

# de next-TGU8-EZBOX

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de next System

User's Manual 1<sup>st</sup> Ed

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## Packing List

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

Item	Quantity
de next-TGU8-EZBOX	1
Wall Mount Bracket & Screws	1
Thermal Pad	1

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

## About this Document

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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](http://AAEON.com) for the latest version of this document.

## Safety Precautions

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

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

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

### **Warning!**



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

### **Caution:**

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

### **Attention:**

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



## 产品中有毒有害物质或元素名称及含量

AAEON System

QO4-381 Rev.A0

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板及其电子组件	×	○	○	○	○	○
外部信号连接器及线材	×	○	○	○	○	○
外壳	○	○	○	○	○	○
中央处理器与内存	×	○	○	○	○	○
硬盘	×	○	○	○	○	○
液晶模块	×	○	○	○	○	○
光驱	×	○	○	○	○	○
触控模块	×	○	○	○	○	○
电源	×	○	○	○	○	○
电池	×	○	○	○	○	○

本表格依据 SJ/T 11364 的规定编制。

○：表示该有毒有害物质在该部件所有均质材料中的含量均在 GB/T 26572 标准规定的限量要求以下。

×：表示该有害物质的某一均质材料超出了 GB/T 26572 的限量要求，然而该部件仍符合欧盟指令 2011/65/EU 的规范。

备注：

- 一、此产品所标示之环保使用期限，系指在一般正常使用状况下。
- 二、上述部件物质中央处理器、内存、硬盘、光驱、电源为选购品。
- 三、上述部件物质液晶模块、触控模块仅一体机产品适用。

# China RoHS Requirement (EN)

## Hazardous and Toxic Materials List

AAEON System

QQ4-381 Rev.A0

Component Name	Hazardous or Toxic Materials or Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr(VI))	Polybrominated biphenyls (PBBS)	Polybrominated 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	O	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

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Product Specifications

## 1.1 Specifications

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### System

<b>Form Factor</b>	de next System
<b>CPU</b>	Onboard 11th Gen Intel® Core™ Processors Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W), with Cooler Version Only Intel® Core™ i5-1145G7E (4C/8T, 1.50 GHz, 15W), with Cooler Version Only Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W), with Cooler Version & Heatsink Version
<b>Chipset</b>	Integrated with Intel® Soc
<b>Memory Type</b>	Onboard LPDDR4x 3733, up to 16GB
<b>BIOS</b>	UEFI
<b>Wake On LAN</b>	Yes
<b>Watchdog Timer</b>	255 Levels
<b>Security</b>	fTPM
<b>RTC Battery</b>	Lithium Battery 3V/240mAh
<b>Dimension</b>	3.75" x 2.73" x 1.78" (95.5mm x 69.5mm x 45.4mm), with Cooler Version 3.75" x 2.73" x 1.67" (95.5mm x 69.5mm x 42.5mm), with Heatsink Version
<b>OS Support</b>	Windows 10 (64-bit) Ubuntu 20.04.4 (Kernel 5.13)

## Power

Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	DC Jack Connector (Optional: 2-Pin Phoenix Connector)
Power Consumption	Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 4.58A @12V, 55W (Typical) Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 7A @12V, 84W (Max)

## Display

Controller	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	-
Display Interface	HDMI 1.4b x 1
Multiple Display	-

## Audio

Codec	-
Audio Interface	-
Speaker	-

## External I/O

Ethernet	Intel® Ethernet Controller I225/I226, 2.5GbE RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE RJ-45 x 1
USB	USB 3.2 Gen 2 x 2
Serial Port	-
Video	HDMI 1.4b x 1

## Internal I/O

USB	-
Serial Port	-
Video	-
SATA	-
Audio	-
DIO/GPIO	-
SMBus/I2C	-
Touch	-
Fan	4-Pin Smart Fan (with Cooler version only)
SIM	-
Front Panel	-

## Expansion

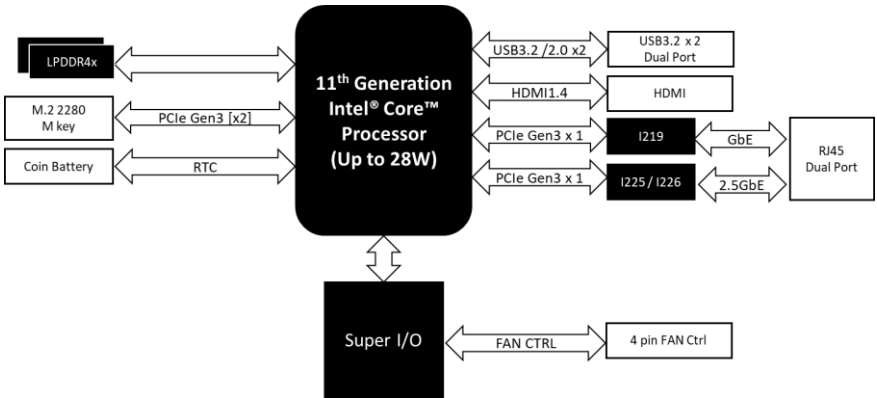
Mini PCIe/mSATA	-
M.2	M.2 2280 M-Key x 1 (PCIe [x2] x 1 or PCIe [x1] x 2, selected by BIOS)
Others	FPC Connector x 1 (PCIe 3.0 [x4])

## Environmental

Operating Temperature	14°F ~122°F (-10°C ~50°C) with 0.7m/sec air flow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	609,263
EMC	CE/FCC Class A



## 1.2 Block Diagram



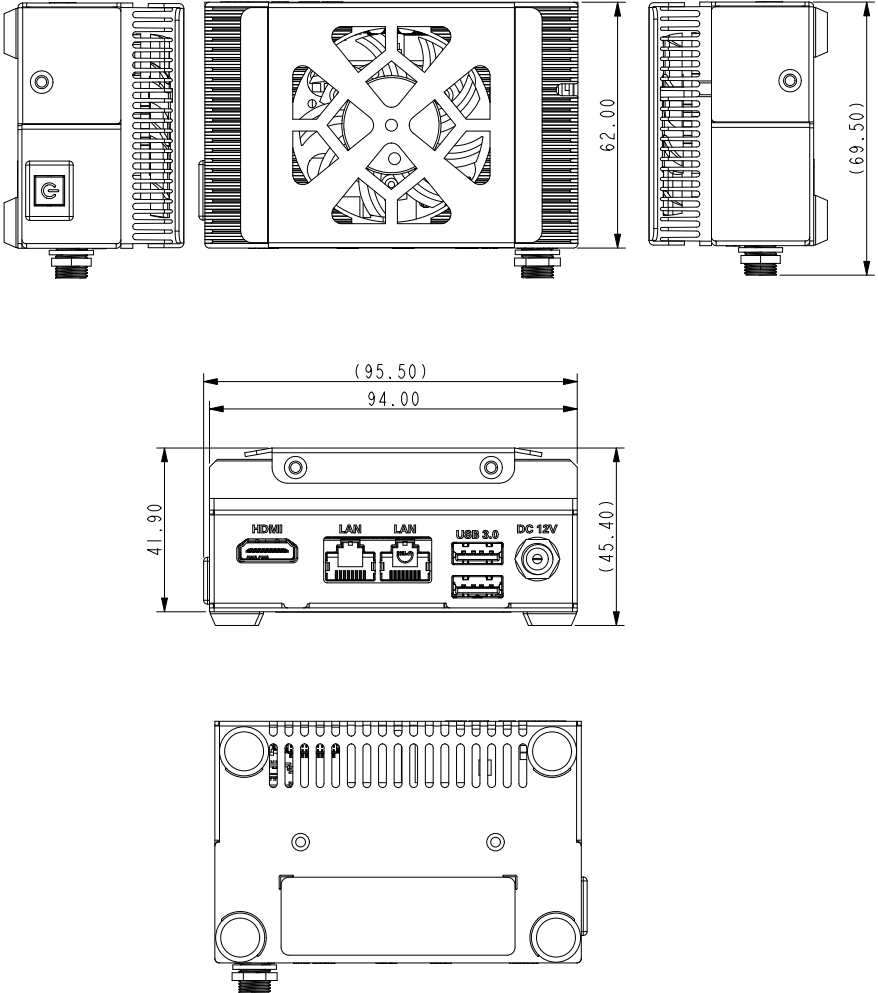
# Chapter 2

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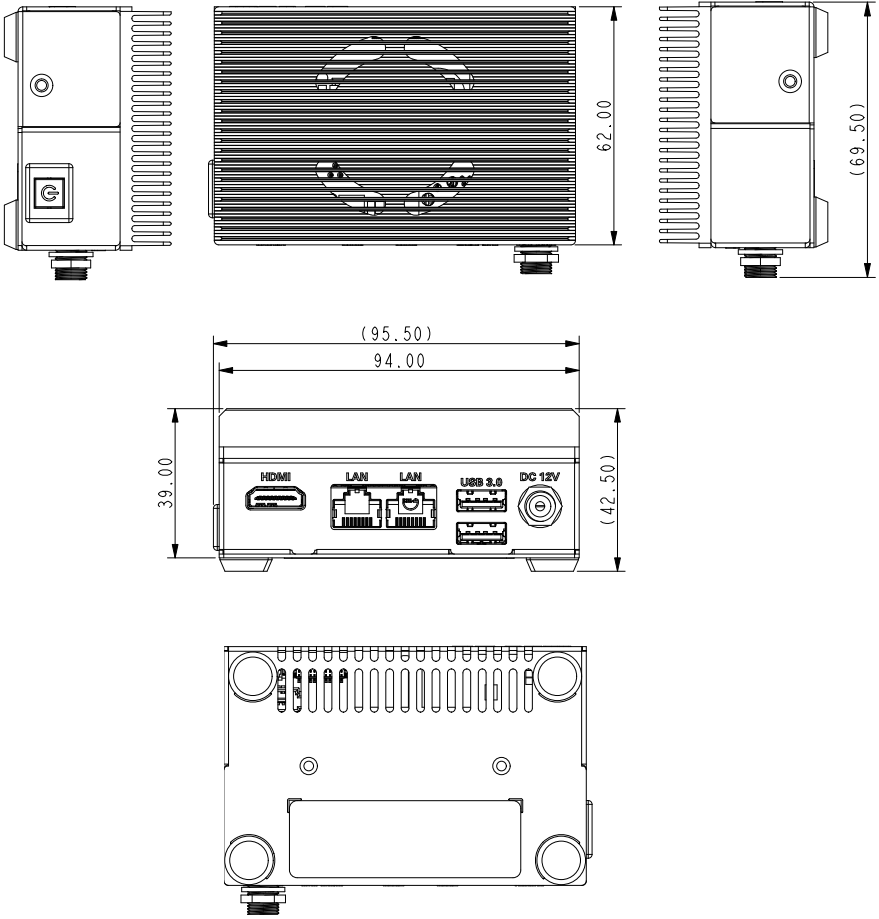
Hardware Information

