

BOXER-6750

Fanless Embedded Box PC

User's Manual 5th Ed

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Packing List

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

Item	Quantity
● BOXER-6750	1
● Din Rail bracket	1
● Screw Package	1
● 3 Pin DC-In Power Connector	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 power 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.
19. Do NOT disassemble the motherboard so as not to damage the system or void your warranty.
20. If the thermal pad had been damaged, please contact AAEON's salesperson to purchase a new one. Do NOT use those of other brands.
21. The Hex Cylinder Coppers on the front panel are not removable.
22. Repeatedly assemble and disassemble the system may cause damages to the exterior paint and surface and screw holes.
23. Use the right size screwdriver.
24. Use the screwdriver correctly to remove screws from the system.

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.

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。

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.

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Chapter 1

Product Specifications

1.1 Specifications

System

CPU	Intel® Celeron® 3955U Intel® Core™ i3-6100U Intel® Core™ i5-6200U Intel® Core™ i3-7100U Intel® Core™ i5-7200U
Chipset	Intel® System on Chip
System Memory	DDR4 2133MHz SODIMM slot x 1, up to 16GB
Display Interface	HDMI x 1 VGA x 1
Storage Device	mSATA, HDD/SSD
Ethernet	Intel® i210-IT x 2
I/O	RS-232/422/485 x 4 RJ-45 x 2 for GbE (i210-IT x 2) USB3.2 Gen 1 x 4 VGA x 1 HDMI x 1 Antenna Holes x 2 Power Switch Power Input
Expansion	Full-size Mini Card x 1 (PCIe + USB with SIM slot, option for mSATA) Full-size Mini Card x 1 (PCIe + USB)
Indicator	Power LED on power button
OS Support	Windows® 10 (64-bit) Windows® 8.1 (64-bit) Windows® 7 (32/64-bit) Linux

Power Supply

Power Requirement	9-30V with 3-pin terminal block
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Mechanical

Mounting	DIN Rail Mount Wall-mount (optional)
Dimensions (W x H x D)	2.72" x 7.2" x 6.1" (69mm x 183mm x 155mm)
Gross Weight	6.1 lbs. (2.8 kg)
Net Weight	3.9 lbs. (1.8 kg)

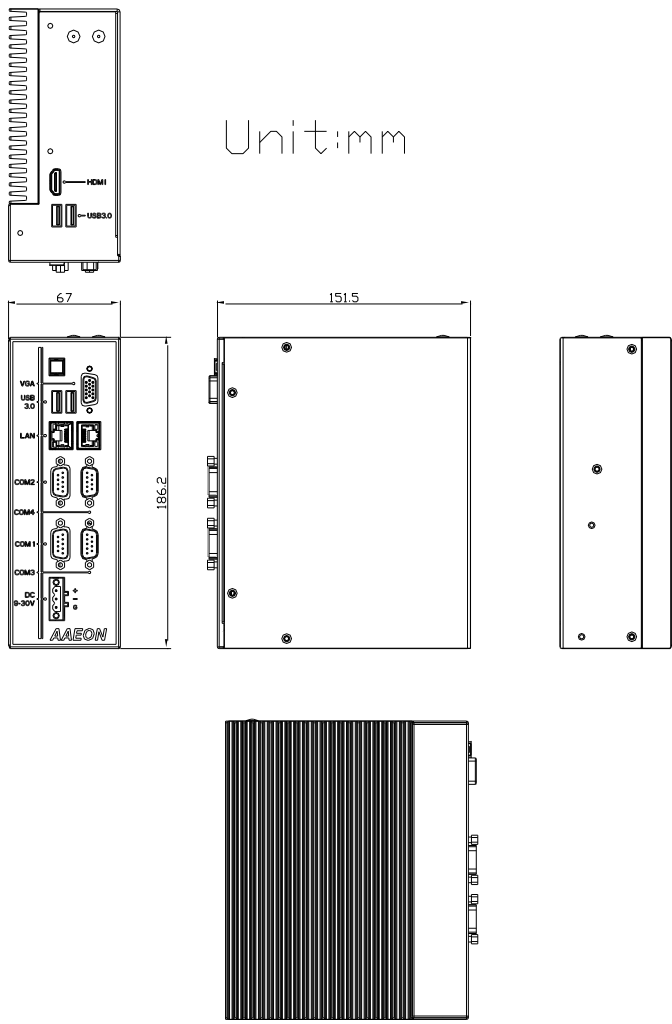
Environmental

Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. SSD/HDD/mSATA (according to IEC68- 2-14 with 0.5 m/s airflow, with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD
Certification	CE/FCC class A

Chapter 2

Hardware Information

2.1 Dimensions

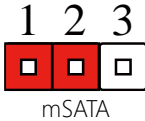


2.2 List of Jumpers

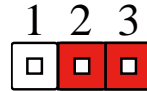
Please refer to the table below for all of the system's jumpers that you can configure for your application.

Label	Function
JP1	mSATA/Mini Card Operating VCC Selection
JP5	Auto Power Button Enable/Disable Selection
JP7	Clear CMOS Jumper
JP9	COM2 Pin8 Function Selection
JP10	COM1 Pin8 Function Selection
JP11	mSATA & Mini PCIe Selection

2.2.1 mSATA/Mini Card Operating VCC Selection (JP1)

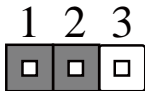


mSATA

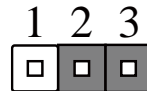


Mini Card (Default)

2.2.2 Auto Power Button Enable/Disable Selection (JP5)

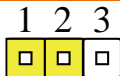


Disable (Default)

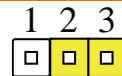


Enable

2.2.3 Clear CMOS (JP7)

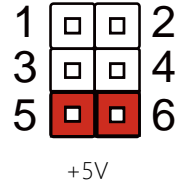
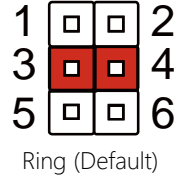
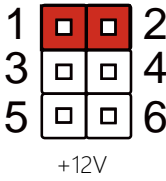


Normal (Default)

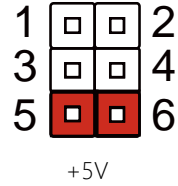
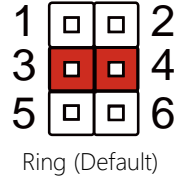
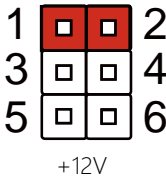


Clear CMOS

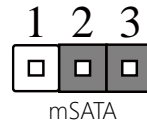
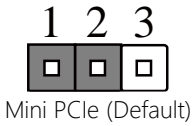
2.2.4 COM2 Pin8 Function Selection (JP9)



2.2.5 COM1 Pin8 Function Selection (JP10)



2.2.6 mSATA & Mini PCIe Selection (JP11)



2.3 List of Connectors

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

Label	Function
CN1	VGA Connector
CN2	Mini Card Slot (Full-Sized Mini Card)
CN4	Micro SIM Card Socket
CN12	+5V Output for SATA HDD
CN13	SATA Port
CN14	BIOS Debug Port
CN15	HDMI Connector
CN19	Dual USB3.0 Ports
CN20	Battery
CN23	LAN Port (RJ45)
CN24	Dual USB3.0 Ports
CN25	External Power Input
CN26	COM Port 2
CN27	COM Port 1

2.3.1 VGA Port (CN1)

Pin	Pin Name	Signal Type	Signal Level
1	RED	OUT	
2	GREEN	OUT	
3	BLUE	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	GND	GND	
11	NC		
12	DDC_DATA	I/O	+5V
13	HSYNC	OUT	
14	VSYNC	OUT	
15	DDC_CLK	I/O	+5V

2.3.2 Mini Card Slot (Full-Sized Mini Card) (CN2)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		

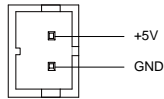
Pin	Pin Name	Signal Type	Signal Level
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	NC	PWR	
9	GND	GND	
10	NC	I/O	
11	PCIE_REF_CLK-	DIFF	
12	NC	IN	
13	PCIE_REF_CLK+	DIFF	
14	NC		
15	GND	GND	
16	NC	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-/MSATA_RX+	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+/MSATA_RX-	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-/MSATA_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V

Pin	Pin Name	Signal Type	Signal Level
33	PCIE_TX+/MSATA_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

2.3.3 Micro SIM Card Socket (CN4)

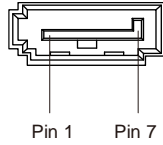
Pin	Pin Name	Signal Type	Signal Level
1	UIM_PWR	PWR	
2	UIM_RST	IN	
3	UIM_CLK	IN	
4	NC		
5	GND	GND	
6	UIM_VPP	PWR	
7	UIM_DATA	I/O	
8	NC		

2.3.4 +5V Output for SATA HDD (CN12)



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

2.3.5 SATA Port (CN13)



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	

2.3.6 BIOS Debug Port (CN14)

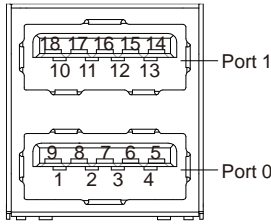
Pin	Pin Name	Signal Type	Signal Level
1	SPI_MISO	OUT	
2	GND	GND	
3	SPI_CLK	IN	
4	+3.3VSB	PWR	+3.3V
5	SPI_MOSI	IN	
6	SPI_CS	IN	
7	NC		

2.3.7 HDMI Connector (CN15)



Pin	Pin Name	Signal Type	Signal Level
1	DVI_D2+	OUT	
2	GND	GND	
3	DVI_D2-	OUT	
4	DVI_D1+	OUT	
5	GND	GND	
6	DVI_D1-	OUT	
7	DVI_D0+	OUT	
8	GND	GND	
9	DVI_D0-	OUT	
10	DVI_CLK+	OUT	
11	GND	GND	
12	DVI_CLK-	OUT	
13	NC		
14	NC		
15	SCL	I/O	
16	SDA	I/O	
17	GND	GND	
18	+5V	PWR	
19	HPD	IN	

2.3.8 Dual USB3.0 Ports (CN19)

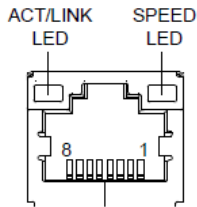


Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	USB_SSRX-	DIFF	
6	USB_SSRX+	DIFF	
7	GND	GND	
8	USB_SSTX-	DIFF	
9	USB_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB_D-	DIFF	
12	USB_D+	DIFF	
13	GND	GND	
14	USB_SSRX-	DIFF	
15	USB_SSRX+	DIFF	
16	GND	GND	
17	USB_SSTX-	DIFF	
18	USB_SSTX+	DIFF	

2.3.9 Battery (CN20)

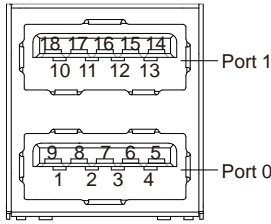
Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	3.3V
2	GND	GND	

2.3.10 LAN (RJ45) Connector (CN23)



Pin	Signal	Pin	Signal
1	MDI0+	2	MDI0-
3	MDI1+	4	MDI2+
5	MDI2-	6	MDI1-
7	MDI3+	8	MDI3-

2.3.11 USB 3.0 Ports (CN24)



Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB_D-	DIFF	
3	USB_D+	DIFF	
4	GND	GND	
5	USB_SSRX-	DIFF	
6	USB_SSRX+	DIFF	
7	GND	GND	
8	USB_SSTX-	DIFF	
9	USB_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB_D-	DIFF	
12	USB_D+	DIFF	
13	GND	GND	
14	USB_SSRX-	DIFF	
15	USB_SSRX+	DIFF	
16	GND	GND	
17	USB_SSTX-	DIFF	
18	USB_SSTX+	DIFF	

2.3.12 External Power Input (CN25)

Pin	Pin Name	Signal Type	Signal Level
1	+12V	PWR	+9~+24V (or +12V)
2	GND	GND	

2.3.13 COM Port 2 (CN26)

RS-232			
Pin	Pin Name	Signal Type	Signal level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V

RS-422			
Pin	Pin Name	Signal Type	Signal level
1	RS422_TX-	OUT	
2	RS422_TX+	OUT	
3	RS422_RX+	IN	
4	RS422_RX-	IN	
5	NC		

RS-422			
Pin	Pin Name	Signal Type	Signal level
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

RS-485			
Pin	Pin Name	Signal Type	Signal level
1	RS485_D-	I/O	
2	RS485_D+	I/O	
3	NC		
4	NC		
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

Note 1: COM2 RS-232/422/485 can be set by BIOS. Default is RS-232.

Note 2: Pin 8 function can be set by Jumper JP11.

2.3.14 COM Port 1 (CN27)

RS-232			
Pin	Pin Name	Signal Type	Signal level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V

RS-422			
Pin	Pin Name	Signal Type	Signal level
1	RS422_TX-	OUT	
2	RS422_TX+	OUT	
3	RS422_RX+	IN	
4	RS422_RX-	IN	
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

RS-485			
Pin	Pin Name	Signal Type	Signal level
1	RS485_D-	I/O	
2	RS485_D+	I/O	
3	NC		
4	NC		
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

Note 1: COM1 RS-232/422/485 can be set by BIOS. Default is RS-232.

