

BOXER-6405U

Fanless Embedded Box PC

User's Manual 2nd Ed

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Packing List

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

Item	Quantity
BOXER-6405U	1
2 Pin DC-In Power Connector	1
Wallmount bracket	2
Screw Package	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 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. All cables and adapters supplied by AAEON are certified and in accordance with the material safety laws and regulations of the country of sale. Do not use any cables or adapters not supplied by AAEON to prevent system malfunction or fires.
3. Make sure the power source matches the power rating of the device.
4. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
5. Always completely disconnect the power before working on the system's hardware.
6. No connections should be made when the system is powered as a sudden rush of power may damage sensitive electronic components.
7. 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.
8. Always disconnect this device from any AC supply before cleaning.
9. While cleaning, use a damp cloth instead of liquid or spray detergents.
10. Make sure the device is installed near a power outlet and is easily accessible.
11. Keep this device away from humidity.
12. Place the device on a solid surface during installation to prevent falls
13. Do not cover the openings on the device to ensure optimal heat dissipation.
14. Watch out for high temperatures when the system is running.
15. Do not touch the heat sink or heat spreader when the system is running
16. Never pour any liquid into the openings. This could cause fire or electric shock.

17. 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.
18. 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
19. **DO NOT LEAVE THIS DEVICE IN AN UNCONTROLLED ENVIRONMENT WITH TEMPERATURES BEYOND THE DEVICE'S PERMITTED STORAGE TEMPERATURES (SEE CHAPTER 1) TO PREVENT DAMAGE.**

Warning!



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

Caution:

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

Attention:

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

China RoHS Requirements (CN)

产品中有毒有害物质或元素名称及含量

AAEON Embedded Box PC/ Industrial System

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	○	○	○	○	○	○
电源	○	○	○	○	○	○

O: 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 SJ/T 11363-2006 标准规定的限量要求以下。

X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。

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、电源为选购品。

China RoHS Requirement (EN)

Poisonous or Hazardous Substances or Elements in Products
 AAEON Embedded Box PC/ Industrial System

Component	Poisonous or Hazardous Substances or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
PCB & Other Components	○	○	○	○	○	○
Wires & Connectors for External Connections	○	○	○	○	○	○
Chassis	○	○	○	○	○	○
CPU & RAM	○	○	○	○	○	○
Hard Disk	○	○	○	○	○	○
PSU	○	○	○	○	○	○

O: The quantity of poisonous or hazardous substances or elements found in each of the component's parts is below the SJ/T 11363-2006-stipulated requirement.

X: The quantity of poisonous or hazardous substances or elements found in at least one of the component's parts is beyond the SJ/T 11363-2006-stipulated requirement.

Note: The Environment Friendly Use Period as labeled on this product is applicable under normal usage only

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Chapter 1

Product Specifications

1.1 Specifications

System

CPU	Intel® Celeron® processor N3350
Chipset	Intel® System on Chip
System Memory	DDR3L 2G 1600 On-board
Display Interface	HDMI
Storage Device	16 or 32G eMMC On-board
Ethernet	RJ-45 x 2 for 10/100/1000 base-T (Intel i211)
I/O	LAN x 2 USB 3.0 x 4 HDMI x 1 DB9 x 2 for RS-232 2-pin 9~24V DC Power Input x 1 Power Button x 1
Expansion	Full-size Minicard x 1 (PCIe/USB) Half-size Minicard x 1 (PCIe/USB, Optional for mSATA)
Indicator	Power LED on Power Button
OS Support	Windows® 10 Windows® 10 IoT Linux Ubuntu16.04.4

Power Supply

Power Requirement	9 - 24V with 2-pin Phoenix connector
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Mechanical

Mounting	Wallmount
Dimensions (W x H x D)	166mm (W) x 37mm (H) x 106.6mm (D)
Gross Weight	3.6 lb (1.6kg)
Net Weight	1.76 lb (0.8 kg)

Environmental

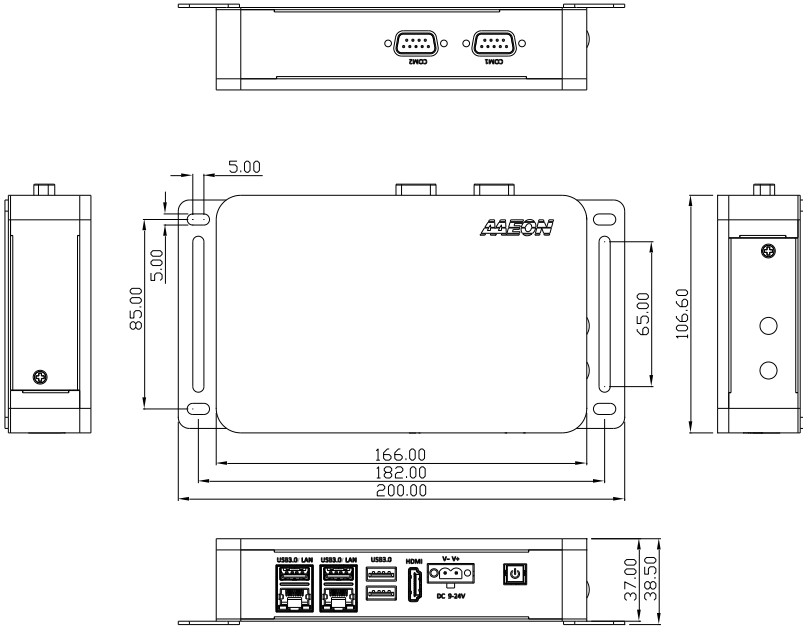
Operating Temperature	-20°C ~ 50°C with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
Storage Temperature	-40°F ~ 158°F (-40°C ~ 70°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation
Certification	CE/FCC class A

Chapter 2

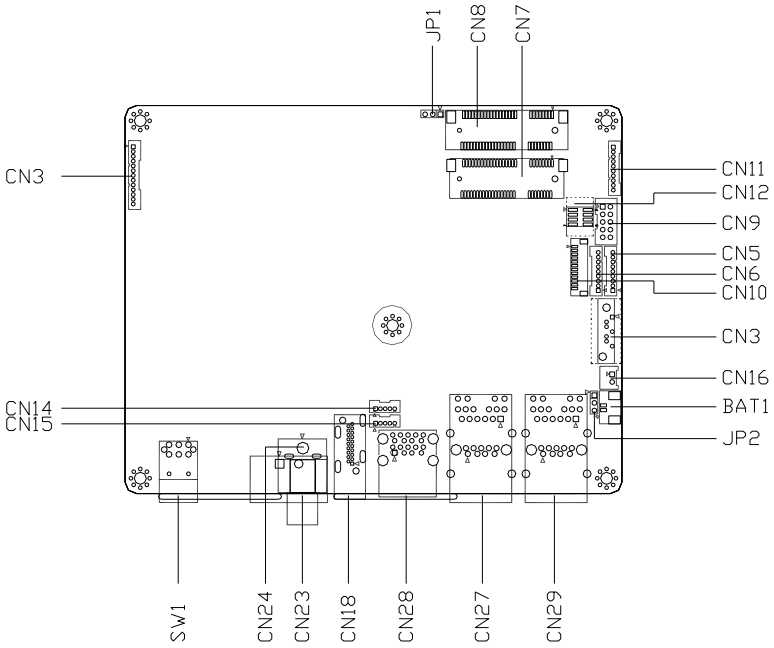
Hardware Information

2.1 Dimensions

BOXER-6405U



2.2 Jumpers and connectors



2.3 List of Jumpers

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

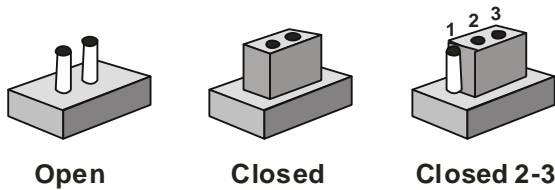
Label	Function
JP1	Auto-Power Button Selection
JP2	CMOS Control Selection

2.3.1 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them.

To "close" a jumper you connect the pins with the clip.

To "open" a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.

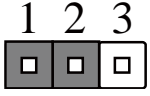


A pair of needle-nose pliers may be helpful when working with jumpers.

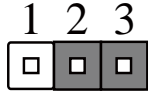
If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

Generally, you simply need a standard cable to make most connections.

2.3.2 Auto Power Button Selection (JP1)



ATX (Default)

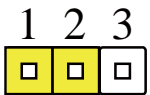


AT

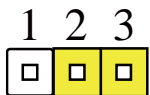
JP1	Function
1-2	ATX (Default)
2-3	AT

* Disable Auto Power Button JP1 (1-2): Need to use power button JP1 (1-2) to power on the system.

