B420PADN1
User's Manual

Revision: 2.0
Release Date: April 07, 2025

Trademark:

*** Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.**

TABLE OF CONTENT

Environmental Protection and Safety Announcement

- Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.

- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.

- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.

China RoHS Requirements (EN)

Poisonous or Hazardous Substances or Elements in Products

Main Board/ Daughter Board/ Backplane

Name and content of hazardous substances in productPart Name						
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯(PBB)	多溴二苯醚(PBDE)
PCB Assemblies	X	○	○	○	○	○
Connector and Cable	X	○	○	○	○	○
Chassis	○	○	○	○	○	○
Hard Disk	X	○	○	○	○	○
CPU and Memory	X	○	○	○	○	○
Power	X	○	○	○	○	○
Battery	X	○	○	○	○	○

The table is prepared in accordance with the provisions of SJ/T 11364.

○：Indicates that said hazardous substance contained in all of the homogenous materials for this product is below the limit requirement of GB/T 26572.

×：Indicates that said hazardous substance contained in at least one of the homogenous materials used for this part is above the limit requirement of GB/T 26572.

But this product still be compliance with 2011/65/EU Directive(allowed with 2011/65/EU Annex III of RoHS exemption with number 6(c),7(a),7(c)-1)

Notes：

1. This product defined period of use is under normal condition.
2. In above part, CPU/Memory/ Hard Disk/ Power are optional.

User's Notice

Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	April 07, 2025

Packing List

Part Number	Description	QTY per System
B420PADN1	B420ADN1 Barebone	1
HCS310MWM01B-2F	Wall+VESA mount Kit	1
LCSCHBJC3XX-F	Screw Pack	1
L01AS051-F	Lockable Adapter 12V/3.3A 40W	1
Change according to shipping area	Power Cord (Region Specific)	1
HNSSOD8DR58GID-F	(Memory pre-installed on board) Innodisk DDR5 4800MHz, Single Channel SO-DIMM, 8GB (M5S0-8GSYZCZQ)	1

Chapter 1 Introduction of the Motherboard

1-1 Specifications

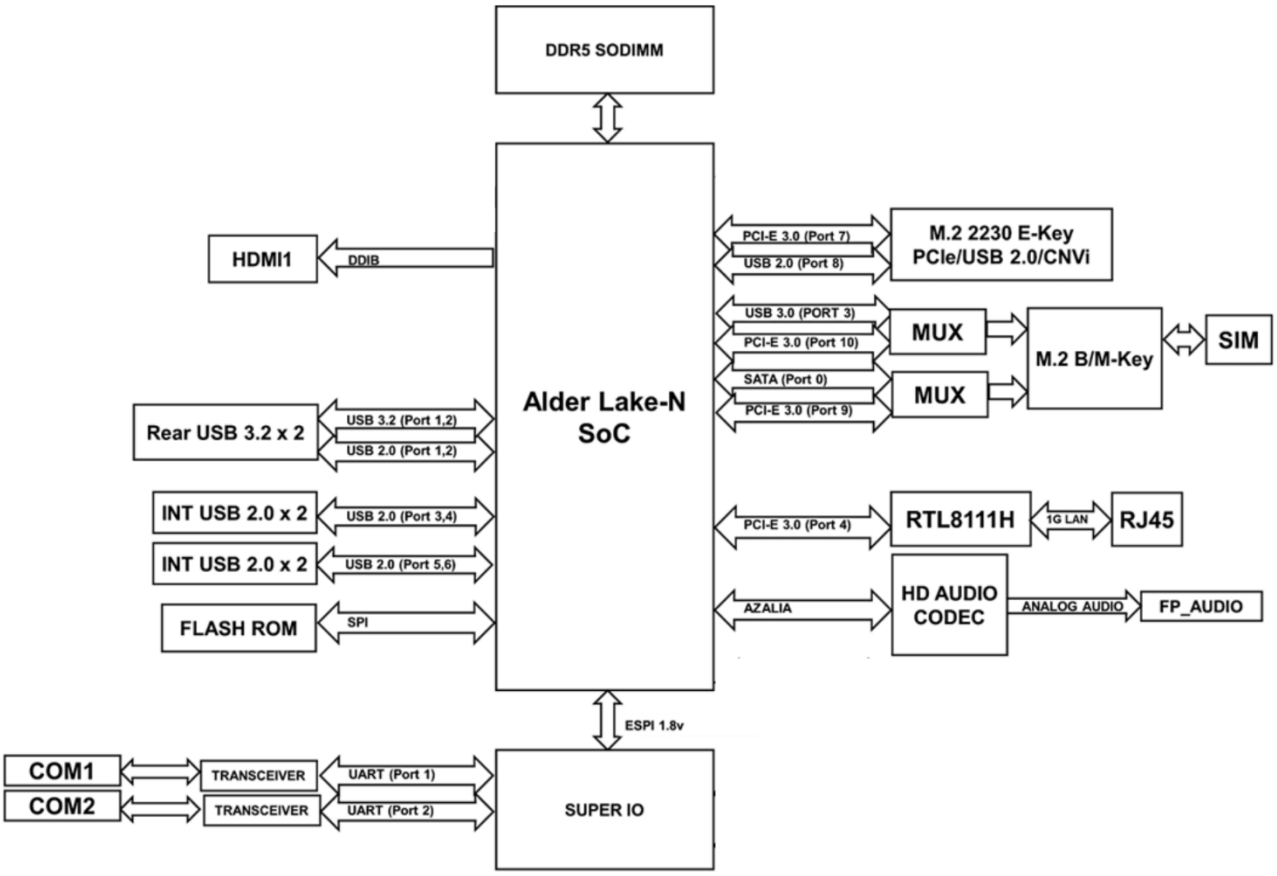
SYSTEM	
MB FORM FACTOR	Pico-ITX
CPU	Onboard Intel® Processor N97 (Formerly Alder Lake-N, TDP 12W) Onboard Intel® Processor N200 (Formerly Alder Lake-N, TDP 6W)
CHIPSET	Intel® SoC
MEMORY	1 x DDR5 4800MHz, Single Channel SO-DIMM, up to 32GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	Intel® PTT (Integrated fTPM)
RTC BATTERY	Lithium Battery
OS SUPPORT	Windows® 11 (64bit) Windows® 10 (64bit) Linux
POWER	
POWER REQUIREMENT	DC-in 12V 40W Adapter: AC90~240V, DC12V/3.3A
POWER ON MODE	AT / ATX (Default) Mode
DISPLAY	
GPU	Intel® UHD Graphics
HDMI	1 x HDMI 2.0b (Max Resolution: 4096 x 2160@60Hz)
AUDIO	
OUTPUT	Intel Audio over HDMI
CODEC	Realtek Audio Codec
LAN	
ETHERNET	1 x RJ45 for Realtek® RTL8111H GbE
SYSTEM I/O	
REAR PANEL I/O	2 x USB 3.2 Gen.1 1 x RJ45 1 x HDMI 1 x DC-in (Lockable) 2 x WIFI Antenna Holes

	1 x GND Hold
FRONT PANEL I/O	2 x RS-232/422/485 2 x USB 2.0 1 x Power Button + Power LED
EXPANSION	
M.2	1 x B+M-Key 2242/3042/3052 (USB 3.2/SATA3/PCIe 3.0 x2) 1 x E-Key 2230 (USB 2.0/PCIe 3.0 x1)
SIM	1 x Nano SIM Card Slot
MECHANICAL	
MOUNTING	Wall + VESA mount
DIMENSIONS (W x H x D)	129.0 (W) x 109.4 (D) x 34.0 (H) mm
NET WEIGHT	0.56 KG
ENVIRONMENT & CERTIFICATION	
OPERATING TEMPERATURE	-20°C ~ 50°C (-4°F ~ 122°F)
STORAGE TEMPERATURE	-40°C ~ 85°C (-40°F ~ 185°F)
OPERATING HUMIDITY	10 ~ 90% Relative Humidity, Non-condensing
CERTIFICATION	CE/FCC Class A LVD
ESG DECLARATION	China RoHS CMRT Report TSCA Declaration WEEE REACH