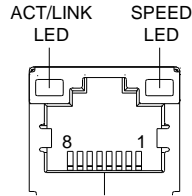
Note 2: Pin 8 function can be set by Jumper JP9.

2.4 List of Connectors (PER-T506)

Connectors on board access link to external devices such as hard disk drives, a keyboard.

Label	Function
CN2	LAN
CN3	Mini Card Slot (Full-Sized Mini Card)
CN9	COM3
CN10	COM4

2.4.1 LAN (RJ-45) Port (CN2)



Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	

2.4.2 Mini Card Slot (Full-Sized Mini Card) (CN3)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	
11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	
13	PCIE_REF_CLK+	DIFF	
14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V

Pin	Pin Name	Signal Type	Signal Level
25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
51	NC		
52	+3.3VSB	PWR	+3.3V

2.4.3 COM Port 3 (CN9)

RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V

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

RS-422			
Pin	Pin Name	Signal Type	Signal Level
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	
2	RS485_D+	I/O	
3	NC		
4	NC		
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

Note: COM3 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

2.4.4 COM Port 4 (CN10)

RS-232			
Pin	Pin Name	Signal Type	Signal Level
1	DCD	IN	
2	RX	IN	
3	TX	OUT	±5V
4	DTR	OUT	±5V
5	GND	GND	
6	DSR	IN	
7	RTS	OUT	±5V
8	CTS	IN	
9	RI/+5V/+12V	IN/ PWR	+5V/+12V

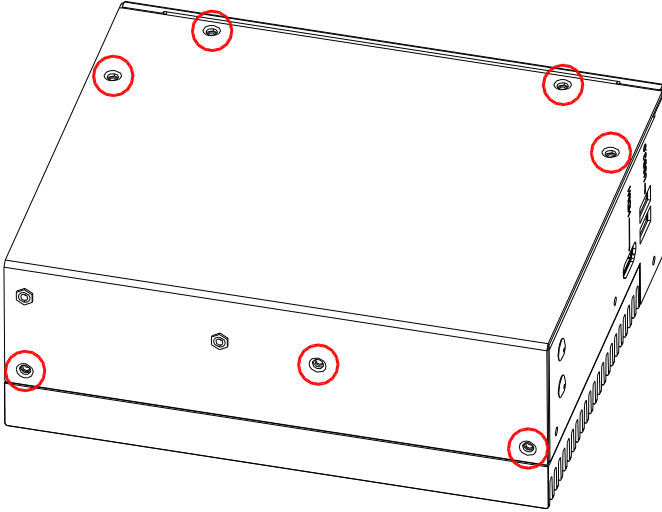
RS-422			
Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	
2	RS422_TX+	OUT	
3	RS422_RX+	IN	
4	RS422_RX-	IN	
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

RS-485			
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	
2	RS485_D+	I/O	
3	NC		
4	NC		
5	NC		
6	NC		
7	NC		
8	GND	GND	
9	NC/+5V/+12V	PWR	+5V/+12V

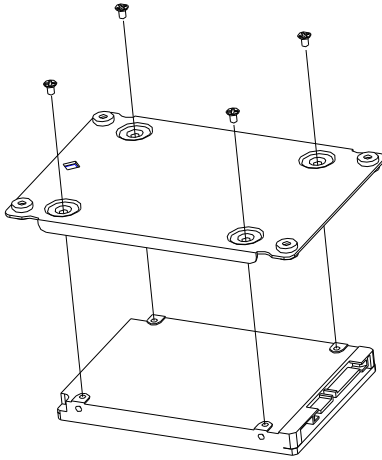
Note: COM4 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

2.5 2.5" Drive Installation

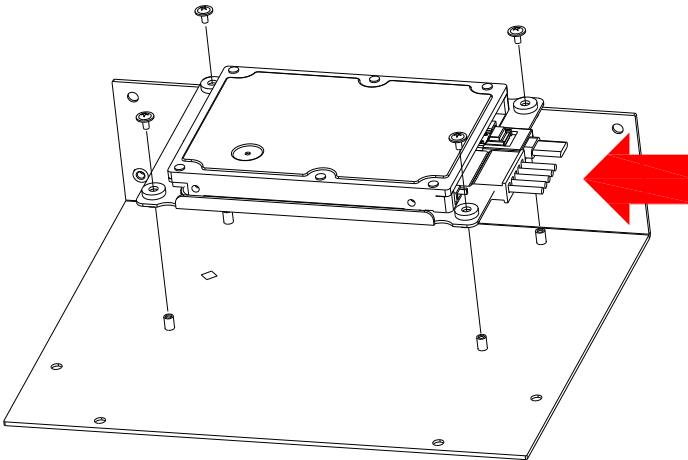
Step 1: Remove the baseplate by removing the screws circled in the diagram below



Step 2: Mount the drive onto the bracket plate

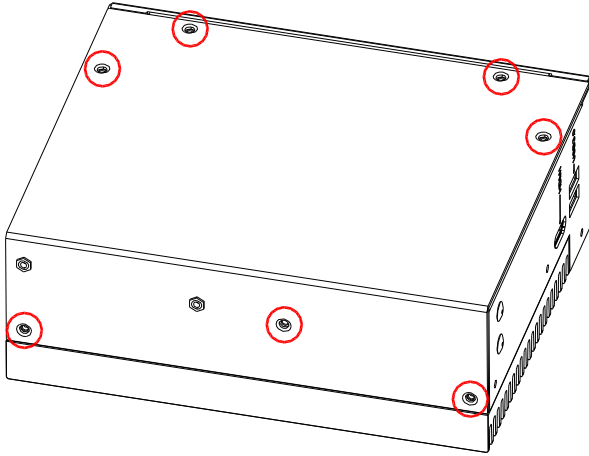


Step 3: Mount the drive assembly to the baseplate using the risers. Please note the orientation of the assembly.

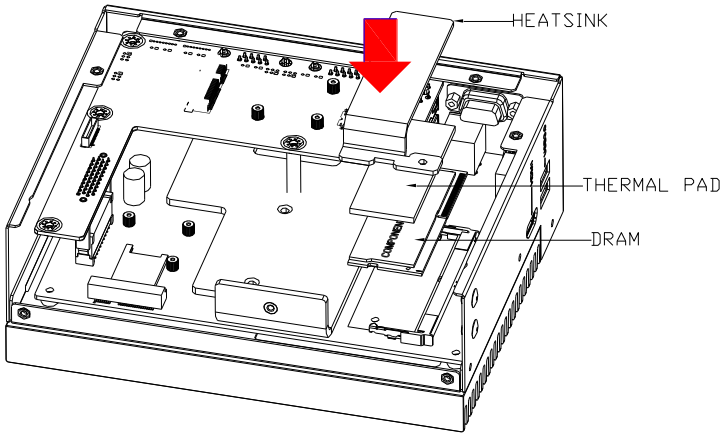


2.6 RAM Installation

Step 1: Remove the baseplate by removing the screws circled in the diagram below

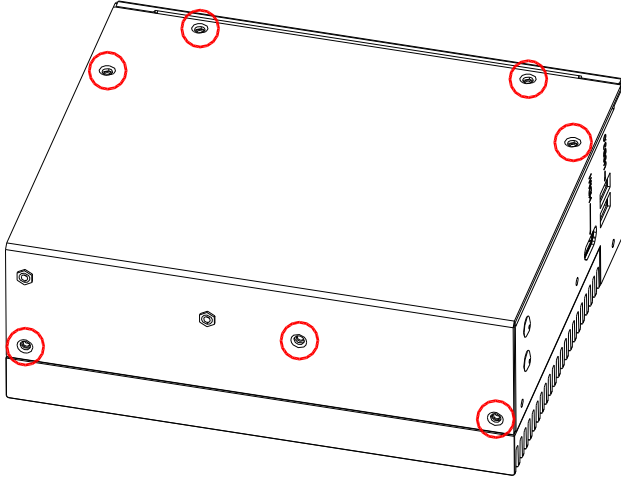


Step 2: Insert the RAM module and ensure it is secure. Apply the thermal pad and mount the RAM heatsink.

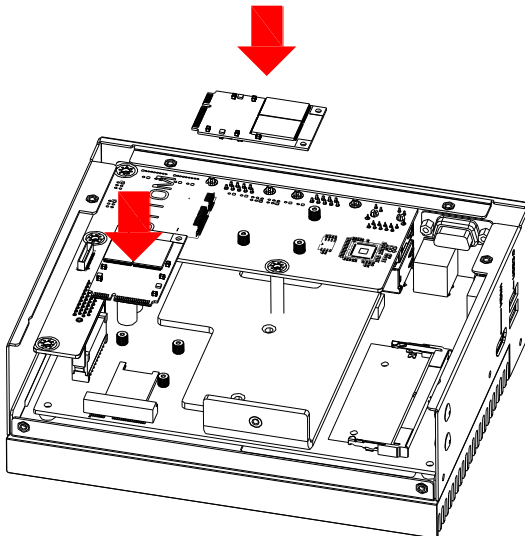


2.7 Mini Card Installation

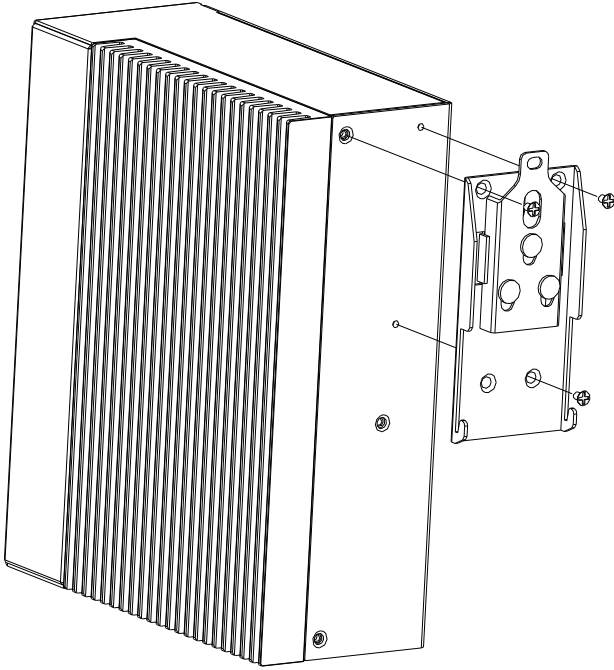
Step 1: Remove the baseplate by removing the screws circled in the diagram below



Step 2: Insert card at about 30° angle, push down and secure with mounting screw.



2.8 Din Rail Mount Installation



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

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

The system configuration verification routines check the current system configuration against the values stored in the CMOS memory. If they do not match, an error message will be output, and the BIOS setup program will need to be run to set the configuration information in memory.

There are three situations in which the CMOS settings will need to be set or changed:

- Starting the system for the first time
- The system hardware has been changed
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention. The battery must be replaced when it runs down.

3.2 AMI BIOS Setup

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

To enter BIOS Setup, press 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 and configure advanced processor options and features.

