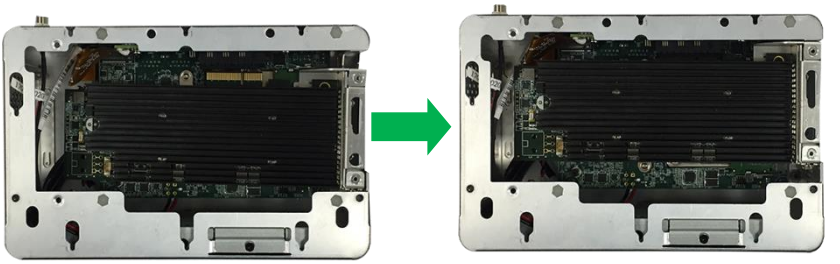


Step 2: Remove the I/O punchout either by hand or with a tool.

Step 3: Next, slide the expansion card into the I/O bracket by sliding the rear bracket into the I/O bracket. Then, secure with a single screw.



Step 4: Place the card into the system, aligning with the PCIe [x4] riser slot. Then, push the card gently into the slot until it is secure. The I/O bracket should also slide into place. Secure the bracket by

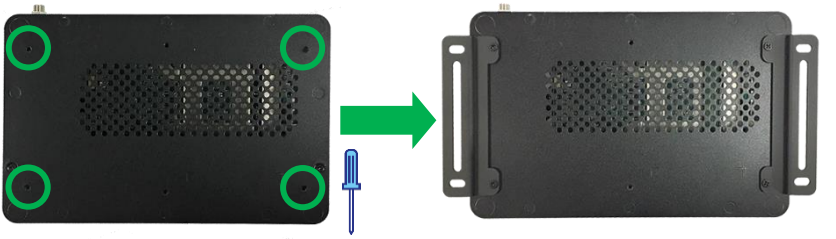


All internal hardware installation is now done. Replace the top and bottom panels by sliding them back on and securing with two screws

2.6.7 Install Wall Mount Brackets

For this task, you need two wall mount brackets and four steel screws included in the wall mount kit.

Line up the brackets with the four open holes on the bottom panel of the system as shown, then secure brackets with the four screws.

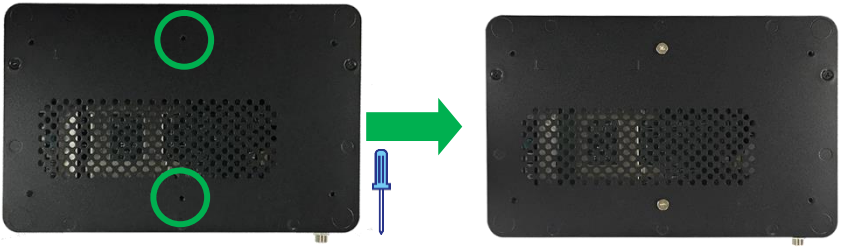


The system is now ready to be mounted to a wall or surface.

2.6.8 VESA Mounting Kit

For this task, you need the VESA bracket and two steel screws included in the VESA mount kit.

Insert screws into the two empty holes on the bottom panel of the system as shown.



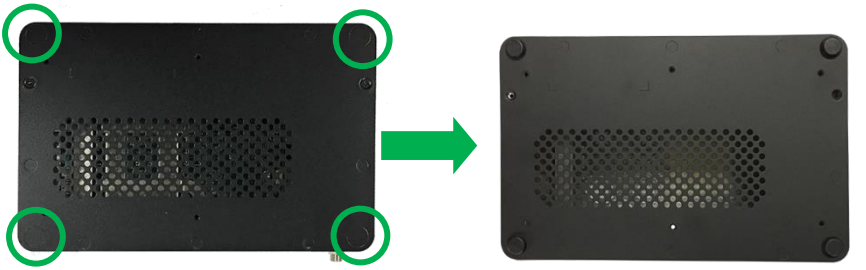
The system can now be attached to the VESA bracket.

Note: This image is for illustrative purposes. It is recommended that you install the VESA bracket onto the mounting surface before attaching the system.

2.6.9 Applying the Rubber Feet

The system also comes with four adhesive rubber feet for deploying the system on a desktop or similar surface.

The bottom panel has four etched circles showing where to place the feet. Simply remove each foot from their backing and place onto each of the circles as shown.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The GENE-CML5 board uses certain routines to perform testing and initialization during the boot up sequence. If an error, fatal or non-fatal, is encountered, the module will output a few short beeps or display an error message. The module can usually continue the boot up sequence with non-fatal errors.

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory and BIOS NVRAM. If a system configuration is not found or an error is detected, the module will load the default configuration and reboot automatically.

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

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

The system CMOS memory has an integral lithium battery backup for data retention. You will need to replace the battery unit when it runs down.

3.2 AMI BIOS Setup

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

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

The function for each interface can be found below.

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

Advanced – Access hardware monitor and advanced board features, options

Chipset – Host bridge parameters

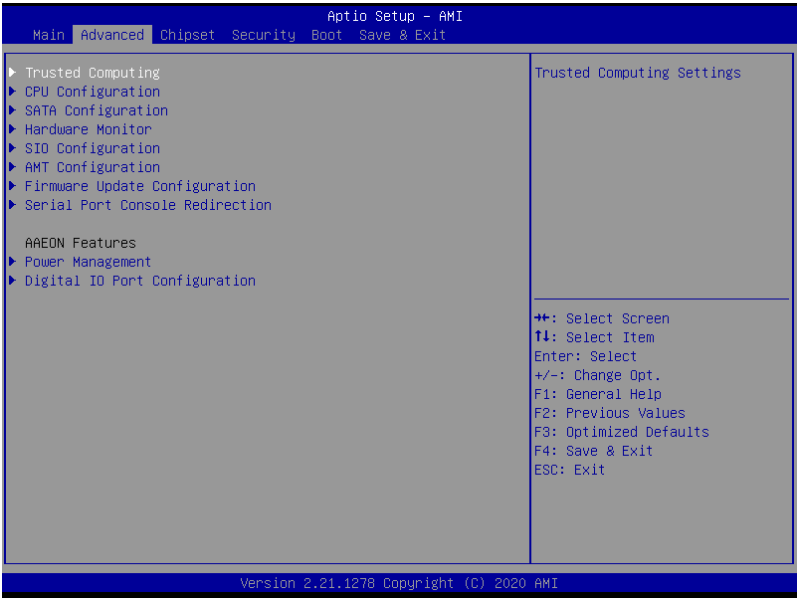
Security – The setup administrator password can be set here

Boot – Enable/ Disable Quiet Boot option

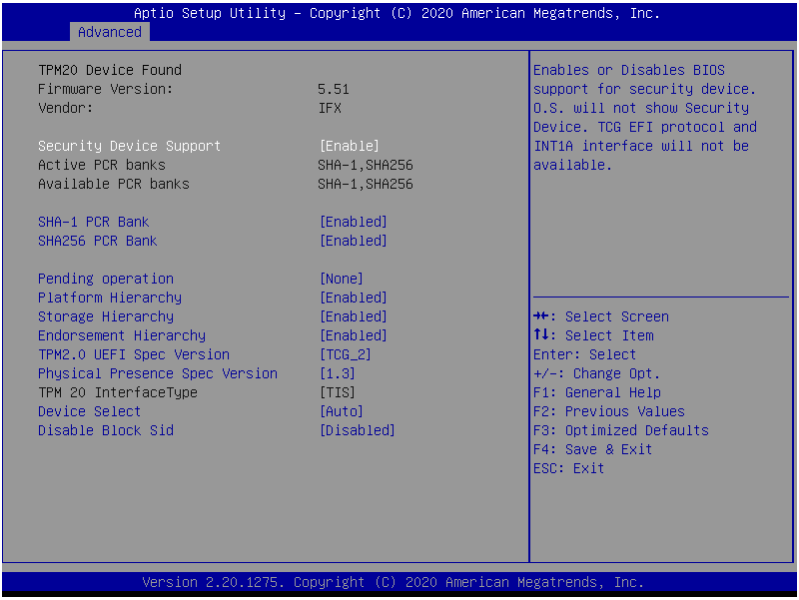
Save & Exit –Save your changes and exit the program