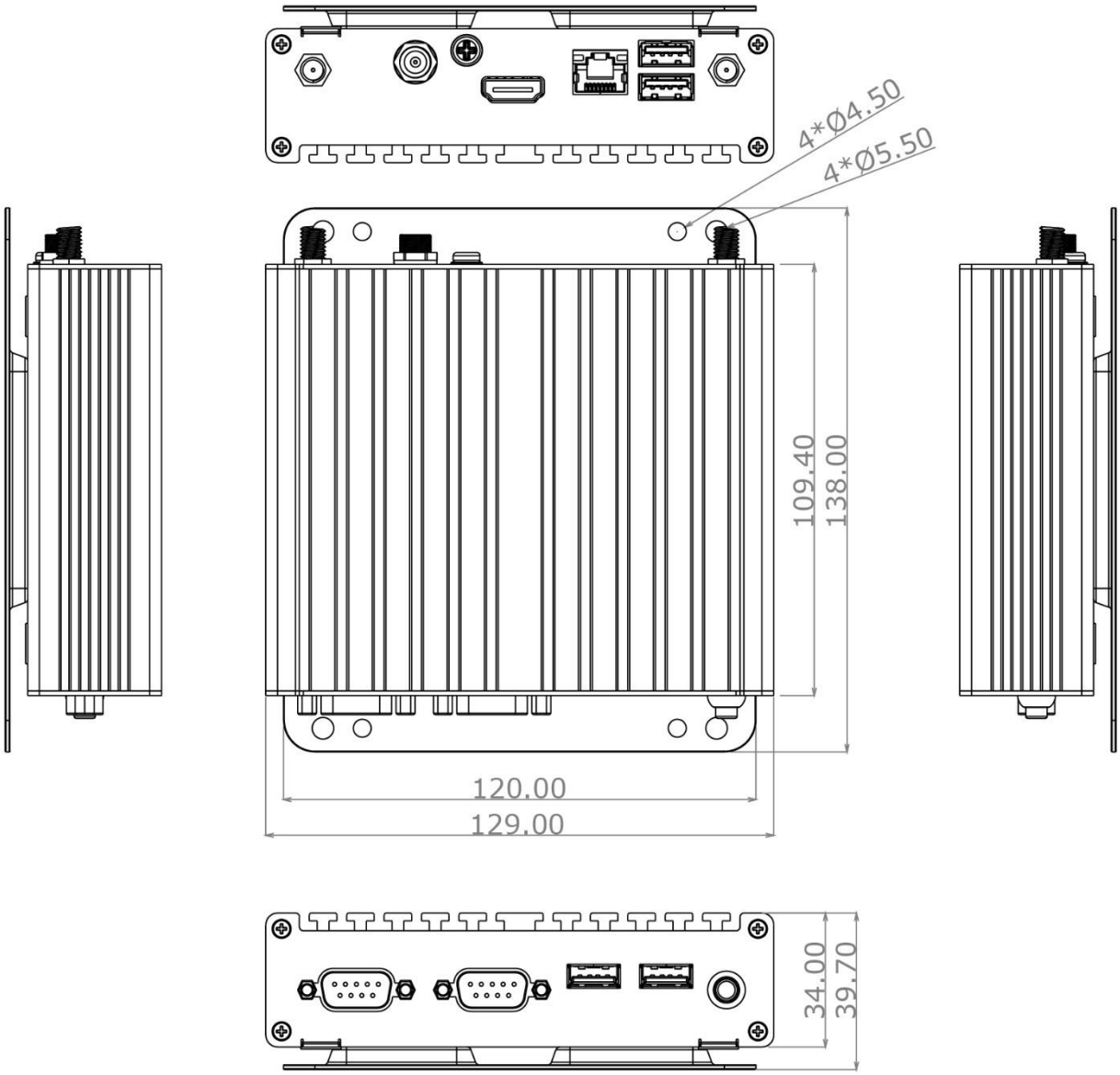
Ordering Information

PART NUMBER	B420PADN1-A111	B420PADN1-A211
CPU	Intel® Processor N97	Intel® Processor N200
MEMORY	1 x DDR5 SO-DIMM, up to 32GB	1 x DDR5 SO-DIMM, up to 32GB
SECURITY	Intel® PTT (fTPM)	Intel® PTT (fTPM)
POWER REQUIREMENT	DC-in 12V	DC-in 12V
GPU	Intel® UHD Graphics	Intel® UHD Graphics
HDMI	1 x HDMI	1 x HDMI
MULTIPLE DISPLAY	-	-
ETHERNET	1 x GbE	1 x GbE
USB	2 x USB 3.2	2 x USB 3.2
USB	2 x USB 2.0	2 x USB 2.0
COM	2 x RS-232/422/485	2 x RS-232/422/485
SATA	1 x SATA3	1 x SATA3
TYPE	1 x B+M-Key 2242/3042/3052	1 x B+M-Key 2242/3042/3052
TYPE	1 x E-Key 2230	1 x E-Key 2230
OPERATING TEMPERATURE	-20°C ~ 50°C (-4°F ~ 122°F)	-20°C ~ 50°C (-4°F ~ 122°F)