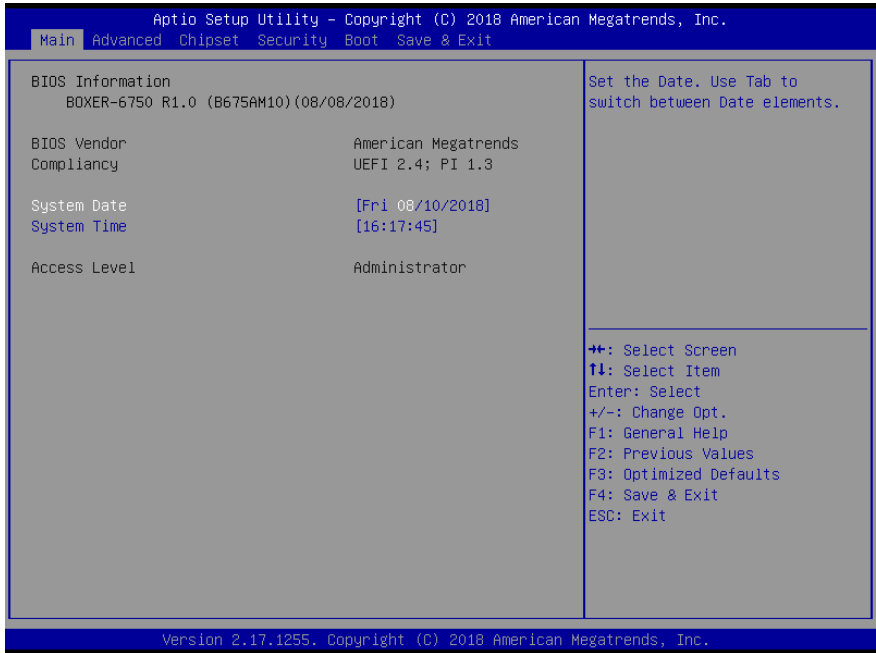
Chipset – Chipset and host bridge options and features

Security – The setup administrator password can be set here

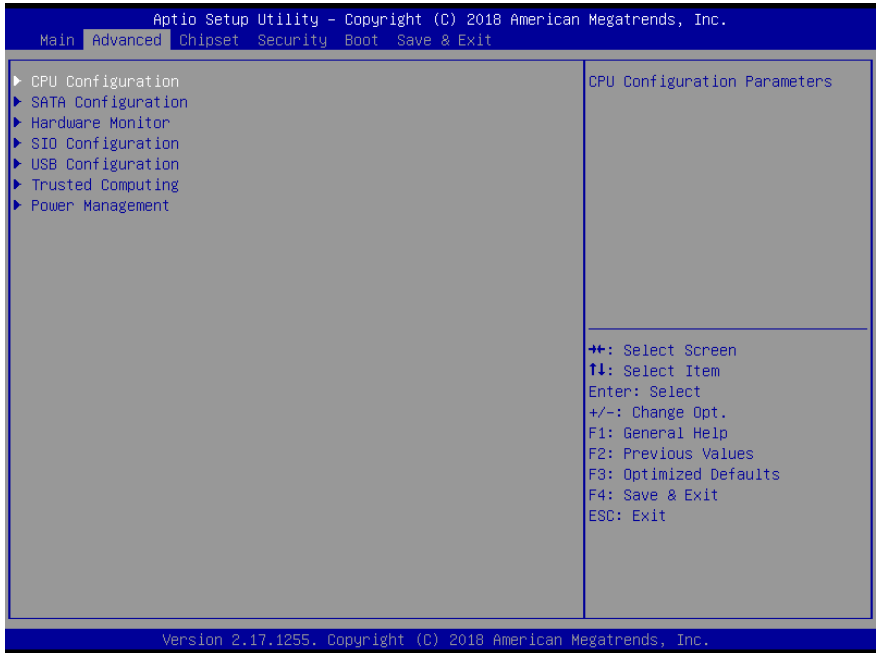
Boot – Set boot options including boot priority and Quiet Boot option

Save & Exit – Save your changes and exit the program

3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



3.4.1 Advanced: CPU Configuration

Aprio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.

Advanced

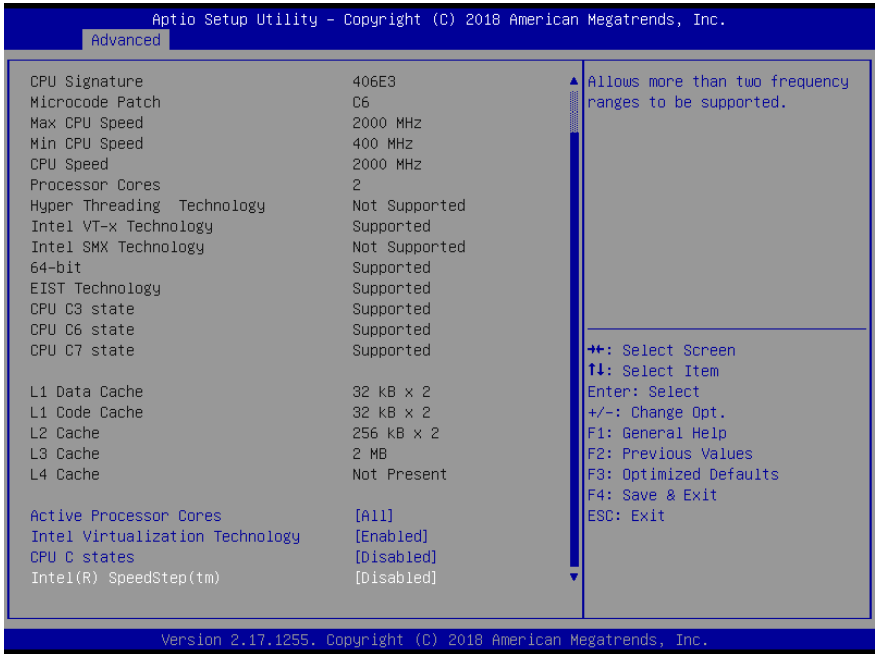
CPU Configuration

Intel(R) Celeron(R) CPU 3955U @ 2.00GHz	
CPU Signature	406E3
Microcode Patch	C6
Max CPU Speed	2000 MHz
Min CPU Speed	400 MHz
CPU Speed	2000 MHz
Processor Cores	2
Hyper Threading Technology	Not Supported
Intel VT-x Technology	Supported
Intel SMX Technology	Not Supported
64-bit	Supported
EIST Technology	Supported
CPU C3 state	Supported
CPU C6 state	Supported
CPU C7 state	Supported
L1 Data Cache	32 kB x 2
L1 Code Cache	32 kB x 2
L2 Cache	256 kB x 2
L3 Cache	2 MB
L4 Cache	Not Present
Active Processor Cores	[All]

Number of cores to enable in each processor package.

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

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Options summary:

Active Processor Cores	1	Optimal Default
	All	
Number of cores to enable in each processor package.		
Intel Virtualization Technology	Disabled	Optimal Default
	Enabled	
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology		
CPU C States	Disabled	Optimal Default
	Enabled	
Enable or disable CPU C states		
Intel(R) SpeedStep(tm)	Disabled	Optimal Default
	Enabled	
Allows more than two frequency ranges to be supported.		

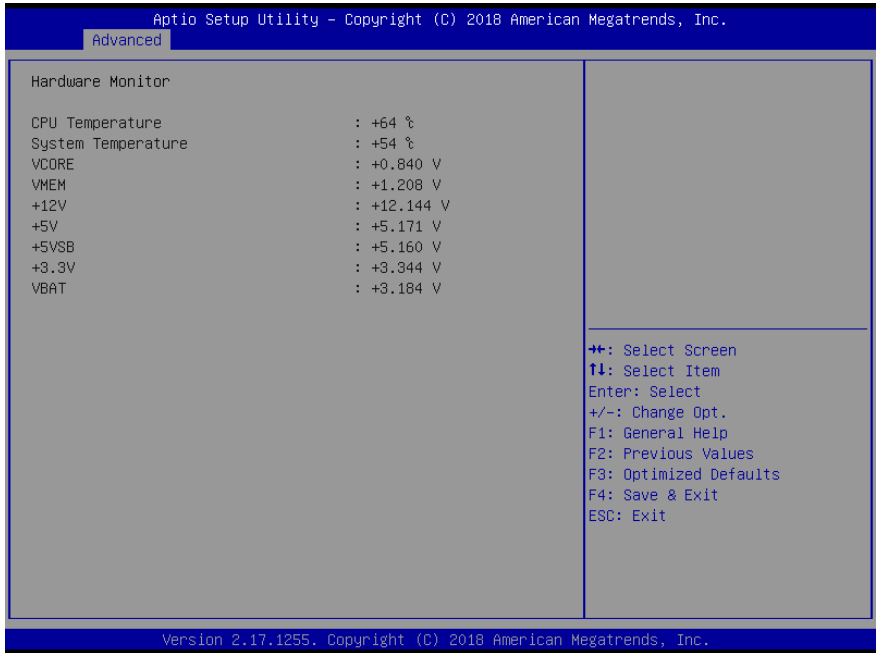
3.4.2 Advanced: SATA Configuration



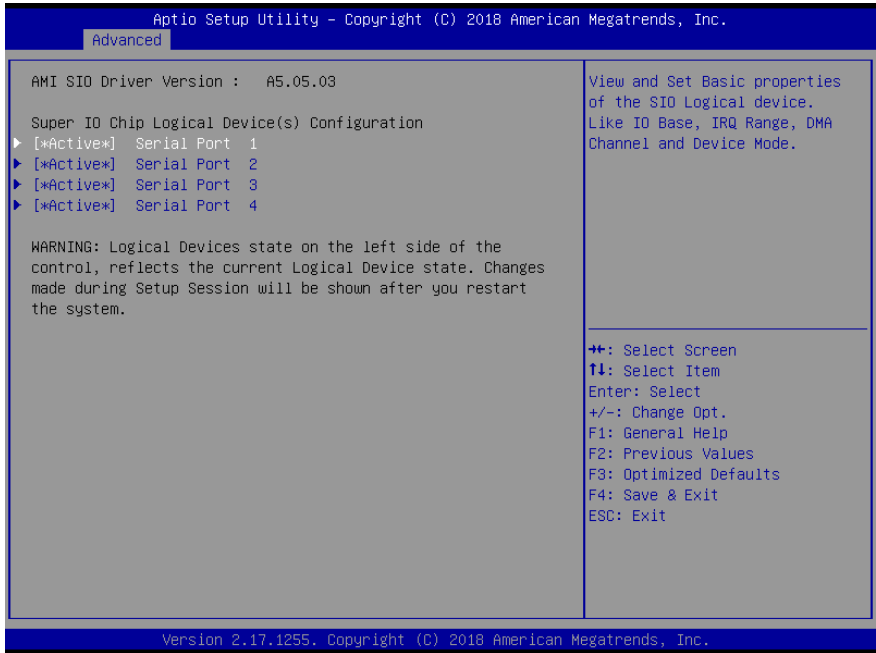
Options summary:

SATA Controller(s)	Enabled	Optimal Default
	Disabled	
Enable or Disable SATA Device.		
Port	Enabled	Optimal Default
	Disabled	
Enable or Disable SATA Port.		
Hot Plug	Enabled	Optimal Default
	Disabled	
Designates this port as Hot Pluggable.		

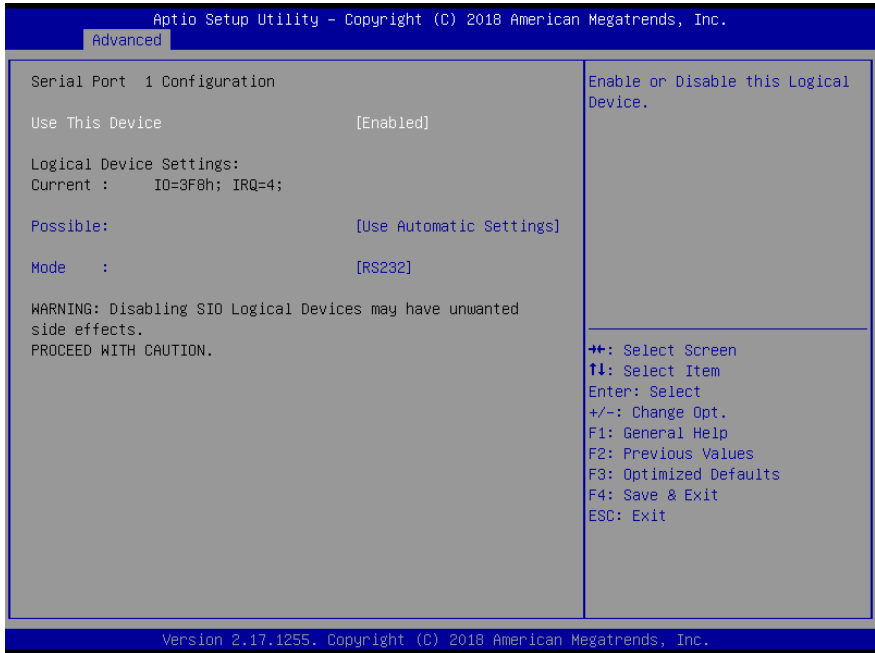
3.4.3 Advanced: Hardware Monitor



3.4.4 Advanced: SIO Configuration



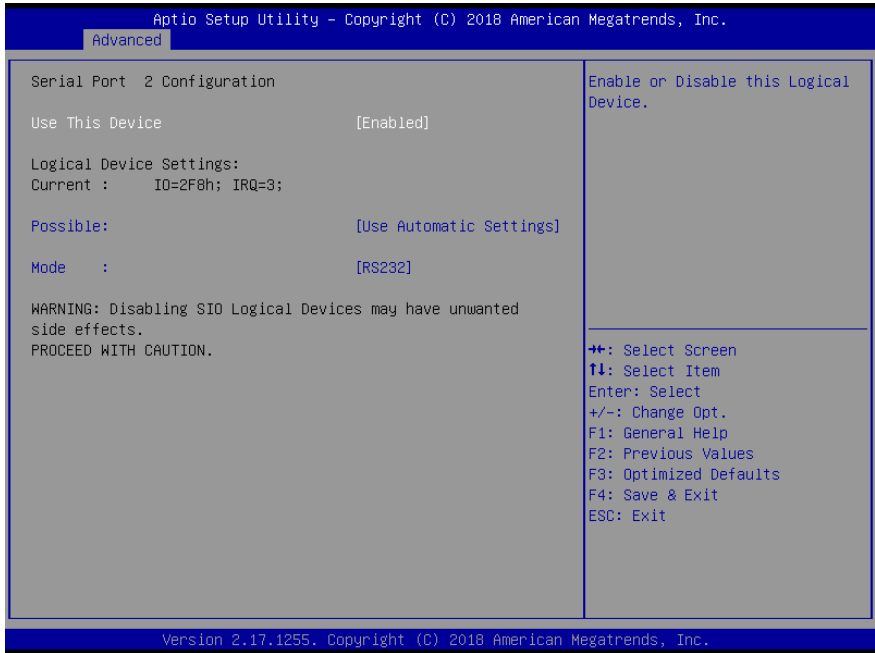
3.4.4.1 SIO Configuration: Serial Port 1 Configuration