3.3 Setup Submenu: Main

3.4 Setup Submenu: Advanced



3.4.1 Trusted Computing

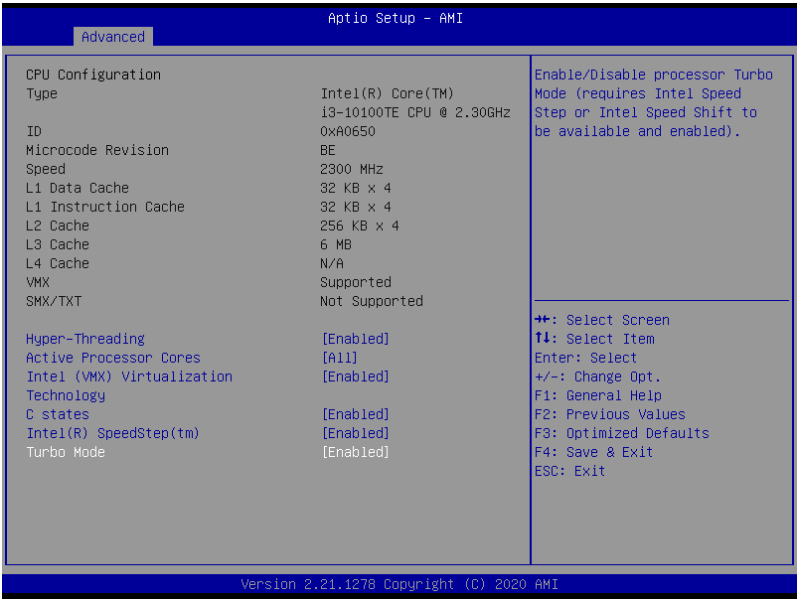


Options Summary		
Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		
SHA-1 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable SHA-1 PCR Bank		
SHA256 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA256 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.		

Table Continues on next Page

Options Summary		
Platform Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or disable Platform Hierarchy		
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage Hierarchy		
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsement Hierarchy		
TPM2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Version Support, TCG_1_2: Compatible mode for Win8/Win10 TCG_2: Support new TCG2 protocol and event format for Win10 or later		
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		

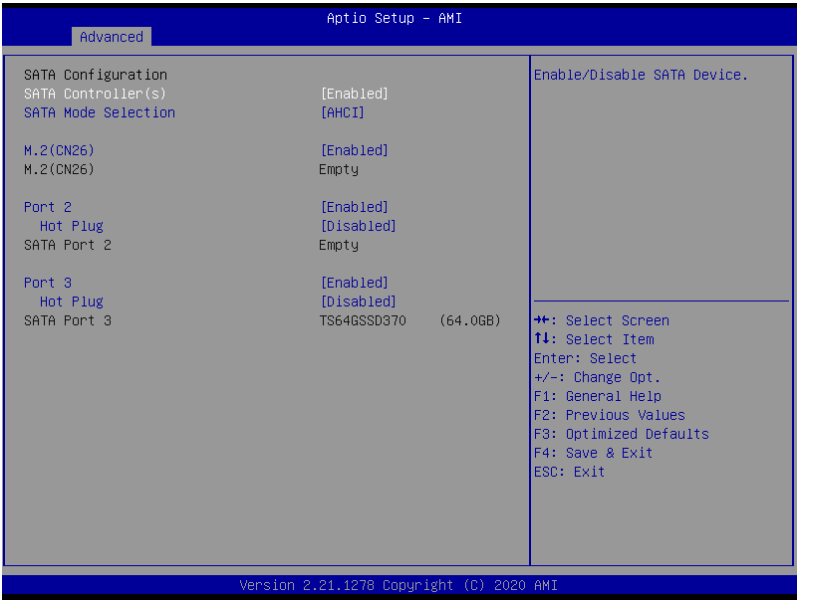
3.4.2 CPU Configuration



Options Summary		
Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enabled or Disabled Hyper-Threading Technology		
Active Processor Cores	All	Optimal Default, Failsafe Default
	1	
Number of cores to enable in each processor package.		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
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.		
Intel(R) SpeedStep(tm)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than two frequency ranges to be supported.		

Options Summary		
Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).		

3.4.3 SATA Configuration

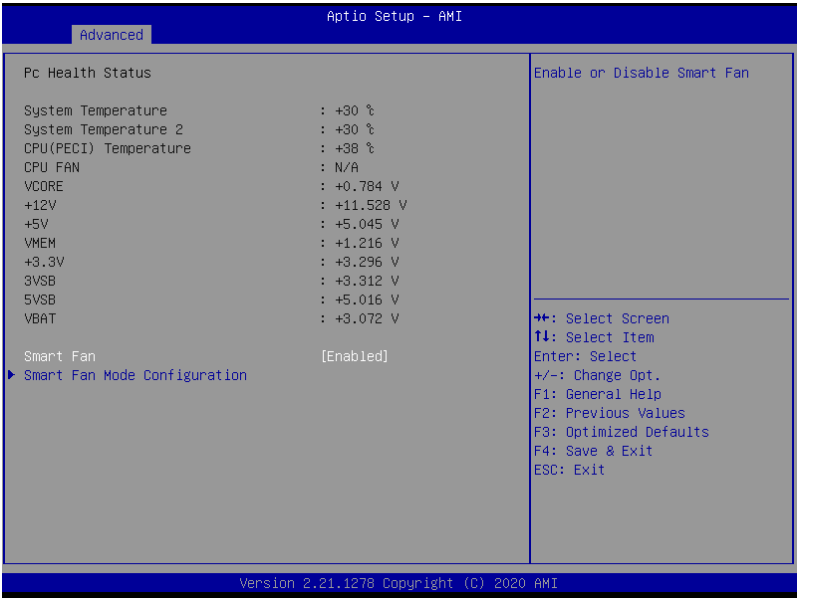


Options Summary		
SATA Controller(s)	Enabled	Optimal Default, Failsafe Default
Enable/Disable SATA Device.		
SATA Mode Selection	AHCI	Optimal Default, Failsafe Default
	Intel RST Premium With Intel Optane System Acceleration	
Determines how SATA controller(s) operate		
M.2(CN26)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port		
Port 2	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port		

Table Continues on Next Page...

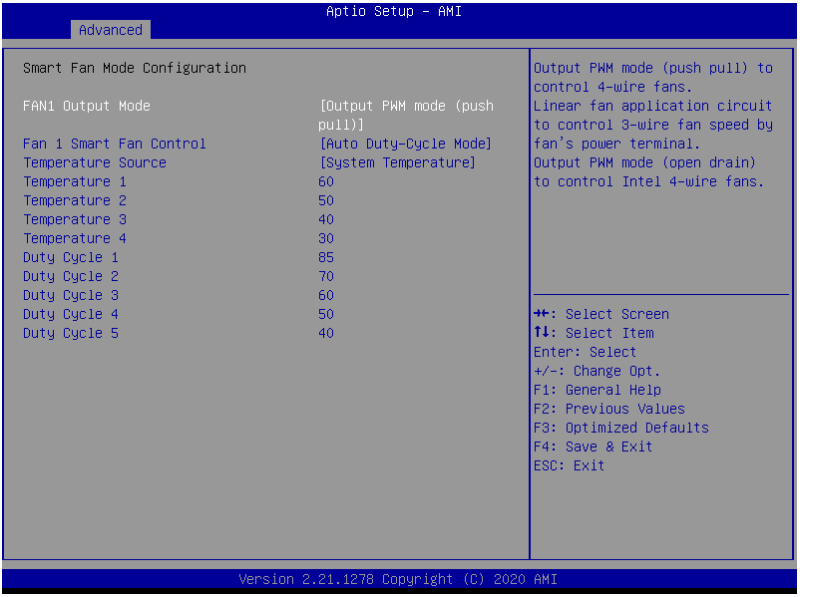
Options Summary		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable		
Port 3	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable		

3.4.4 Hardware Monitor



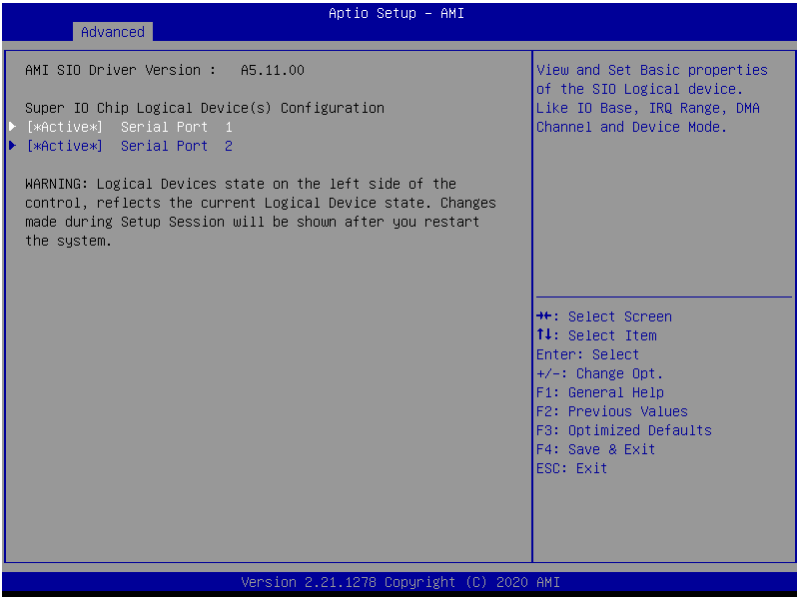
Options Summary		
Smart Fan	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enables or Disables Smart Fan.		