1-2 Block Diagram

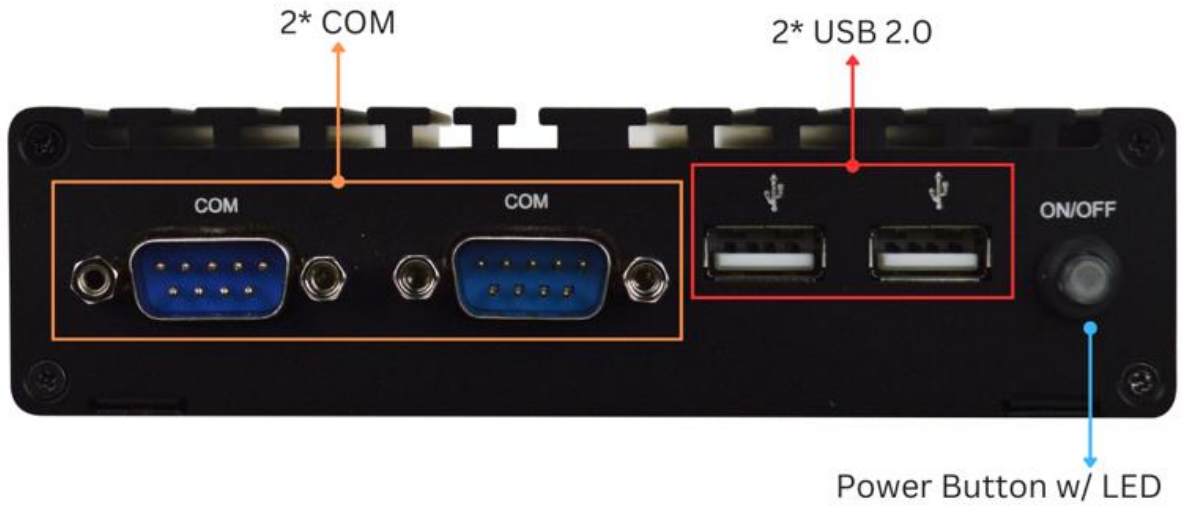


1-3 Dimension

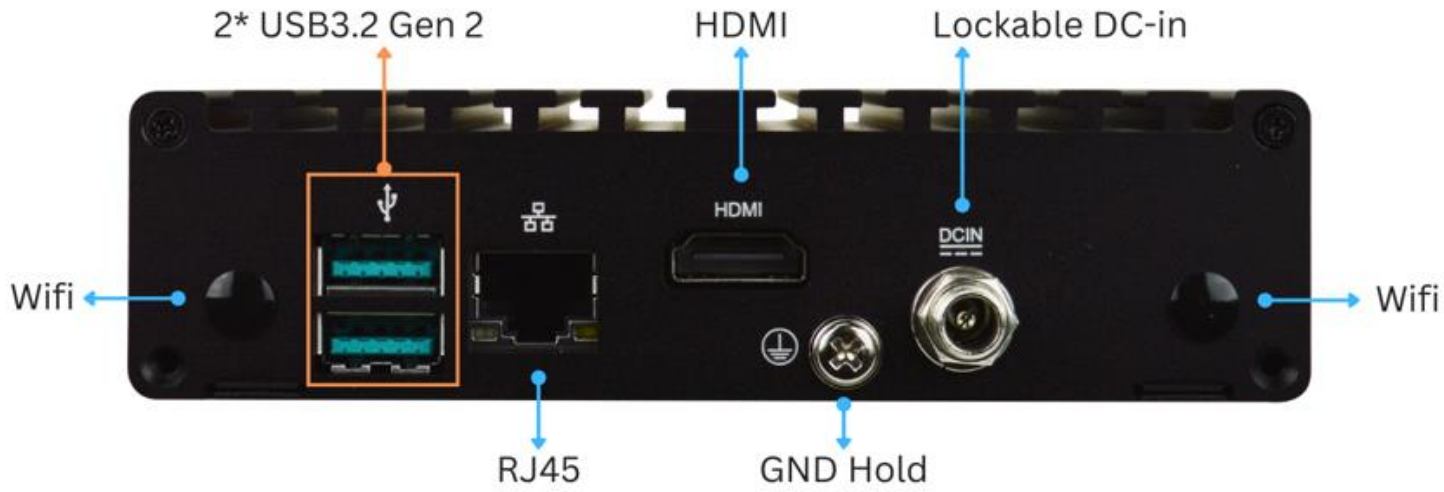


1-4 I/O Placement

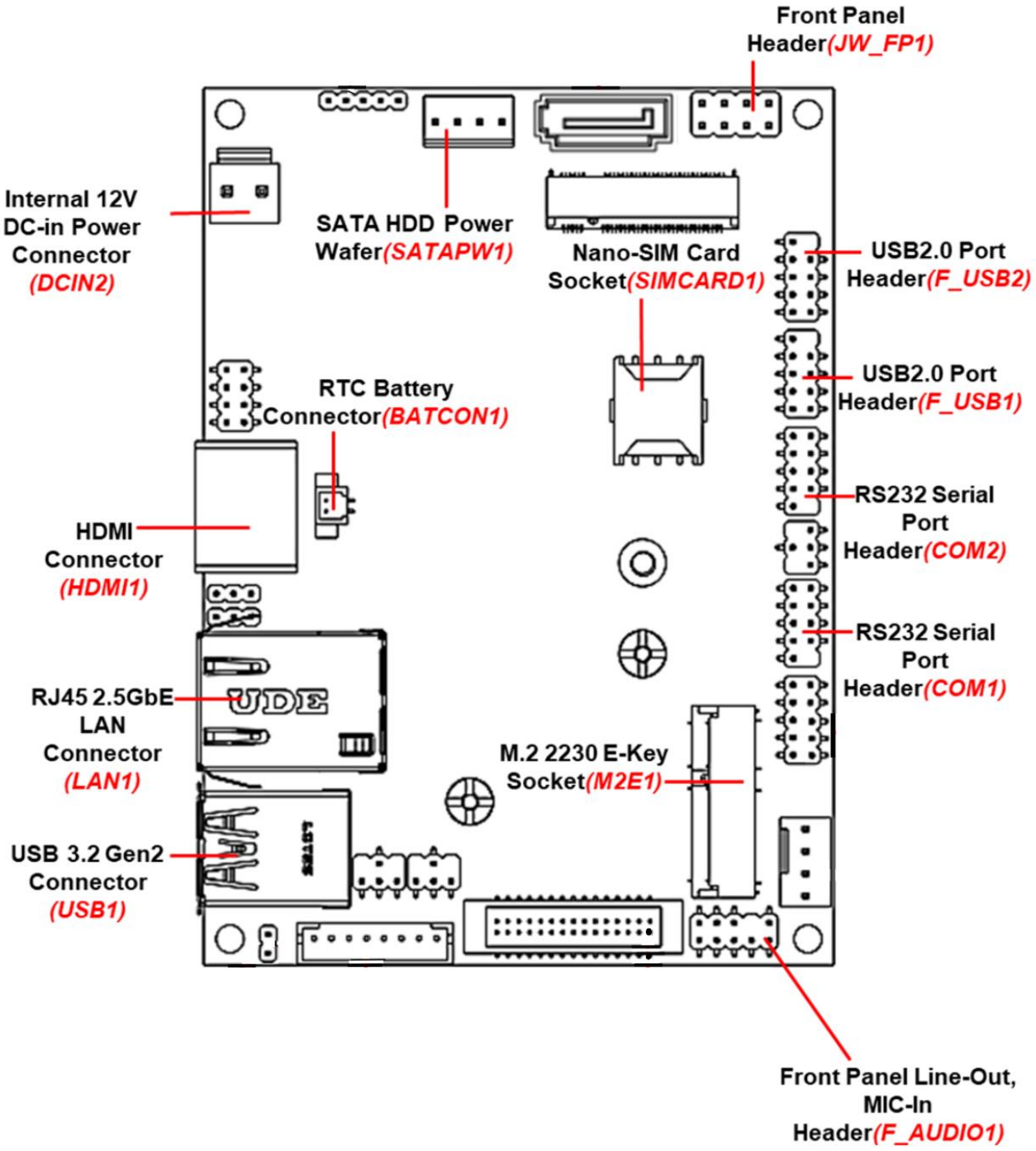
Front I/O

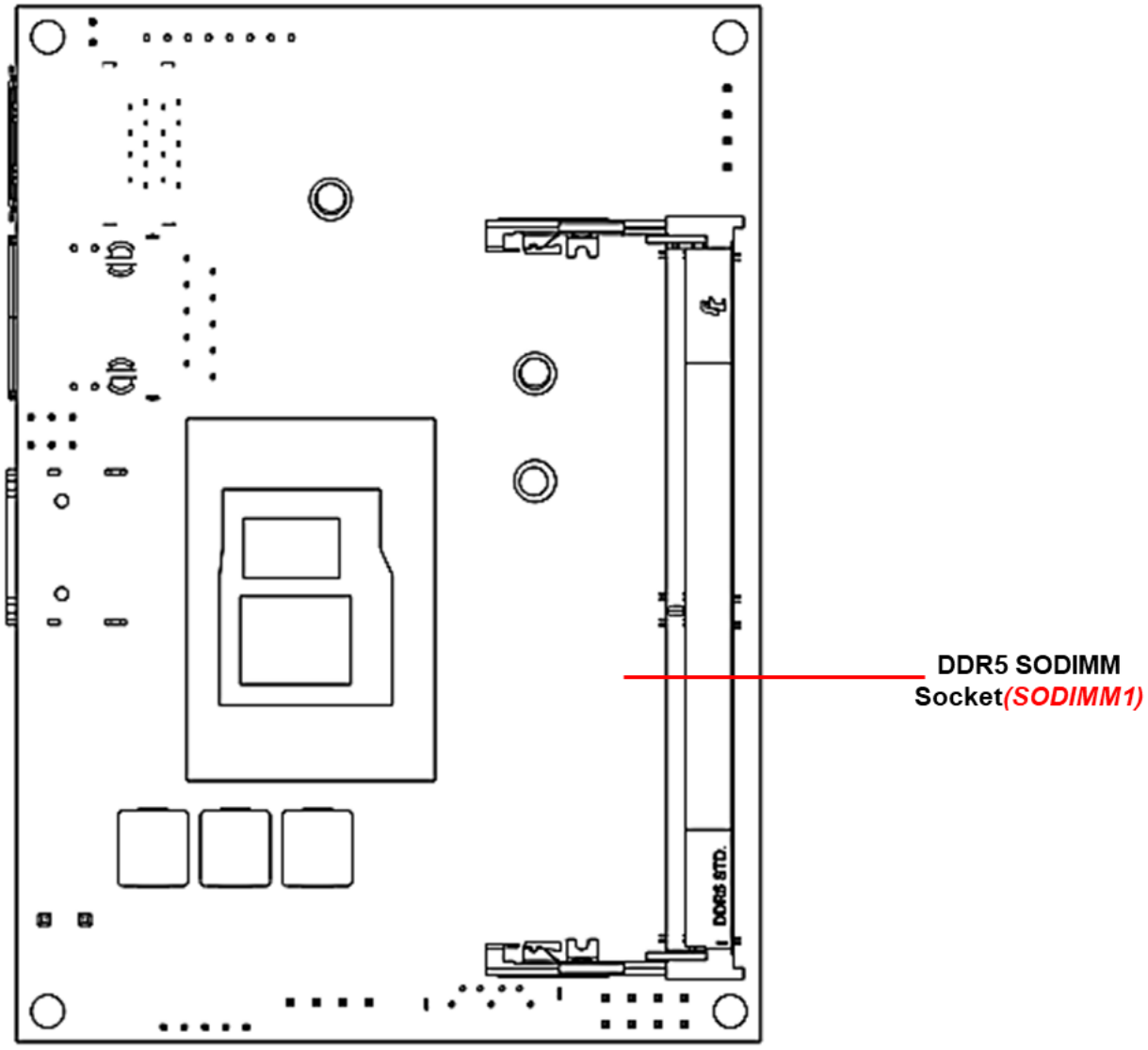


Rear I/O

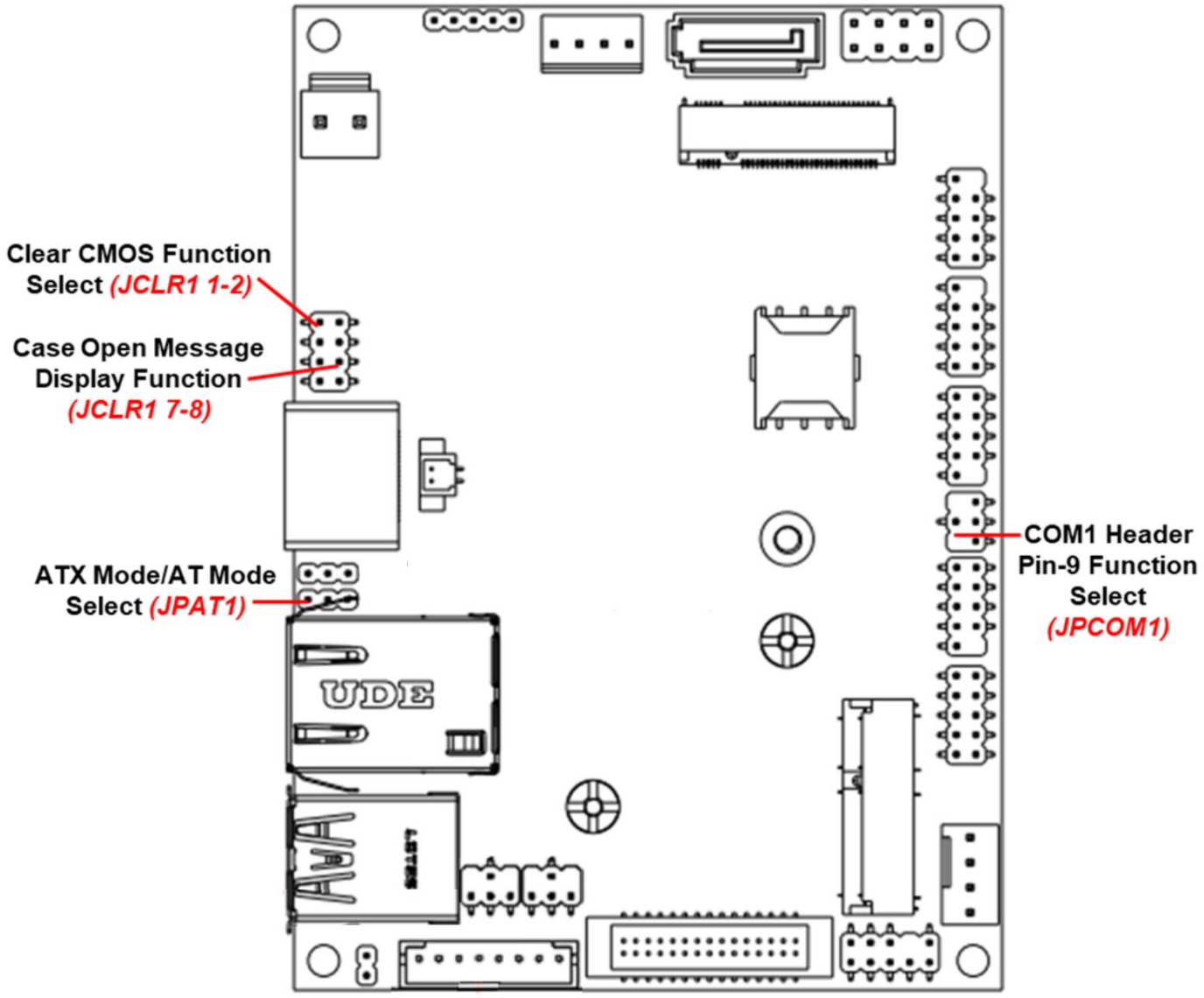


1-5 Motherboard Placement




DDR5 SODIMM
Socket(SODIMM1)

1-6 Jumper Positions



Chapter 2 Hardware Information

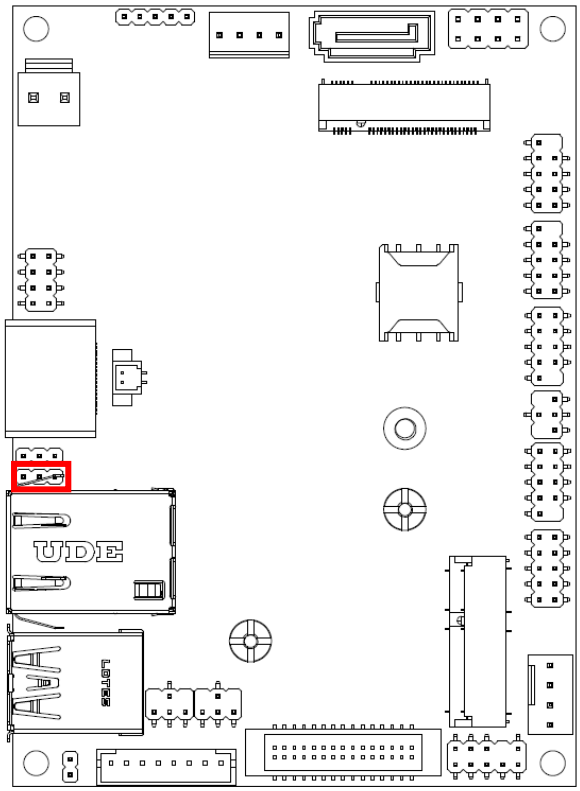
2-1 List of Jumpers

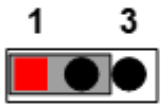
Please refer to the table below for all of the board's jumpers that you can configure for your application.

Location Printing	Function
JPAT1	ATX Mode/AT Mode Select
JPCOM1	COM1 Port Pin-9 Function Select
JCLR1 1-2	Clear CMOS Function Select
JCLR1 7-8	Case Open Message Display Function