## 2.1 Dimensions

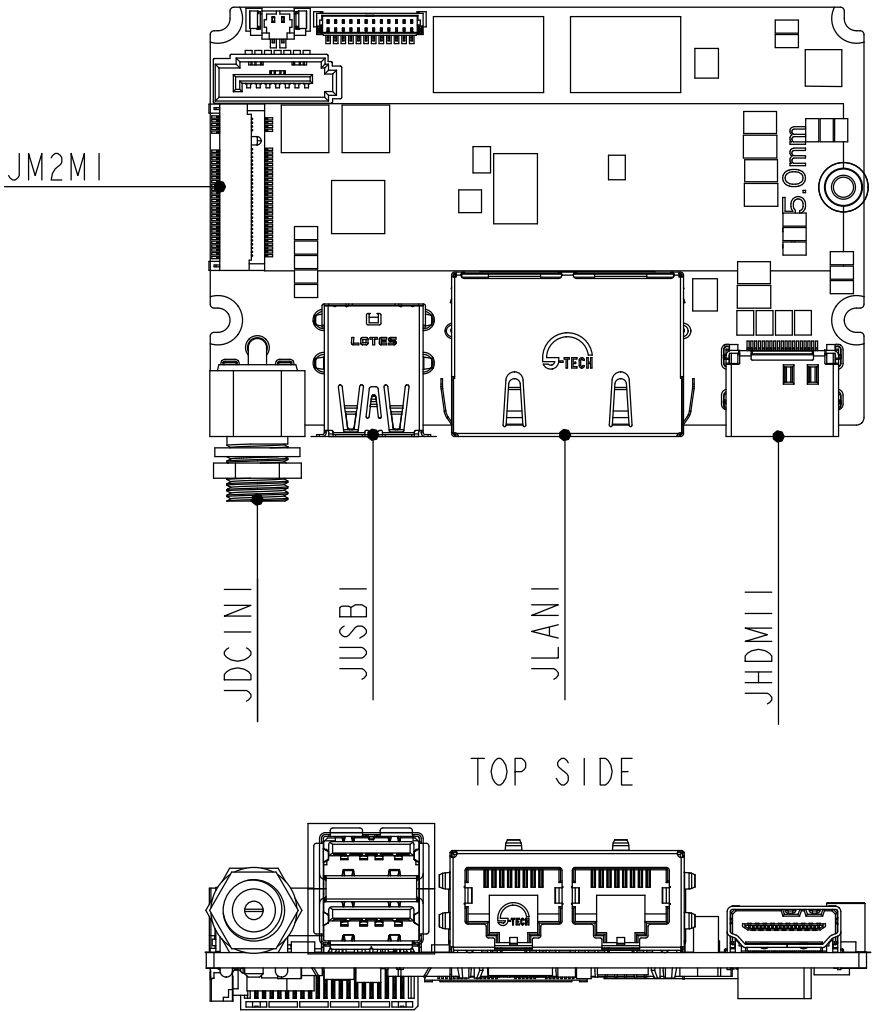
With Cooler

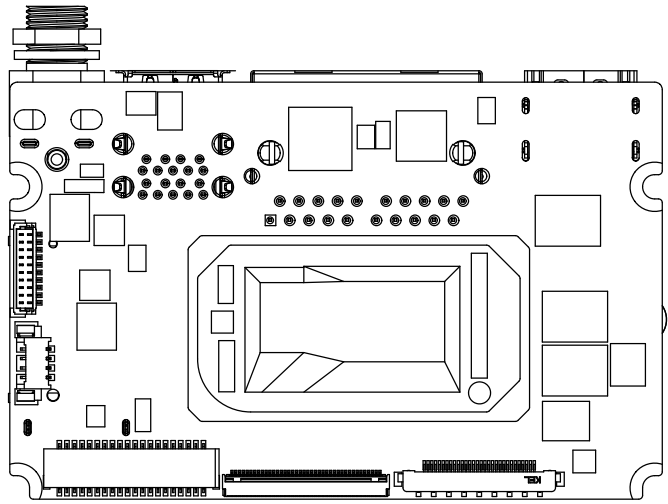


### With Heatsink



## 2.2 Jumpers and Connectors





BOTTOM SIDE

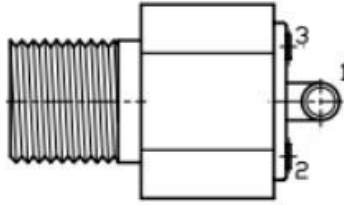
## 2.3 List of Connectors

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

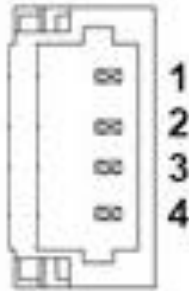
Label	Function
JDCIN1	DC In
JFAN1	FAN
JHDMI1	HDMI
JLAN1	LAN
JM2M1	M.2 2280 M-Key
JRTC1	RTC Battery
JUSB1	USB 3.2 Gen 2

### 2.3.1 DC In (JDCIN2)



Pin	Pin Name	Signal Type
1	+VIN	PWR
2	GND	GND

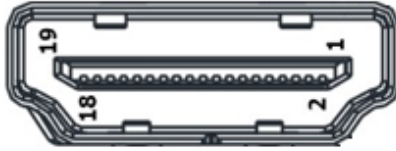
### 2.3.2 FAN (JFAN1)



Pin	Pin Name	Signal Type
1	GND	GND
2	+V12S	PWR
3	FAN_1_TAC_CON	I/O
4	FAN_1_CTL_CON	I/O

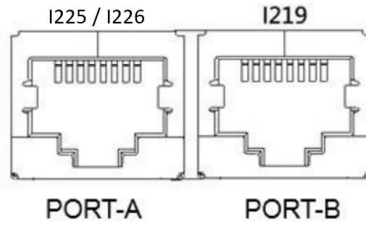


### 2.3.3 HDMI (JHDMI1)



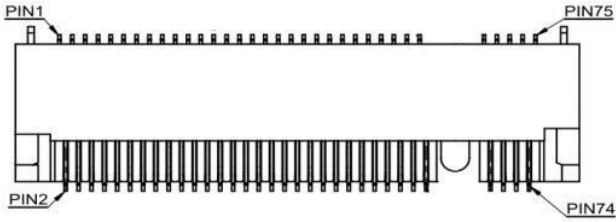
Pin	Pin Name	Signal Type
1	HDMI1_D2_DP_CM	I/O
2	GND	GND
3	HDMI1_D2_DN_CM	I/O
4	HDMI1_D1_DP_CM	I/O
5	GND	GND
6	HDMI1_D1_DN_CM	I/O
7	HDMI1_D0_DP_CM	I/O
8	GND	GND
9	HDMI1_D0_DN_CM	I/O
10	HDMI1_CLK_DP_CM	I/O
11	GND	GND
12	HDMI1_CLK_DN_CM	I/O
13	NC	-
14	NC	-
15	HDMI1_SCL	I/O
16	HDMI1_SDA	I/O
17	GND	GND
18	+V5S_HDMI	PWR
19	HDMI1_HPD	I/O

### 2.3.4 LAN (JLAN1)



Pin	Pin Name	Signal Type
1P1	LAN2_MDI0P	I/O
1P2	LAN2_MDI0N	I/O
1P3	LAN2_MDI1P	I/O
1P4	LAN2_MDI1N	I/O
1P5	LAN2_CT	I/O
1P6	LAN2_CT	I/O
1P7	LAN2_MDI2P	I/O
1P8	LAN2_MDI2N	I/O
1P9	LAN2_MDI3P	I/O
1P10	LAN2_MDI3N	I/O
2P1	LAN1_MDI0P	I/O
2P2	LAN1_MDI0N	I/O
2P3	LAN1_MDI1P	I/O
2P4	LAN1_MDI1N	I/O
2P5	LAN1_CT	I/O
2P6	LAN1_CT	I/O
2P7	LAN1_MDI2P	I/O
2P8	LAN1_MDI2N	I/O
2P9	LAN1_MDI3P	I/O
2P10	LAN1_MDI3N	I/O

### 2.3.5 M.2 2280 M-Key (JM2M1)

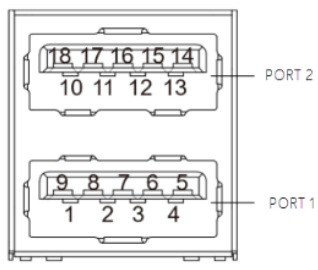


Pin	Pin Name	Signal Type
1	GND	GND
2	+V3P3S	PWR
3	GND	GND
4	+V3P3S	PWR
5	NC	-
6	CARD_PWR_EN_R	I/O
7	NC	-
8	NC	-
9	GND	GND
10	NC	-
11	NC	-
12	+V3P3S	PWR
13	NC	-
14	+V3P3S	PWR
15	GND	GND
16	+V3P3S	PWR
17	NC	-
18	+V3P3S	PWR
19	NC	-
20	NC	-
21	GND	GND
22	NC	-
23	NC	-

Pin	Pin Name	Signal Type
24	NC	-
25	NC	-
26	NC	-
27	GND	GND
28	NC	-
29	PCIE4_1_RXN	I/O
30	NC	-
31	PCIE4_1_RXP	I/O
32	NC	-
33	GND	GND
34	NC	-
35	PCIE4_1_TXN_M2	I/O
36	NC	-
37	PCIE4_1_TXP_M2	I/O
38	NC	-
39	GND	GND
40	M2M_SMB_CLK	I/O
41	PCIE4_0_RXN	I/O
42	M2M_SMB_DATA	I/O
43	PCIE4_0_RXP	I/O
44	NC	-
45	GND	GND
46	NC	-
47	PCIE4_0_TXN_M2	I/O
48	NC	-
49	PCIE4_0_TXP_M2	I/O
50	BUF_PLT_RST#	I/O
51	GND	GND
52	NC	I/O
53	PCIE_0_CLK_DN	I/O
54	PCIE_WAKE#	I/O
55	PCIE_0_CLK_DP	I/O
56	NC	-