2.3.3 Clear CMOS (JP2)



Normal (Default)



Clear CMOS

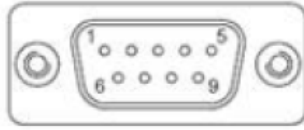
JP2	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.4 List of Connectors

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

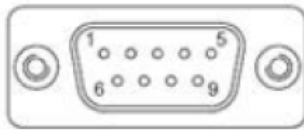
Label	Function
CN5	COM1 RS232
CN6	COM2 RS232
CN7	Mini-PCIE slot
CN8	Mini-PCIE slot
CN13	SATA1
CN16	SATA PWR Connector
CN18	HDMI Connector
CN23	Phoenix connector Power input
CN27	LAN+USB3.0 Connector
CN28	Dual USB3.0 Connector
CN29	LAN+USB3.0 Connector

2.4.1 COM Port 1 (Wafer Box, Optional) (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	DCD1	IN	
2	DSR1	IN	
3	RX1	IN	
4	RTS1	OUT	±9V
5	TX1	OUT	±9V
6	CTS1	IN	
7	DTR1	OUT	±9V
8	RI1	IN	
9	GND	GND	

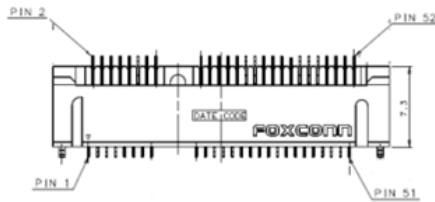
2.4.2 COM Port 2 (Wafer Box, Optional) (CN6)



Pin	Pin Name	Signal Type	Signal Level
1	DCD2	IN	
2	DSR2	IN	
3	RX2	IN	
4	RTS2	OUT	±9V
5	TX2	OUT	±9V

Pin	Pin Name	Signal Type	Signal Level
6	CTS2	IN	
7	DTR2	OUT	±9V
8	RI2	IN	
9	GND	GND	

2.4.3 Mini-Card Slot (Half-Mini Card) (CN7)

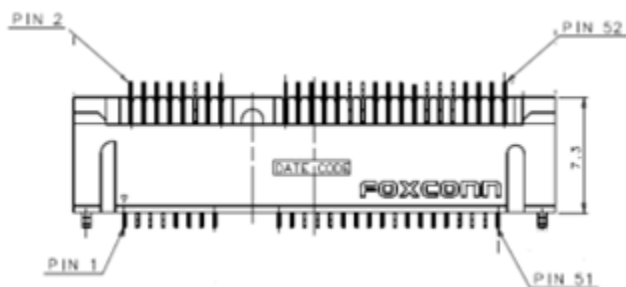


Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3V	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	NC	PWR	
9	GND	GND	
10	NC	I/O	
11	PCIE_REF_CLK-	DIFF	
12	NC	IN	
13	PCIE_REF_CLK+	DIFF	
14	NC	IN	

Pin	Pin Name	Signal Type	Signal Level
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-	DIFF	
24	+3.3VSB	PWR	+3.3V
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	

Pin	Pin Name	Signal Type	Signal Level
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

2.4.4 Mini-Card Slot (Full-Mini Card) (CN8)

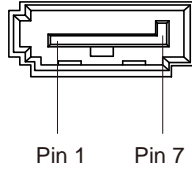


Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3V	PWR	+3.3V
3	NC		
4	GND	GND	

Pin	Pin Name	Signal Type	Signal Level
5	NC		
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	IN	
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-	DIFF	
24	+3.3VSB	PWR	+3.3V
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

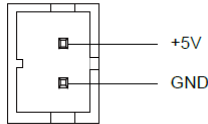
Pin	Pin Name	Signal Type	Signal Level
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	
35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND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

2.4.5 SATA Port (CN13)



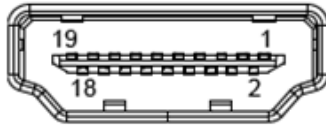
Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	
5	SATA_RX-	DIFF	
6	SATA_RX+	DIFF	
7	GND	GND	

2.4.6 +5V Output for SATA HDD (2P Pitch : 2.0mm) (CN16)



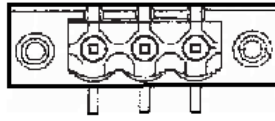
Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	
2	GND	GND	

2.4.7 HDMI Connector (CN18)



Pin	Pin Name	Signal Type	Signal Level
1	HDMI_1_DATA2_P	OUT	
2	GND	GND	
3	HDMI_1_DATA2_N	DIFF	
4	HDMI_1_DATA1_P	DIFF	
5	GND	GND	
6	HDMI_1_DATA1_N	DIFF	
7	HDMI_1_DATA0_P	DIFF	
8	NC		
9	HDMI_1_DATA0_N	DIFF	
10	HDMI_1_CLK_C_P	DIFF	
11	GND	GND	
12	HDMI_1_CLK_C_N	DIFF	
13	NC		
14	NC		
15	HDMI_1_SCL	I/O	
16	HDMI_1_SDA	I/O	
17	GND	GND	
18	+V5S_HDMI_1_CON	GND	
19	HDMI_1_HPD	IN	

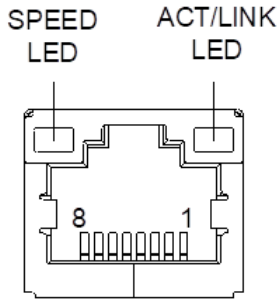
2.4.8 DC-IN CONNECTOR (2P) (CN23)



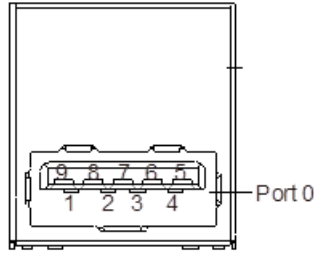
PIN1 PIN2 PIN3

Pin	Pin Name	Signal Type	Signal Level
1	VIN	PWR	+9V~+24V
2	GND	GND	

2.4.9 LAN (RJ-45) + USB3.0 (CN27)

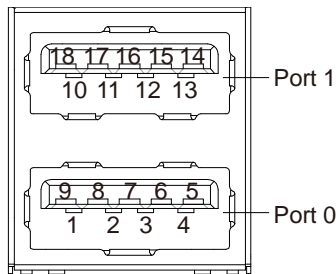


Pin	Pin Name	Signal Type	Signal Level
1	MDI0+	DIFF	
2	MDI0-	DIFF	
3	MDI1+	DIFF	
4	MDI2+	DIFF	
5	MDI2-	DIFF	
6	MDI1-	DIFF	
7	MDI3+	DIFF	
8	MDI3-	DIFF	



Pin	Pin Name	Signal Type	Signal Level
U1	+5VSB	PWR	+5V
U2	USB0_D-	DIFF	
U3	USB0_D+	DIFF	
U4	GND	GND	
U5	USB0_SSRX-	DIFF	
U6	USB0_SSRX+	DIFF	
U7	GND	GND	
U8	USB0_SSTX-	DIFF	
U9	USB0_SSTX+	DIFF	

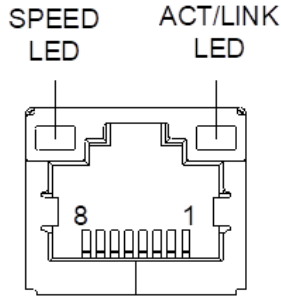
2.4.10 DUAL USB3.0 (CN28)



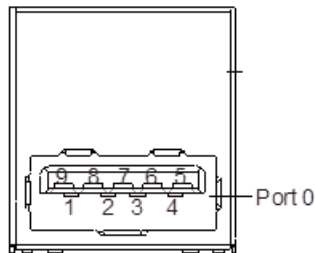
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V

Pin	Pin Name	Signal Type	Signal Level
2	USB0_D-	DIFF	
3	USB0_D+	DIFF	
4	GND	GND	
5	USB0_SSRX-	DIFF	
6	USB0_SSRX+	DIFF	
7	GND	GND	
8	USB0_SSTX-	DIFF	
9	USB0_SSTX+	DIFF	
10	+5VSB	PWR	+5V
11	USB1_D-	DIFF	
12	USB1_D+	DIFF	
13	GND	GND	
14	USB1_SSRX-	DIFF	
15	USB1_SSRX+	DIFF	
16	GND	GND	
17	USB1_SSTX-	DIFF	
18	USB1_SSTX+	DIFF	

2.4.11 LAN (RJ-45) + USB3.0 (CN29)



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	

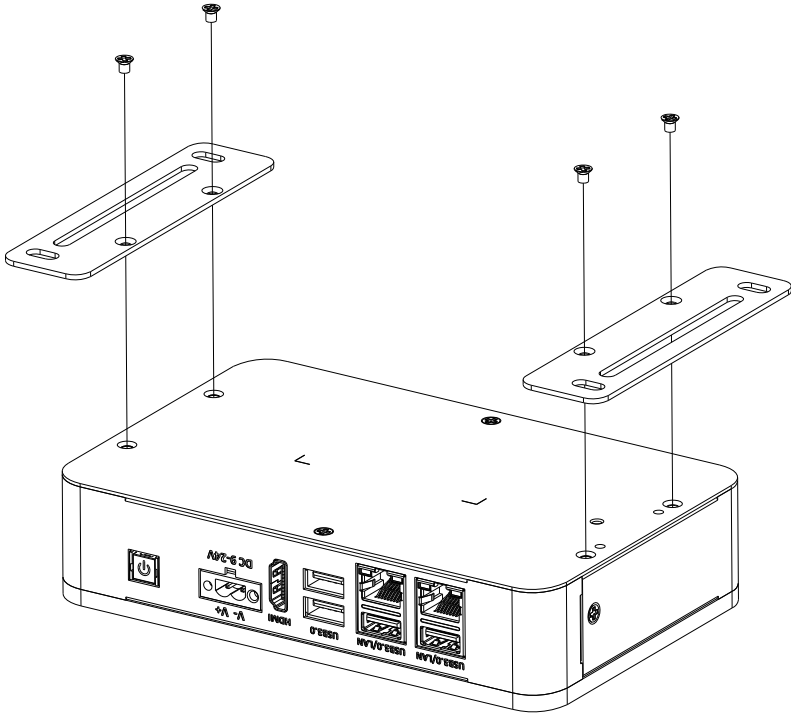


Pin	Pin Name	Signal Type	Signal Level
U1	+5VSB	PWR	+5V
U2	USB0_D-	DIFF	
U3	USB0_D+	DIFF	

Pin	Pin Name	Signal Type	Signal Level
U4	GND	GND	
U5	USB0_SSRX-	DIFF	
U6	USB0_SSRX+	DIFF	
U7	GND	GND	
U8	USB0_SSTX-	DIFF	
U9	USB0_SSTX+	DIFF	

2.5 Wall mount bracket installation

Attach the wall mount bracket onto the chassis and secure the screws.