Options summary:

Use This Device	Disabled	Optimal Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal 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
	RS422	
	RS485	
UART RS232, 422, 485 selection		

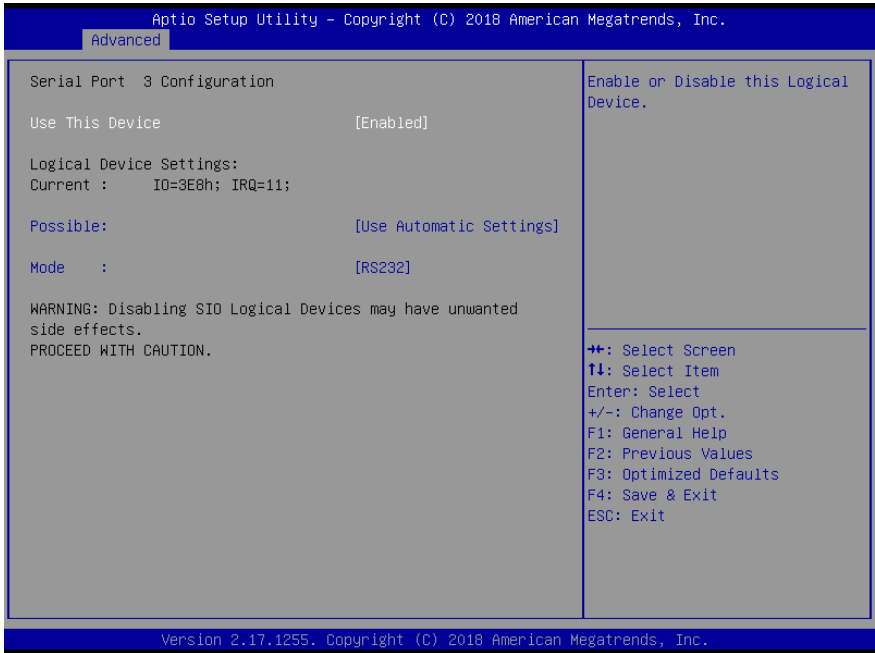
3.4.4.2 SIO Configuration: Serial Port 2 Configuration



Options summary:

Use This Device	Disabled	Optimal Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal 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
	RS422	
	RS485	
UART RS232, 422, 485 selection		

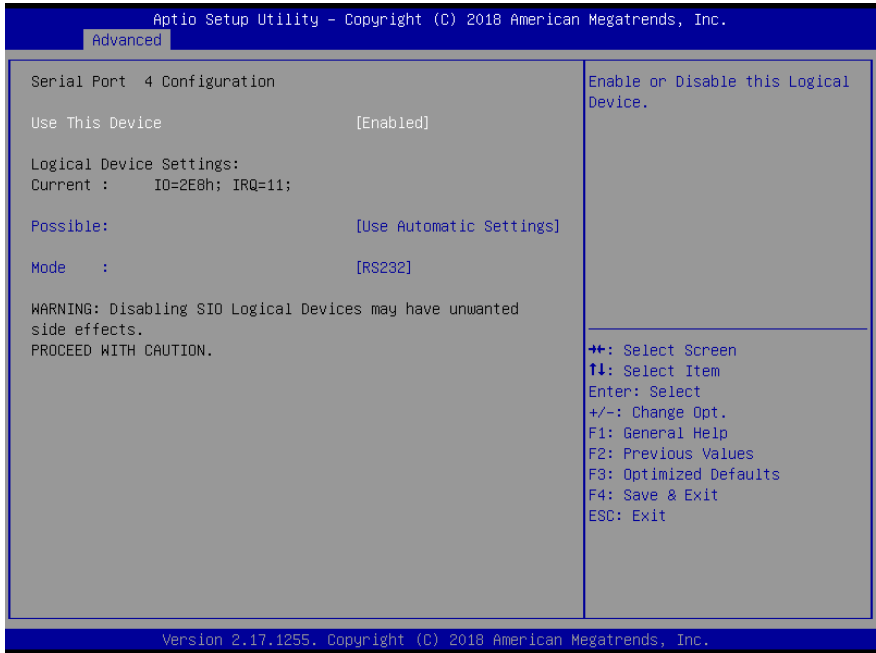
3.4.4.3 SIO Configuration: Serial Port 3 Configuration



Options summary:

Use This Device	Disabled	Optimal Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal 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
	RS422	
	RS485	
UART RS232, 422, 485 selection		

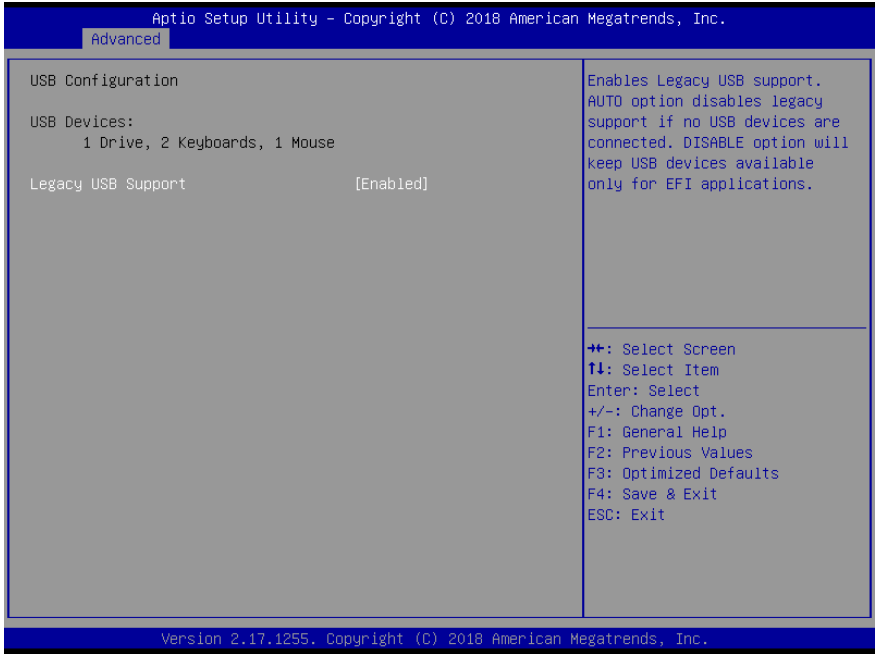
3.4.4.4 SIO Configuration: Serial Port 4 Configuration



Options summary:

Use This Device	Disabled	Optimal Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal 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
	RS422	
	RS485	
UART RS232, 422, 485 selection		

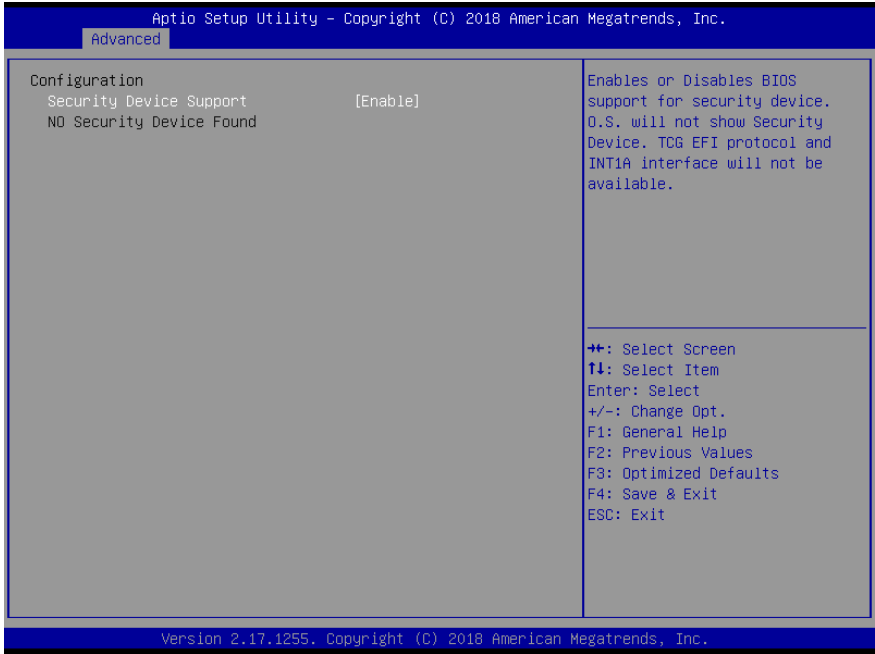
3.4.5 Advanced: USB Configuration



Options summary:

Legacy USB Support	Enabled	Optimal Default
	Disabled	
	Auto	
Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications.		

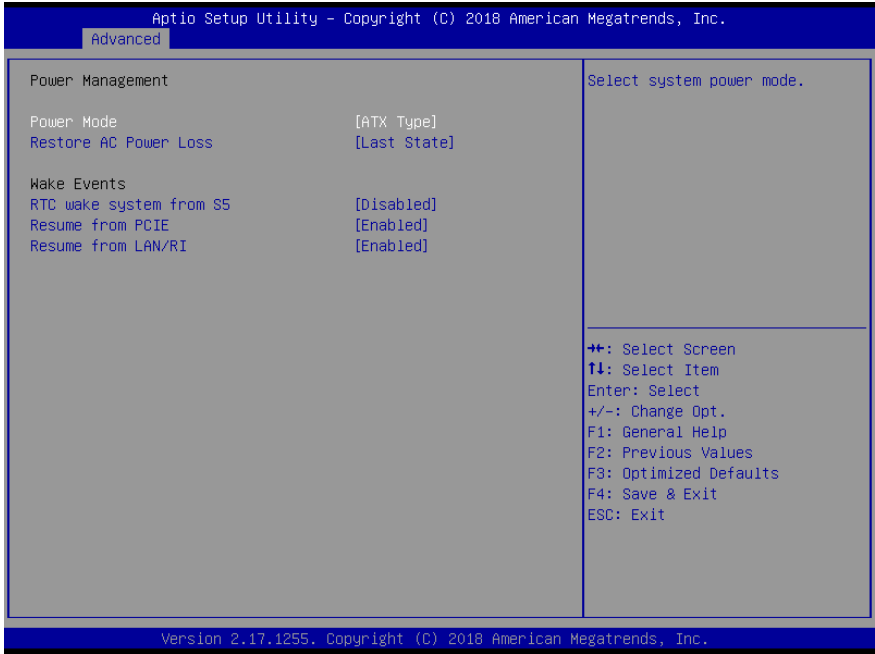
3.4.6 Advanced: Trusted Computing



Options summary:

Security Device Support	Enable	Optimal Default
	Disable	
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.		

3.4.7 Advanced: Power Management

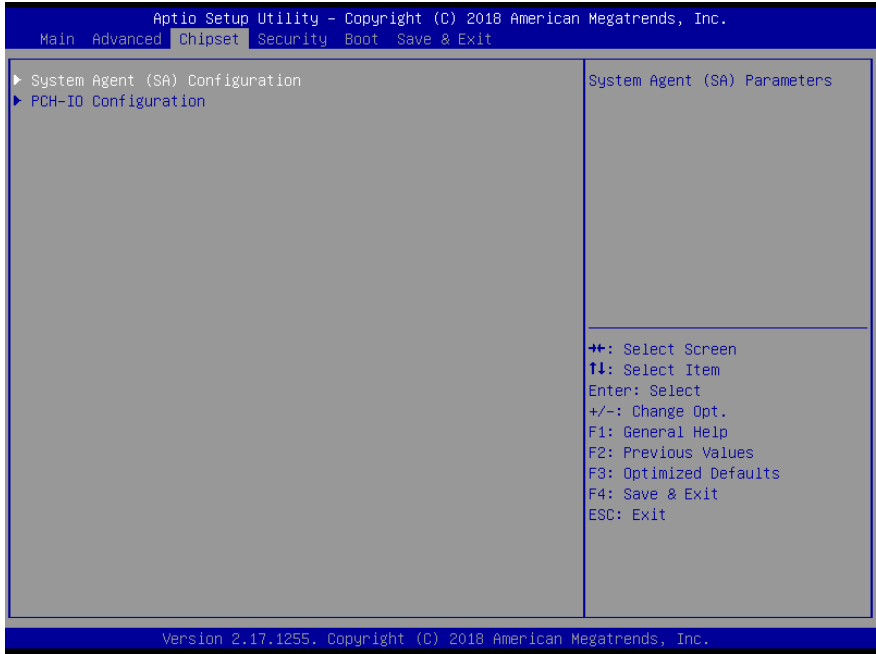


Options summary:

Power Mode	ATX Type	Optimal Default
	AT Type	
Select power supply mode.		
Restore AC Power Loss	Last State	Optimal Default
	Power On	
	Power Off	
Select power state when power is re-applied after a power failure.		
RTC wake system from S5	Disabled	Optimal Default
	Fixed Time	
	Dynamic 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)		
Resume from PCIE	Enabled	Optimal Default
	Disabled	
Enable/Disable Resume from PCIE		
Resume from	Enabled	Optimal Default