Pin	Pin Name	Signal Type
57	GND	GND
58	NC	-
59	NC	-
67	NC	-
68	M2M_SSCLK	I/O
69	NC	-
70	+V3P3S	PWR
71	GND	GND
72	+V3P3S	PWR
73	GND	GND
74	+V3P3S	PWR
75	GND	GND

### 2.3.6 USB 3.2 (JUSB1)



Pin	Pin Name	Signal Type
1	+V5A_USB12	PWR
2	USB2_1_DN_CM	I/O
3	USB2_1_DP_CM	I/O
4	GND	GND
5	USB31_1_RXN_CM	I/O
6	USB31_1_RXP_CM	I/O
7	GND	GND
8	USB31_1_TXN_CM	I/O
9	USB31_1_TXP_CM	I/O

Pin	Pin Name	Signal Type
10	+V5A_USB12	PWR
11	USB2_2_DN_CM	I/O
12	USB2_2_DP_CM	I/O
13	GND	GND
14	USB31_2_RXN_CM	I/O
15	USB31_2_RXP_CM	I/O
16	GND	GND
17	USB31_2_TXN_CM	I/O
18	USB31_2_TXP_CM	I/O

# Chapter 3

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AMI BIOS Setup

## 3.1 System Test and Initialization

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The board 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

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

To enter BIOS Setup, press <Del> or <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

**System I/O** – Enable/ Disable System input and output port

**Security** – The setup administrator password can be set here

**Boot** – Enable/ Disable quiet Boot Option

**Save & Exit** – Save your changes and exit the program

### 3.3 Setup Submenu: Main

Aptio Setup - AMI

Main Advanced System I/O Security Boot Save & Exit

== BIOS Information ==  
DeNext-TGUB-EZBOX R1.0 (EZTGAM10) (02/02/2024)

== CPU Information ==  
11th Gen Intel(R) Core(TM) i3-1115G4E @ 3.00GHz

== MEM Information ==  
Total Memory 16384 MB  
Memory Speed 3733 MT/s

== SATA Information ==  
Serial ATA Port 0 Empty

System Date [Sun 03/03/2024]  
System Time [17:54:04]

Access Level Administrator

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

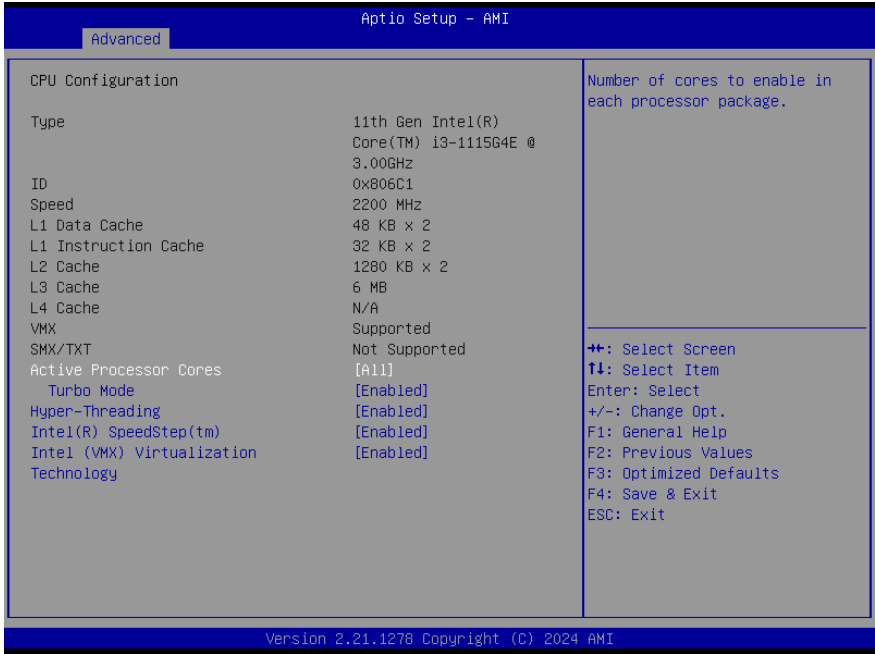
++: Select Screen  
↑↓: Select Item  
Enter: Select  
+/-: Change Opt.  
F1: General Help  
F2: Previous Values  
F3: Optimized Defaults  
F4: Save & Exit  
ESC: Exit

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### 3.4 Setup Submenu: Advanced



### 3.4.1 CPU Configuration



Options Summary		
Active Processor Cores	All	Optimal Default, Failsafe Default
	1	
Number of cores to enable in each processor package.		
Turbo Mode	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable processor Turbo Mode (requires EMTTM enabled too). AUTO means enabled.		
Hyper-Threading	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Hyper-Threading Technology.		
Intel® SpeedStep™	Disabled	
	Enabled	Optimal Default, Failsafe Default
Allows more than two frequency ranges to be supported.		
Intel (VMX) Virtualization Technology	Disabled	
	Enabled	Optimal Default, Failsafe Default

## Options Summary

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

### 3.4.2 Memory Configuration

Aptio Setup - AMI

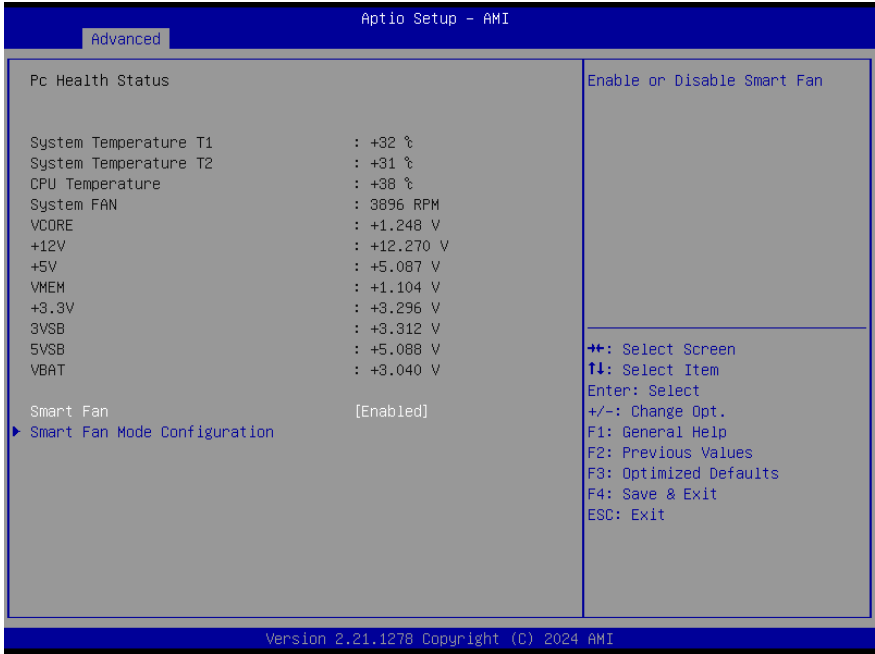
Advanced

Memory Configuration	
Memory RC Version	2.0.2.0
Total Memory	16384 MB
Memory Speed	3733 MT/s
Memory Timings (tCL-tRCD-tRP-tRAS)	32-34-34-79
Controller 0 Channel 0 Slot 0	Populated & Enabled
In-Band ECC Support	[Disabled]

++: 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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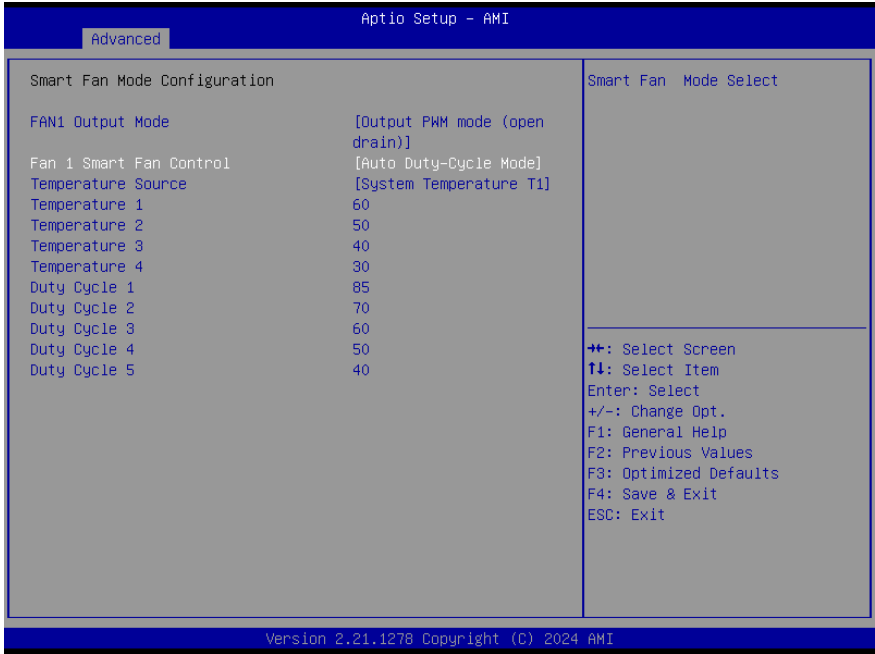
### 3.4.3 Hardware Monitor



Options Summary		
Smart Fan	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Smart Fan.		