3.4.4.1 Smart Fan Mode Configuration

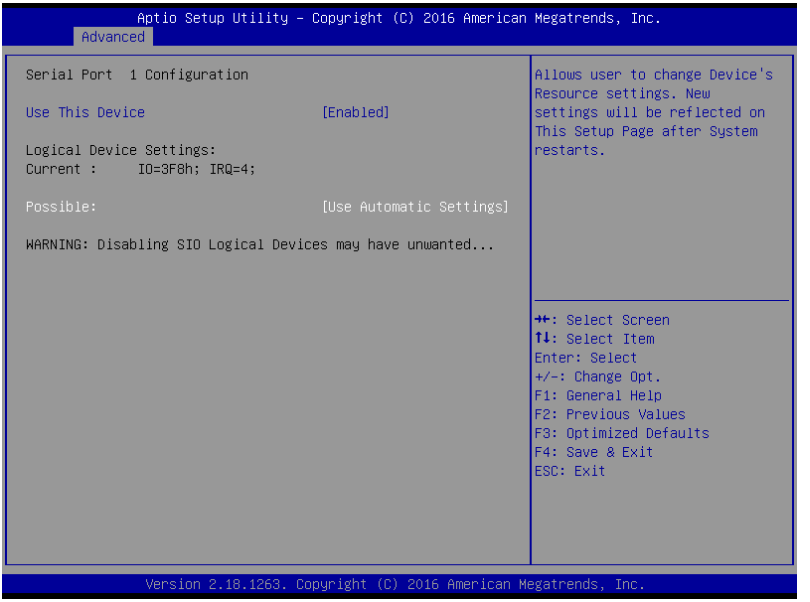


Options Summary		
FAN1 Output Mode	Output PWM mode (open drain)	
	Linear Fan Application	
	Output PWM mode (push pull)	Optimal Default, Failsafe Default
Fan 1 Smart Fan Control	Manual Duty Mode	
	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default
Smart Fan Mode Select		
Temperature Source	CPU(PECI) Temperature	
	System Temperature	Optimal Default, Failsafe Default
	System Temperature 2	
Select the monitored temperature source for this fan.		
Temperature 1	60	
Duty Cycle 1	85	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100		

3.4.5 SIO Configuration

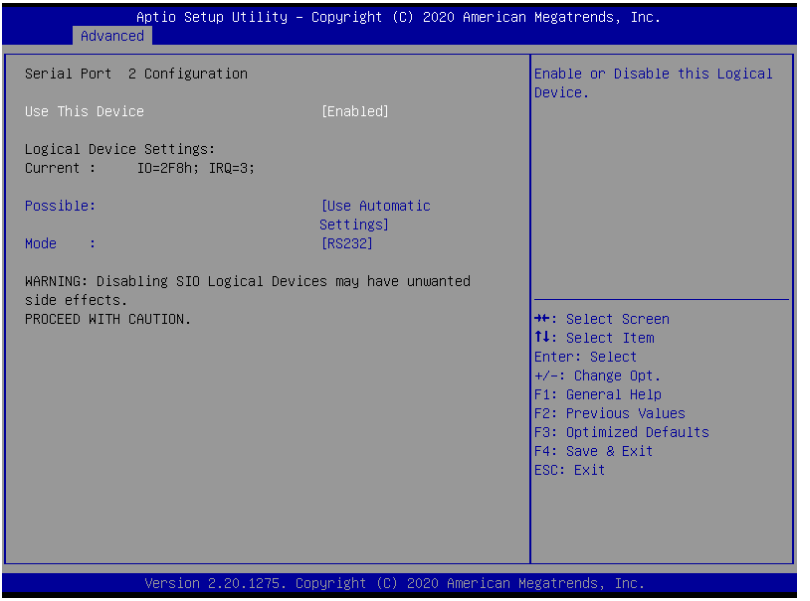


3.4.5.1 Serial Port 1 Configuration



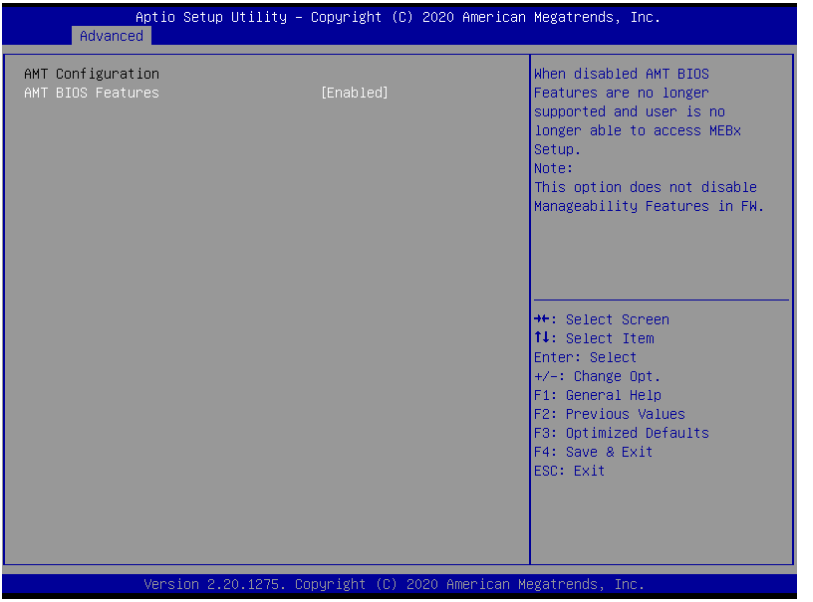
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8h; IRQ=4	
	IO=2F8h; IRQ=3	
Allows user to change Device's Resource settings. New settings will be reflected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

3.4.5.2 Serial Port 2 Configuration



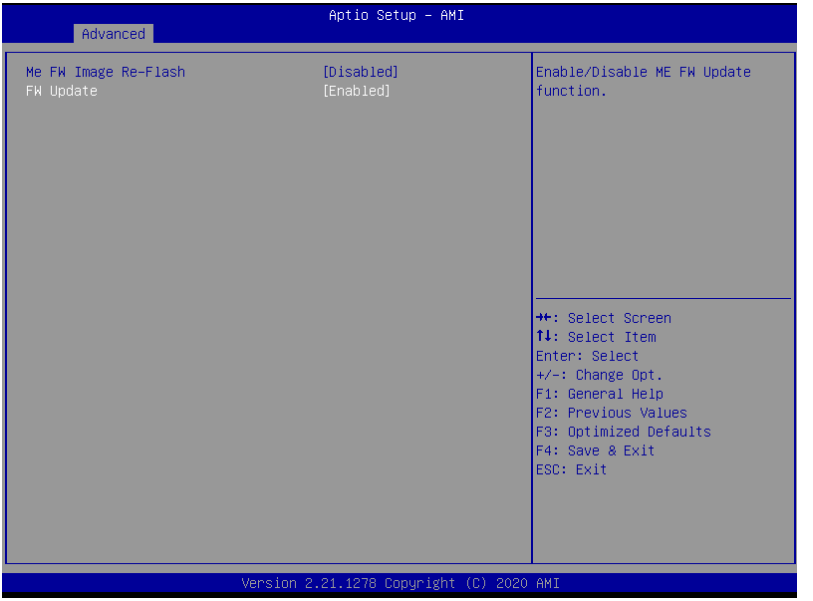
Options Summary		
Use This Device	Disable	
	Enable	Optimal Default, Failsafe Default
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8h; IRQ=3	
	IO=3F8h; IRQ=4	
Allows user to change Device's Resource settings. New settings will be reflected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