LAN/RI	Disabled
Enable/Disable Resume from LAN/RI	

3.5 Setup Submenu: Chipset



3.5.1 Chipset: System Agent (SA) Configuration

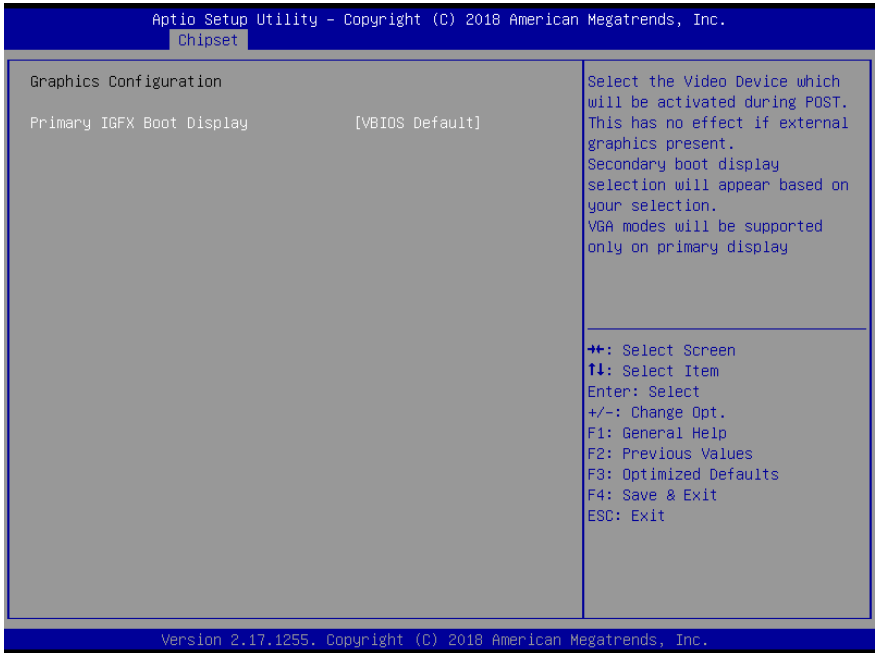


Options summary:

Max TOLUD	Dynamic	Optimal Default
	1 GB	
	1.25 GB	
	1.5 GB	
	1.75 GB	
	2 GB	
	2.25 GB	
	2.5 GB	
	2.75 GB	
	3 GB	

Maximum Value of TOLUD (Top of Low Usable DRAM)
 Dynamic assignment would adjust TOLUD automatically based on largest MMIO length of installed graphic controller.
 Changing this value may cause side effect, if reserved memory is lesser than MMIO required. This happens often when Gfx device with large MMIO requirement.

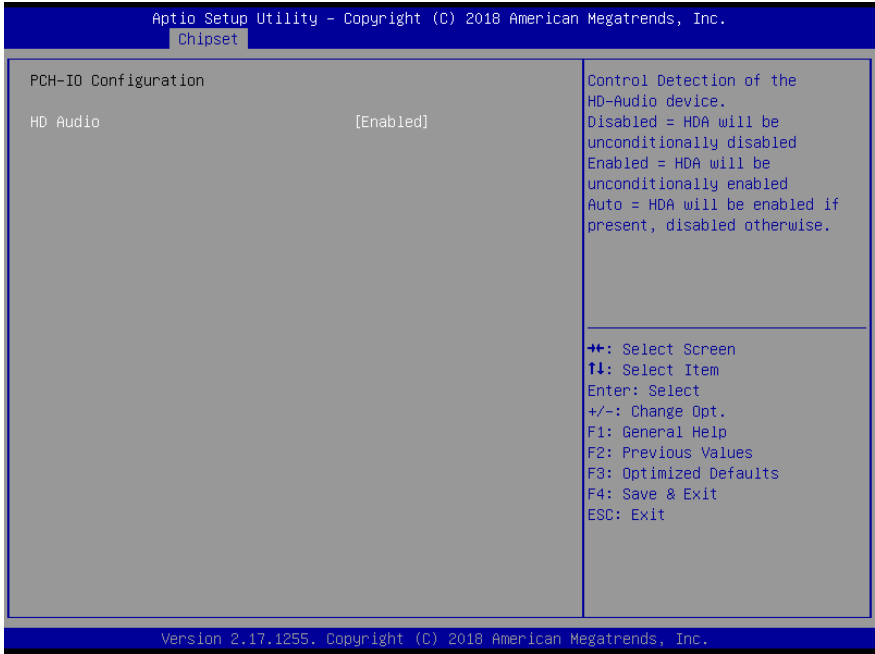
3.5.1.1 System Agent (SA) Configuration: Graphics Configuration



Options summary:

Primary IGFX Boot Display	VBIOS default	Optimal Default
	HDMI	
	LVDS	
<p>Select the Video Device which will be activated during POST. This has no effect if external graphics present. Secondary boot display selection will appear based on your selection. VGA modes will be supported only on primary display</p>		

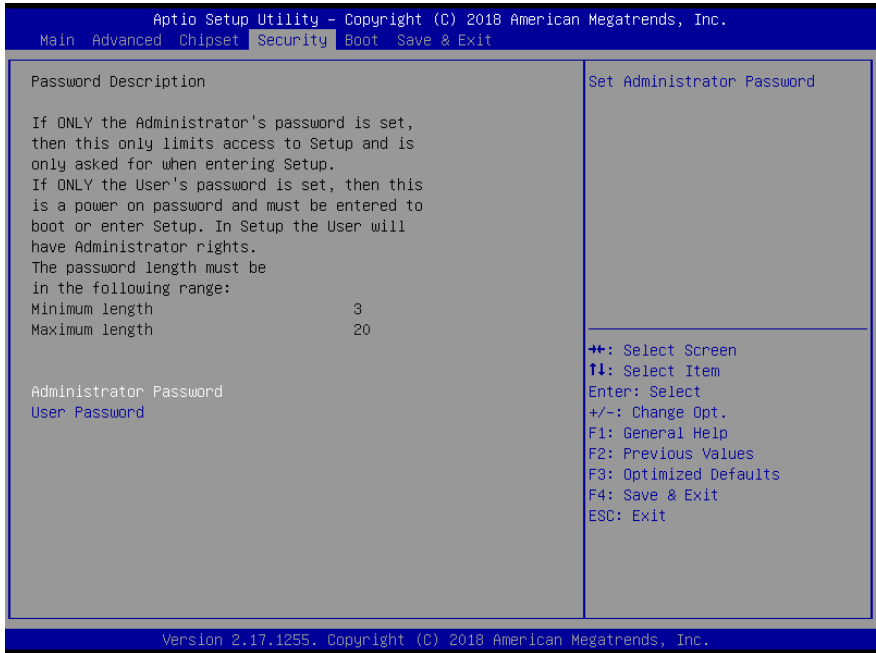
3.5.2 Chipset: PCH-IO Configuration



Options summary:

HD Audio	Disabled	Optimal Default
	Enabled	
<p>Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled Enabled = HDA will be unconditionally enabled Auto = HDA will be enabled if present, disabled otherwise.</p>		

3.6 Setup Submenu: Security



Change User/Administrator Password

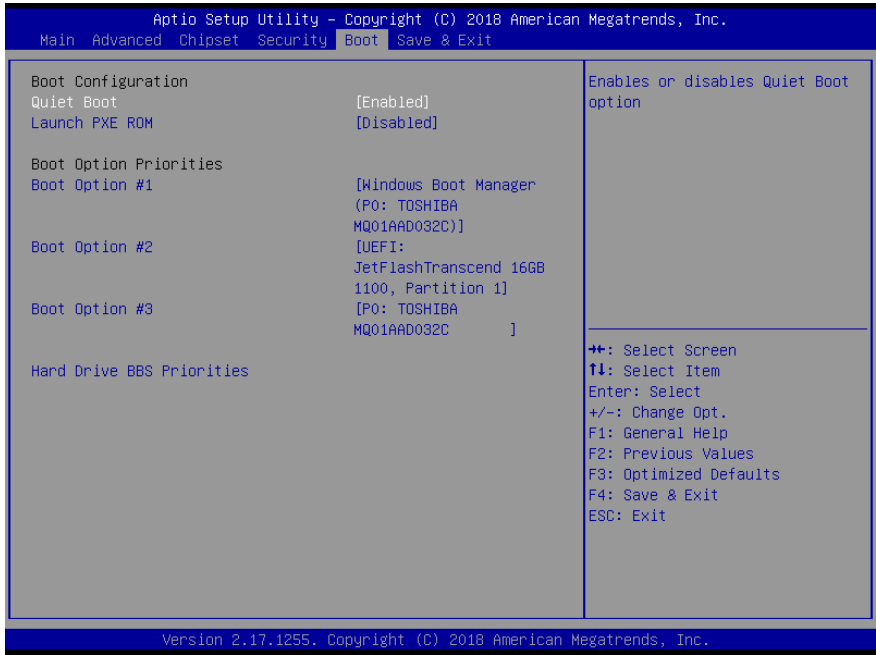
You can set an Administrator Password or User Password. An Administrator Password must be set before you can set a User Password. The password will be required during boot up, or when the user enters the Setup utility. A User Password does not provide access to many of the features in the Setup utility.

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

Removing the Password

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

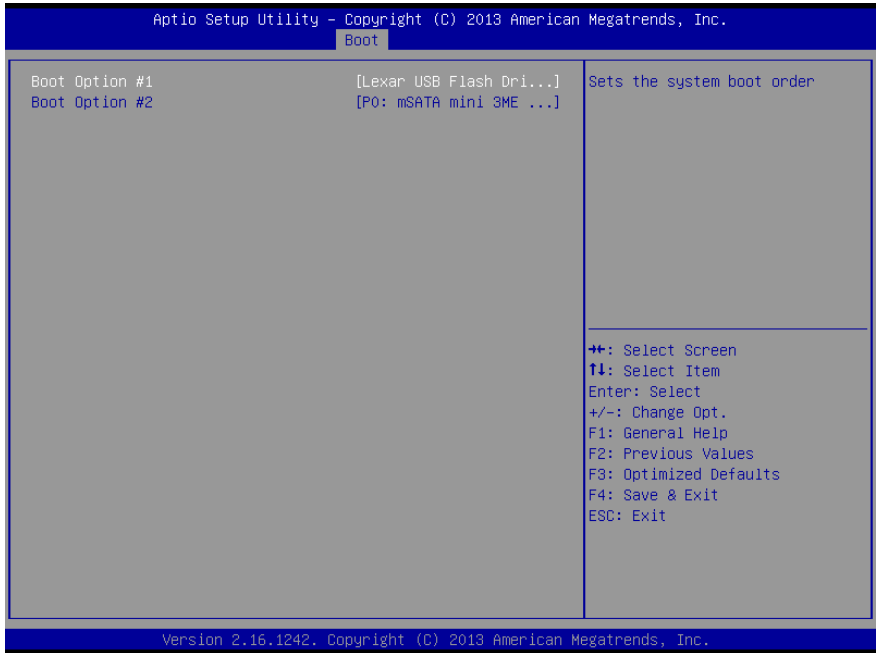
3.7 Setup Submenu: Boot



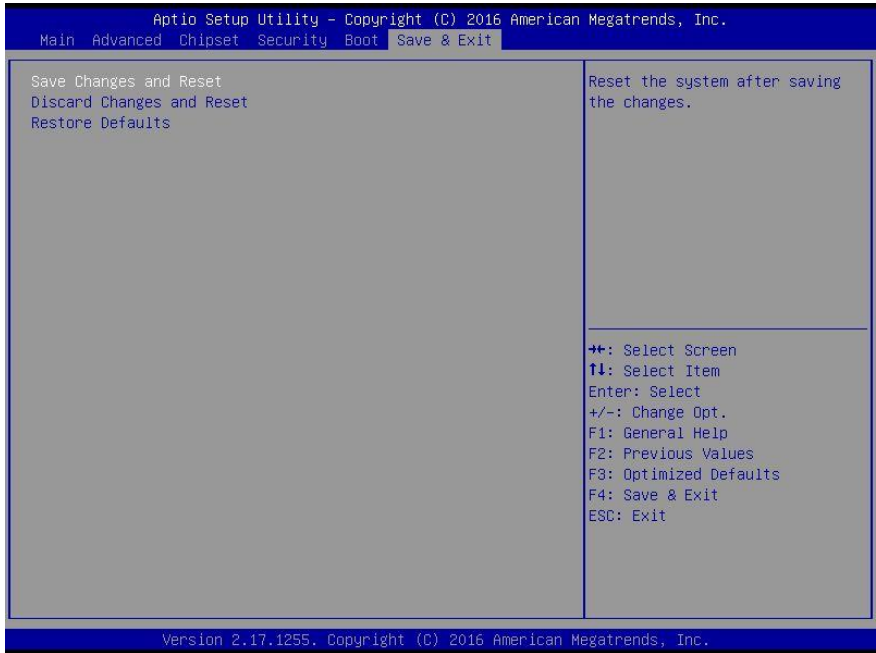
Options summary:

Quiet Boot	Disabled	Optimal Default
	Enabled	
Enables or disables Quiet Boot option.		
Launch PXE OpROM	Disabled	Optimal Default
	Enabled	
Controls the execution of UEFI and Legacy PXE OpROM.		