### 3.4.3.1 Smart Fan Mode Configuration

#### Fan Mode: Auto Duty-Cycle Mode

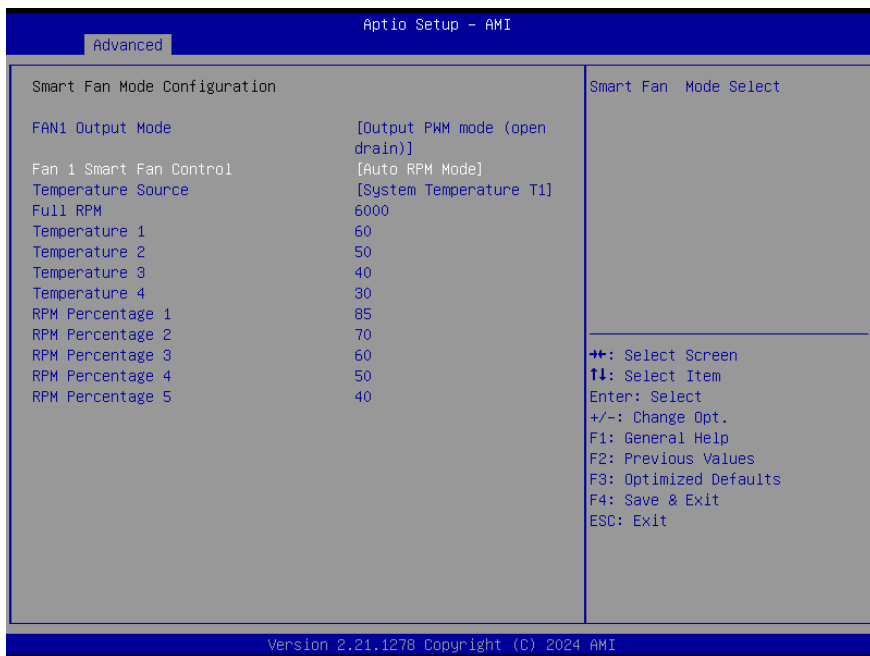


Options Summary		
FAN1 Output Mode	Output PWM mode (open drain)	Optimal Default, Failsafe Default
	Linear Fan Application	
	Output PWM mode (push pull)	
<p>Output PWM mode (push pull) to control 4-wire fans.                      Linear fan application circuit to control 3-wire fan speed by fan's power terminal.                      Output PWM mode (open drain) to control Intel 4-wire fans.</p>		
Fan 1 Smart Fan Control	Manual RPM Mode	
	Manual Duty Mode	
	Auto RPM Mode	
	Auto Duty-Cycle Mode	Optimal Default, Failsafe Default

Options Summary		
Smart Fan Mode Select.		
Temperature Source	CPU Temperature	
	System Temperature T1	Optimal Default, Failsafe Default
	System Temperature T2	
Select the monitored temperature source for this fan.		
Temperature 1 – 4	1 - 100	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.		
Duty Cycle 1 – 5	1 - 100	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.		



## Fan Mode: Auto RPM Mode



### Options Summary

<b>FAN1 Output Mode</b>	Output PWM mode (open drain)	Optimal Default, Failsafe Default
	Linear Fan Application	
	Output PWM mode (push pull)	
Output PWM mode (push pull) to control 4-wire fans.		
Linear fan application circuit to control 3-wire fan speed by fan's power terminal.		
Output PWM mode (open drain) to control Intel 4-wire fans.		
<b>Fan 1 Smart Fan Control</b>	Manual RPM Mode	
	Manual Duty Mode	
	Auto RPM Mode	Optimal Default, Failsafe Default
	Auto Duty-Cycle Mode	

Options Summary		
Smart Fan Mode Select.		
Temperature Source	CPU Temperature	
	System Temperature T1	Optimal Default, Failsafe Default
	System Temperature T2	
Select the monitored temperature source for this fan.		
Full RPM	500 - 10000	
User can set the full RPM value for the controlled fan..		
Temperature 1 – 4	1 - 100	
Auto fan speed control. Fan speed will follow different temperature by different duty cycle 1-100.		
RPM Percentage 1 – 5	1 - 100	
Auto fan speed control. Fan speed will follow different temperature by different RPM 1-100.		

## Fan Mode: Manual Duty Mode



### Options Summary

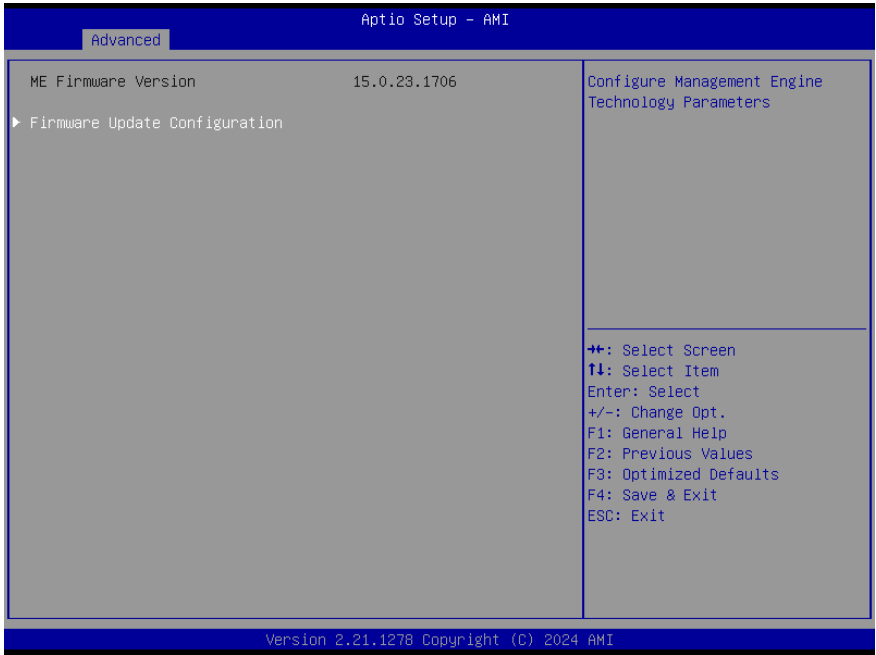
<b>FAN1 Output Mode</b>	Output PWM mode (open drain)	Optimal Default, Failsafe Default
	Linear Fan Application	
	Output PWM mode (push pull)	
Output PWM mode (push pull) to control 4-wire fans. Linear fan application circuit to control 3-wire fan speed by fan's power terminal. Output PWM mode (open drain) to control Intel 4-wire fans.		
<b>Fan 1 Smart Fan Control</b>	Manual RPM Mode	
	Manual Duty Mode	Optimal Default, Failsafe Default
	Auto RPM Mode	
	Auto Duty-Cycle Mode	
<b>Smart Fan Mode Select.</b>		
<b>Manual Duty Mode</b>	1 - 100	
Manual mode fan control, user can write expected duty cycle (PWM fan type) 1 - 100		

## Fan Mode: Manual RPM Mode

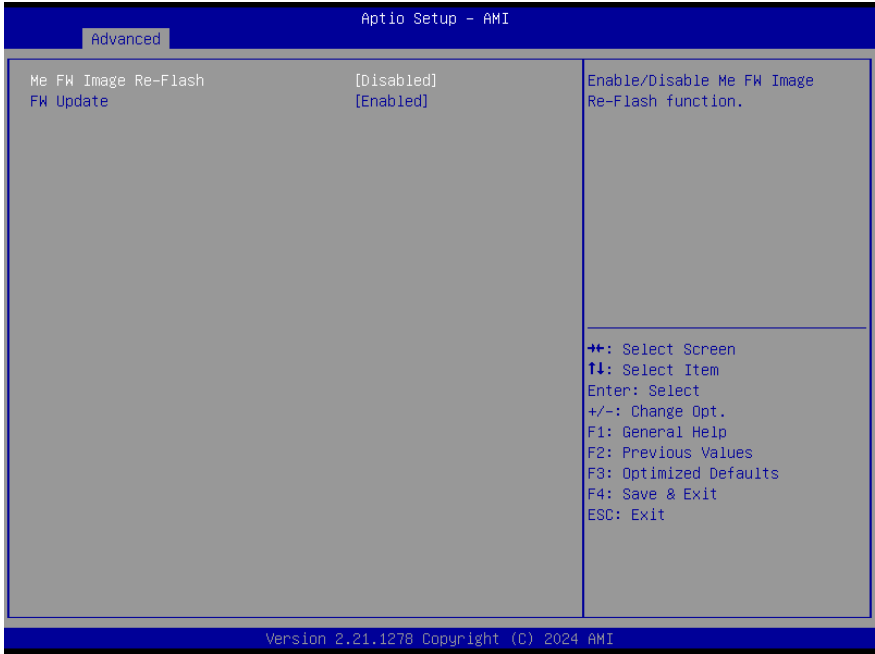


Options Summary		
<b>FAN1 Output Mode</b>	Output PWM mode (open drain)	Optimal Default, Failsafe Default
	Linear Fan Application	
	Output PWM mode (push pull)	
<p>Output PWM mode (push pull) to control 4-wire fans.                      Linear fan application circuit to control 3-wire fan speed by fan's power terminal.                      Output PWM mode (open drain) to control Intel 4-wire fans.</p>		
<b>Fan 1 Smart Fan Control</b>	Manual RPM Mode	Optimal Default, Failsafe Default
	Manual Duty Mode	
	Auto RPM Mode	
	Auto Duty-Cycle Mode	
Smart Fan Mode Select.		
<b>Manual RPM Mode</b>	500 - 10000	
Manual mode fan control, user can write expected RPM count 500 – 10000.		

### 3.4.4 PCH-FW Configuration

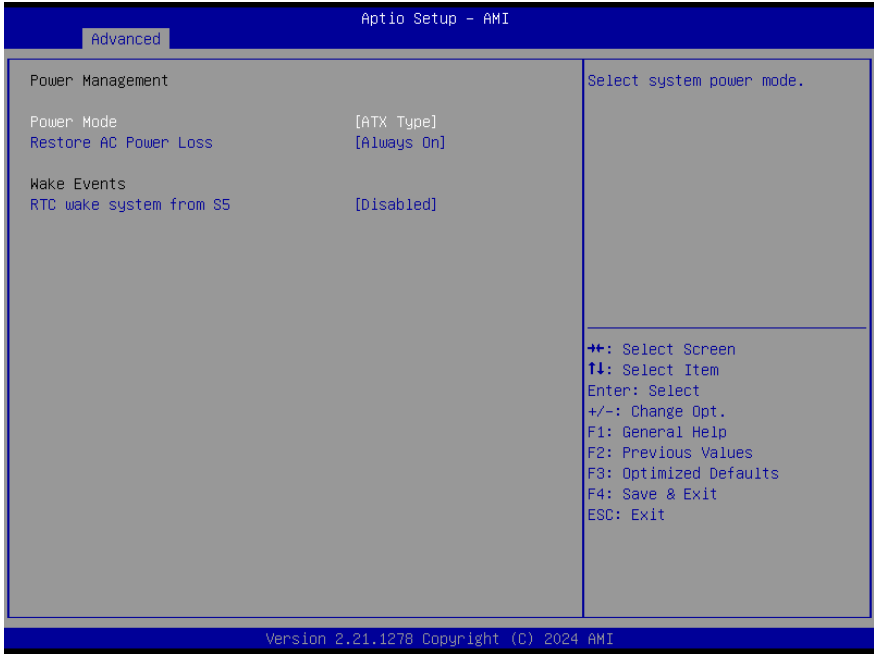


### 3.4.4.1 Firmware Update Configuration



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

### 3.4.5 Power Management



Options Summary		
Power Mode	ATX Type	Optimal Default, Failsafe Default
	AT Type	
Select system power mode.		
Restore AC Power Loss	Last State	
	Always On	Optimal Default, Failsafe Default
	Always Off	
Restore AC Power Loss: To decide the behavior after system power cut then resupply. Note: The CMOS battery must present.		
RTC wake system from S5	Disabled	Optimal Default, Failsafe Default
	Fixed Time	
	Dynamic Time	
	Bypass	

## Options Summary

Fixed Time: System will wake on the hr :: min :: sec specified.