Chapter 3

AMI BIOS Setup

3.1 System Test and Initialization

The system uses certain routines to perform testing and initialization. If an error, fatal or non-fatal, is encountered, a few short beeps or an error message will be outputted. 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 outputted, in which case you will need to run the BIOS setup program to set the configuration information in memory.

There are three situations in which you will need to change the CMOS settings:

- You are starting your system for the first time
- You have changed your system's hardware
- The CMOS memory has lost power and the configuration information is erased

The system's CMOS memory uses a backup battery for data retention, which is to be replaced once emptied.

3.2 AMI BIOS Setup

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

To enter BIOS Setup, press or <F2> immediately while your computer is powering up.

The function for each interface can be found below.

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

Advanced – Enable/ Disable boot option for legacy network devices

Chipset – For hosting bridge parameters

Boot – Enable/ Disable quiet Boot Option

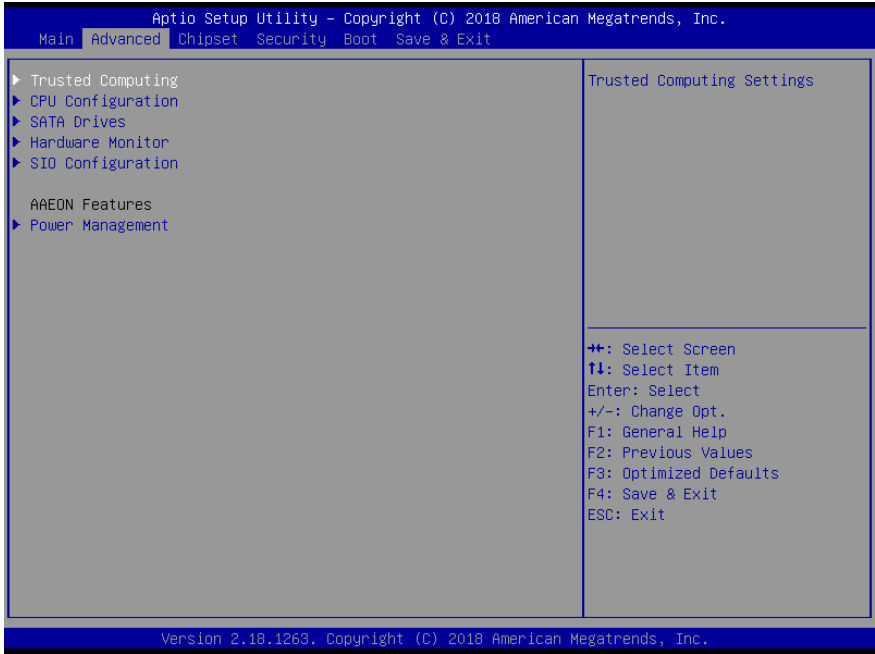
Security – The setup administrator password can be set here

Save & Exit – Save your changes and exit the program

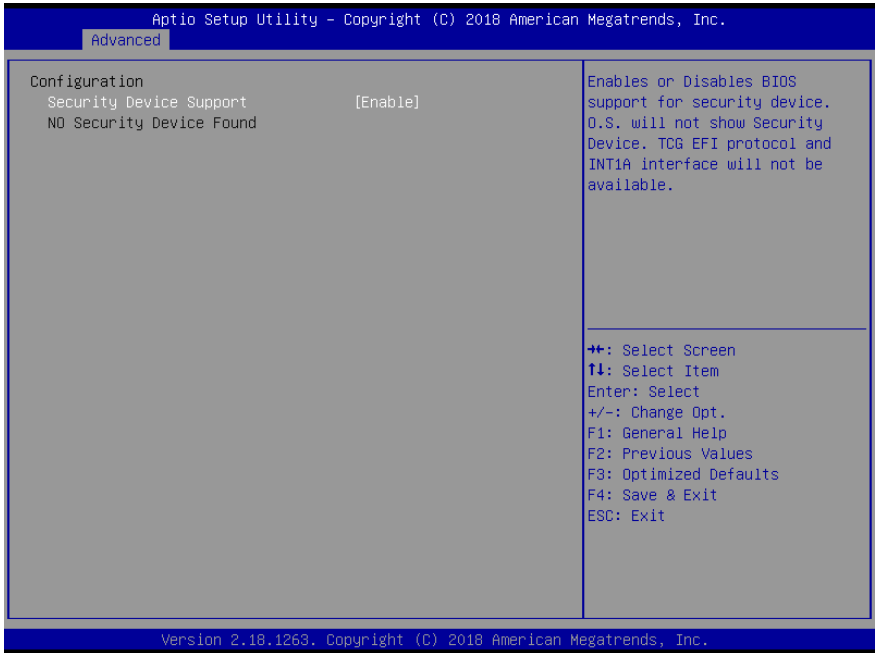
3.3 Setup Submenu: Main



3.4 Setup Submenu: Advanced



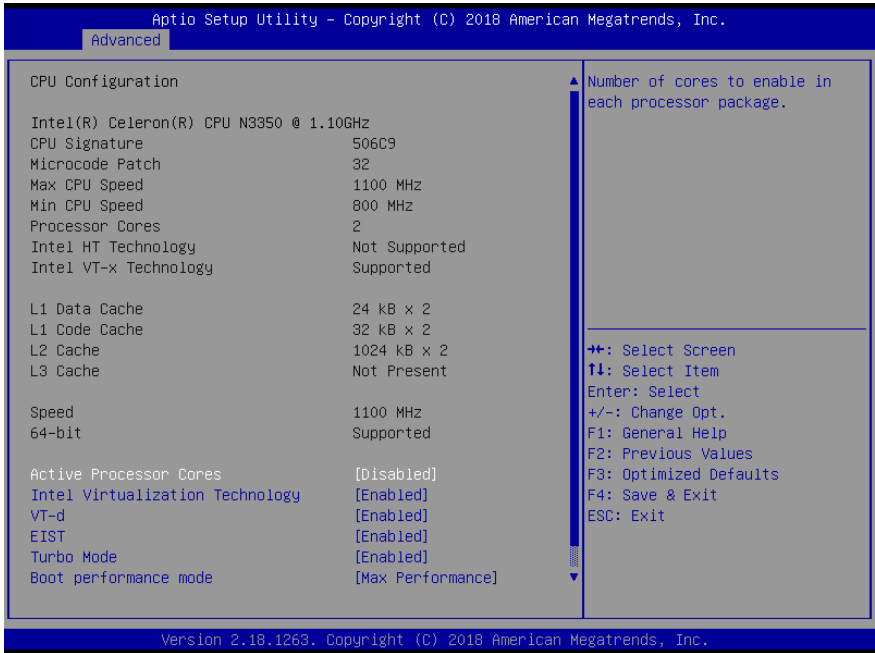
3.4.1 Advanced: Trusted Computing

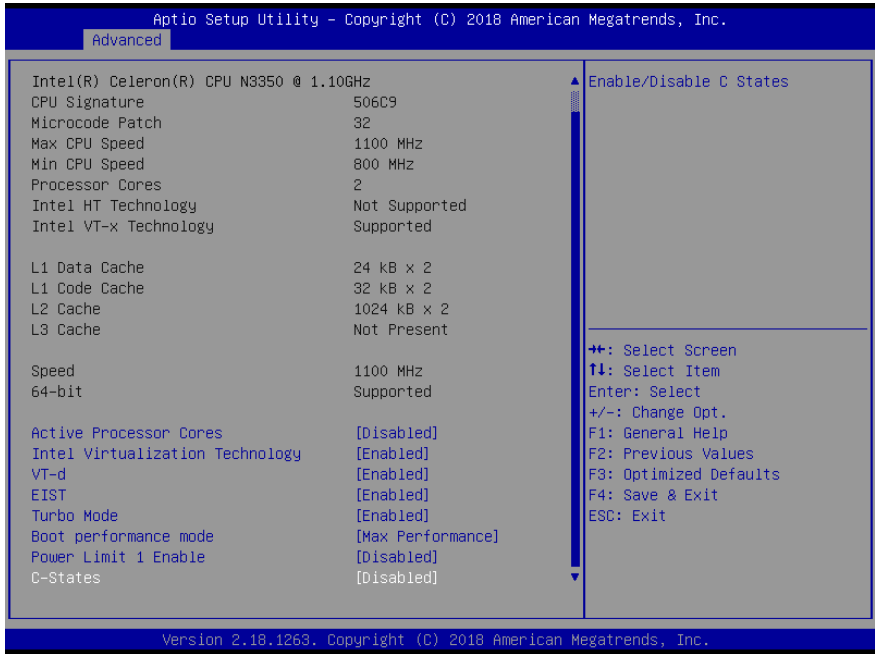


Options summary:

Security Device	Disabled	
Support	Enabled	Optimal Default, Failsafe Default
Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to change State of the Device.		