2-2 Jumper Settings

(1) ATX Mode/AT Mode Select (JPAT1)

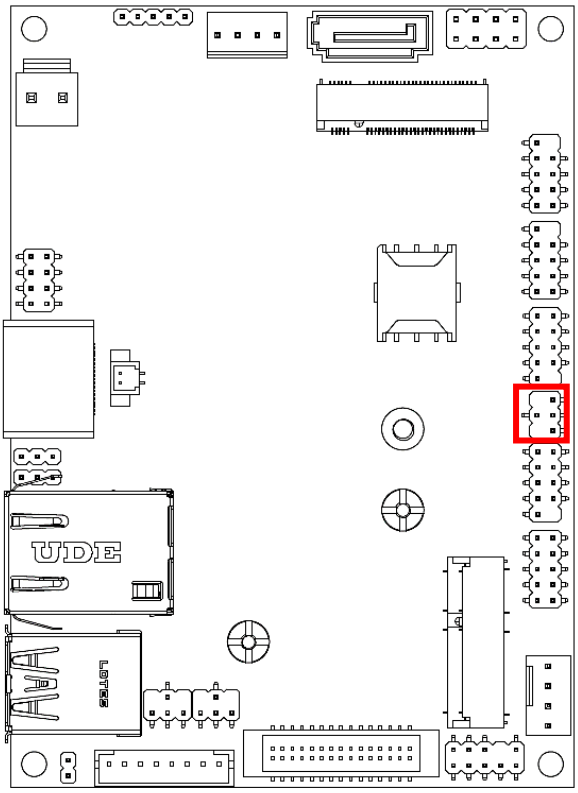


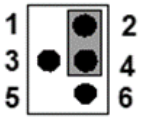


1-2 Closed:ATX Mode Selected

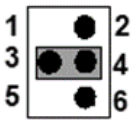
2-3 Closed:AT Mode Selected

(2) COM1 Port Pin-9 Function Select (JPCOM1)

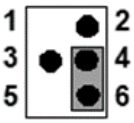




2-4 Closed:
RI=RS232;

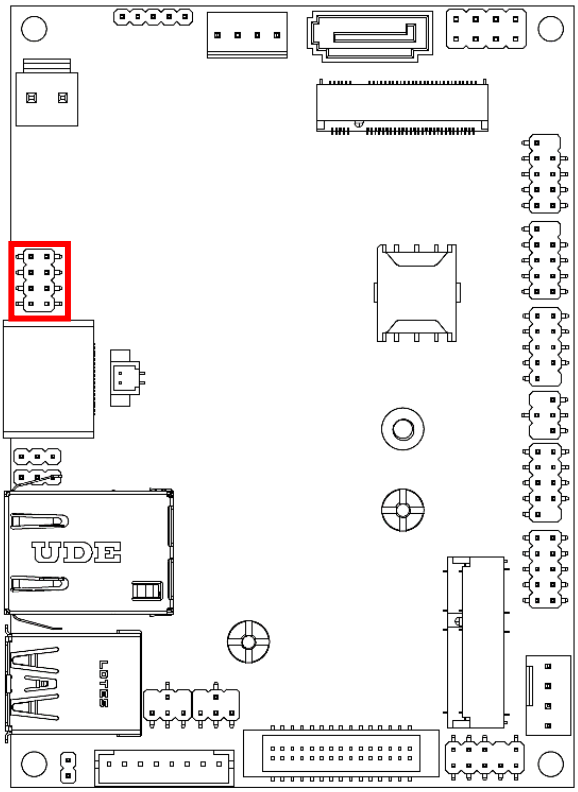


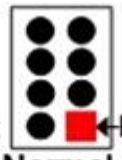
3-4 Closed:
RI= 5V;



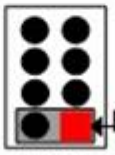
4-6 Closed:
RI= 12V;

(3) Clear CMOS Function Select (JCLR1 1-2)



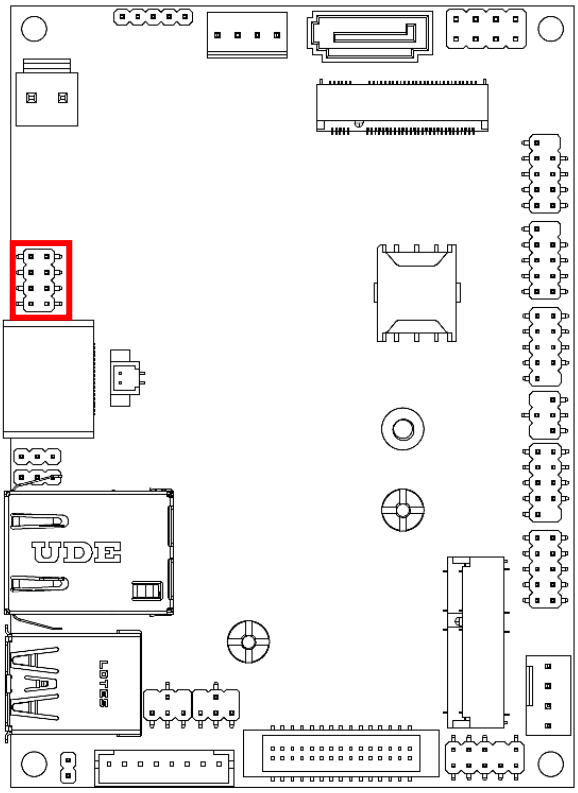


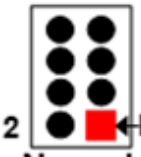
1-2 Open: Normal (Default);



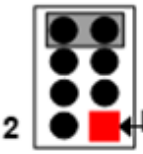
1-2 Closed: Clear CMOS.