Dynamic Time: System will wake on the current time + Increase minutes(s).

Bypass: BIOS will not control RTC wake function during system shutdown.

### 3.4.6 AAEON BIOS Robot

Aptio Setup - AMI

Advanced

AAEON BIOS Robot		<p>Enabled - Robot set Watch Dog Timer(WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.</p> <p>           ++: Select Screen            ↑↓: Select Item            Enter: Select            +/-: Change Opt.            F1: General Help            F2: Previous Values            F3: Optimized Defaults            F4: Save &amp; Exit            ESC: Exit         </p>
Sends watch dog before BIOS POST	[Disabled]	
POST Timer (second)	30	
Sends watch dog before booting OS	[Disabled]	
OS Timer (minute)	3	
Delayed POST (PEI phase)	[Disabled]	
Delayed time (second)	10	
Delayed POST (DXE phase)	[Disabled]	
Delayed time (second)	10	
Reset system once	[Disabled]	
Soft or hard reset	[Soft reset]	
▶ Device detecting configuration		

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## Options Summary

Sends watch dog before BIOS POST	Disabled	Optimal Default, Failsafe Default
	Enabled	

Enabled - Robot set Watch Dog Timer (WDT) right after power on, before BIOS start POST process. And then Robot will clear WDT on completion of POST. WDT will reset system automatically if it is not cleared before its timer counts down to zero.

POST Timer (second)	30	Optimal Default, Failsafe Default
---------------------	----	-----------------------------------

Timer count set to Watch Dog Timer for POST. WARNING: Do not set to a value equal or shorter than normal POST time, otherwise system may never complete POST unless clearing BIOS settings. More than 2 x normal POST time is suggested.



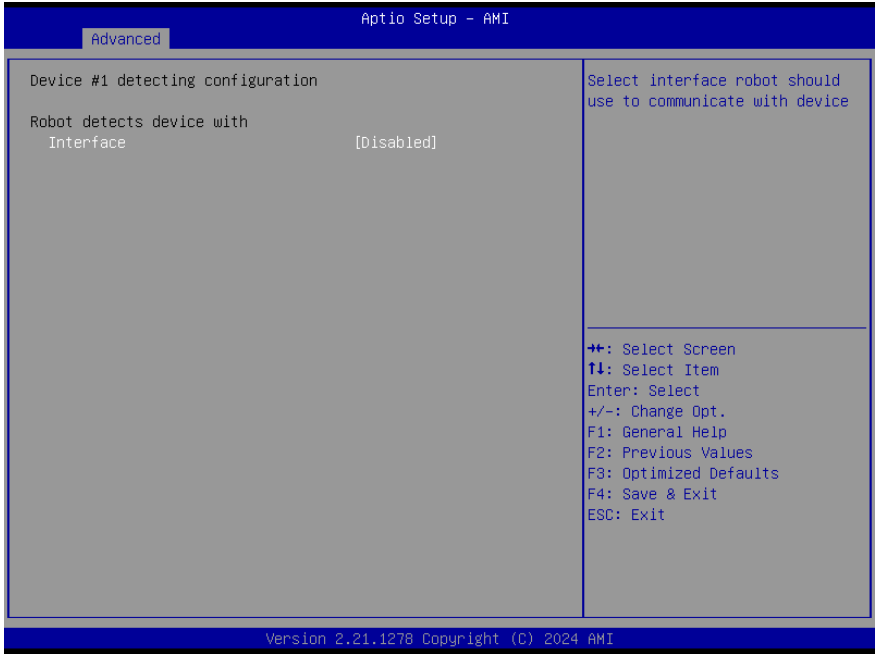
Options Summary		
<b>Sends watch dog before booting OS</b>	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot set Watch Dog Timer (WDT) after POST completion, before BIOS transfer control to OS. WARNING: Before enabling this function, a program in OS must be in responsible for clearing WDT. Also, this function should be disabled if OS is going to update itself.		
<b>OS Timer (minute)</b>	3	Optimal Default, Failsafe Default
Timer count set to Watch Dog Timer for OS loading.		
<b>Delayed POST (PEI phase)</b>	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS from starting POST, right after power on. This allows BIOS POST to start with stable power or start after system is physically warmed-up. Note: Robot does this before 'Sends watch dog'.		
<b>Delayed time (second)</b>	10	Optimal Default, Failsafe Default
Period of time for Robot to hold BIOS from POST.		
<b>Delayed POST (DXE phase)</b>	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot holds BIOS before POST completion. This allows BIOS POST to start with stable power or start after system is physically warmed-up. Note: Robot does this after 'Sends watch dog before BIOS POST'.		
<b>Delayed time (second)</b>	10	Optimal Default, Failsafe Default
Period of time for Robot to hold BIOS from POST.		
<b>Reset system once</b>	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enabled - Robot resets system for one time on each boot. This will send a soft or hard reset to onboard devices, thus puts devices to more stable state.		
<b>Soft or hard reset</b>	Soft reset	Optimal Default, Failsafe Default
	Hard reset"	
Select reset type robot should send on each boot.		

### 3.4.6.1 Device Detecting Configuration



Options Summary		
Action	Reset System	Optimal Default, Failsafe Default
	Hold System	
Select action that robot should do.		
Soft or hard reset	Soft	Optimal Default, Failsafe Default
	Hard	
Select reset type robot should send on each boot.		
Retry-Count	3	Optimal Default, Failsafe Default
Fill retry counter here. Robot will reset system at most counter times, and then let system continue its POST.		
At time	After show logo	Optimal Default, Failsafe Default
	Before show logo	
Select robot action time: After show logo - Robot will do action after logo is displayed. System devices are almost ready. Before show logo - Robot will do action earlier before logo, but some devices may not be ready.		

### 3.4.6.2 Device #\* Detecting Configuration

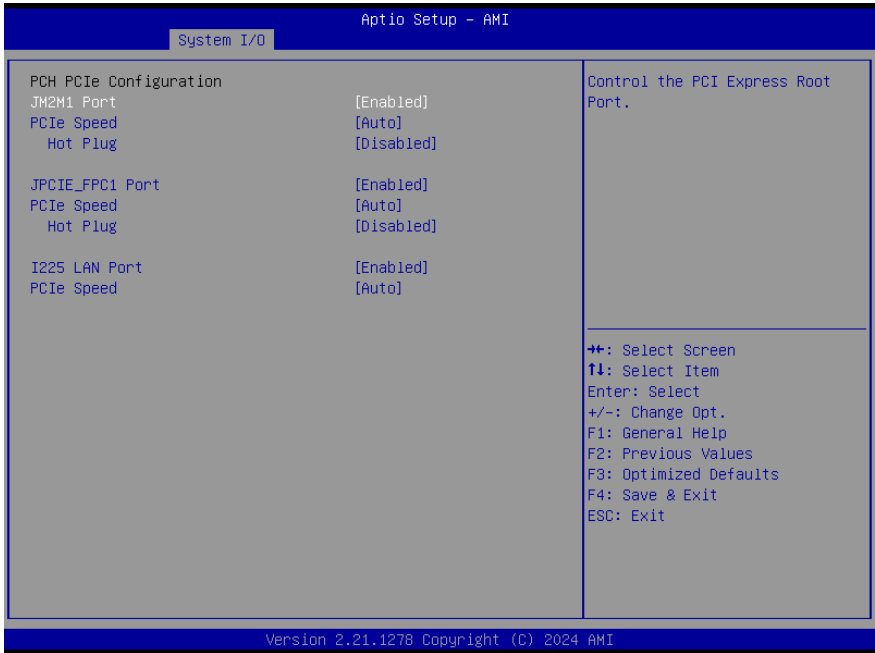


Options Summary		
Interface	Disabled	Optimal Default, Failsafe Default
	PCI	
	DIO	
	SMBUS	
	Legacy I/O	
	Super I/O	
	MMIO	
Select interface robot should use to communicate with device.		

### 3.5 Setup Submenu: System I/O



### 3.5.1 PCI Express Configuration



Options Summary		
JM2M1	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		
PCIe Speed	Auto	Optimal Default, Failsafe Default
	Gen1	
	Gen2	
	Gen3	
Configure PCIe Speed.		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
PCI Express Hot Plug Enable/Disable.		
JPCIE_FPC1 Port	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		

### Options Summary

I225 LAN Port	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control the PCI Express Root Port.		