3.4.6 AMT Configuration



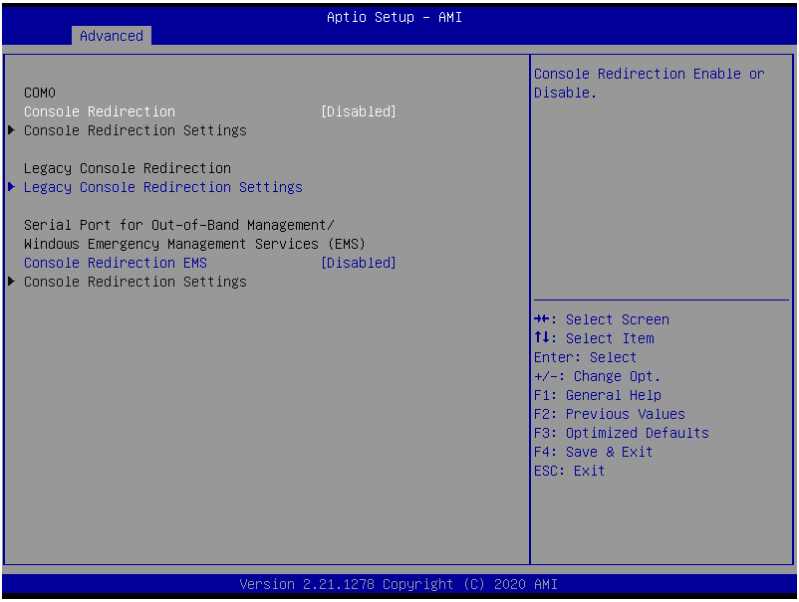
Options Summary		
AMT BIOS Features	Disable	
	Enable	Optimal Default, Failsafe Default
When disabled AMT BIOS Features are no longer supported and user is no longer able to access MEBx Setup. Note: This option does not disable Manageability Features in FW		

3.4.7 Firmware Update Configuration



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

3.4.8 Serial Port Console Redirection



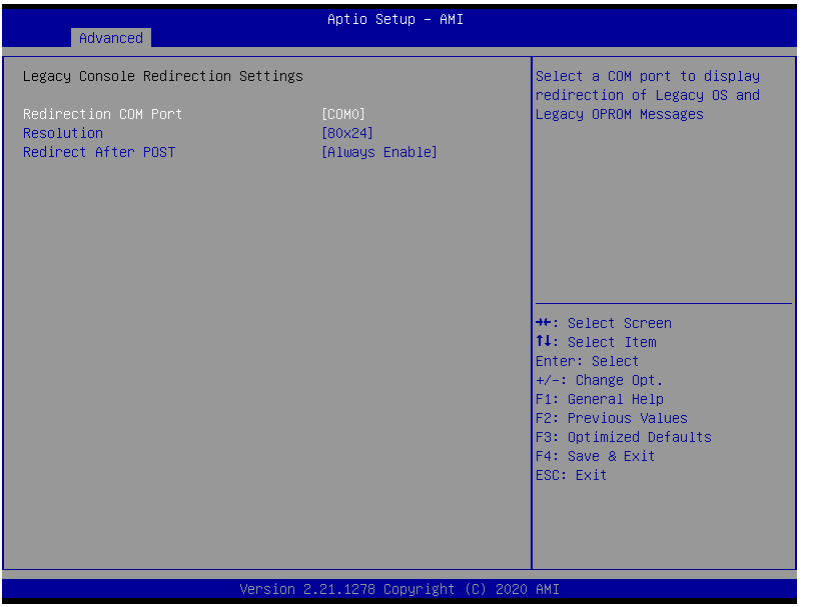
Options Summary		
Console Redirection	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		
Console Redirection EMS	Disabled	Optimal Default, Failsafe Default
	Enabled	
Console Redirection Enable or Disable.		

3.4.8.1 COM0 Console Redirection Settings

Options Summary		
Terminal Type	VT100	
	VT100+	
	VT-UTF8	
	ANSI	Optimal Default, Failsafe Default
Emulation: ANSI: Extended ASCII char set. VT100: ASCII char set. VT100+: Extends VT100 to support color, function keys, etc. VT-UTF8: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.		
Bits Per second	9600	
	19200	
	38400	
	57600	
	115200	Optimal Default, Failsafe Default
Selects serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.		
Data Bits	7	
	8	Optimal Default, Failsafe Default
Parity	None	Optimal Default, Failsafe Default

Options Summary		
	Even	
	Odd	
	Mark	
	Space	
A parity bit can be sent with the data bits to detect some transmission errors. Even: parity bit is 0 if the num of 1's in the data bits is even. Odd: parity bit is 0 if num of 1's in the data bits is odd. Mark: parity bit is always 1. Space: Parity bit is always 0. Mark and Space Parity do not allow for error detection. They can be used as an additional data bit.		
Stop Bits	1	Optimal Default, Failsafe Default
	2	
Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.		
Flow Control	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.		
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	
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.		

3.4.8.2 Legacy Console Redirection Settings



Options Summary		
Redirection Console COM Port	COM0	Optimal Default, Failsafe Default
Console Redirection Enable or Disable.		
Resolution	80x24	Optimal Default, Failsafe Default
	80x25	
On Legacy OS, the Number of Rows and Columns supported redirection		
Redirect After POST	Always Enable	Optimal Default, Failsafe Default
	BootLoader	
When Bootloader is selected, then Legacy Console Redirection is disabled before booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable.		

3.4.8.3 Out-of-Band Mgmt Console Redirection Settings

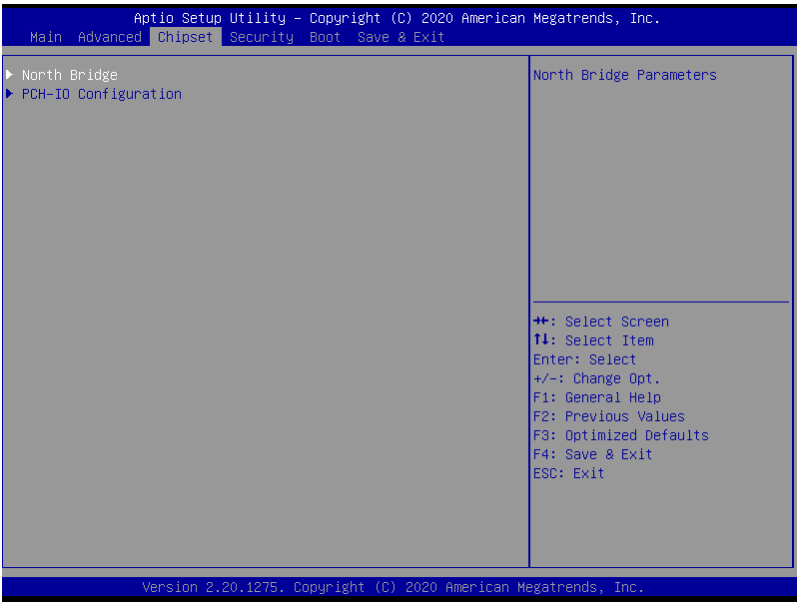
Options Summary		
Terminal Type EMS	VT100	
	VT100+	
	VT-UTF8	Optimal Default, Failsafe Default
	ANSI	
VT-UTF8 is the preferred terminal type for out-of-band management. The next best choice is VT100+ and then VT100. See above, in Console Redirection Settings page, for more Help with Terminal Type/Emulation.		
Bits Per second EMS	9600	
	19200	
	57600	
	115200	Optimal Default, Failsafe Default
Flow Control EMS	None	Optimal Default, Failsafe Default
	Hardware RTS/CTS	
	Software xon/xoff	
Continued on Next Page…		

Options Summary
Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a 'stop' signal can be sent to stop the data flow. Once the buffers are empty, a 'start' signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