(4) Case Open Message Display Function (JCLR1 7-8)





7-8 Open: Normal (Default);



7-8 Closed: Case Open.

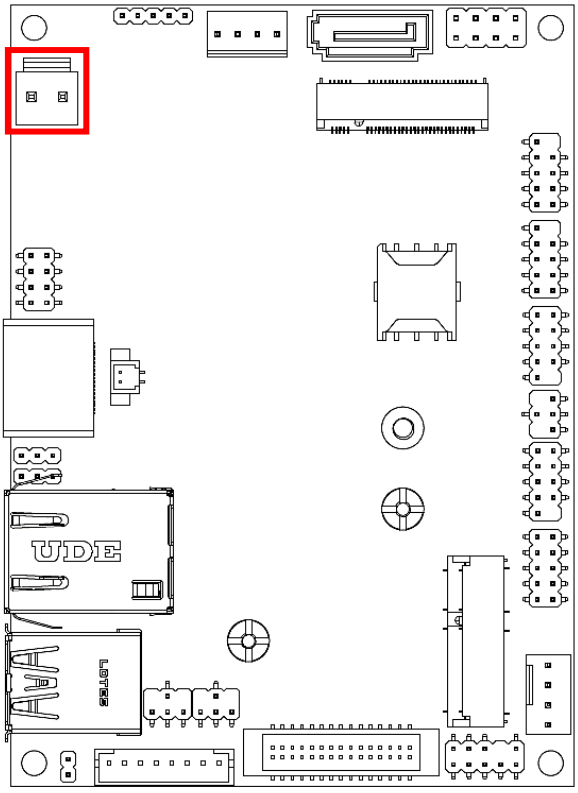
2-3 List of Connectors

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

Location Printing	Function
DCIN2	Internal 12V DC-in Power Connector
HDMI	HDMI Connector
BATCON1	RTC Battery Connector
LAN1	RJ-45 2.5GbE LAN Connector
USB1	USB 3.2 Gen2 Connector
F_AUDIO1	Front Panel Line-Out, MIC-In Header
M2E1	M.2 2230 E-Key Slot
COM1	RS-232 Serial Port Header
COM2	RS-232 Serial Port Header
SIMCARD1	Nano SIM Card Slot
F_USB1	USB 2.0 Port Header
F_USB2	USB 2.0 Port Header
JW_FP1	Front Panel Header
M2B1	M.2 2242/3052 B-Key Slot
F_BUZZ1	Buzzer Header
SODIMM1	DDR5 SODIMM Socket

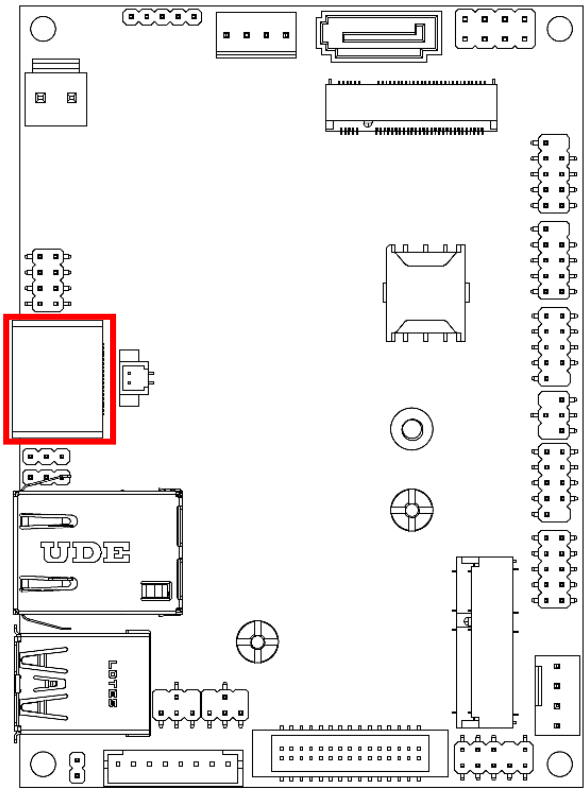
2-4 Connector Settings

(1) Internal 12V DC-in Power Connector (DCIN2)



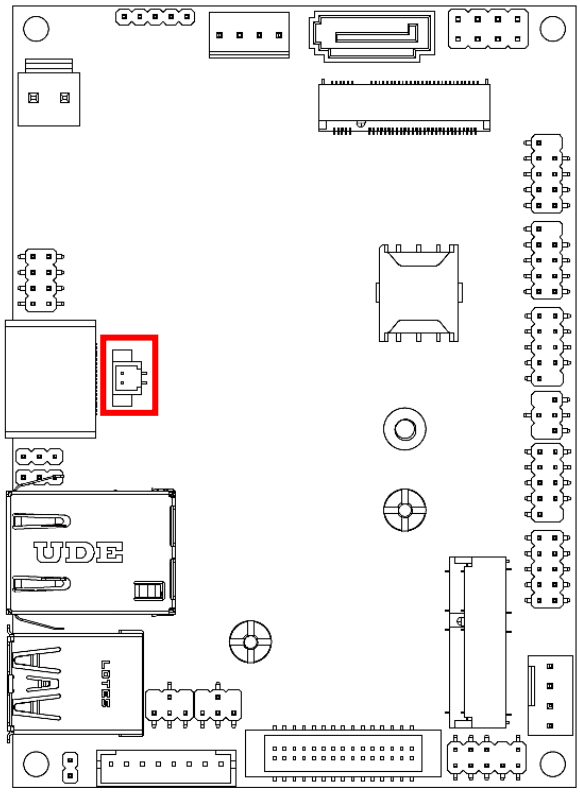
Pin No.	Definition
1	+12V DC-In
2	GND

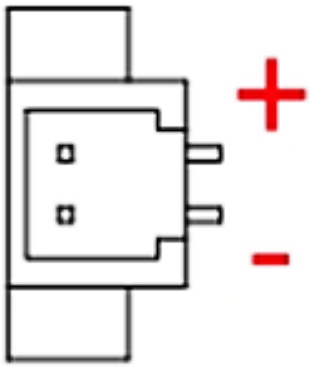
(2) HDMI Connector (HDMI1)



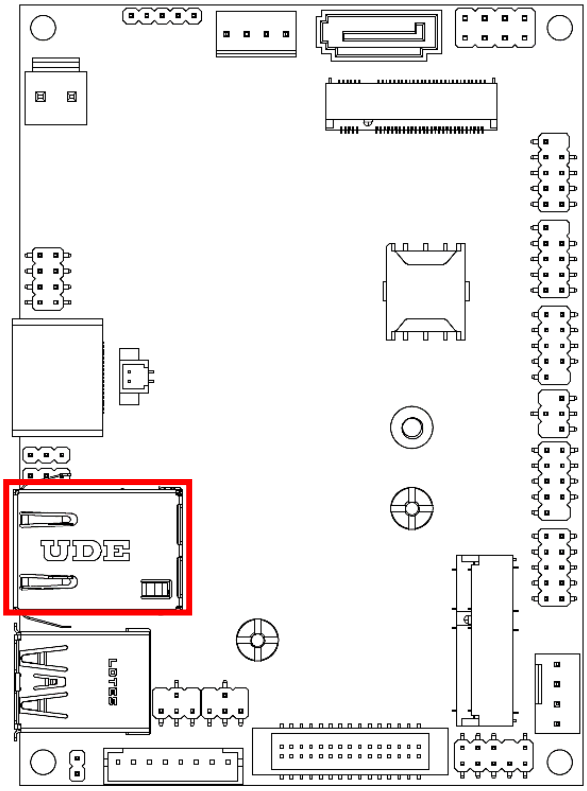
Note: Standard specifications.