## 3.5.2 Storage Configuration

Aptio Setup - AMI

System I/O

Enable VMD controller	[Disabled]	Enable/Disable to VMD controller
▶ NVMe Configuration		
SATA Controller(s)	[Enabled]	
Serial ATA Port 0	Empty	
Software Preserve	Unknown	
Port 0	[Enabled]	
Hot Plug	[Disabled]	
Configured as eSATA	Hot Plug supported	
SATA Device Type	[Hard Disk Drive]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

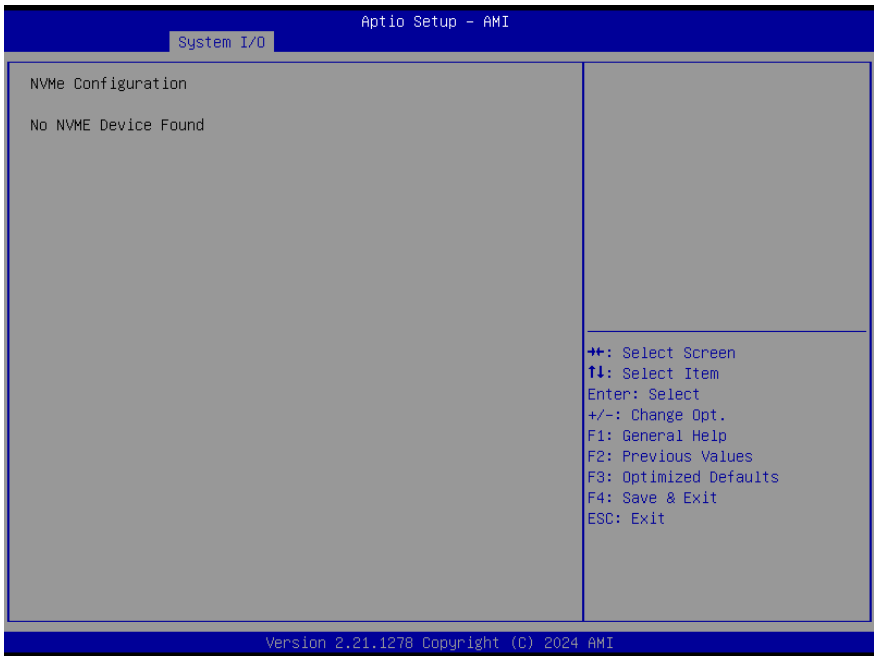
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### Options Summary

Enable VMD controller	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable/Disable to VMD controller.		
SATA Controller(s)	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable/Disable SATA Device.		
Port 0	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SATA Port.		

Options Summary		
Hot Plug	Disabled	Optimal Default, Failsafe Default
	Enabled	
Designates this port as Hot Pluggable.		
SATA Device Type	Hard Disk Drive	Optimal Default, Failsafe Default
	Solid State Drive	
Identify the SATA port is connected to Solid State Drive or Hard Disk Drive.		

### 3.5.2.1 NVMe Configuration



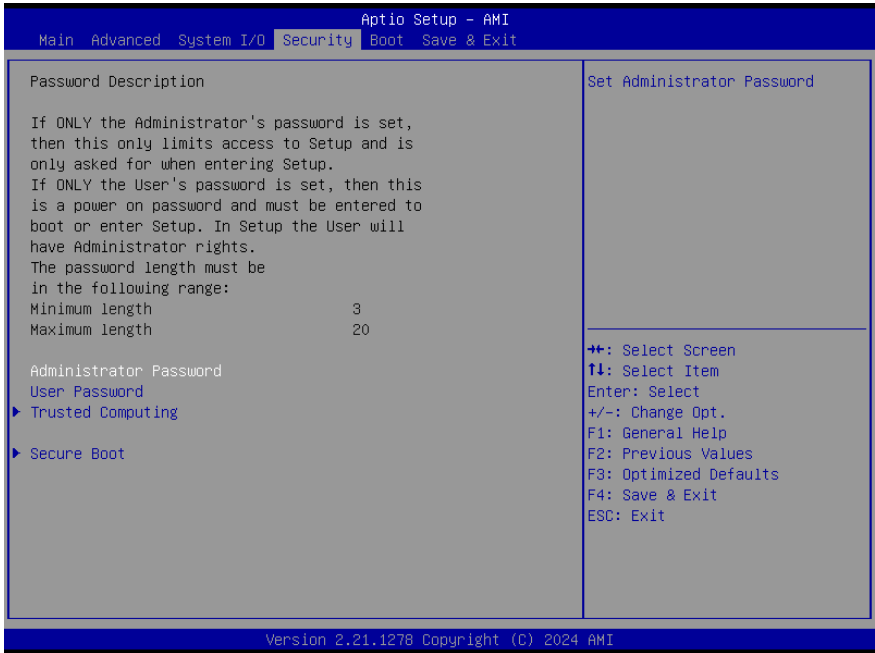
### 3.5.3 HD Audio Configuration



Options Summary		
HD Audio	Disabled	
	Enabled	Optimal Default, Failsafe Default
Control Detection of the HD-Audio device. Disabled = HDA will be unconditionally disabled. Enabled = HDA will be unconditionally enabled.		



## 3.6 Setup Submenu: Security



### Change User/Supervisor Password

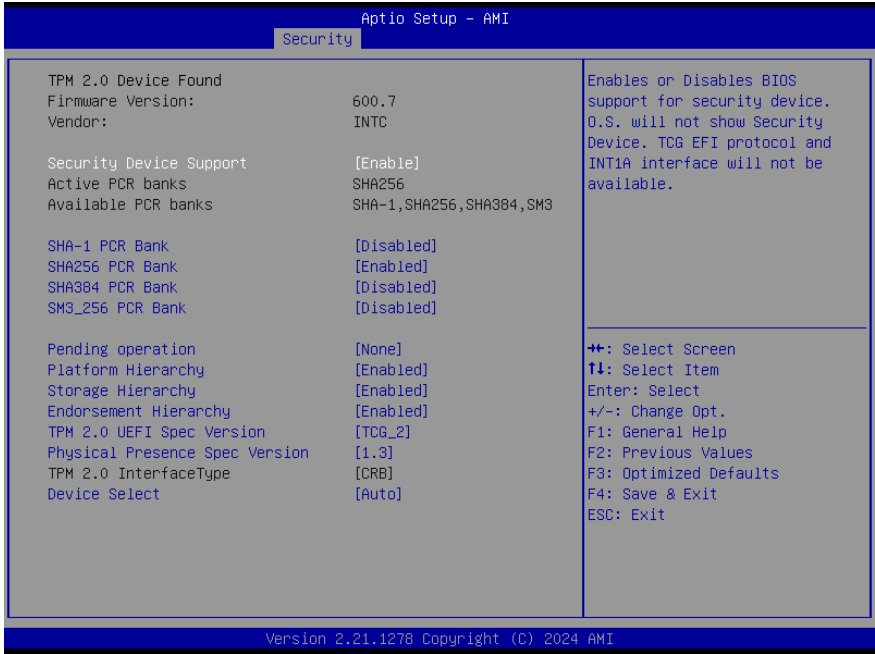
You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

If you highlight these items and press Enter, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

### 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 Trusted Computing



Options Summary		
Security Device Support	Disable	
	Enable	Optimal Default, Failsafe Default
Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.		
SHA-1 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable SHA-1 PCR Bank.		
SHA256 PCR Bank	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable SHA256 PCR Bank.		
SHA384 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable SHA384 PCR Bank.		

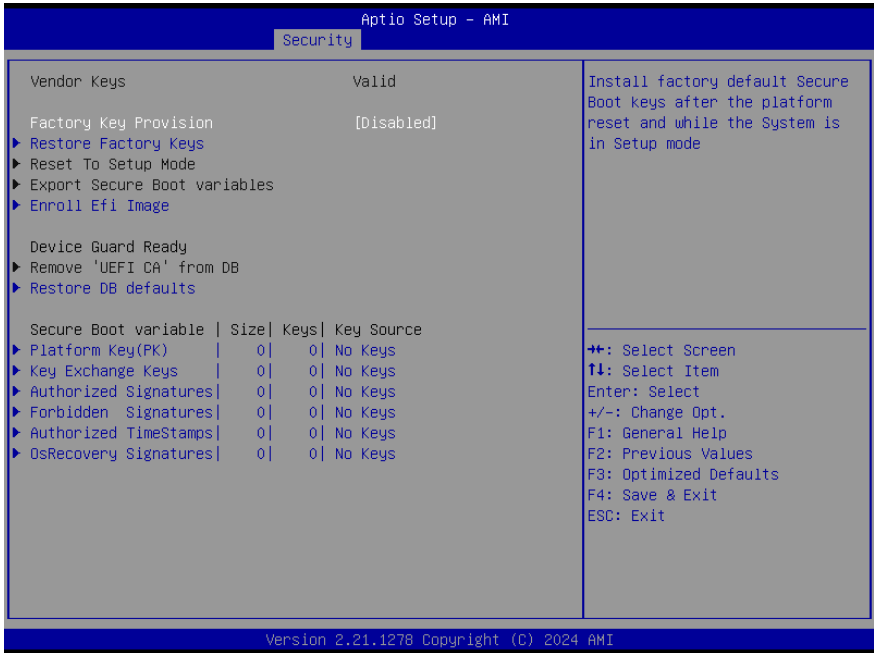
Options Summary		
SM3_256 PCR Bank	Disabled	Optimal Default, Failsafe Default
	Enabled	
Enable or Disable SM3_256 PCR Bank.		
Pending operation	None	Optimal Default, Failsafe Default
	TPM Clear	
Schedule an Operation for the Security Device. Note: Your Computer will reboot during restart in order to change State of Security Device.		
Platform Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Platform Hierarchy.		
Storage Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Storage Hierarchy.		
Endorsement Hierarchy	Disabled	
	Enabled	Optimal Default, Failsafe Default
Enable or Disable Endorsement Hierarchy.		
TPM 2.0 UEFI Spec Version	TCG_1_2	
	TCG_2	Optimal Default, Failsafe Default
Select the TCG2 Spec Version Support, TCG_1_2: The Compatible mode for Win8/Win10, TCG_2: Support new TCG2 protocol and event format for Win10 or later.		
Physical Presence Spec Version	1.2	
	1.3	Optimal Default, Failsafe Default
Select to Tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3.		
Device Select	TPM 1.2	
	TPM 1.3	
	Auto	Optimal Default, Failsafe Default
TPM 1.2 will restrict support to TPM 1.2 devices. TPM 2.0 will restrict support to TPM 2.0 devices. Auto will support both with the default set to TPM 2.0 devices if not found. TPM 1.2 devices will be enumerated.		