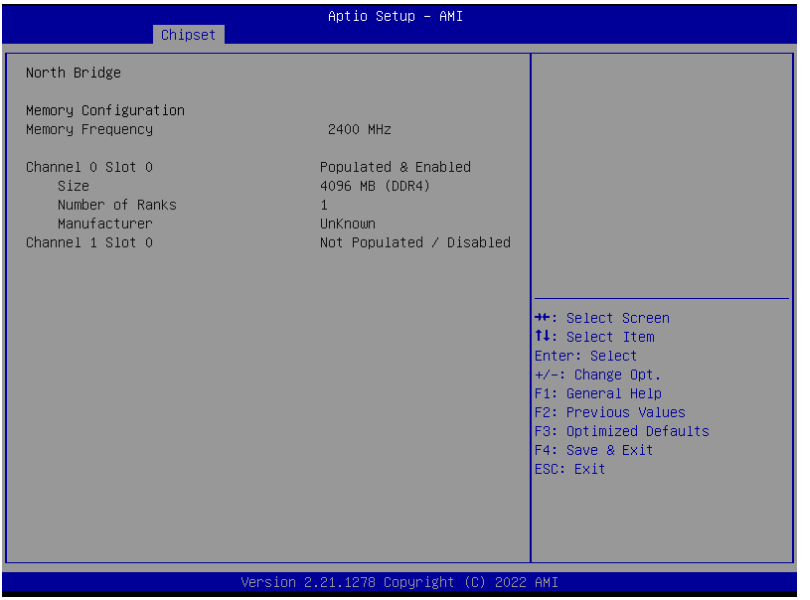
3.4.9 Power Management

Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode		
State After G3	Always On	
	Always Off	
	Last State	Optimal Default, Failsafe Default
Specify what state to go to when power is re-applied after a power failure (G3 state).		
RTC wake system from S5	Disable	Optimal Default, Failsafe Default
	Fixed Time	
Fixed Time: System will wake on the hr::min::sec specified./n Dynamic Time: System will wake on the current time + Increase minute(s)		

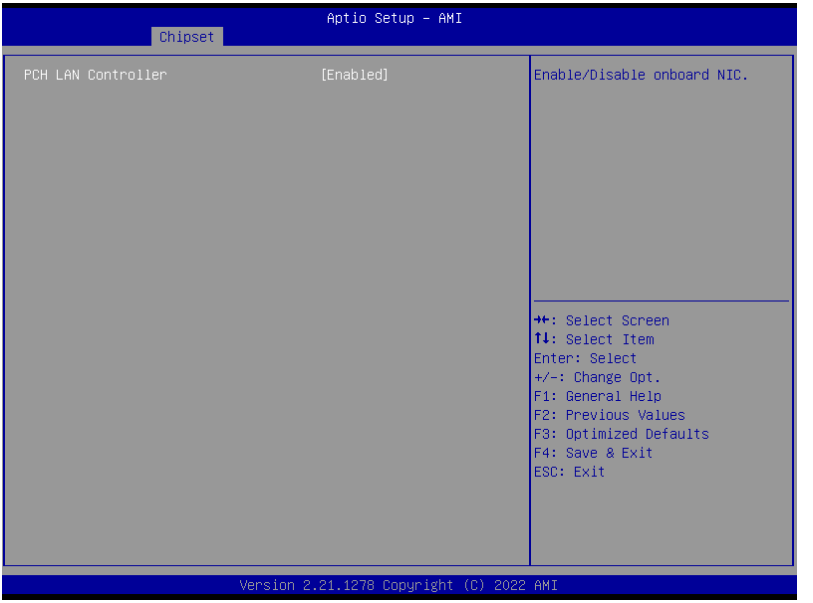
3.5 Setup Submenu: Chipset



3.5.1 North Bridge

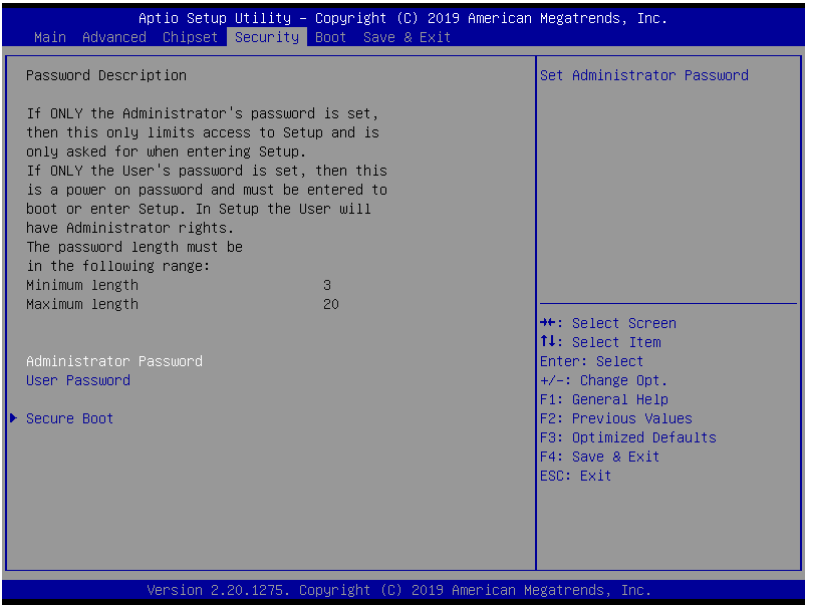


3.5.2 PCH IO Configuration



Options Summary		
PCH Lan Controller	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable onboard NIC		

3.6 Setup Submenu: Security



Change User/Administrator Password

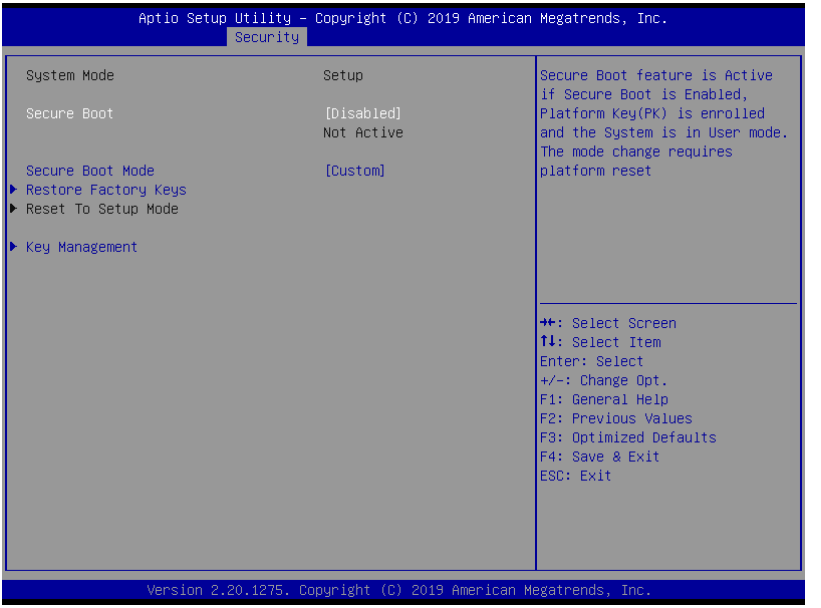
You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

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

Removing the Password

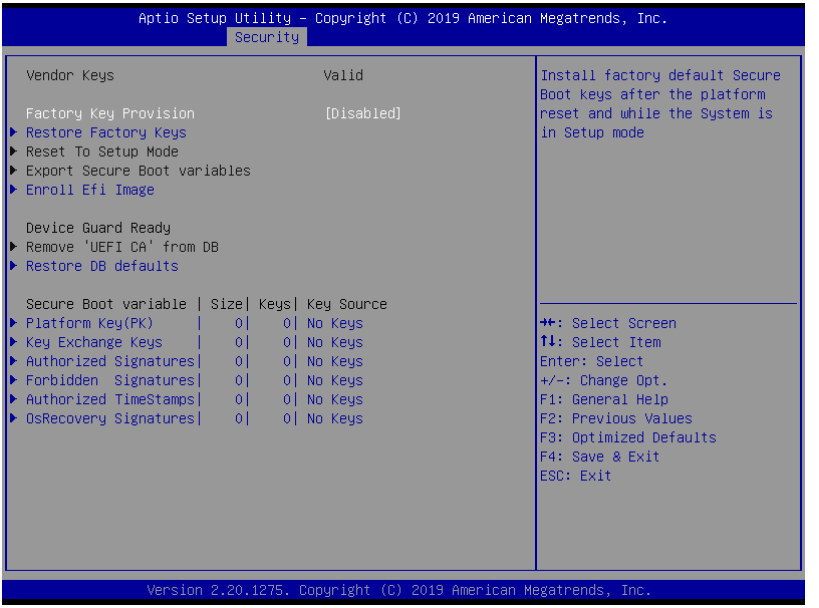
Select the password you want to remove and enter the current password. At the next dialog box press Enter to disable password protection.