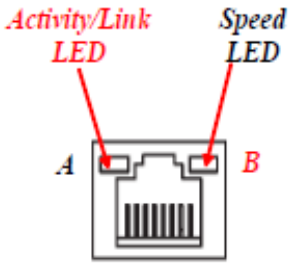
(3) RTC Battery Connector (BATCON1)





(4) RJ45 2.5GbE Lan Connector (LAN1)



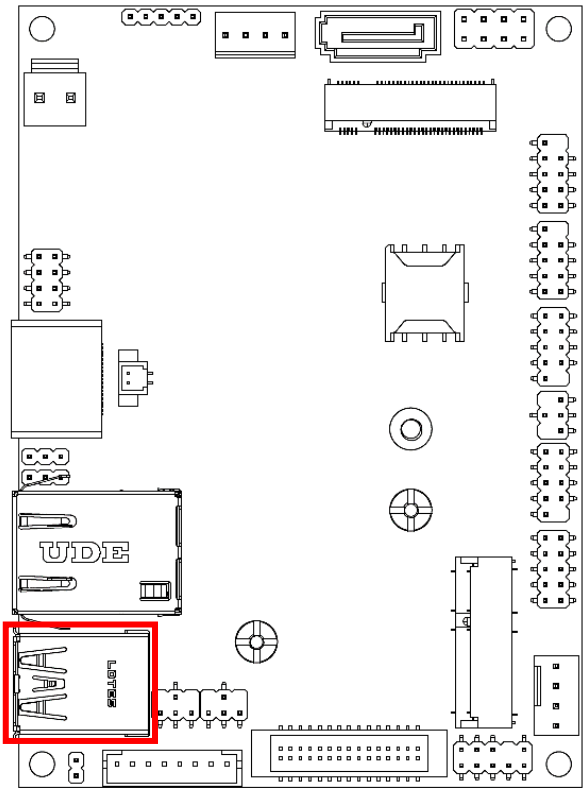


A: Activity/Link LED		B: Speed LED	
Status	**Description**	**Status**	**Description**
Off	No Link	Off	10/100Mbps connection
Blinking	Data Activity	**Orange**	1000Mbps connection
On	Link	**Green**	2.5Gbps connection

Note: 2.5Gbps high-speed transmission rate is **only** supported over **CAT 5e UTP cable**.

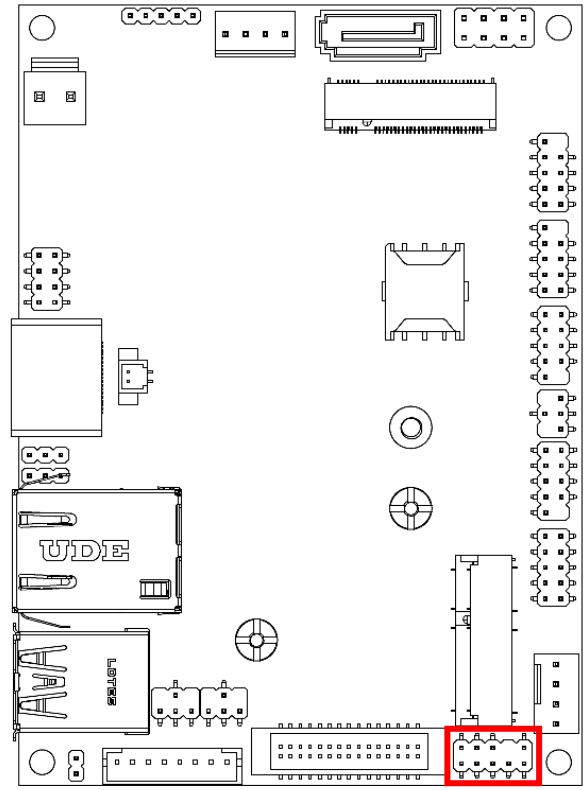
Note: Standard specifications.

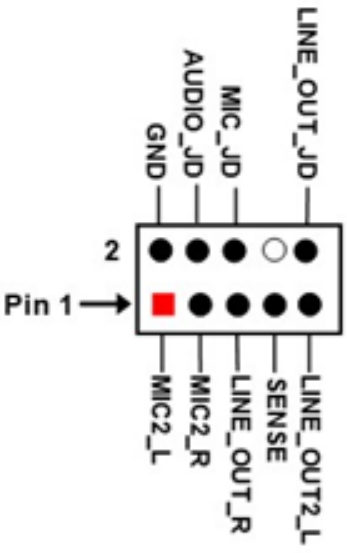
(5) USB 3.2 Gen2 Connector (USB1)



Note: Standard specifications.

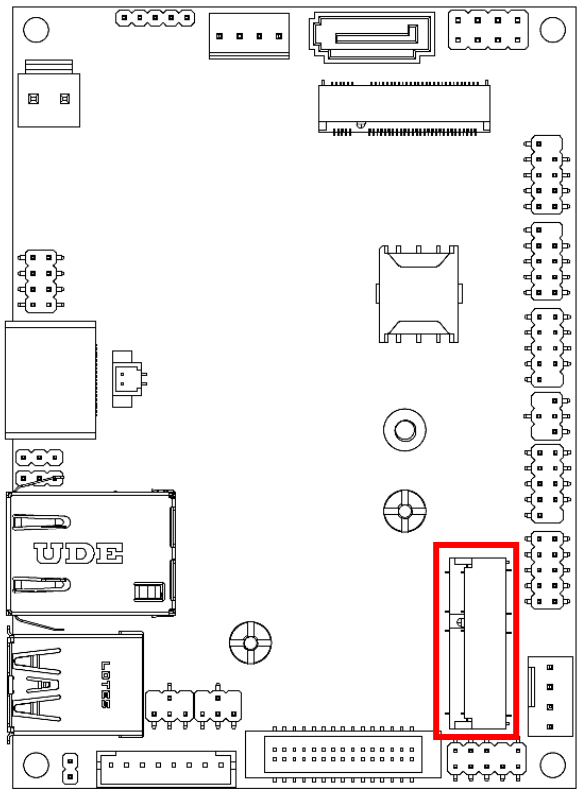
(6) Front Panel Line-Out, MIC-In Header (F_AUDIO1)

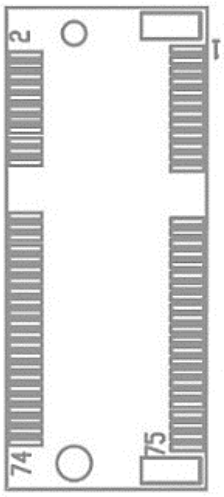




Note: Standard specifications.

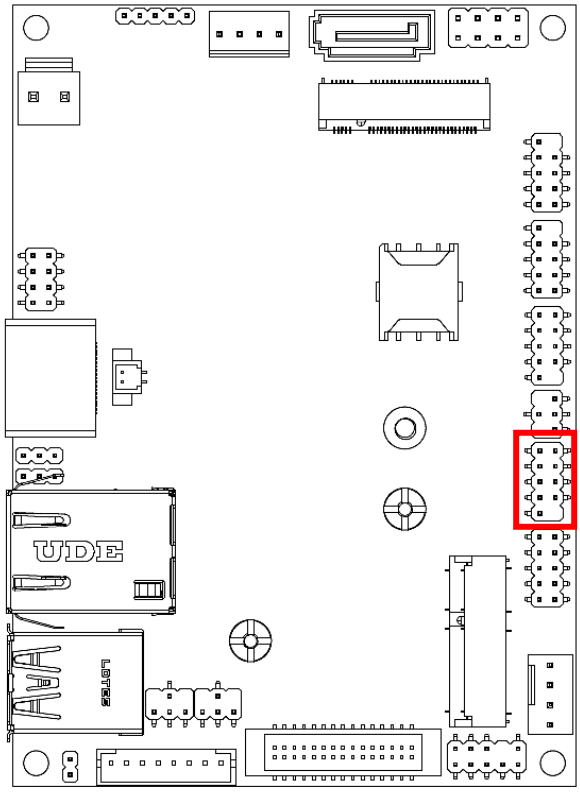
(7) M.2 2230 KEY E Socket (M2E1)

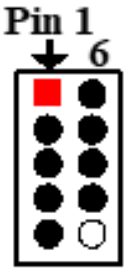




Note: Standard specifications.