### 3.6.2 Secure Boot



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

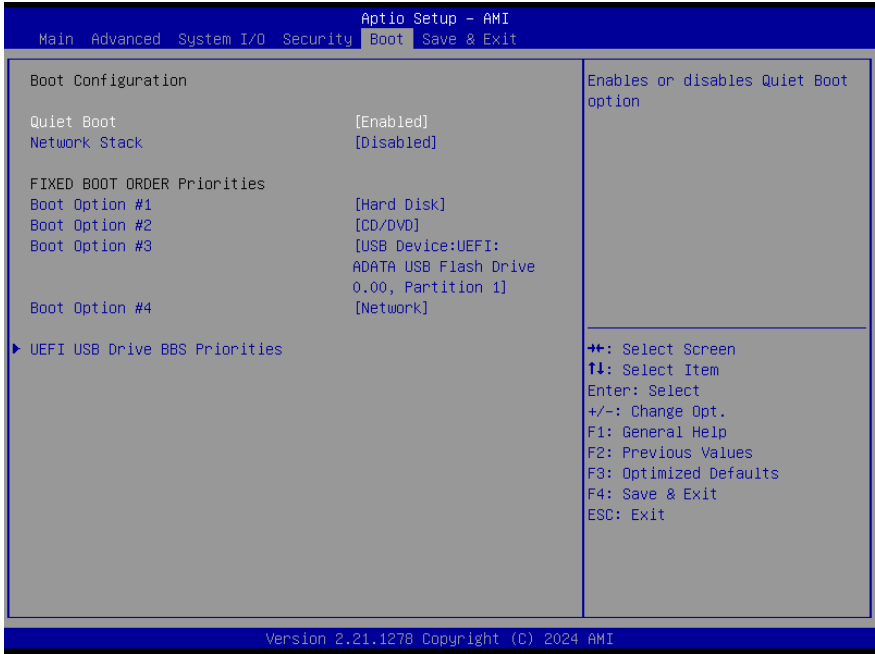
### 3.6.2.1 Key Management



Options Summary		
Factory Key Provision	Disabled	Optimal Default, Failsafe Default
	Enabled	
Install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.		
Restore Factory Keys	Force system to user mode. Install factory default Secure Boot key databases.	
Enroll EFI Image	Allow the image to run in Secure Boot mode. Enroll SHA256 hash of a PE image into Authorized Signature Database (db).	
Restore DB defaults	Restore DB variable to factory defaults.	
Platform Key (PK)	Enroll Factory Defaults or load certificates from a file:	
Key Exchange Keys	1. Public Key Certificate:	
Authorized Signatures	a) EFI_SIGNATURE_LIST	
Forbidden Signatures	b) EFI_CERT_X509 (DER)	
Authorized TimeStamps	c) EFI_CERT_RSA2048 (bin)	

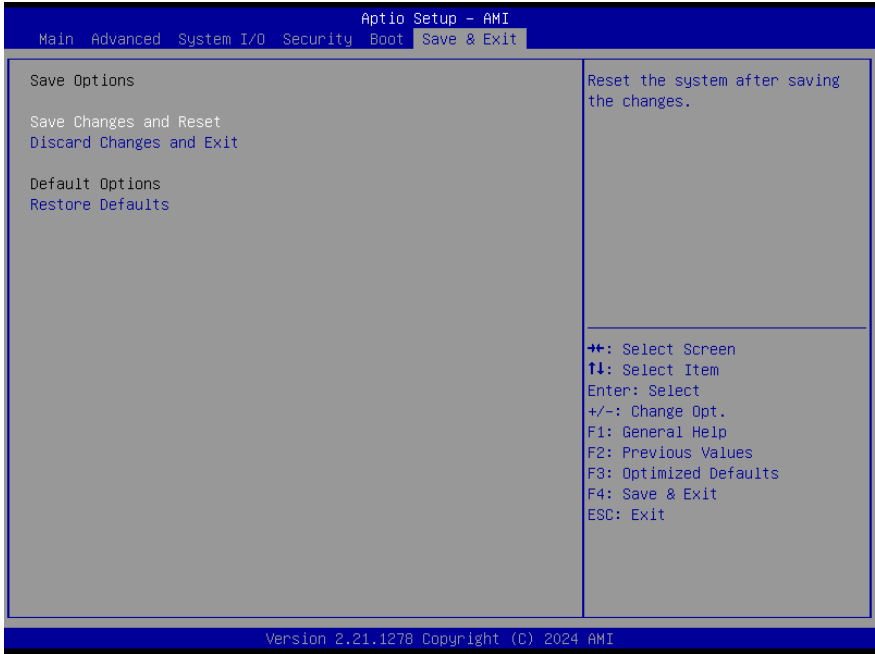
Options Summary	
OsRecovery Signatures	d) EFI_CERT_SHAXXX 2. Authenticated UEFI Variable. 3. EFI PE/COFF Image (SHA256) Key Source: Factory, External, Mixed.

### 3.7 Setup Submenu: Boot



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

### 3.8 Setup Submenu: Save & Exit





# Chapter 4

---

Driver Installation

## 4.1 Driver Download/Installation

---

Drivers for the de next-TGU8-EZBOX can be downloaded from the product page on the AAEON website by following this link:

<https://www.aaeon.com/en/>

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

### Install Chipset Drivers

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

### Install Graphics Drivers

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

### Install LAN Driver

1. Open the **LAN Driver** folder
2. Run the **Autorun.exe** file in the folder
3. Follow the instructions
4. Drivers will be installed automatically

## Install ME & TXE Driver Drivers

1. Open the **ME & TXE** folder
2. Follow instructions in the **Management Engine Interface** and **Active Management Technology** subfolders to install the drivers manually.

## Install RAID Driver

1. Open the **RAID Driver** folder
2. Extract the drivers package and open the folder
3. Click the File option from the upper left corner of the driver package folder
4. Move the cursor to the Open Windows PowerShell option
5. Select Open Windows PowerShell as administrator option
6. Select Yes, Allow this app to make changes to your device.
7. Input `.\Install.cmd`
8. Press Enter key to start drivers installation until return to next command line.
9. After successful installation, please restart.

# Appendix A

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I/O Information

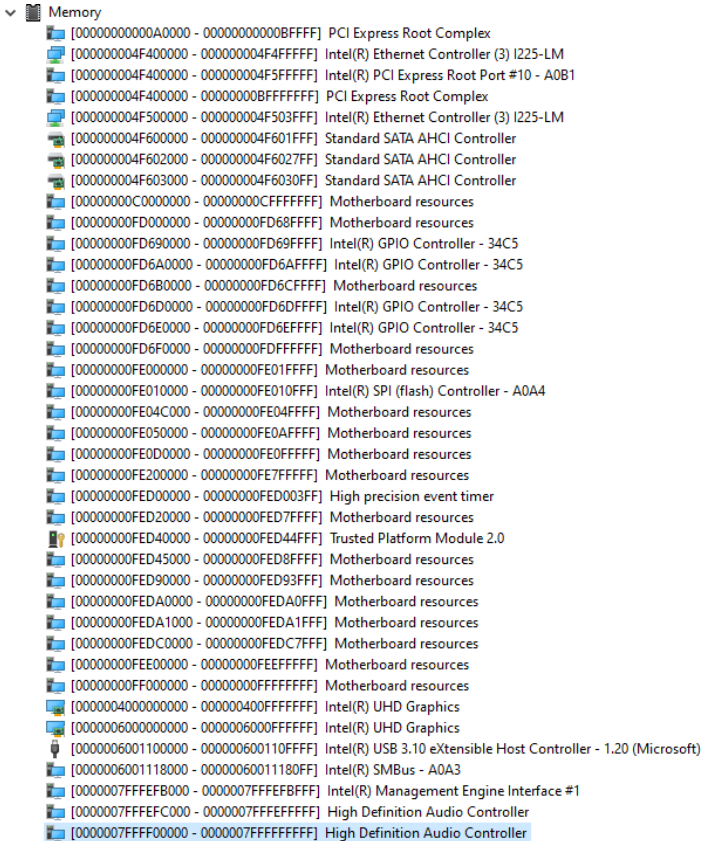
## A.1 I/O Address Map

de next System

de next-TGU8-EZBOX

- DESKTOP-HBIT58
  - Input/output (IO)
    - [0000000000000000 - 000000000000CF7] PCI Express Root Complex
    - [0000000000000020 - 0000000000000021] Programmable interrupt controller
    - [0000000000000024 - 0000000000000025] Programmable interrupt controller
    - [0000000000000028 - 0000000000000029] Programmable interrupt controller
    - [000000000000002C - 000000000000002D] Programmable interrupt controller
    - [000000000000002E - 000000000000002F] Motherboard resources
    - [0000000000000030 - 0000000000000031] Programmable interrupt controller
    - [0000000000000034 - 0000000000000035] Programmable interrupt controller
    - [0000000000000038 - 0000000000000039] Programmable interrupt controller
    - [000000000000003C - 000000000000003D] Programmable interrupt controller
    - [0000000000000040 - 0000000000000043] System timer
    - [000000000000004E - 000000000000004F] Motherboard resources
    - [0000000000000050 - 0000000000000053] System timer
    - [0000000000000061 - 0000000000000061] Motherboard resources
    - [0000000000000063 - 0000000000000063] Motherboard resources
    - [0000000000000065 - 0000000000000065] Motherboard resources
    - [0000000000000067 - 0000000000000067] Motherboard resources
    - [0000000000000070 - 0000000000000070] Motherboard resources
    - [0000000000000080 - 0000000000000080] Motherboard resources
    - [0000000000000092 - 0000000000000092] Motherboard resources
    - [00000000000000A0 - 00000000000000A1] Programmable interrupt controller
    - [00000000000000A4 - 00000000000000A5] Programmable interrupt controller
    - [00000000000000A8 - 00000000000000A9] Programmable interrupt controller
    - [00000000000000AC - 00000000000000AD] Programmable interrupt controller
    - [00000000000000B0 - 00000000000000B1] Programmable interrupt controller
    - [00000000000000B2 - 00000000000000B3] Motherboard resources
    - [00000000000000B4 - 00000000000000B5] Programmable interrupt controller
    - [00000000000000B8 - 00000000000000B9] Programmable interrupt controller
    - [00000000000000BC - 00000000000000BD] Programmable interrupt controller
    - [00000000000004D0 - 00000000000004D1] Programmable interrupt controller
    - [0000000000000680 - 000000000000069F] Motherboard resources
    - [0000000000000A00 - 0000000000000A0F] Motherboard resources
    - [0000000000000A10 - 0000000000000A1F] Motherboard resources
    - [0000000000000A20 - 0000000000000A2F] Motherboard resources
    - [0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
    - [000000000000164E - 000000000000164F] Motherboard resources
    - [0000000000001800 - 00000000000018FE] Motherboard resources
    - [0000000000001854 - 0000000000001857] Motherboard resources
    - [0000000000002000 - 00000000000020FE] Motherboard resources
    - [0000000000003000 - 000000000000303F] Intel(R) UHD Graphics
    - [0000000000003060 - 000000000000307F] Standard SATA AHCI Controller
    - [0000000000003080 - 0000000000003083] Standard SATA AHCI Controller
    - [0000000000003090 - 0000000000003097] Standard SATA AHCI Controller
    - [000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus - A0A3

## A.2 Memory Address Map





The image shows a screenshot of the Windows System Information tool, specifically the 'Memory' section. It displays a list of memory addresses and their corresponding hardware components. The list is sorted by address in descending order. The components include various controllers, motherboard resources, and graphics cards.