3.4.2 Advanced: CPU Configuration



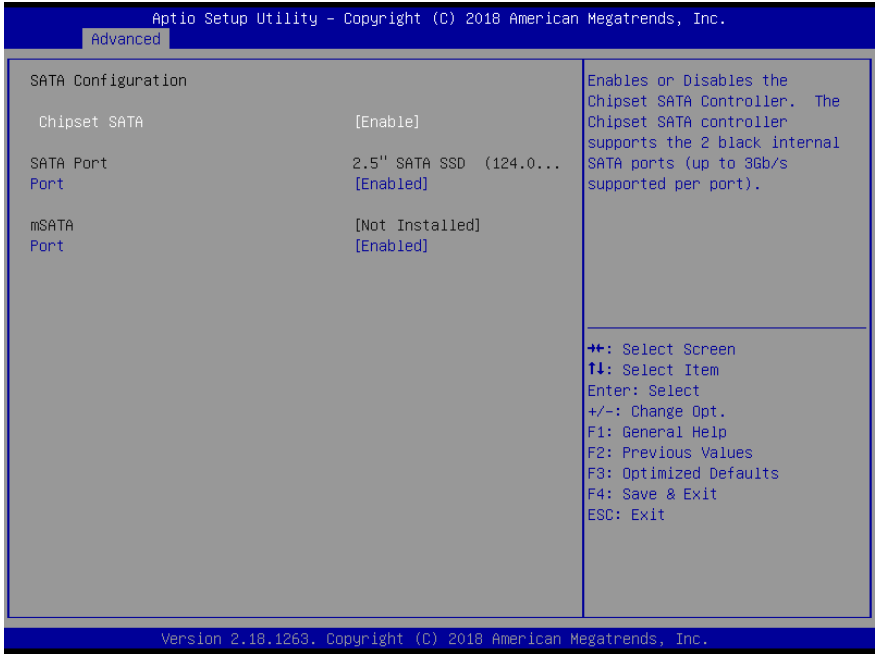


Options summary:

Active Processor Cores	Disabled	Optimal Default, Failsafe Default
	Enabled	
Number of cores to enable in each processor package		
Intel Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default
When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology.		
VT-d	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable CPU VT-d		
EIST	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable Intel SpeedStep		
Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Turbo Mode		
Boot performance	Max performance	Optimal Default, Failsafe Default

mode	Max battery	
Select the performance state that the BIOS will set before OS handoff		
Power Limit 1 Enable	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable Power Limit 1		
C-States	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable C States		

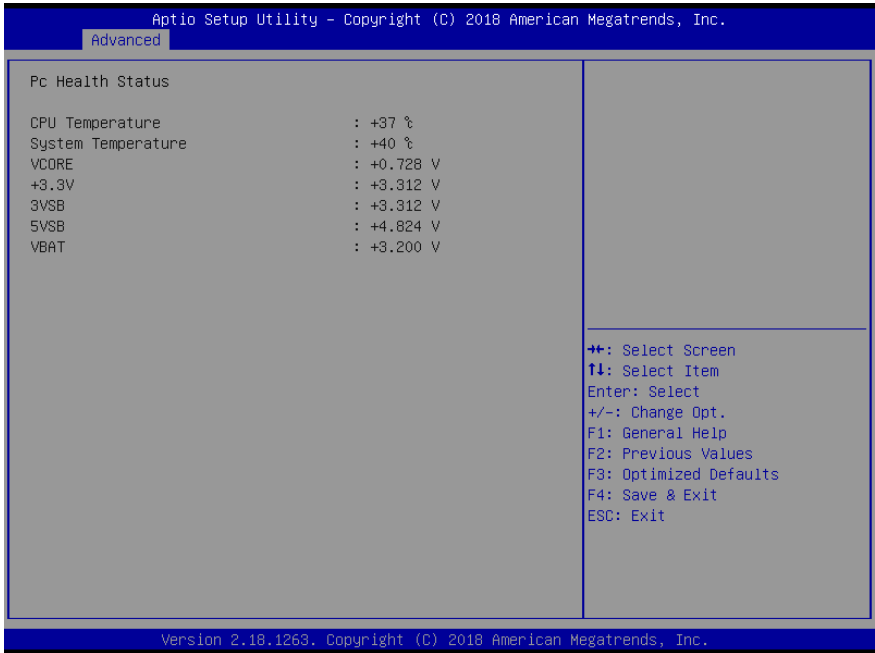
3.4.3 Advanced: SATA Drives



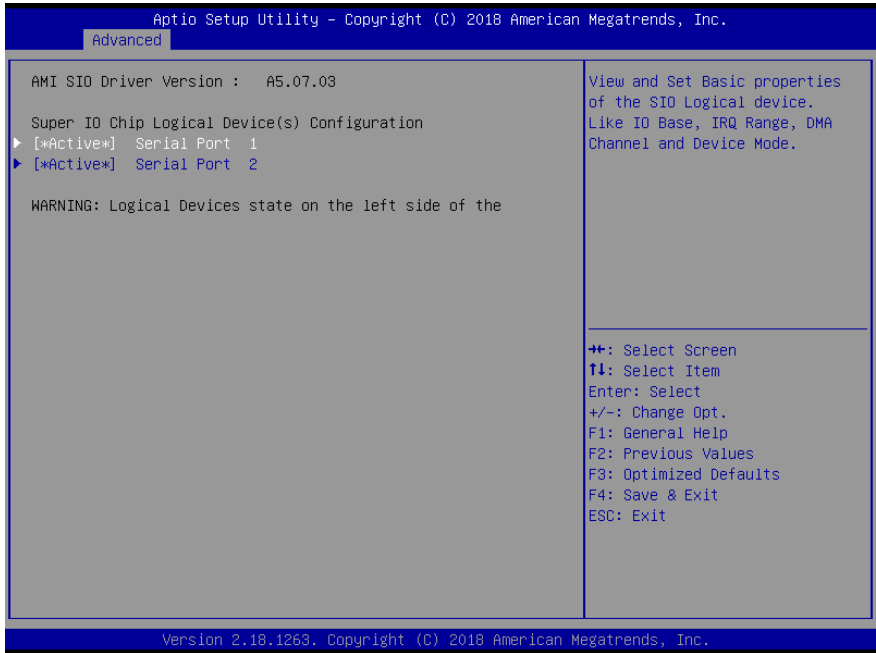
Options summary:

Chipset SATA	Enable	Optimal Default, Failsafe Default
	Disable	
Enable or Disable the Chipset SATA Controller. The Chipset SATA controller supports the 2 black internal SATA ports (up to 3Gb/s supported per port)		
Port	Enable	Optimal Default, Failsafe Default
	Disable	
Enable or Disable SATA Port		
Port	Enable	Optimal Default, Failsafe Default
	Disable	
Enable or Disable SATA Port		