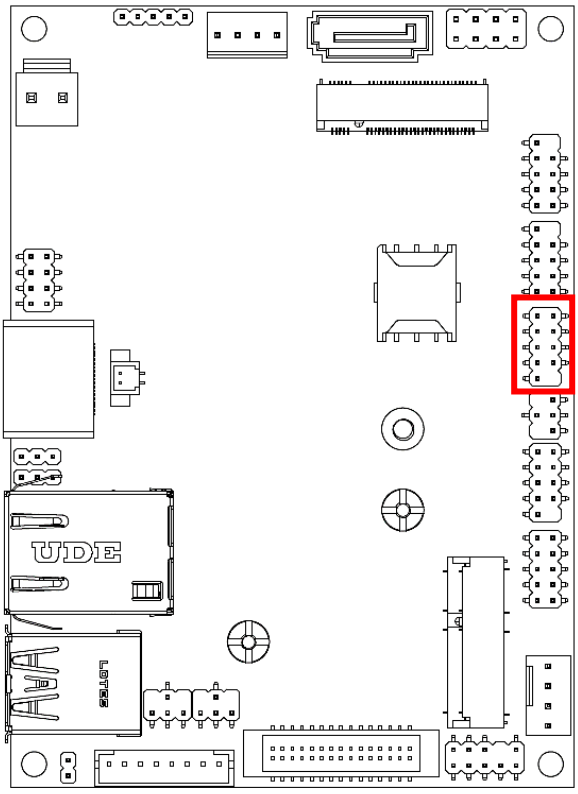
(8) RS232 Serial Port Header *(COM1)*

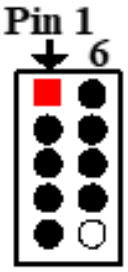




Pin NO.	RS232	*RS422 (optional)	*RS485 (optional)
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

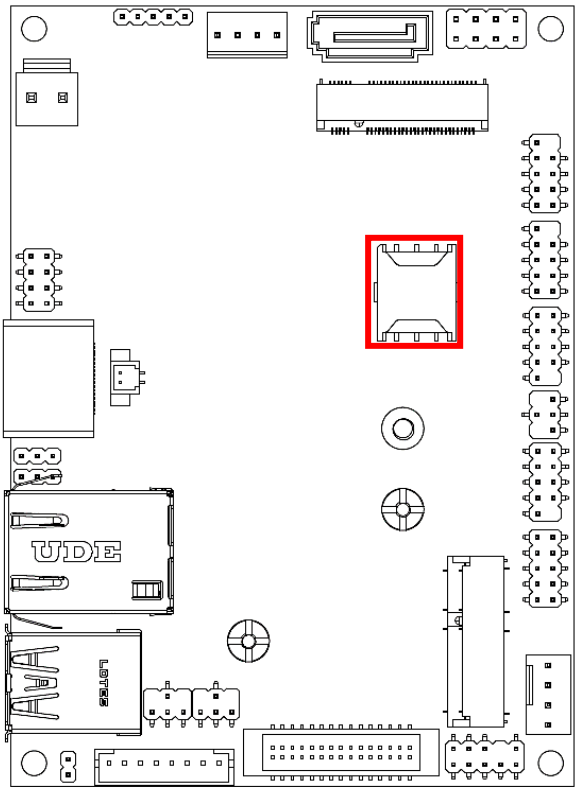
(9) RS232 Serial Port Header *(COM2)*

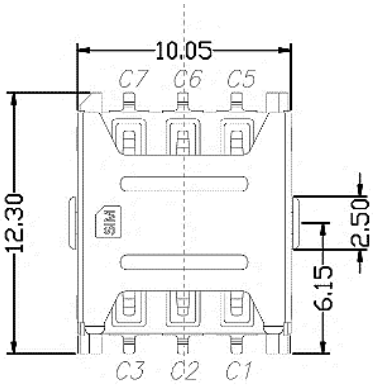




Pin NO.	RS232	*RS422 (optional)	*RS485 (optional)
Pin 1	DCD	TX-	DATA-
Pin 2	RXD	TX+	DATA+
Pin 3	TXD	RX+	NC
Pin 4	DTR	RX-	NC
Pin 5	GND	GND	GND
Pin 6	DSR	NC	NC
Pin 7	RTS	NC	NC
Pin 8	CTS	NC	NC
Pin 9	RI	NC	NC

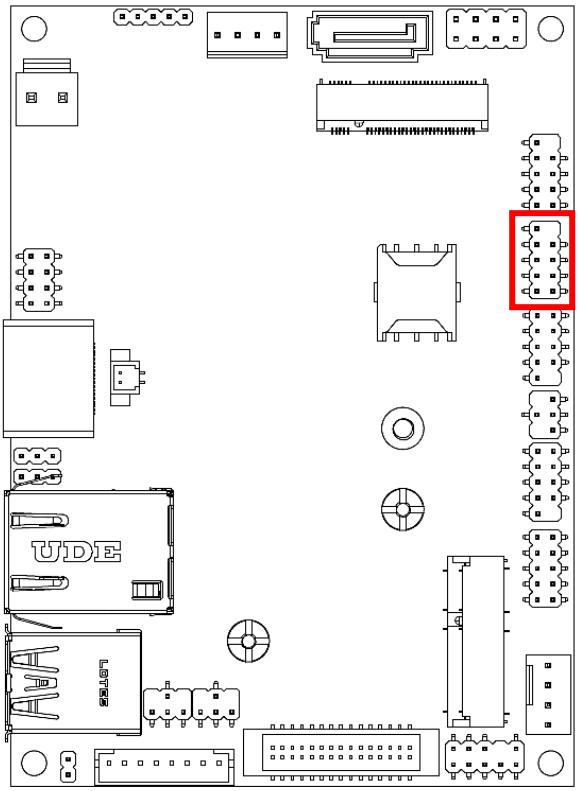
(10) Nano-SIM Card Socket (SIMCARD1)

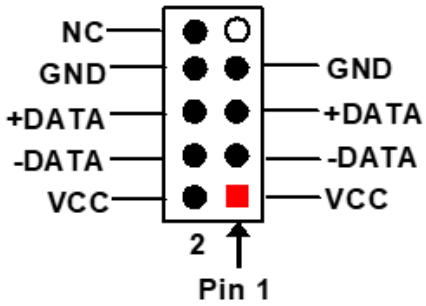




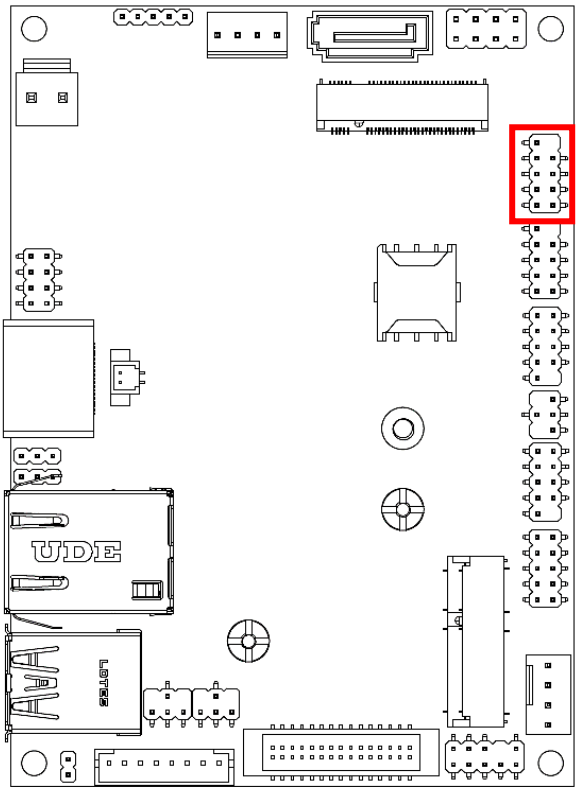
Note: Standard specifications.

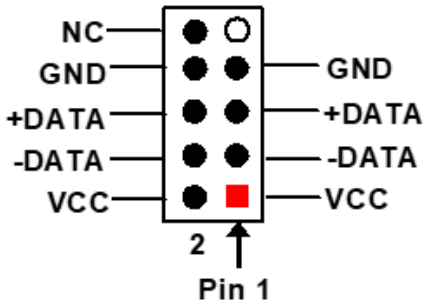
(11) USB2.0 Port Header (F_USB1)



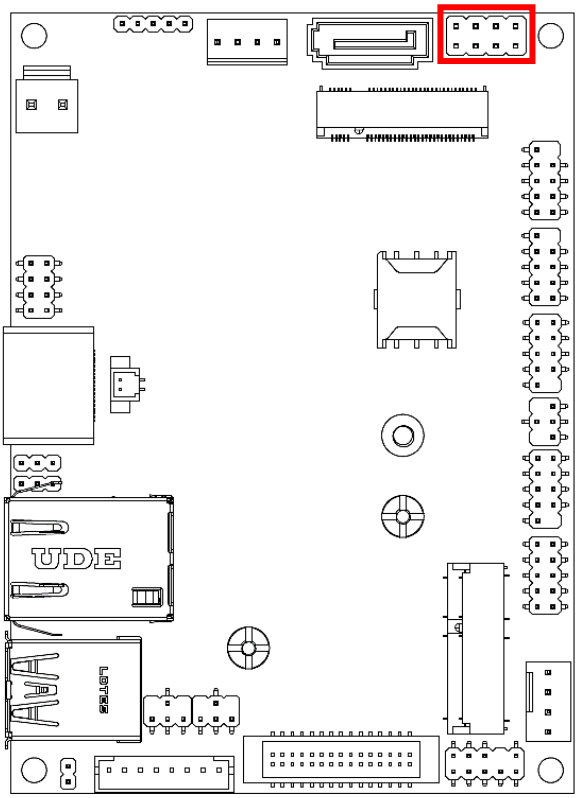


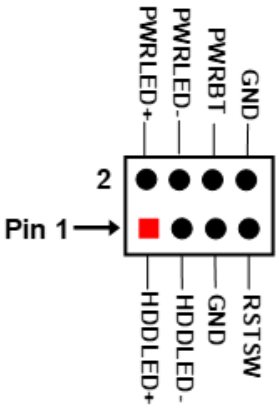
(12) USB2.0 Port Header (F_USB2)