3.7.1 Boot: BBS Priorities



3.8 Setup Submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Drivers Download and Installation

Drivers for the BOXER-6750 can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/p/fanless-embedded-box-pc-boxer-6750>

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

Step 1 – Install Chipset Driver

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

Step 2 – Install Graphics Driver

1. Open the **Step 2 - Graphic** folder and select your OS
2. Open the **Setup.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 3 – Install LAN Driver

1. Open the **Step 3 - LAN** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 4 – Install Audio Driver

1. Open the **Step 4 - Audio** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 5 – Install USB3.0 Driver

1. Open the **Step 5 – USB3.0** folder and select your OS
2. Open the **.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 6 – Install ME Driver

1. Open the **Step 6 – ME** folder and select your OS
2. Open the **SetupME.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Step 7 – Install Serial Port Driver (Optional)

1. Open the **Step7 - Serial Port Driver (Optional)** folder and select your OS
2. Open the **.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

Appendix A

Watchdog Timer Programming

A.1 Watchdog Timer Initial Program

Table 1 : SuperIO relative register table		
	Default Value	Note
Index	0x2E(Note1)	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	0x2F(Note2)	SIO MB PnP Mode Data Register 0x2F or 0x4F

Table 2 : Watchdog relative register table					
	LDN	Register	BitNum	Value	Note
Timer Counter	0x07(Note3)	0xF6(Note4)		(Note24)	Time of watchdog timer (0~255) This register is byte access
Counting Unit	0x07(Note5)	0xF5(Note6)	3(Note7)	0(Note8)	Select time unit. 0: second 1: minute
Watchdog Enable	0x07(Note9)	0xF5(Note10)	5(Note11)	1(Note12)	0: Disable 1: Enable
Timeout Status	0x07(Note13)	0xF5(Note14)	6(Note15)	1	1: Clear timeout status
Output Mode	0x07(Note16)	0xF5(Note17)	4(Note18)	1(Note19)	Select WDTRST# output mode 0: level 1: pulse
WDTRST output	0x07(Note20)	0xFA(Note21)	0(Note22)	1(Note23)	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable

```

*****
// SuperIO relative definition (Please reference to Table 1)
#define byte SIOIndex //This parameter is represented from Note1
#define byte SIOData //This parameter is represented from Note2
#define void IOWriteByte(byte IOPort, byte Value);
#define byte IOReadByte(byte IOPort);
// Watch Dog relative definition (Please reference to Table 2)
#define byte TimerLDN //This parameter is represented from Note3
#define byte TimerReg //This parameter is represented from Note4
#define byte TimerVal // This parameter is represented from Note24
#define byte UnitLDN //This parameter is represented from Note5
#define byte UnitReg //This parameter is represented from Note6
#define byte UnitBit //This parameter is represented from Note7
#define byte UnitVal //This parameter is represented from Note8
#define byte EnableLDN //This parameter is represented from Note9
#define byte EnableReg //This parameter is represented from Note10
#define byte EnableBit //This parameter is represented from Note11
#define byte EnableVal //This parameter is represented from Note12
#define byte StatusLDN // This parameter is represented from Note13
#define byte StatusReg // This parameter is represented from Note14
#define byte StatusBit // This parameter is represented from Note15
#define byte ModeLDN // This parameter is represented from Note16
#define byte ModeReg // This parameter is represented from Note17
#define byte ModeBit // This parameter is represented from Note18
#define byte ModeVal // This parameter is represented from Note19
#define byte WDRstLDN // This parameter is represented from Note20
#define byte WDRstReg // This parameter is represented from Note21
#define byte WDRstBit // This parameter is represented from Note22
#define byte WDRstVal // This parameter is represented from Note23
*****

```

```
*****
VOID Main() {
    // Procedure : AaeonWDTConfig
    // (byte)Timer : Time of WDT timer.(0x00~0xFF)
    // (boolean)Unit : Select time unit(0: second, 1: minute).
    AaeonWDTConfig();

    // Procedure : AaeonWDTEnable
    // This procedure will enable the WDT counting.
    AaeonWDTEnable();
}
*****
```



```

*****
// Procedure : AaeonWDTEnable
VOID AaeonWDTEnable (){
    WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 1);
}

// Procedure : AaeonWDTConfig
VOID AaeonWDTConfig (){
    // Disable WDT counting
    WDTEnableDisable(EnableLDN, EnableReg, EnableBit, 0);
    // Clear Watchdog Timeout Status
    WDTClearTimeoutStatus();
    // WDT relative parameter setting
    WDTParameterSetting();
}

VOID WDTEnableDisable(byte LDN, byte Register, byte BitNum, byte Value){
    SIOBitSet(LDN, Register, BitNum, Value);
}

VOID WDTParameterSetting(){
    // Watchdog Timer counter setting
    SIOByteSet(TimerLDN, TimerReg, TimerVal);
    // WDT counting unit setting
    SIOBitSet(UnitLDN, UnitReg, UnitBit, UnitVal);
    // WDT output mode setting, level / pulse
    SIOBitSet(ModeLDN, ModeReg, ModeBit, ModeVal);
    // Watchdog timeout output via WDTRST#
    SIOBitSet(WDTRstLDN, WDTRstReg, WDTRstBit, WDTRstVal);
}

VOID WDTClearTimeoutStatus(){
    SIOBitSet(StatusLDN, StatusReg, StatusBit, 1);
}
*****

```

```

*****
VOID SIOEnterMBPnPMode(){
    IOWriteByte(SIOIndex, 0x87);
    IOWriteByte(SIOIndex, 0x87);
}

VOID SIOExitMBPnPMode(){
    IOWriteByte(SIOIndex, 0xAA);
}

VOID SIOSelectLDN(byte LDN){
    IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
    IOWriteByte(SIOData, LDN);
}

VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
    Byte TmpValue;

    SIOEnterMBPnPMode();
    SIOSelectLDN(byte LDN);
    IOWriteByte(SIOIndex, Register);
    TmpValue = IOReadByte(SIOData);
    TmpValue &= ~(1 << BitNum);
    TmpValue |= (Value << BitNum);
    IOWriteByte(SIOData, TmpValue);
    SIOExitMBPnPMode();
}

VOID SIOByteSet(byte LDN, byte Register, byte Value){
    SIOEnterMBPnPMode();
    SIOSelectLDN(LDN);
    IOWriteByte(SIOIndex, Register);
    IOWriteByte(SIOData, Value);
    SIOExitMBPnPMode();
}
*****

```

Appendix B

I/O Information

B.1 I/O Address Map

The screenshot displays the Windows Device Manager interface for a system named 'DESKTOP-PGDLU7'. The 'Input/output (I/O)' category is expanded, showing a list of hardware devices with their corresponding I/O addresses and names. The devices listed include:

- PCI Express Root Complex
- Programmable interrupt controller (multiple instances)
- Motherboard resources (multiple instances)
- System timer (multiple instances)
- System CMOS/real time clock
- Communications Port (COM4, COM2, COM3, COM1)
- Intel(R) HD Graphics 510 (multiple instances)
- Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #2 - 9D11
- Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10
- Intel(R) HD Graphics 510
- Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
- Standard SATA AHCI Controller

Device Manager

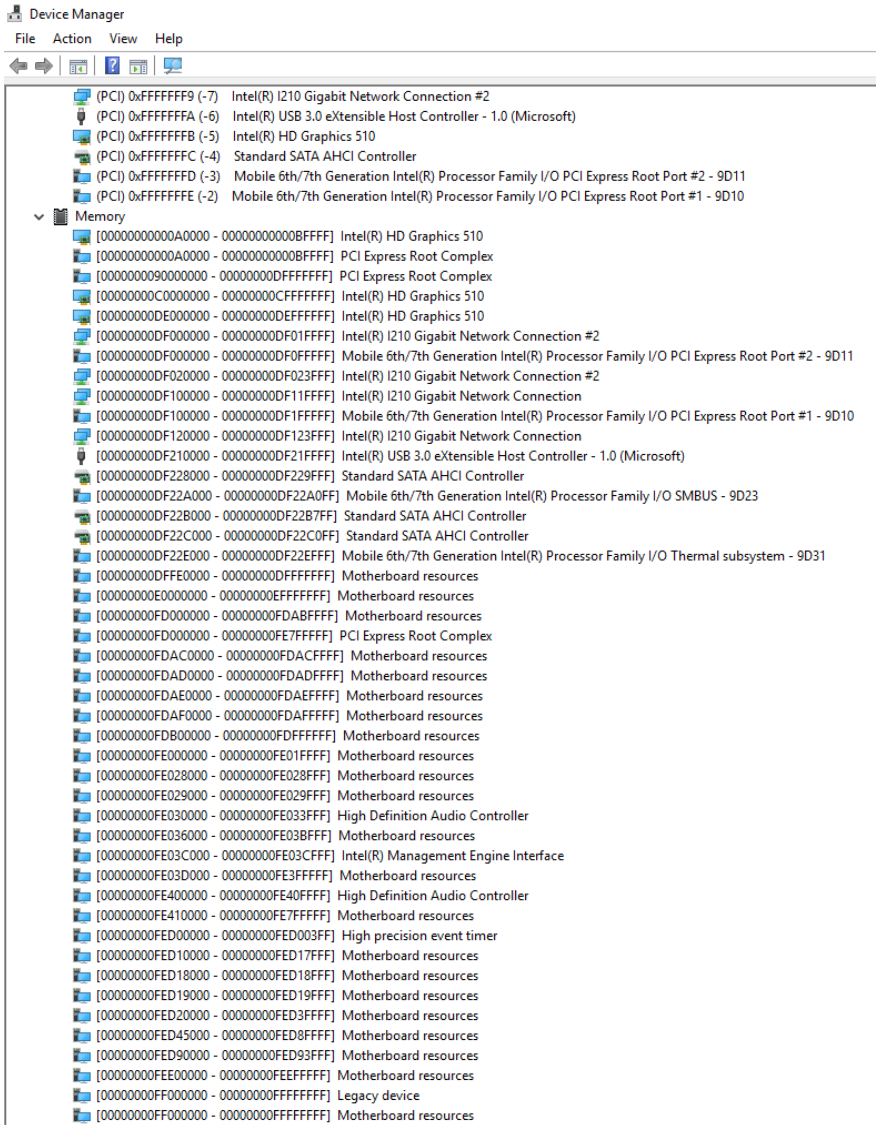
File Action View Help

- [0000000000000030 - 0000000000000031] Programmable interrupt controller
- [0000000000000034 - 0000000000000035] Programmable interrupt controller
- [0000000000000038 - 0000000000000039] Programmable interrupt controller
- [000000000000003C - 000000000000003D] Programmable interrupt controller
- [0000000000000040 - 0000000000000043] System timer
- [000000000000004E - 000000000000004F] Motherboard resources
- [0000000000000050 - 0000000000000053] System timer
- [0000000000000061 - 0000000000000061] Motherboard resources
- [0000000000000063 - 0000000000000063] Motherboard resources
- [0000000000000065 - 0000000000000065] Motherboard resources
- [0000000000000067 - 0000000000000067] Motherboard resources
- [0000000000000070 - 0000000000000070] Motherboard resources
- [0000000000000070 - 0000000000000077] System CMOS/real time clock
- [0000000000000080 - 0000000000000080] Motherboard resources
- [0000000000000092 - 0000000000000092] Motherboard resources
- [0000000000000A0 - 00000000000000A1] Programmable interrupt controller
- [0000000000000A4 - 00000000000000A5] Programmable interrupt controller
- [0000000000000A8 - 00000000000000A9] Programmable interrupt controller
- [0000000000000AC - 00000000000000AD] Programmable interrupt controller
- [0000000000000B0 - 00000000000000B1] Programmable interrupt controller
- [0000000000000B2 - 00000000000000B3] Motherboard resources
- [0000000000000B4 - 00000000000000B5] Programmable interrupt controller
- [0000000000000B8 - 00000000000000B9] Programmable interrupt controller
- [0000000000000BC - 00000000000000BD] Programmable interrupt controller
- [0000000000000E8 - 00000000000000EF] Communications Port (COM4)
- [00000000000002F8 - 000000000000002FF] Communications Port (COM2)
- [00000000000003B0 - 000000000000003BB] Intel(R) HD Graphics 510
- [00000000000003C0 - 000000000000003DF] Intel(R) HD Graphics 510
- [00000000000003E8 - 000000000000003EF] Communications Port (COM3)
- [00000000000003F8 - 000000000000003FF] Communications Port (COM1)
- [00000000000004D0 - 000000000000004D1] Programmable interrupt controller
- [0000000000000680 - 0000000000000069F] Motherboard resources
- [0000000000000A00 - 00000000000000A0F] Motherboard resources
- [0000000000000A10 - 00000000000000A1F] Motherboard resources
- [0000000000000A20 - 00000000000000A2F] Motherboard resources
- [0000000000000D00 - 00000000000000FFF] PCI Express Root Complex
- [000000000000164E - 000000000000164F] Motherboard resources
- [0000000000001800 - 00000000000018FE] Motherboard resources
- [0000000000001854 - 0000000000001857] Motherboard resources
- [0000000000000D00 - 00000000000000FFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #2 - 9D11
- [0000000000000E00 - 00000000000000FFF] Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10
- [0000000000000F00 - 00000000000000F3F] Intel(R) HD Graphics 510
- [0000000000000F04 - 00000000000000F5F] Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
- [0000000000000F60 - 00000000000000F7F] Standard SATA AHCI Controller
- [0000000000000F80 - 00000000000000F83] Standard SATA AHCI Controller
- [0000000000000F90 - 00000000000000F97] Standard SATA AHCI Controller
- [0000000000000FF0 - 00000000000000FFE] Motherboard resources
- [0000000000000FFF - 00000000000000FFF] Motherboard resources
- [0000000000000FFF - 00000000000000FFF] Motherboard resources
- [0000000000000FFF - 00000000000000FFF] Motherboard resources