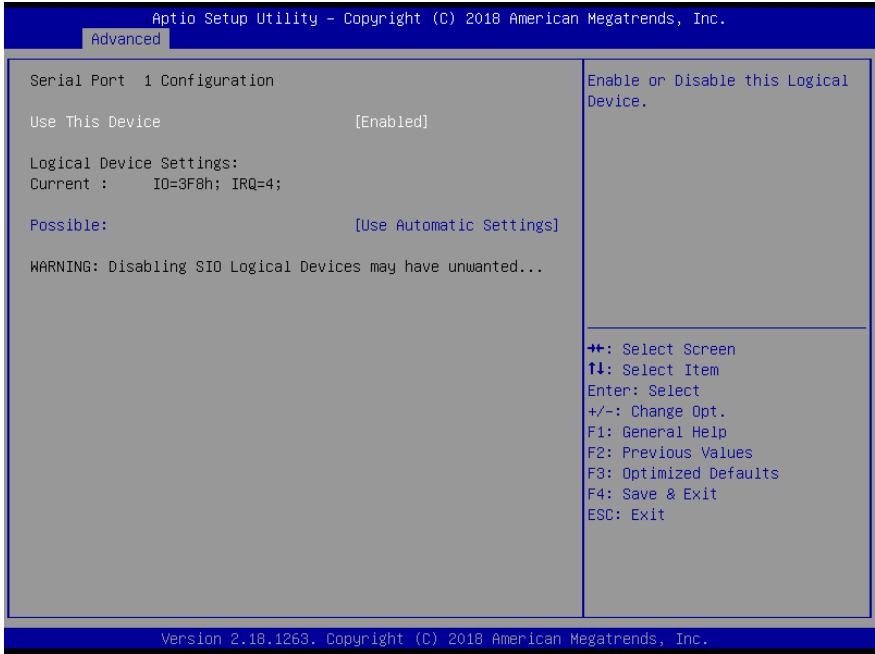
3.4.4 Advanced: Hardware Monitor



3.4.5 Advanced: SIO Configuration



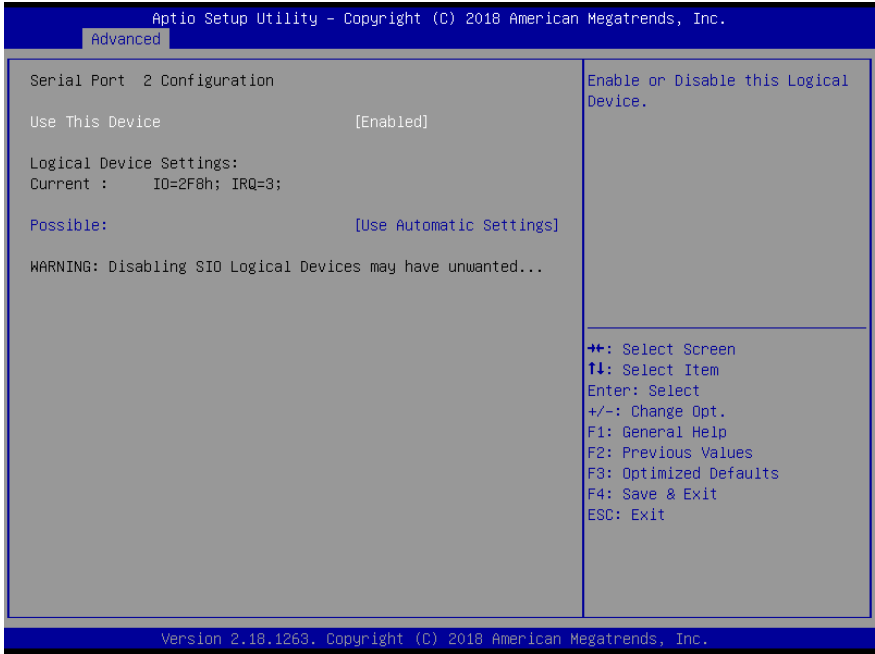
3.4.5.1 SIO Configuration: Serial Port 1 Configuration



Options summary:

Use This Device	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=3F8; IRQ=4;	
	IO=2F8; IRQ=3;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

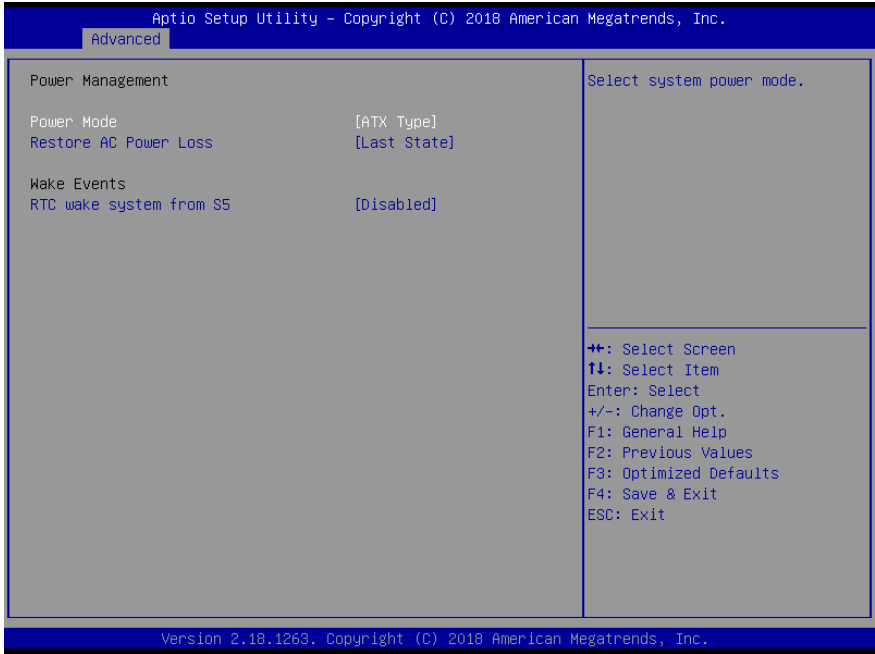
3.4.5.2 SIO Configuration: Serial Port 2 Configuration



Options summary:

Use This Device	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable this Logical Device.		
Possible:	Use Automatic Settings	Optimal Default, Failsafe Default
	IO=2F8; IRQ=3;	
	IO=3F8; IRQ=4;	
Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.		

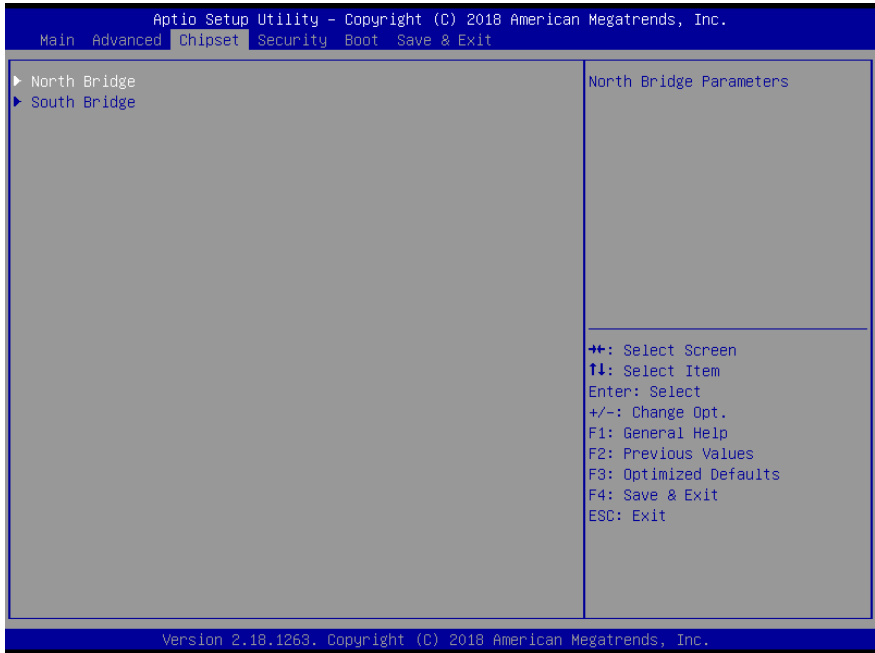
3.4.6 Power Management



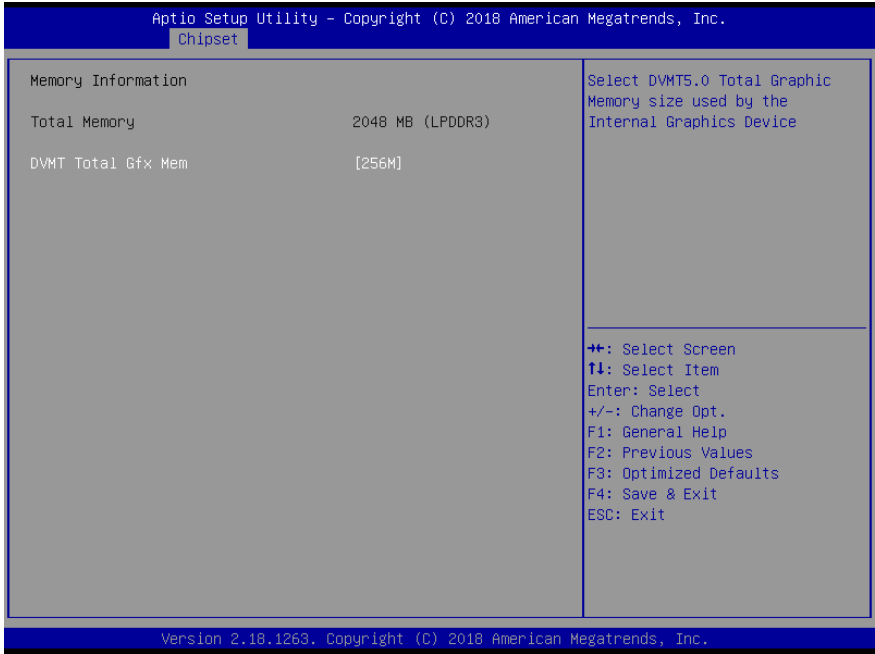
Options summary:

Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode.		
Restore AC Power Loss	Last State	Optimal Default, Failsafe Default
	Always On	
	Always Off	
RTC wake system from S5	Disabled	Optimal Default, Failsafe Default
	Fixed Time	
	Dynamic Time	
Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified		