3.6.1 Secure Boot



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

3.6.1.1 Key Management

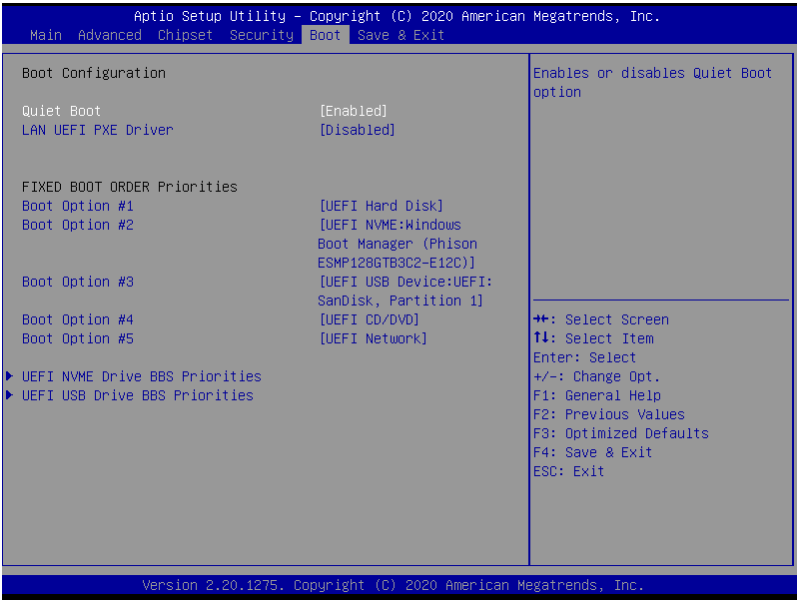


Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
Secure Boot feature is Active if Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset		
Restore Factory Keys		
Force System to User Mode. Install factory default Secure Boot key databases		
Reset To Setup Mode		
Delete all Secure Boot key databases from NVRAM		
Export Secure Boot variables		
Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device		
Enroll Efi Image		
Allow the image to run in Secure Boot mode. Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db)		

Table Continues on Next Page…

Options Summary		
Remove 'UEFI CA' from DB		
Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database (db)		
Restore DB defaults		
Restore DB variable to factory defaults		
Platform Key (PK)	Details	
	Export	
	Update	
	Delete	
Key Exchange Keys	Details	
	Export	
	Update	
	Append	
	Delete	
Authorized Signatures	Details	
	Export	
	Update	
	Append	
	Delete	
Forbidden Signatures	Details	
	Export	
	Update	
	Append	
	Delete	
Authorized TimeStamps	Update	
	Append	
OsRecovery Signatures	Update	
	Append	
Enroll Factory Defaults or load certificates from a file: 1.Public Key Certificate: a) EFI_SIGNATURE_LIST b) EFI_CERT_X509 (DER) c) EFI_CERT_RSA2048 (bin) d) EFI_CERT_SHAXXX 2.Authenticated UEFI Variable 3.EFI PE/COFF Image (SHA256) Key Source: Factory, External, Mixed		

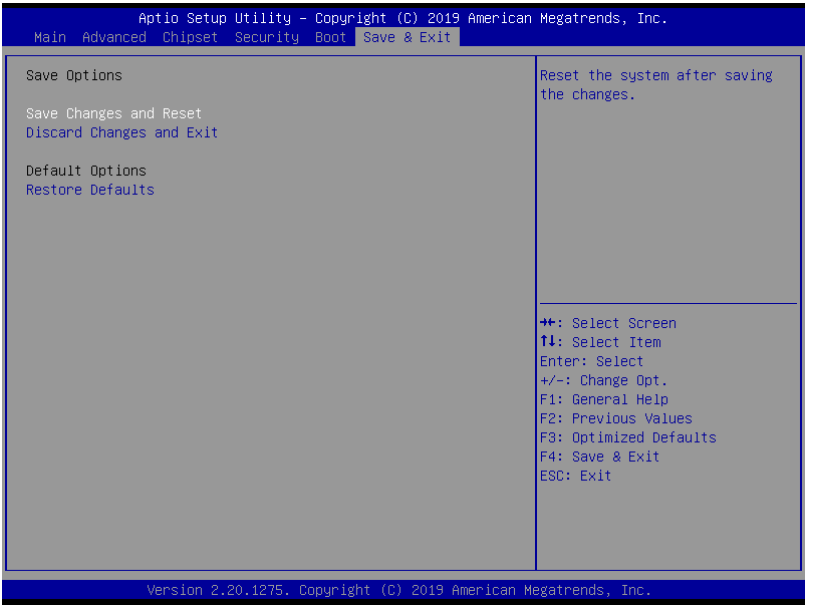
3.7 Setup Submenu: Boot



Options Summary		
Quiet Boot	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable showing boot logo.		
LAN UEFI Pxe Driver	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled/Disable LAN UEFI PXE Driver		

3.7.1 BBS Priorities

3.8 Setup Submenu: Save & Exit



Chapter 4

Driver Installation

4.1 Driver Download/Installation

Drivers for the GENE-CML5 can be downloaded from the product page on the AAEON website by following this link:

https://www.aaeon.com/en/p/subcompact-boards-gene-cml5

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

Step 1 – Install Chipset Drivers

1. Open the **Step 1 – Chipset** folder
2. Run the **SetupChipset.exe** in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 2 – Install Graphics Drivers

1. Open the **Step 2 – Graphic** folder
2. Run the **igxpin.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install Network Driver

1. Open the **Step 3 – Network** folder
2. Run the **PROWinx64.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install Serial IO Drivers

1. Open the **Step 4 – SerialIO** folder
2. Run the **SetupSerialIO.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

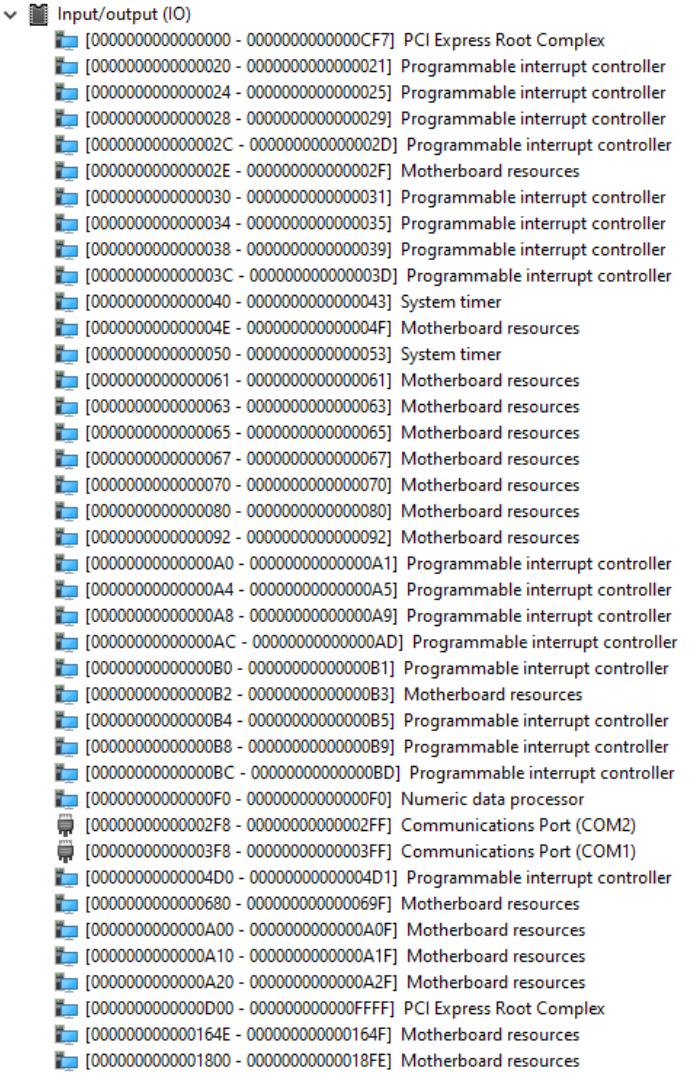
Step 5 – Install ME Drivers

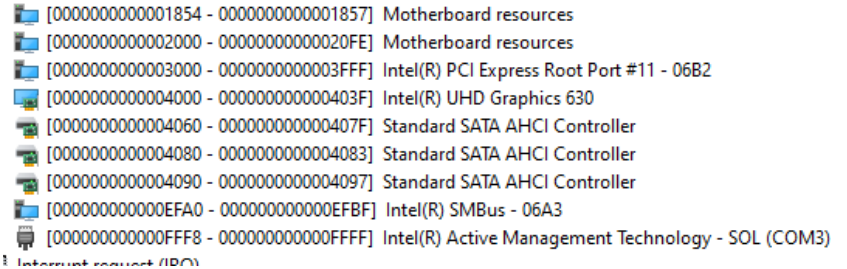
1. Click on the **Step 5 – ME** folder
2. Run the **SetupME.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