> Interrupt request (IRQ)

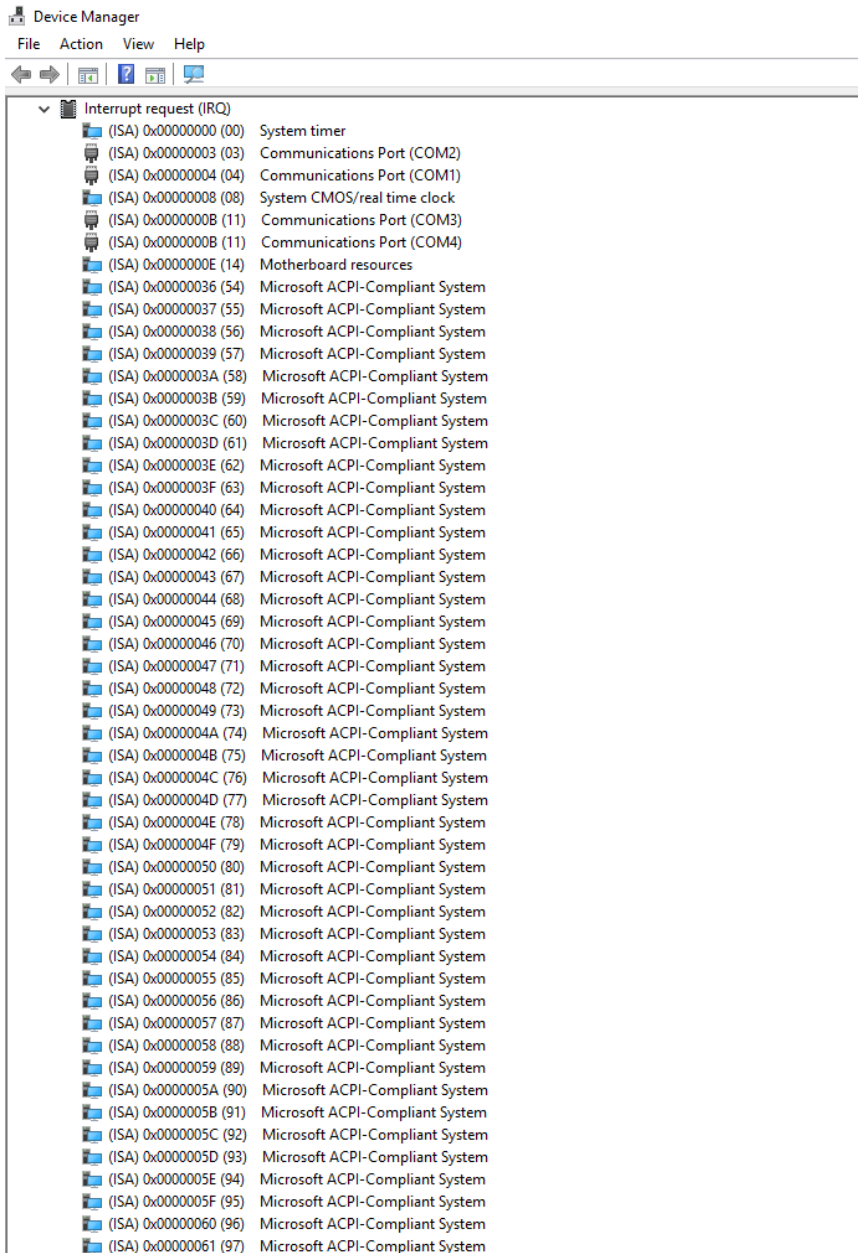
> Memory

B.2 Memory Address Map



Address	Device Name
(PCI) 0xFFFFFFF9 (-7)	Intel(R) I210 Gigabit Network Connection #2
(PCI) 0xFFFFF9FA (-6)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
(PCI) 0xFFFFF9FB (-5)	Intel(R) HD Graphics 510
(PCI) 0xFFFFF9FC (-4)	Standard SATA AHCI Controller
(PCI) 0xFFFFF9FD (-3)	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #2 - 9D11
(PCI) 0xFFFFF9FE (-2)	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10
Memory	
[0000000000A0000 - 0000000000BFFFF]	Intel(R) HD Graphics 510
[0000000000A0000 - 0000000000BFFFF]	PCI Express Root Complex
[0000000009000000 - 00000000DF000000]	PCI Express Root Complex
[000000000C0000000 - 00000000CFFF00000]	Intel(R) HD Graphics 510
[000000000DE000000 - 00000000DEFFF0000]	Intel(R) HD Graphics 510
[000000000DF000000 - 00000000DF01FFF0000]	Intel(R) I210 Gigabit Network Connection #2
[000000000DF000000 - 00000000DF0FFF00000]	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #2 - 9D11
[000000000DF020000 - 00000000DF023FFF00000]	Intel(R) I210 Gigabit Network Connection #2
[000000000DF100000 - 00000000DF11FFF0000]	Intel(R) I210 Gigabit Network Connection
[000000000DF100000 - 00000000DF1FFF00000]	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10
[000000000DF120000 - 00000000DF123FFF00000]	Intel(R) I210 Gigabit Network Connection
[000000000DF210000 - 00000000DF21FFF0000]	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
[000000000DF228000 - 00000000DF229FFF00000]	Standard SATA AHCI Controller
[000000000DF22A000 - 00000000DF22A0FFF000000]	Mobile 6th/7th Generation Intel(R) Processor Family I/O SMBUS - 9D23
[000000000DF22B000 - 00000000DF22B7FFF00000]	Standard SATA AHCI Controller
[000000000DF22C000 - 00000000DF22C0FFF000000]	Standard SATA AHCI Controller
[000000000DF22E000 - 00000000DF22EFFF00000]	Mobile 6th/7th Generation Intel(R) Processor Family I/O Thermal subsystem - 9D31
[000000000DFFE0000 - 00000000DFFFF0000]	Motherboard resources
[000000000E0000000 - 00000000E0FFF0000]	Motherboard resources
[000000000FD000000 - 00000000FDABFFF0000]	Motherboard resources
[000000000FD000000 - 00000000FE7FFF00000]	PCI Express Root Complex
[000000000FDAC0000 - 00000000FDACFFF0000]	Motherboard resources
[000000000FDAD0000 - 00000000FDADFFF0000]	Motherboard resources
[000000000FDAE0000 - 00000000FDAEFFF0000]	Motherboard resources
[000000000FDAF0000 - 00000000FDAFFF00000]	Motherboard resources
[000000000FDB00000 - 00000000FDBFFF00000]	Motherboard resources
[000000000FE000000 - 00000000FE01FFF0000]	Motherboard resources
[000000000FE028000 - 00000000FE028FFF00000]	Motherboard resources
[000000000FE029000 - 00000000FE029FFF00000]	Motherboard resources
[000000000FE030000 - 00000000FE033FFF00000]	High Definition Audio Controller
[000000000FE036000 - 00000000FE03BFFF00000]	Motherboard resources
[000000000FE03C000 - 00000000FE03CFFF00000]	Intel(R) Management Engine Interface
[000000000FE03D000 - 00000000FE03FFF0000]	Motherboard resources
[000000000FE400000 - 00000000FE40FFF0000]	High Definition Audio Controller
[000000000FE410000 - 00000000FE47FFF0000]	Motherboard resources
[000000000FED00000 - 00000000FED003FFF000000]	High precision event timer
[000000000FED10000 - 00000000FED17FFF00000]	Motherboard resources
[000000000FED18000 - 00000000FED18FFF00000]	Motherboard resources
[000000000FED19000 - 00000000FED19FFF00000]	Motherboard resources
[000000000FED20000 - 00000000FED33FFF00000]	Motherboard resources
[000000000FED45000 - 00000000FED88FFF00000]	Motherboard resources
[000000000FED90000 - 00000000FED93FFF00000]	Motherboard resources
[000000000FEE00000 - 00000000FEEFFF00000]	Motherboard resources
[000000000FF000000 - 00000000FFFFFFF000000]	Legacy device
[000000000FF000000 - 00000000FFFFFFF000000]	Motherboard resources

B.3 IRQ Mapping Chart



The screenshot shows the Windows Device Manager window with the 'Interrupt request (IRQ)' category expanded. The list contains 48 entries, each with an icon, an ISA address in parentheses, and a device name. The entries are as follows:

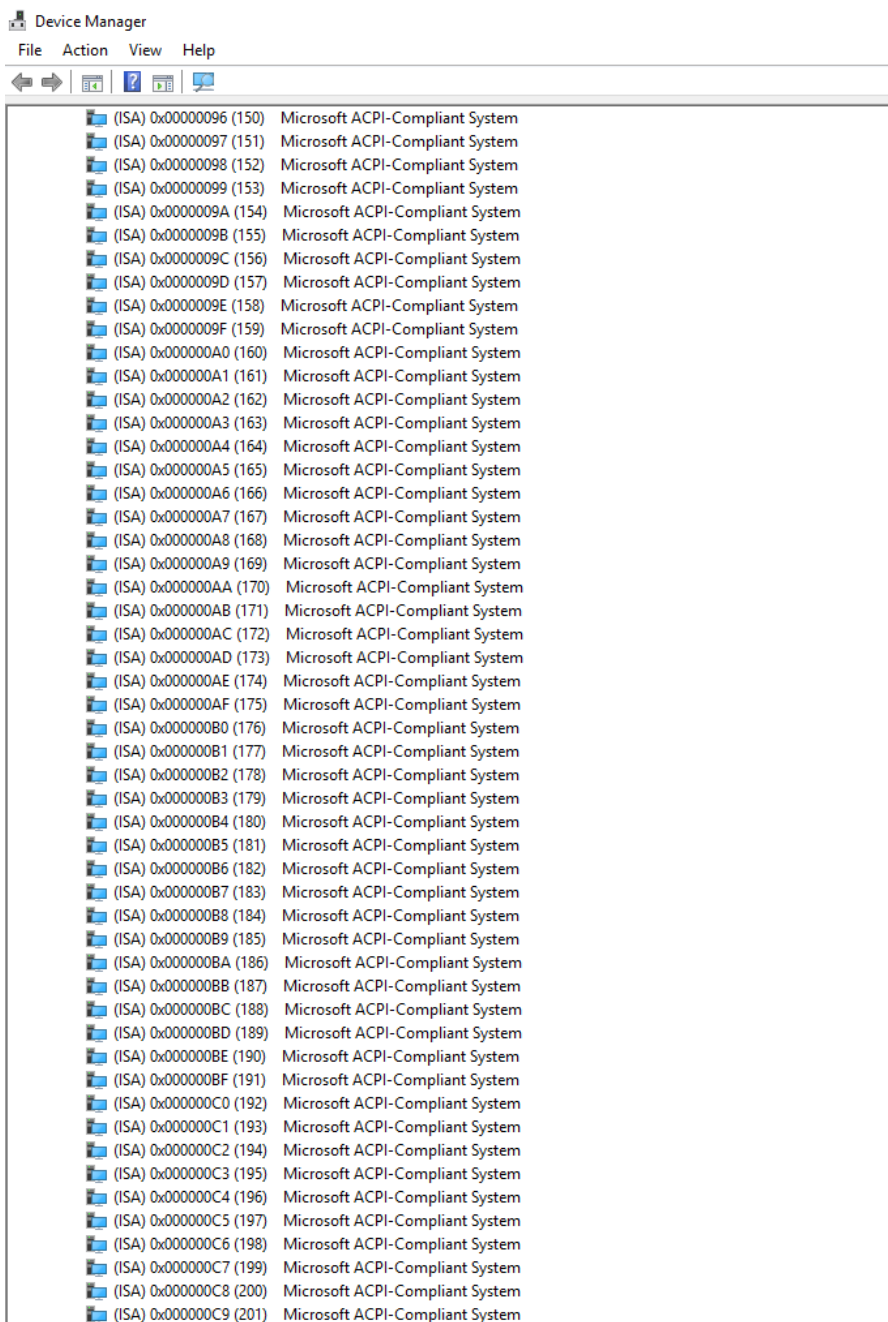
ISA Address	Device Name
(ISA) 0x00000000 (00)	System timer
(ISA) 0x00000003 (03)	Communications Port (COM2)
(ISA) 0x00000004 (04)	Communications Port (COM1)
(ISA) 0x00000008 (08)	System CMOS/real time clock
(ISA) 0x0000000B (11)	Communications Port (COM3)
(ISA) 0x0000000B (11)	Communications Port (COM4)
(ISA) 0x0000000E (14)	Motherboard resources
(ISA) 0x00000036 (54)	Microsoft ACPI-Compliant System
(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