3.5 Setup submenu: Chipset



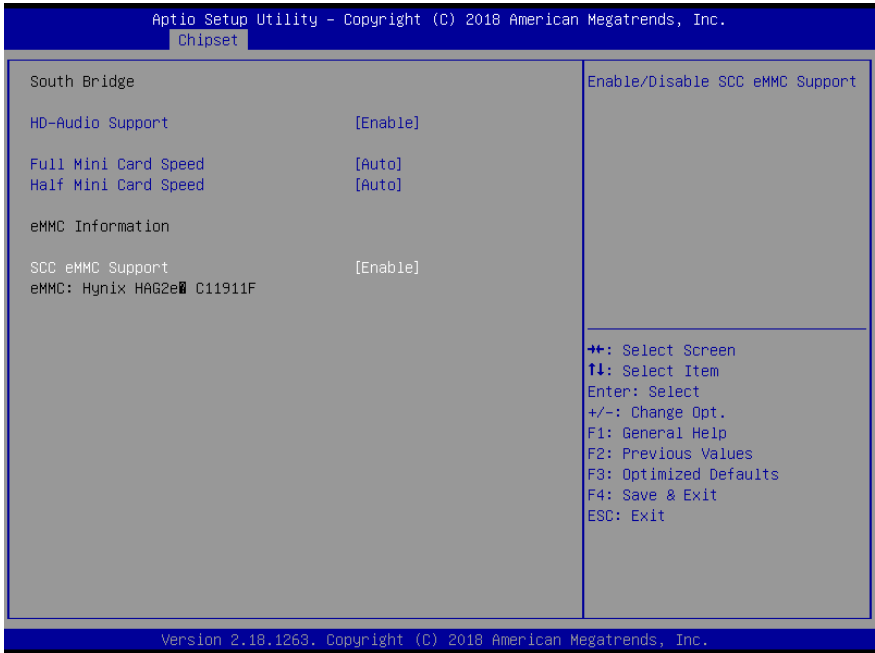
3.5.1 Chipset: North Bridge



Options summary:

DCMT Total Gfx Mem	128M	Optimal Default, Failsafe Default
	256M	
	MAX	
Select DVMT5.0 Total Graphics Memory size used by the Internal Graphics Device		

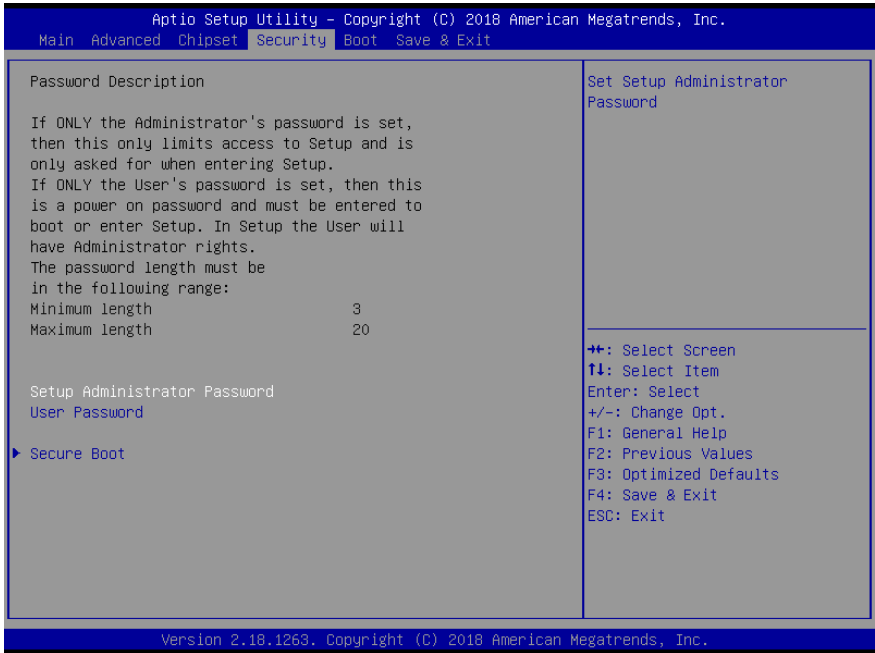
3.5.2 Chipset: South Bridge



Options summary:

HD-Audio Support	Disable	Optimal Default, Failsafe Default
	Enable	
Enable/Disable HD-Audio Support		
Full Mini Card Speed	Auto	Optimal Default, Failsafe Default
	Gen 1	
	Gen 2	
Configure PCIe Speed		
Half Mini Card Speed	Auto	Optimal Default, Failsafe Default
	Gen 1	
	Gen 2	
Configure PCIe Speed		
SCC eMMC Support	Disable	Optimal Default, Failsafe Default
	Enable	
Enable/Disable SCC eMMC Support Support		

3.6 Setup submenu: Security



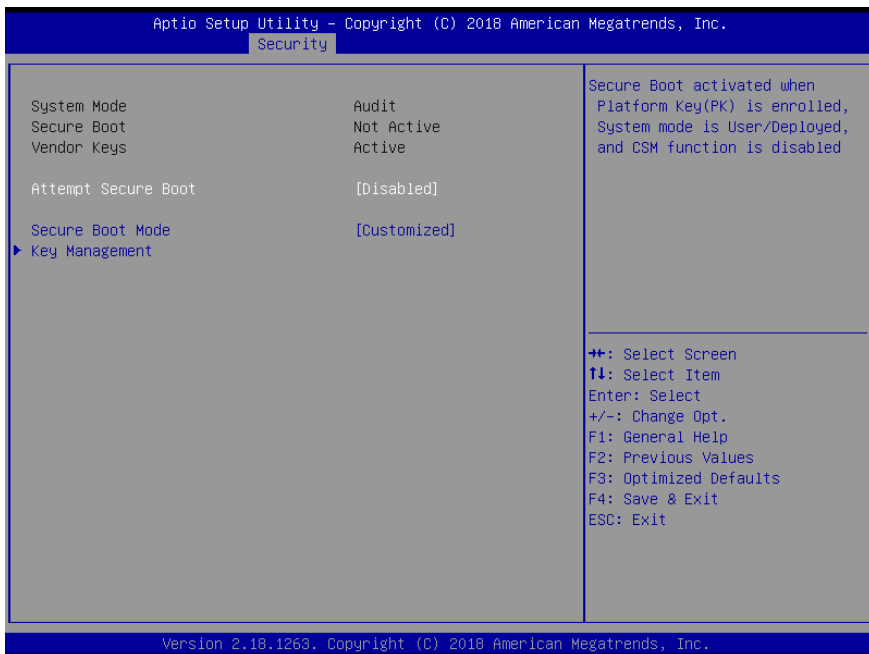
Change User/Administrator Password

You can set a User Password once an Administrator Password. The password will be required during boot up, or when the user enters the Setup utility. Please Note that a User Password does not provide access to many of the features in the Setup utility. Select the password you wish to set, press Enter to open a dialog box to enter your password (you can enter no more than six letters or numbers). Press Enter to confirm your entry, after which you will be prompted to retype your password for a final confirmation. Press Enter again after you have retyped it correctly.

Removing the Password

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

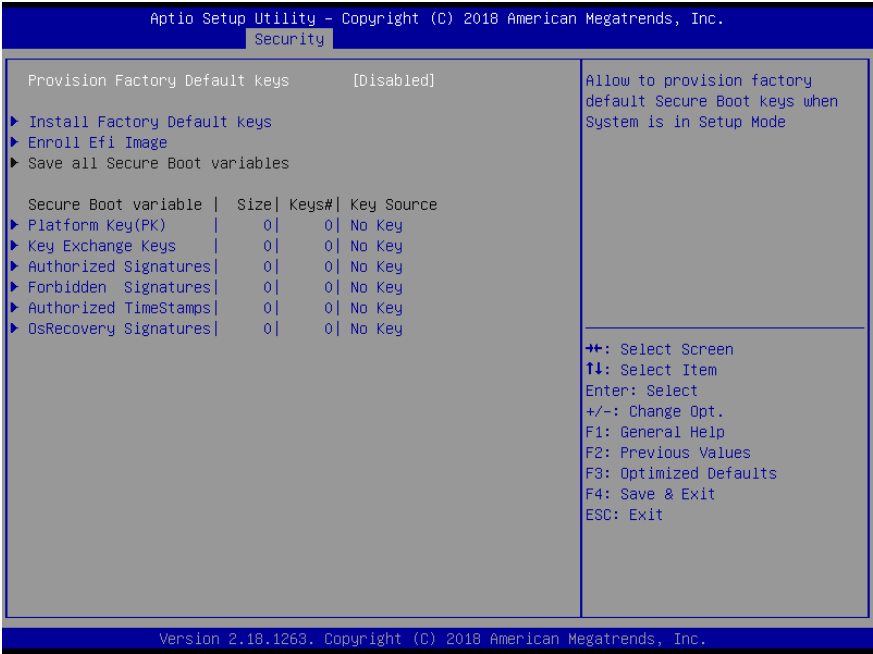
3.6.1 Secure Boot



Options summary:

Attempt Secure Boot	Disable	Optimal Default, Failsafe Default
	Enable	
Secure Boot activated when Platform Key(PK) is enrolled, System mode is User/Deployed, and CSM function is disabled		
Secure Boot Mode	Standard	Optimal Default, Failsafe Default
	Customized	
Secure Boot Mode – Custom & Standard, Set UEFI Secure Boot Mode to STANDARD mode or CUSTOM mode, this change is effect after save. And after reset, the mode will return to STANDARD mode		

3.6.2 Key management



Enables expert users to modify Secure Boot Policy variables without full authentication

Options summary:

Provision Factory Default keys	Disable	Optimal Default, Failsafe Default
	Enable	
Allow to provision factory default Secure Boot keys when System is in Setup Mode		
Install Factory Default Keys	No	Press 'Yes' to install factory default keys
	Yes	
Force System to User Mode – install all Factory Default keys		

Options summary:

Enroll Efi Image	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3, SubType 18)HD(Part1, Sig)\	\$AttrDef \$BadClus \$Bitmap \$Boot \$LogFile \$MFT \$MFTMirr \$Secure \$UpCase \$Volume <System Volume Information> <.> <\$Extend>
	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3, SubType 18)HD(Part2, Sig)\	<EFI> dbx
	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3, SubType 18)HD(Part4, Sig)\	\$AttrDef \$BadClus \$Bitmap \$Boot \$LogFile \$MFT \$MFTMirr \$Secure \$UpCase \$Volume Hiberfil.sys Pagefile.sys Swapfile.sys <Windows> <Users> <System Volume Information> <Recovery> <ProgramData> <Program Files (x86)> <Program Files> <PerfLogs> <Intel>

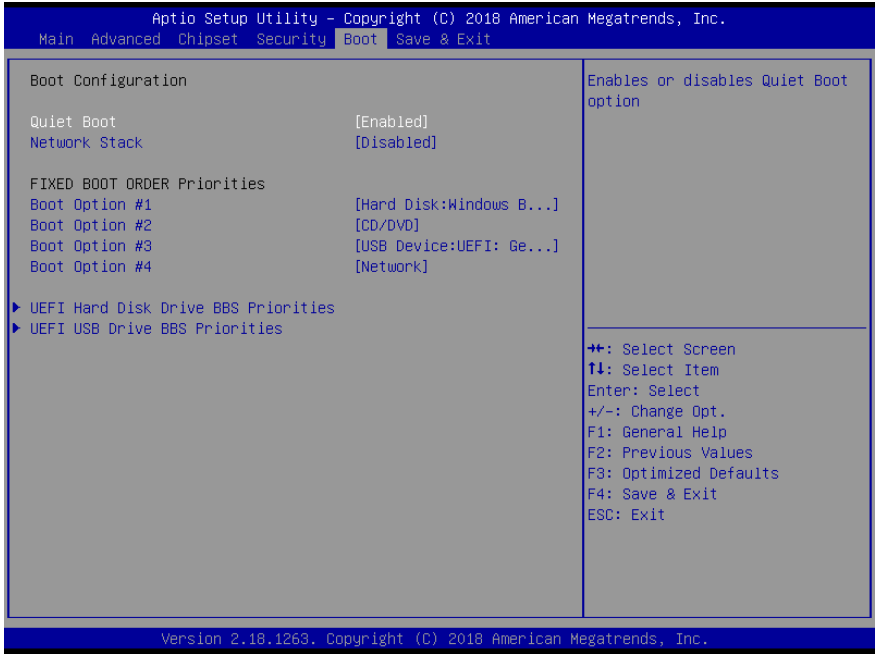
Enroll Efi Image		<Documents and Settings> <.> <\$Recycle.Bin> <\$Extend>
Allow the image to run in Secure Boot mode. Enroll SHA256 Hash Certificate of the Image into Authorized Signature Database (db)		
Save all Secure Boot variables	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3,SubType 18)HD(Part1, Sig ?)\	dbx
	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3,SubType 18)HD(Part2, Sig ?)\	1 variable(s) saved to disk
	Acpi(a0341d0, 0)\PCI(12 0)\DevicePath(Type 3,SubType 18)HD(Part4, Sig ?)\	dbx
Save NVRAM content of Secure Boot policy variables to the files (EFI_SIGNATURE_LIST Data format) in root folder on a target file system device		

Secure Boot variable |Size | Keys#| key Source

Platform key(PK) 0 0 No Key	Set New Var	No	
		Yes	Press 'Yes' to load factory default 'PK' or Select 'No' to load it from a File on external media
Key Exchange keys 0 0 No Key	Set New Var	No	
		Yes	Press 'Yes' to load factory default 'KEK' or Select 'No' to load it from a File on external media
	Append Key	No	
		Yes	Press 'Yes' to load factory default 'KEK' or Select 'No' to load it from a File on external media
Authorized Signatures 0 0 No Key	Set New Var	No	
		Yes	Press 'Yes' to load factory default 'db' or Select 'No' to load it from a File on external media
	Append Key	No	
		Yes	Press 'Yes' to load factory default 'db' or Select 'No' to load it from a File on external media
Forbidden Signatures 0 0 No Key	Set New Var	No	
		Yes	Press 'Yes' to load factory default 'dbx' or Select 'No' to load it from a File on external media

	Append Key	No	Press 'Yes' to load factory default 'dbx' or Select 'No' to load it from a File on external media
		Yes	
Authorized TimeStamps 0 0 No Key	Set New Var	No	Press 'Yes' to load factory default 'dbt' or Select 'No' to load it from a File on external media
		Yes	
	Append Key	No	Press 'Yes' to load factory default 'dbt' or Select 'No' to load it from a File on external media
		Yes	
OsRecovery Signatures 0 0 No Key	Set New Var	No	Press 'Yes' to load factory default 'dbr' or Select 'No' to load it from a File on external media
		Yes	
	Append Key	No	Press 'Yes' to load factory default 'dbr' or Select 'No' to load it from a File on external media
		Yes	

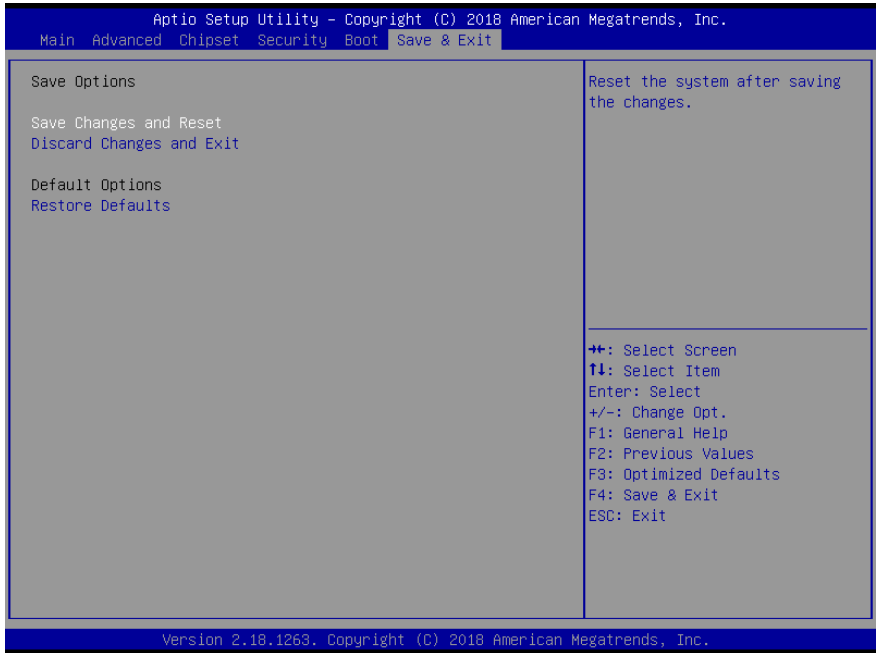
3.7 Setup submenu: Boot



Options summary:

Quiet Boot	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable Quiet Boot option		
Network Stack	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable UEFI Network Stack		

3.8 Setup submenu: Save & Exit



Chapter 4

Drivers Installation

4.1 Driver Installation

Please download the drivers from <http://www.aaeon.com/> and follow the sequence below to install the drivers.

Step 1 – Install Chipset Drivers

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

Step 2 – Install Graphics Driver

1. Open the **Step 2 - Graphics** 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 TXE Driver

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

Step 4 – Install LAN Driver

1. Open the **Step 4 - LAN** folder and select your OS
2. Open the **PROWinx64_21.1.exe** file in the folder
3. Follow the instructions

4. Drivers will be installed automatically

Step 5 – Install Audio Drivers

1. Open the **Step 5 – Audio** folder and select your OS
2. Open the **0006-64bit_Win7_Win8_Win81_Win10_R279.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 6 – Install Serial IO Drivers

1. Open the **Step 6 –Serial IO Driver** folder and select your OS
2. Open the **SetupSerialIO.exe** file
3. Follow the instructions
4. Drivers will be installed automatically

Step 7 – Install Serial Port Driver (Optional)

1. Open the **Step 7 - Serial Port Driver (Optional)** folder and select your OS
2. Open the **FintekSerial.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

A.2 Watchdog Sample Program

```
*****
// 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 WDTRstLDN // This parameter is represented from Note20
#define byte WDTRstReg // This parameter is represented from Note21
#define byte WDTRstBit // This parameter is represented from Note22
#define byte WDTRstVal // 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(ModelLDN, ModeReg, ModeBit, ModeVal);
    // Watchdog timeout output via WDTRST#
    SIOBitSet(WDTRstLDN, WDTRstReg, WDTRstBit, WDTRstVal);
}

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