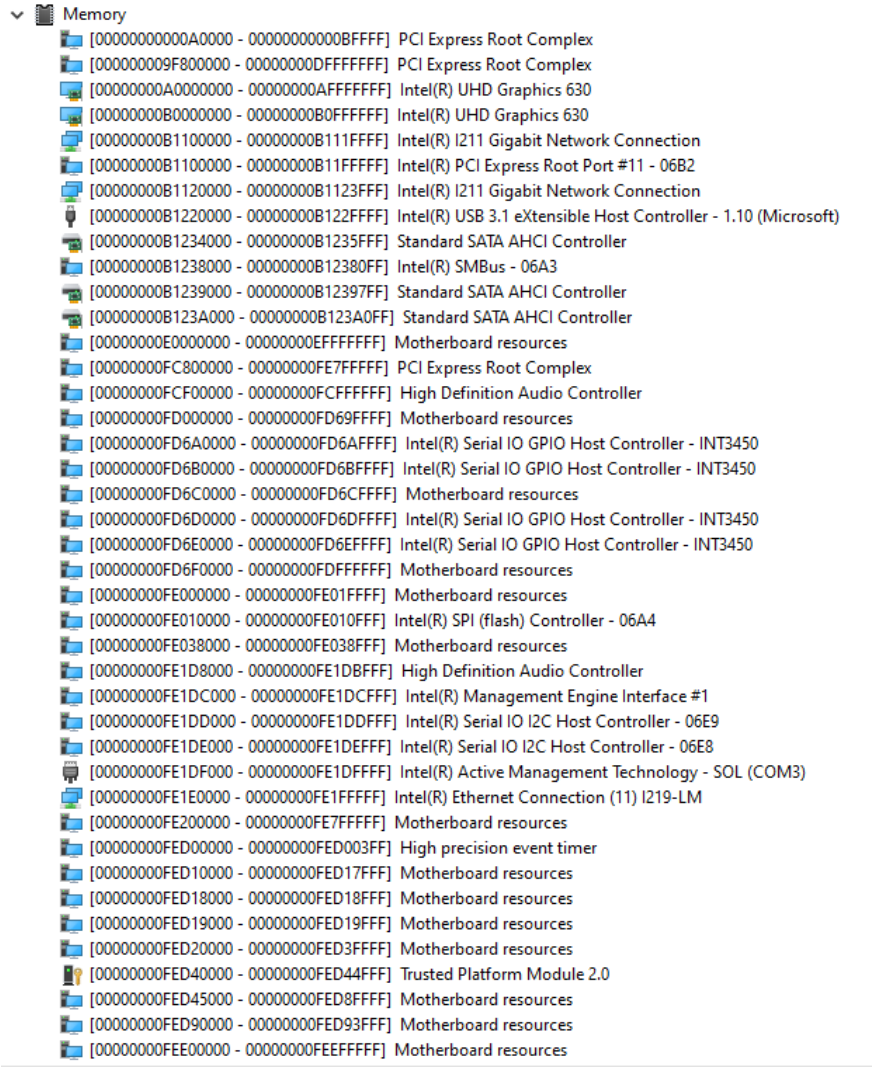
I/O Information

A.1 I/O Address Map

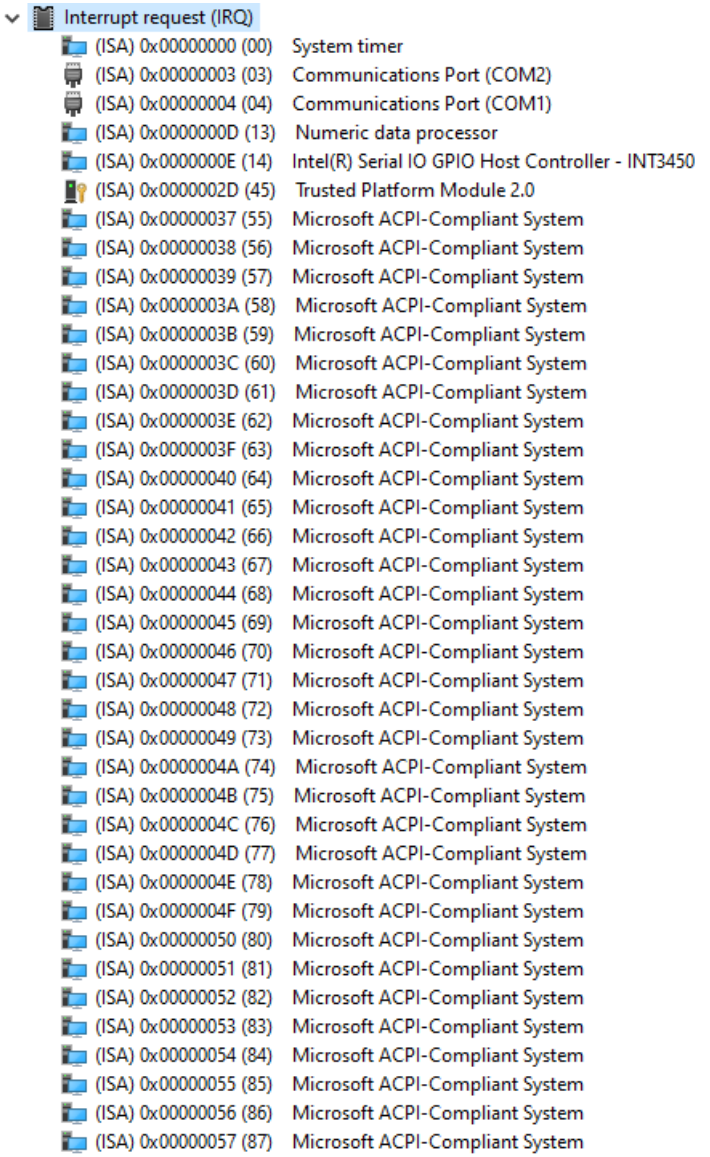


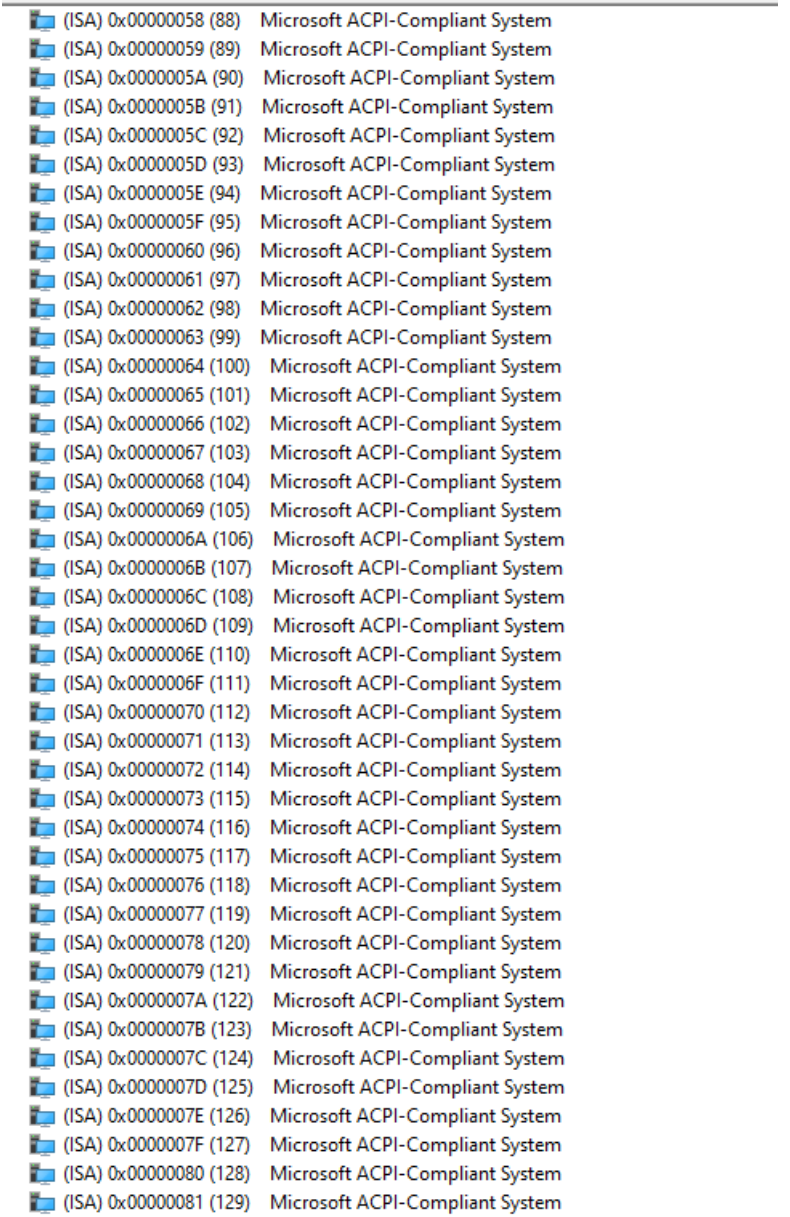

[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000002000 - 00000000000020FE] Motherboard resources
[0000000000003000 - 0000000000003FFF] Intel(R) PCI Express Root Port #11 - 06B2
[0000000000004000 - 000000000000403F] Intel(R) UHD Graphics 630
[0000000000004060 - 000000000000407F] Standard SATA AHCI Controller
[0000000000004080 - 0000000000004083] Standard SATA AHCI Controller
[0000000000004090 - 0000000000004097] Standard SATA AHCI Controller
[0000000000EFA0 - 0000000000EFBF] Intel(R) SMBus - 06A3
[0000000000FFF8 - 0000000000FFFF] Intel(R) Active Management Technology - SOL (COM3)