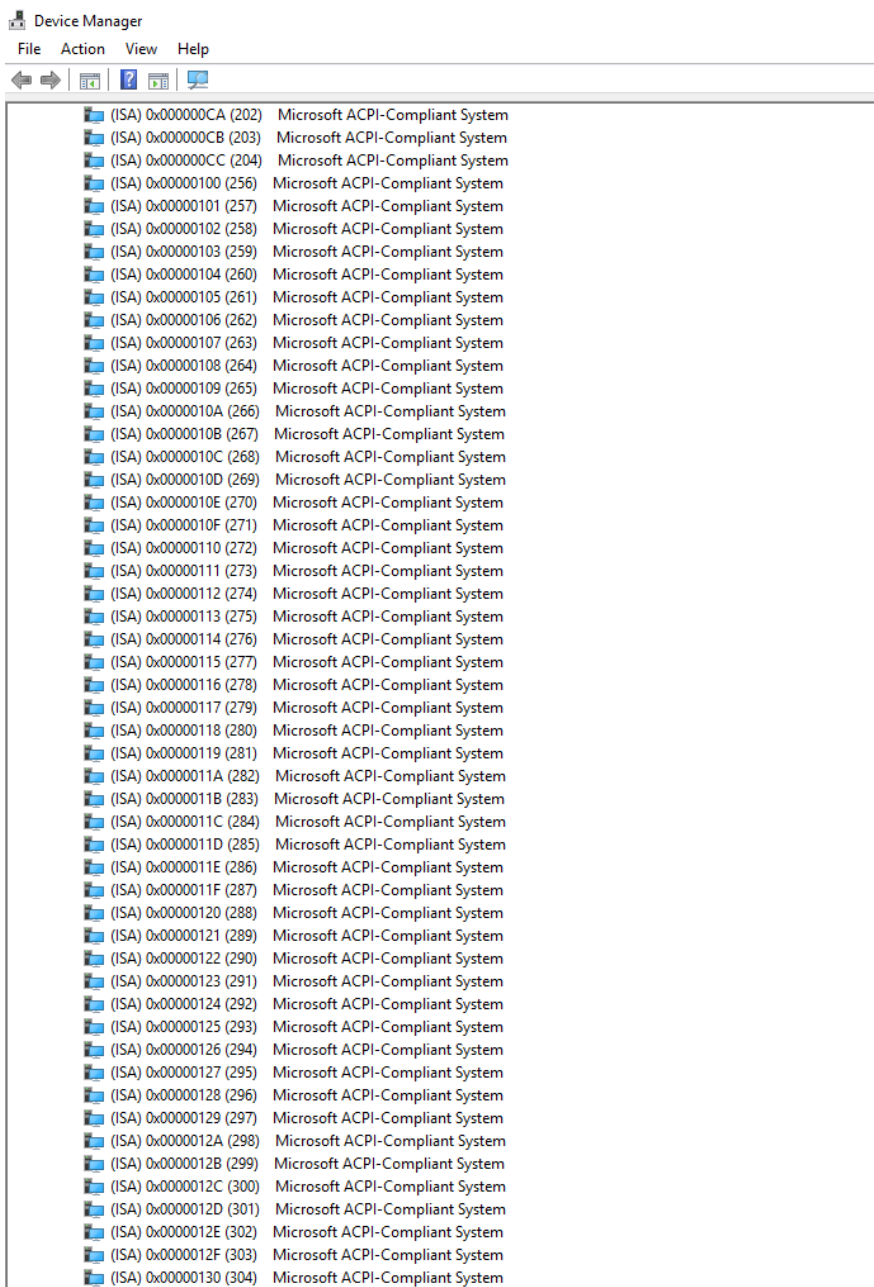
Device Manager

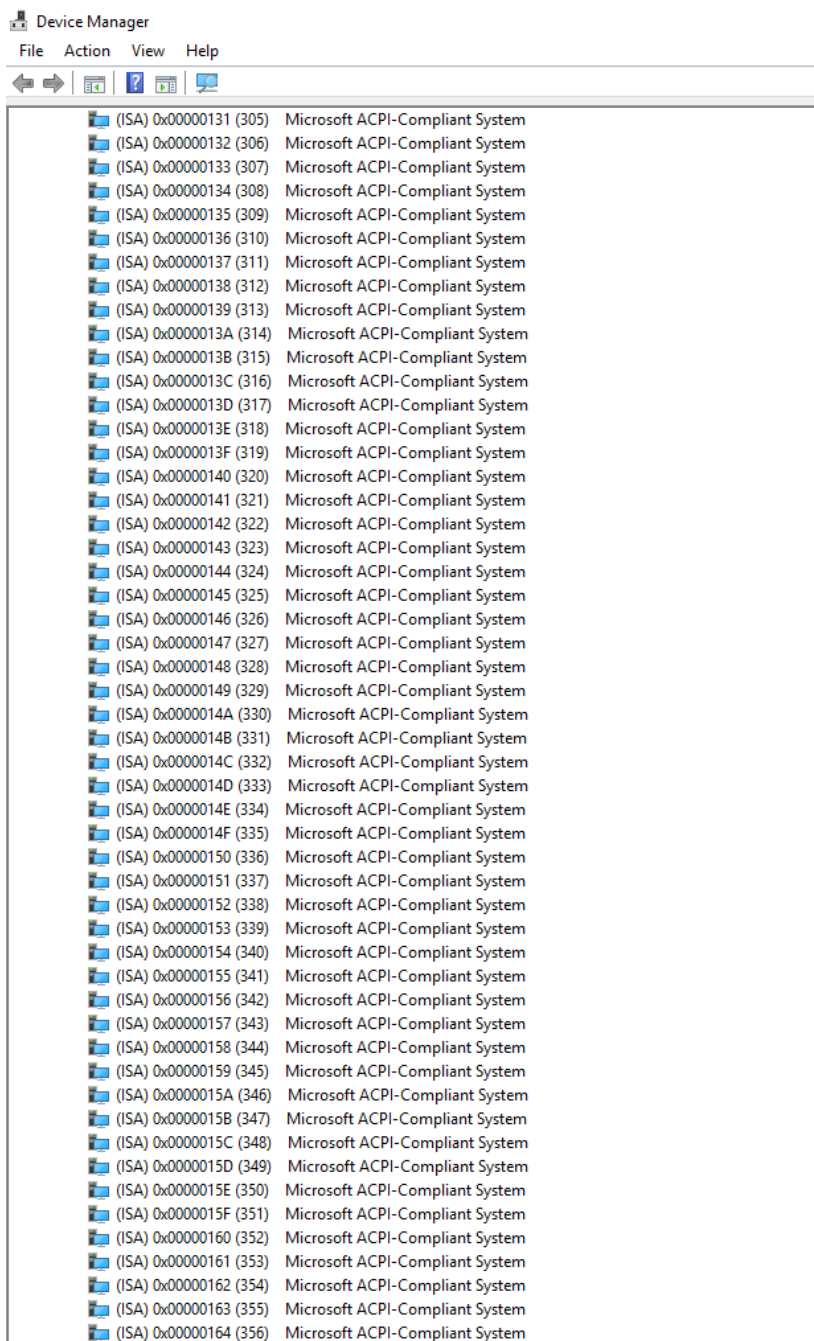
File Action View Help

← → 📄 ? 📄 🖨

📁 (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












The screenshot shows the Windows Device Manager window. The title bar reads "Device Manager". Below the title bar is a menu bar with "File", "Action", "View", and "Help". Underneath the menu bar is a toolbar with icons for back, forward, refresh, help, and search. The main area of the window displays a list of devices. Each entry consists of a folder icon, a hexadecimal ID in parentheses, a number in parentheses, and the device name "Microsoft ACPI-Compliant System". The list starts with (ISA) 0x00000131 (305) and ends with (ISA) 0x00000164 (356).




















































ID	Device Name
(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
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Device Manager		
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	(PCI) 0xFFFFFED (-19)	Intel(R) Management Engine Interface
	(PCI) 0xFFFFFEE (-18)	Intel(R) I210 Gigabit Network Connection
	(PCI) 0xFFFFFEF (-17)	Intel(R) I210 Gigabit Network Connection
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	(PCI) 0xFFFFFF9 (-7)	Intel(R) I210 Gigabit Network Connection #2
	(PCI) 0xFFFFFFA (-6)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(PCI) 0xFFFFFFB (-5)	Intel(R) HD Graphics 510
	(PCI) 0xFFFFFFC (-4)	Standard SATA AHCI Controller
	(PCI) 0xFFFFFFD (-3)	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #2 - 9D11
	(PCI) 0xFFFFFFE (-2)	Mobile 6th/7th Generation Intel(R) Processor Family I/O PCI Express Root Port #1 - 9D10
Memory		

Appendix C

Glue Removal Procedure

C.1 Removing Glue from Your System

To protect components from damage and ensure proper operation out of the box, glue may have been applied to some cables or connectors to keep them in place during shipping. This glue must be removed before attempting to swap components or perform maintenance. This section details the steps needed to remove the glue.

Before performing any kind of system maintenance, ensure the system is shut down (not in sleep or hibernate mode) and the power cable has been removed. Follow steps in Chapter 2 to access the components inside.

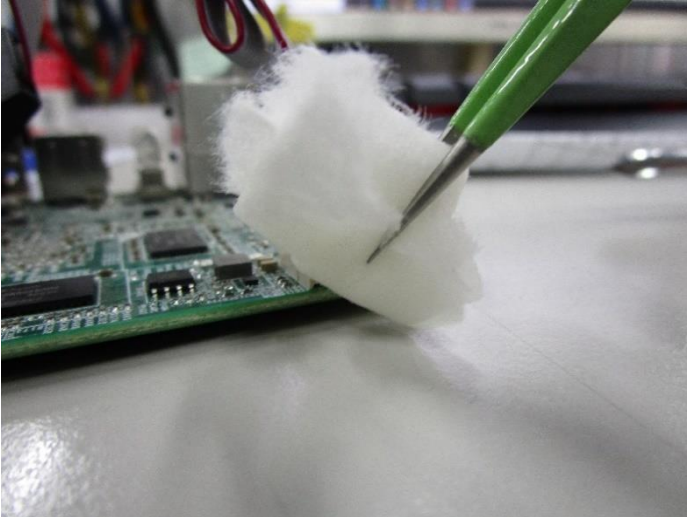
You will need the following items for this step:

- Cotton or cotton swab
- Anti-static tweezers
- An alcohol solution that is at least 99.5% alcohol (ethanol solution or denatured alcohol). AAeon recommends using an eye dropper or a bottle with a nozzle as in the picture below:

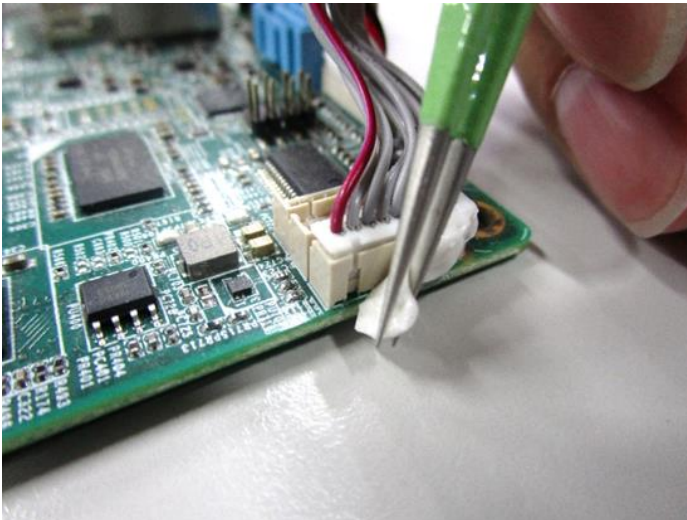


Step 1: Using an eyedropper or bottle as shown above, apply a few drops of alcohol to the glue.

Step 2: Allow the alcohol to soak for 10 seconds, then use a cotton swab or cotton with anti-static tweezers to evenly rub the alcohol over the glue.



Step 3: Let soak for 10 more seconds, then use anti-static tweezers to remove the glue.



If you encounter any issues or need support, please contact your AAEON representative or visit our [Support Page](#) at AAEON.com