```

```

*****
VOID  SIOEnterMBPnPMode0{
    IOWriteByte(SIOIndex, 0x87);
    IOWriteByte(SIOIndex, 0x87);
}

VOID  SIOExitMBPnPMode0{
    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





















































DESKTOP-LC5TVPU	
Input/output (IO)	
[0000000000000000 - 000000000000006F]	PCI Express Root Complex
[0000000000000020 - 0000000000000021]	Programmable interrupt controller
[0000000000000024 - 0000000000000025]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[000000000000002C - 000000000000002D]	Programmable interrupt controller
[000000000000002E - 000000000000002F]	Motherboard resources
[0000000000000030 - 0000000000000031]	Programmable interrupt controller
[0000000000000034 - 0000000000000035]	Programmable interrupt controller
[0000000000000038 - 0000000000000039]	Programmable interrupt controller
[000000000000003C - 000000000000003D]	Programmable interrupt controller
[0000000000000040 - 0000000000000043]	System timer
[000000000000004E - 000000000000004F]	Motherboard resources
[0000000000000050 - 0000000000000053]	System timer
[0000000000000061 - 0000000000000061]	Motherboard resources
[0000000000000063 - 0000000000000063]	Motherboard resources
[0000000000000065 - 0000000000000065]	Motherboard resources
[0000000000000067 - 0000000000000067]	Motherboard resources
[0000000000000070 - 0000000000000070]	Motherboard resources
[0000000000000070 - 0000000000000077]	System CMOS/real time clock
[0000000000000078 - 000000000000007F]	PCI Express Root Complex
[0000000000000080 - 000000000000008F]	Motherboard resources
[0000000000000092 - 0000000000000092]	Motherboard resources
[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
[00000000000000A8 - 00000000000000A9]	Programmable interrupt controller
[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
[00000000000000B2 - 00000000000000B3]	Motherboard resources
[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller
[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
[00000000000002F8 - 00000000000002FF]	Fintek Communications Port (COM2)
[00000000000003F8 - 00000000000003FF]	Fintek Communications Port (COM1)
[0000000000000400 - 000000000000047F]	Motherboard resources
[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
[0000000000000500 - 00000000000005FE]	Motherboard resources
[0000000000000680 - 000000000000069F]	Motherboard resources
[0000000000000A00 - 0000000000000A0F]	Motherboard resources
[0000000000000A10 - 0000000000000A1F]	Motherboard resources
[0000000000000A20 - 0000000000000A2F]	Motherboard resources
[0000000000000D00 - 0000000000000FFF]	PCI Express Root Complex
[000000000000D000 - 000000000000DFFF]	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
[000000000000E000 - 000000000000EFFF]	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
[000000000000F000 - 000000000000F03F]	Intel(R) HD Graphics
[000000000000F040 - 000000000000F05F]	Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
[000000000000F060 - 000000000000F07F]	Standard SATA AHCI Controller
[000000000000F080 - 000000000000F083]	Standard SATA AHCI Controller
[000000000000F090 - 000000000000F097]	Standard SATA AHCI Controller





















































B.2 Memory Address Map





















































▼	Memory
▶	[000000007B800001 - 000000007BFFFFFF] PCI Express Root Complex
▶	[000000007C000001 - 000000007FFFFFFF] PCI Express Root Complex
▶	[0000000080000000 - 000000008FFFFFFF] Intel(R) HD Graphics
▶	[0000000080000000 - 00000000CFFFFFFF] PCI Express Root Complex
▶	[0000000090000000 - 0000000090FFFFFF] Intel(R) HD Graphics
▶	[0000000091000000 - 00000000910FFFFFFF] High Definition Audio Controller
▶	[0000000091100000 - 00000000911FFFFFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
▶	[00000000911DC000 - 00000000911DFFFF] Intel(R) I211 Gigabit Network Connection #2
▶	[00000000911E0000 - 00000000911FFFFFFF] Intel(R) I211 Gigabit Network Connection #2
▶	[0000000091200000 - 00000000912FFFFFFF] Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
▶	[00000000912DC000 - 00000000912DFFFF] Intel(R) I211 Gigabit Network Connection
▶	[00000000912E0000 - 00000000912FFFFFFF] Intel(R) I211 Gigabit Network Connection
▶	[0000000091300000 - 000000009130FFFF] Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
▶	[0000000091310000 - 0000000091313FFFF] High Definition Audio Controller
▶	[0000000091314000 - 0000000091315FFFF] Standard SATA AHCI Controller
▶	[0000000091318000 - 00000000913180FF] Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
▶	[0000000091319000 - 00000000913190FF] Intel SD Host Controller
▶	[000000009131A000 - 000000009131AFFF] Intel SD Host Controller
▶	[000000009131B000 - 000000009131B7FF] Standard SATA AHCI Controller
▶	[000000009131C000 - 000000009131C0FF] Standard SATA AHCI Controller
▶	[0000000091320000 - 0000000091320FFF] Intel(R) Trusted Execution Engine Interface
▶	[00000000D0C00000 - 00000000D0C00653] Intel(R) Serial IO GPIO Host Controller - INT3452
▶	[00000000D0C40000 - 00000000D0C40763] Intel(R) Serial IO GPIO Host Controller - INT3452
▶	[00000000D0C50000 - 00000000D0C5076B] Intel(R) Serial IO GPIO Host Controller - INT3452
▶	[00000000D0C70000 - 00000000D0C70673] Intel(R) Serial IO GPIO Host Controller - INT3452
▶	[00000000E0000000 - 00000000EFFFFFFF] Motherboard resources
▶	[00000000E0000000 - 00000000EFFFFFFF] PCI Express Root Complex
▶	[00000000FEA00000 - 00000000FEAFFFFFFF] Motherboard resources
▶	[00000000FED00000 - 00000000FED003FF] High precision event timer
▶	[00000000FED01000 - 00000000FED01FFF] Motherboard resources
▶	[00000000FED03000 - 00000000FED03FFF] Motherboard resources
▶	[00000000FED06000 - 00000000FED06FFF] Motherboard resources
▶	[00000000FED08000 - 00000000FED09FFF] Motherboard resources
▶	[00000000FED1C000 - 00000000FED1CFFF] Motherboard resources
▶	[00000000FED80000 - 00000000FEDBFFFF] Motherboard resources
▶	[00000000FEE00000 - 00000000FEEFFFFFFF] Motherboard resources





















































B.3 IRQ Mapping Chart















































▼		Interrupt request (IRQ)
		(ISA) 0x00000000 (00) System timer
		(ISA) 0x00000003 (03) Fintek Communications Port (COM2)
		(ISA) 0x00000004 (04) Fintek Communications Port (COM1)
		(ISA) 0x00000008 (08) High precision event timer
		(ISA) 0x0000000E (14) Intel(R) Serial IO GPIO Host Controller - IN
		(ISA) 0x0000000E (14) Intel(R) Serial IO GPIO Host Controller - IN
		(ISA) 0x0000000E (14) Intel(R) Serial IO GPIO Host Controller - IN
		(ISA) 0x0000000E (14) Intel(R) Serial IO GPIO Host Controller - IN
		(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
 (ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
 (ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
 (ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
 (ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
 (ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
 (ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
 (ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
 (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
 (ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
 (ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
 (ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
 (ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
 (ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
 (ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
 (ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
 (ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
 (ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
 (ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
 (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
 (ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
 (ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
 (ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
 (ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
 (ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
 (ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
 (ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
 (ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
 (ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
 (ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
 (ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
 (ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System


















































 (ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
 (ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
 (ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
 (ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
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 (ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C0 (192)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C1 (193)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C2 (194)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C3 (195)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C4 (196)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C5 (197)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C6 (198)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C7 (199)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C8 (200)	Microsoft ACPI-Compliant System


















 (ISA) 0x000000C9 (201)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
 (ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
 (ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
 (ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
 (ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
 (ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
 (ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
 (ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
 (ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
 (ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
 (ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
 (ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
 (ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
 (ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
 (ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
 (ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
 (ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
 (ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
 (ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
 (ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
 (ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
 (ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
 (ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
 (ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
 (ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
(ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
(ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C1 (449)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C2 (450)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C5 (453)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C6 (454)	Microsoft ACPI-Compliant System
(ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System
(ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
(ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
(ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
(ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System

 (ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CE (462)	Microsoft ACPI-Compliant System
 (ISA) 0x000001CF (463)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D0 (464)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D1 (465)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D2 (466)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D3 (467)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D4 (468)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D5 (469)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D6 (470)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D7 (471)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D8 (472)	Microsoft ACPI-Compliant System
 (ISA) 0x000001D9 (473)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DE (478)	Microsoft ACPI-Compliant System
 (ISA) 0x000001DF (479)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E0 (480)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
 (ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
 (ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
 (ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
 (ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
 (ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
(ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
(ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System
(ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System

	(ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
	(PCI) 0x00000019 (25)	High Definition Audio Controller
	(PCI) 0x00000027 (39)	Intel SD Host Controller
	(PCI) 0xFFFFFFFF1 (-15)	Intel(R) I211 Gigabit Network Connection
	(PCI) 0xFFFFFFFF2 (-14)	Intel(R) I211 Gigabit Network Connection
	(PCI) 0xFFFFFFFF3 (-13)	Intel(R) I211 Gigabit Network Connection
	(PCI) 0xFFFFFFFF4 (-12)	Intel(R) I211 Gigabit Network Connection
	(PCI) 0xFFFFFFFF5 (-11)	Intel(R) I211 Gigabit Network Connection #2
	(PCI) 0xFFFFFFFF6 (-10)	Intel(R) I211 Gigabit Network Connection #2
	(PCI) 0xFFFFFFFF7 (-9)	Intel(R) I211 Gigabit Network Connection #2
	(PCI) 0xFFFFFFFF8 (-8)	Intel(R) I211 Gigabit Network Connection #2
	(PCI) 0xFFFFFFFF9 (-7)	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
	(PCI) 0xFFFFFFFFFA (-6)	Intel(R) Trusted Execution Engine Interface
	(PCI) 0xFFFFFFFFFB (-5)	Intel(R) HD Graphics
	(PCI) 0xFFFFFFFFFC (-4)	Standard SATA AHCI Controller
	(PCI) 0xFFFFFFFFFD (-3)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
	(PCI) 0xFFFFFFFFFE (-2)	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8