Address Range	Component
[0000000000A0000 - 0000000000BFFFFF]	PCI Express Root Complex
[0000000004F400000 - 0000000004F4FFFFF]	Intel(R) Ethernet Controller (3) I225-LM
[0000000004F400000 - 0000000004F5FFFFF]	Intel(R) PCI Express Root Port #10 - AOB1
[0000000004F400000 - 00000000BFFFFFFF]	PCI Express Root Complex
[0000000004F500000 - 0000000004F503FFF]	Intel(R) Ethernet Controller (3) I225-LM
[0000000004F600000 - 0000000004F601FFF]	Standard SATA AHCI Controller
[0000000004F602000 - 0000000004F6027FF]	Standard SATA AHCI Controller
[0000000004F603000 - 0000000004F6030FF]	Standard SATA AHCI Controller
[000000000C0000000 - 00000000CFFFFFFF]	Motherboard resources
[000000000FD000000 - 00000000FD68FFFFF]	Motherboard resources
[000000000FD690000 - 00000000FD69FFFFF]	Intel(R) GPIO Controller - 34C5
[000000000FD6A0000 - 00000000FD6AFFFFF]	Intel(R) GPIO Controller - 34C5
[000000000FD6B0000 - 00000000FD6CFFFFF]	Motherboard resources
[000000000FD6D0000 - 00000000FD6DFFFFF]	Intel(R) GPIO Controller - 34C5
[000000000FD6E0000 - 00000000FD6EFFFFF]	Intel(R) GPIO Controller - 34C5
[000000000FD6F0000 - 00000000FD6FFFFF]	Motherboard resources
[000000000FE000000 - 00000000FE01FFFFF]	Motherboard resources
[000000000FE010000 - 00000000FE010FFFF]	Intel(R) SPI (flash) Controller - A0A4
[000000000FE04C000 - 00000000FE04FFFFF]	Motherboard resources
[000000000FE050000 - 00000000FE0AFFFFF]	Motherboard resources
[000000000FE0D0000 - 00000000FE0FFFFF]	Motherboard resources
[000000000FE200000 - 00000000FE77FFFFF]	Motherboard resources
[000000000FED00000 - 00000000FED003FFF]	High precision event timer
[000000000FED20000 - 00000000FED77FFFF]	Motherboard resources
[000000000FED40000 - 00000000FED44FFFF]	Trusted Platform Module 2.0
[000000000FED45000 - 00000000FED8FFFFF]	Motherboard resources
[000000000FED90000 - 00000000FED93FFFF]	Motherboard resources
[000000000FEDA0000 - 00000000FEDA0FFFF]	Motherboard resources
[000000000FEDA1000 - 00000000FEDA1FFFF]	Motherboard resources
[000000000FEDC0000 - 00000000FEDC7FFF]	Motherboard resources
[000000000FEE00000 - 00000000FEEFFFFF]	Motherboard resources
[000000000FF000000 - 00000000FFFFFFF]	Motherboard resources
[00000004000000000 - 0000000400FFFFFFF]	Intel(R) UHD Graphics
[00000060000000000 - 0000006000FFFFFFF]	Intel(R) UHD Graphics
[00000060011000000 - 000000600110FFFFF]	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
[00000060011180000 - 00000060011180FFF]	Intel(R) SMBus - A0A3
[00000077FFEFB0000 - 00000077FFEFB8FFF]	Intel(R) Management Engine Interface #1
[00000077FFFEFC000 - 00000077FFFEFFFFF]	High Definition Audio Controller
[00000077FFFF00000 - 00000077FFFFFFFFFFF]	High Definition Audio Controller

## A.3 Large Memory Address Map





















































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- ▼  Large Memory
  -  [0000004000000000 - 0000007FFFFFFF] PCI Express Root Complex





















































## A.4 IRQ Mapping Chart





















































▼	Interrupt request (IRQ)	
	(ISA) 0x00000000 (00)	System timer
	(ISA) 0x0000000E (14)	Intel(R) GPIO Controller - 34C5
	(ISA) 0x00000037 (55)	Microsoft ACPI-Compliant System
	(ISA) 0x00000038 (56)	Microsoft ACPI-Compliant System
	(ISA) 0x00000039 (57)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003A (58)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003B (59)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003C (60)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003D (61)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003E (62)	Microsoft ACPI-Compliant System
	(ISA) 0x0000003F (63)	Microsoft ACPI-Compliant System
	(ISA) 0x00000040 (64)	Microsoft ACPI-Compliant System
	(ISA) 0x00000041 (65)	Microsoft ACPI-Compliant System
	(ISA) 0x00000042 (66)	Microsoft ACPI-Compliant System
	(ISA) 0x00000043 (67)	Microsoft ACPI-Compliant System
	(ISA) 0x00000044 (68)	Microsoft ACPI-Compliant System
	(ISA) 0x00000045 (69)	Microsoft ACPI-Compliant System
	(ISA) 0x00000046 (70)	Microsoft ACPI-Compliant System
	(ISA) 0x00000047 (71)	Microsoft ACPI-Compliant System
	(ISA) 0x00000048 (72)	Microsoft ACPI-Compliant System
	(ISA) 0x00000049 (73)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004A (74)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004B (75)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004C (76)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004D (77)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004E (78)	Microsoft ACPI-Compliant System
	(ISA) 0x0000004F (79)	Microsoft ACPI-Compliant System
	(ISA) 0x00000050 (80)	Microsoft ACPI-Compliant System
	(ISA) 0x00000051 (81)	Microsoft ACPI-Compliant System
	(ISA) 0x00000052 (82)	Microsoft ACPI-Compliant System
	(ISA) 0x00000053 (83)	Microsoft ACPI-Compliant System
	(ISA) 0x00000054 (84)	Microsoft ACPI-Compliant System
	(ISA) 0x00000055 (85)	Microsoft ACPI-Compliant System
	(ISA) 0x00000056 (86)	Microsoft ACPI-Compliant System
	(ISA) 0x00000057 (87)	Microsoft ACPI-Compliant System
	(ISA) 0x00000058 (88)	Microsoft ACPI-Compliant System
	(ISA) 0x00000059 (89)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
	(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
	(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
	(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
	(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
	(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
	(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
	(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
	(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System











































































































 (ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
 (ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
 (ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
 (ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
 (ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
 (ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
 (ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
 (ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
 (ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
 (ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
 (ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
 (ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
 (ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
 (ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
 (ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
 (ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
 (ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
 (ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
 (ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
 (ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
 (ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
 (ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
 (ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
 (ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008D (141)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
 (ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
 (ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
 (ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
 (ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
 (ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
 (ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
 (ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
 (ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System
 (ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
 (ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
 (ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
























































 (ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
 (ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
 (ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
 (ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
 (ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
 (ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C0 (192)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C1 (193)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C2 (194)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C3 (195)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C4 (196)	Microsoft ACPI-Compliant System
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 (ISA) 0x000000C7 (199)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C8 (200)	Microsoft ACPI-Compliant System
 (ISA) 0x000000C9 (201)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CA (202)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CB (203)	Microsoft ACPI-Compliant System
 (ISA) 0x000000CC (204)	Microsoft ACPI-Compliant System
 (ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
 (ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
 (ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System

 (ISA) 0x0000103 (259)	Microsoft ACPI-Compliant System
 (ISA) 0x0000104 (260)	Microsoft ACPI-Compliant System
 (ISA) 0x0000105 (261)	Microsoft ACPI-Compliant System
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 (ISA) 0x000010B (267)	Microsoft ACPI-Compliant System
 (ISA) 0x000010C (268)	Microsoft ACPI-Compliant System
 (ISA) 0x000010D (269)	Microsoft ACPI-Compliant System
 (ISA) 0x000010E (270)	Microsoft ACPI-Compliant System
 (ISA) 0x000010F (271)	Microsoft ACPI-Compliant System
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 (ISA) 0x000011C (284)	Microsoft ACPI-Compliant System
 (ISA) 0x000011D (285)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000121 (289)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
 (ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
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 (ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
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 (ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
 (ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
 (ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
 (ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
 (ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System
 (ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System

 (ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
 (ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
 (ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
 (ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
 (ISA) 0x00000172 (370)	Microsoft ACPI-Compliant System
 (ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
 (ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
 (ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
 (ISA) 0x00000176 (374)	Microsoft ACPI-Compliant System
 (ISA) 0x00000177 (375)	Microsoft ACPI-Compliant System
 (ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
 (ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
 (ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
 (ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
 (ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
 (ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
 (ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
 (ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
 (ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
 (ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
 (ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
 (ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
 (ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System
 (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
 (ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
 (ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
 (ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
 (ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
 (ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
 (ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
 (ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
 (ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
 (ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
 (ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System

 (ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
 (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
 (PCI) 0x00000010 (16)	High Definition Audio Controller
 (PCI) 0xFFFFFFF6 (-10)	Intel(R) Management Engine Interface #1
 (PCI) 0xFFFFFFF7 (-9)	Intel(R) Ethernet Controller (3) I225-LM
 (PCI) 0xFFFFFFF8 (-8)	Intel(R) Ethernet Controller (3) I225-LM
 (PCI) 0xFFFFFFF9 (-7)	Intel(R) Ethernet Controller (3) I225-LM
 (PCI) 0xFFFFF6 (-6)	Intel(R) UHD Graphics
 (PCI) 0xFFFFF5 (-5)	Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
 (PCI) 0xFFFFF4 (-4)	Standard SATA AHCI Controller
 (PCI) 0xFFFFFD (-3)	Intel(R) PCI Express Root Port #9 - A0B0
 (PCI) 0xFFFFFE (-2)	Intel(R) PCI Express Root Port #10 - A0B1