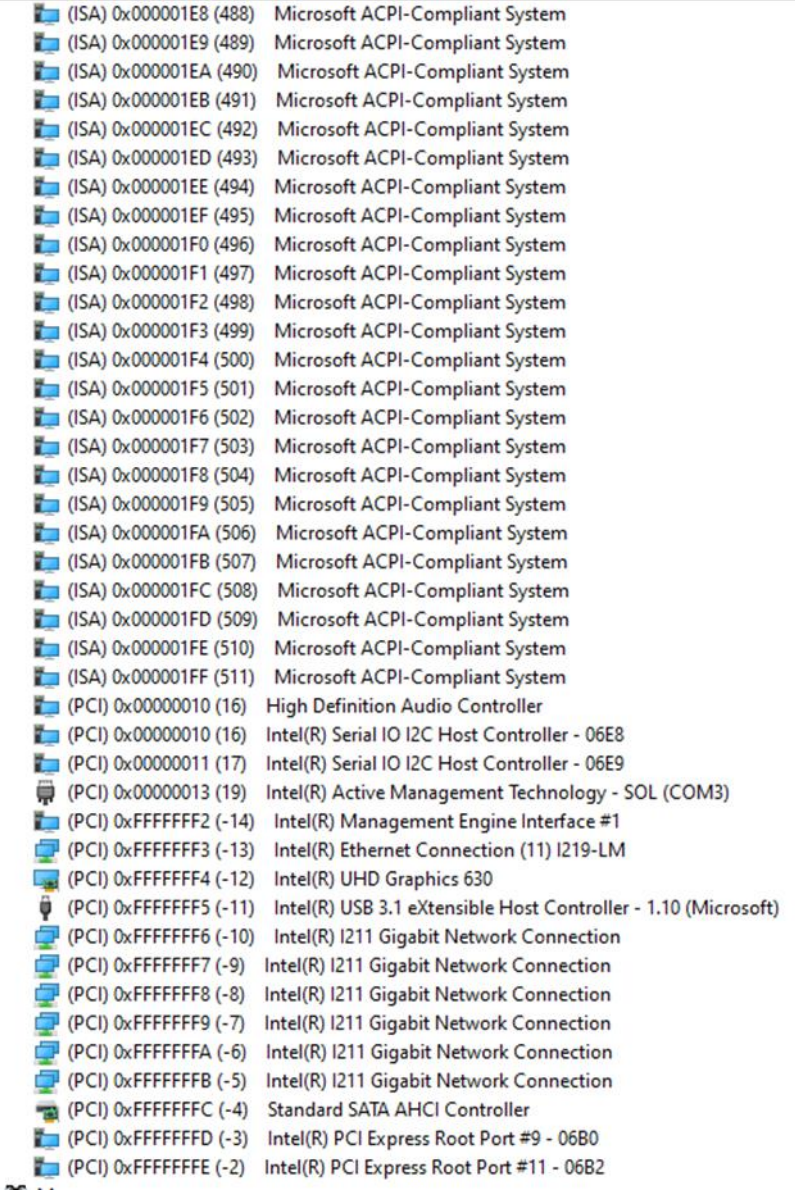
A.2 Memory Address Map



A.3 IRQ Mapping Chart




(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) 0x000001E8 (488) Microsoft ACPI-Compliant System
(ISA) 0x000001E9 (489) Microsoft ACPI-Compliant System
(ISA) 0x000001EA (490) Microsoft ACPI-Compliant System
(ISA) 0x000001EB (491) Microsoft ACPI-Compliant System
(ISA) 0x000001EC (492) Microsoft ACPI-Compliant System
(ISA) 0x000001ED (493) Microsoft ACPI-Compliant System
(ISA) 0x000001EE (494) Microsoft ACPI-Compliant System
(ISA) 0x000001EF (495) Microsoft ACPI-Compliant System
(ISA) 0x000001F0 (496) Microsoft ACPI-Compliant System
(ISA) 0x000001F1 (497) Microsoft ACPI-Compliant System
(ISA) 0x000001F2 (498) Microsoft ACPI-Compliant System
(ISA) 0x000001F3 (499) Microsoft ACPI-Compliant System
(ISA) 0x000001F4 (500) Microsoft ACPI-Compliant System
(ISA) 0x000001F5 (501) Microsoft ACPI-Compliant System
(ISA) 0x000001F6 (502) Microsoft ACPI-Compliant System
(ISA) 0x000001F7 (503) Microsoft ACPI-Compliant System
(ISA) 0x000001F8 (504) Microsoft ACPI-Compliant System
(ISA) 0x000001F9 (505) Microsoft ACPI-Compliant System
(ISA) 0x000001FA (506) Microsoft ACPI-Compliant System
(ISA) 0x000001FB (507) Microsoft ACPI-Compliant System
(ISA) 0x000001FC (508) Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509) Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510) Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511) Microsoft ACPI-Compliant System
(PCI) 0x00000010 (16) High Definition Audio Controller
(PCI) 0x00000010 (16) Intel(R) Serial IO I2C Host Controller - 06E8
(PCI) 0x00000011 (17) Intel(R) Serial IO I2C Host Controller - 06E9
(PCI) 0x00000013 (19) Intel(R) Active Management Technology - SOL (COM3)
(PCI) 0xFFFFFFF2 (-14) Intel(R) Management Engine Interface #1
(PCI) 0xFFFFFFF3 (-13) Intel(R) Ethernet Connection (11) I219-LM
(PCI) 0xFFFFFFF4 (-12) Intel(R) UHD Graphics 630
(PCI) 0xFFFFFFF5 (-11) Intel(R) USB 3.1 eXtensible Host Controller - 1.10 (Microsoft)
(PCI) 0xFFFFFFF6 (-10) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF7 (-9) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF8 (-8) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFF9 (-7) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFA (-6) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFB (-5) Intel(R) I211 Gigabit Network Connection
(PCI) 0xFFFFFFFC (-4) Standard SATA AHCI Controller
(PCI) 0xFFFFFFFD (-3) Intel(R) PCI Express Root Port #9 - 06B0
(PCI) 0xFFFFFFFE (-2) Intel(R) PCI Express Root Port #11 - 06B2

Appendix B

Mating Connectors and Cables

B.1 Mating Connectors and Cables

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model no		
CN1	COM Port Connector	PINREX	710-H73-095 WE1	Serial Port Cable	1701090122
CN2	COM Port Connector	PINREX	710-H73-095 WE1	Serial Port Cable	1701090122
CN3	ATX Connector	PINREX	753-71-03TW 01	ATX Cable	170220020B
CN8	SATA Connector	TechBest	007-01-00757	SATA Cable	1709070460
CN9	SATA Connector	TechBest	007-01-00757	SATA Cable	1709070460
CN10	SATA Power Connector	PINREX	721-81-02TW 00	SATA Power Cable	1702150155
CN12	USB2.0 Connector	Aces	50238-01041-003	USB2.0 Cable	170010010D
CN13	USB2.0 Connector	Aces	50238-01041-003	USB2.0 Cable	170010010D
CN14	FPC Connector	Panasonic	AYF534035	FPC Cable	1706400601
CN16	Front Panel Connector	Aces	50238-01041-001	Front Panel cable	1709100108
CN18	Inverter Connector	Aces	50228-00671-001	Inverter Cable	170X000152