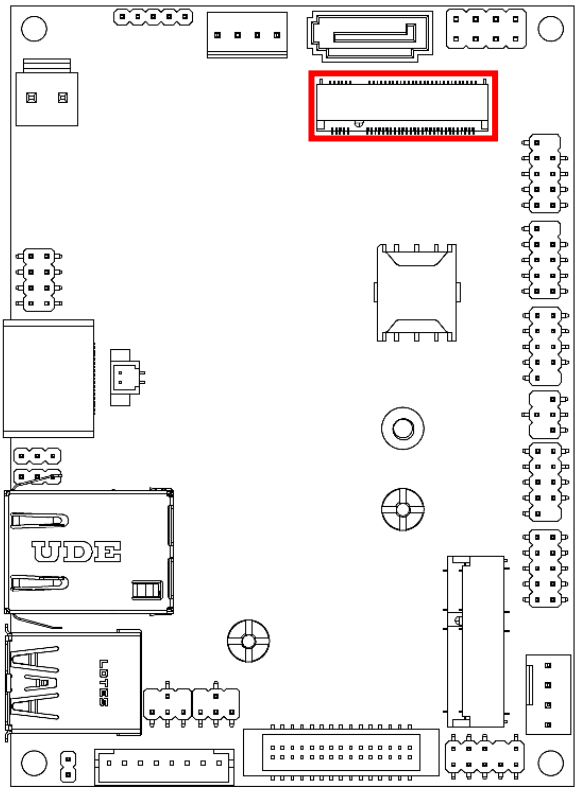


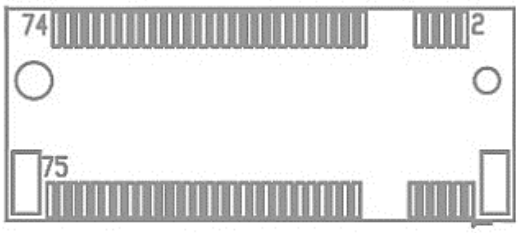
(13) Front Panel Header (JW_FP1)





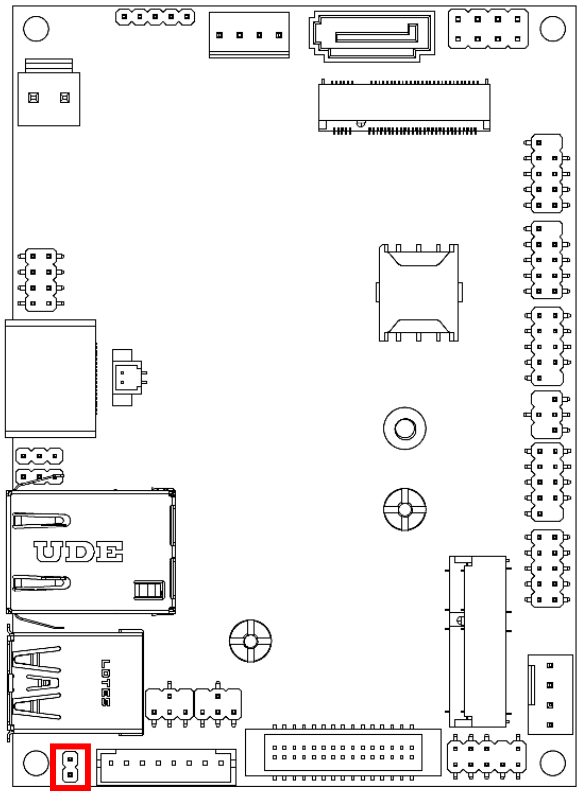
(14) M.2 2242/3052 B-Key Slot (M2B1)

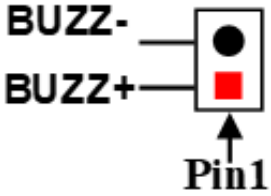




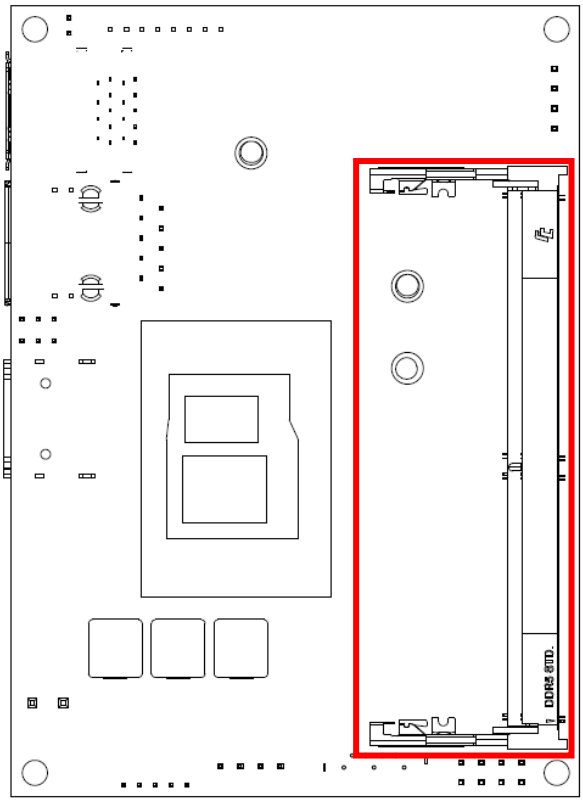
Note: Standard specifications.

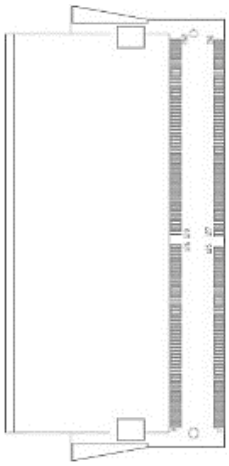
(15) Buzzer Header (F_BUZZ1)





(16) DDR5 SODIMM Slot (SODIMM1)





Note: Standard specifications.

2-5 Maximum Voltage & Current Limit

Below is a list of maximum voltage & Current Limit specification for motherboard interface (including but not limited to slots, connectors and headers) for setup reference:

Parts		Working Voltage	Current Support
USB Port From	USB1	5V	2A
	FP_USB1	5V	1.5A
	FP_USB2	5V	1.5A
JW_FP1		5V	1A

Chapter 3 Quick Installation Manual

Notice!	The photos in this file are for illustration purpose only. The model may not be the latest version. Please refer to the product you purchased for actual specification.

3-1 Safety Instructions

1. Read these safety instructions carefully.
2. Retain this user manual for future reference.
3. Disconnect the equipment from all AC outlets before cleaning.
   use only a damp cloth for cleaning. Do not use liquid or spray detergents.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible.
5. Protect the equipment from humidity.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage.
7. Ensure that the voltage is correct before connecting the equipment to a power outlet.
8. Position the power cord away from high-traffic areas. Do not place anything over the power cord.
9. All cautions and warnings on the equipment should be noted.
10. If unused for a long time, disconnect the equipment from the power source to avoid damage from transient overvoltage.
11. Never pour liquid into an opening. This may cause fire or electrical shock.
12. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
13. If one of the following occurs, have the equipment checked by authorized service personnel:

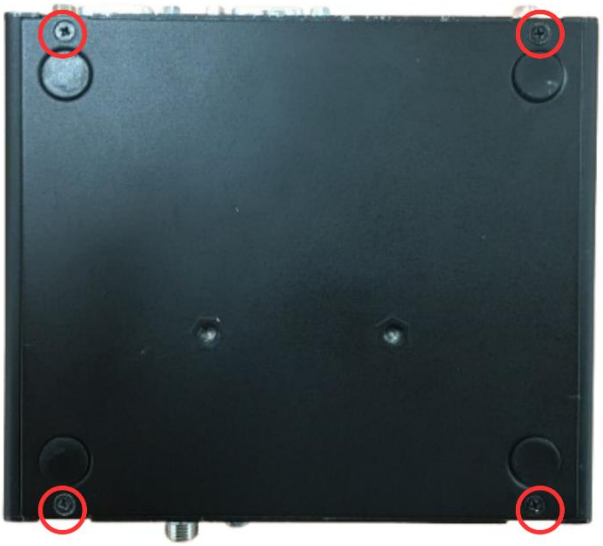
●The power cord or plug is damaged.
●Liquid has penetrated the equipment.
●The equipment has been exposed to moisture.
●The equipment is malfunctioning or does not operate according to the user manual.
●The equipment has been dropped and damaged.
●The equipment shows obvious signs of breakage.

16. Any unverified components may cause unexpected damage. To ensure Correct installation, always use the components (e.g., screws) provided in the accessory box.
17. Batteries are at risk of exploding if incorrectly installed.
    Replace only with the same or equivalent type as recommended by the manufacturer.
    Discard used batteries according to the manufacturer’s instructions.
18. Always disconnect the power cord from the chassis before manually handling the hardware.
    Do not implement connections or configuration changes while the device is powered on.
    Sudden power surges may damage sensitive electronic components.

19.  **CAUTION OF HIGH HEAT FROM TOP COVER!!!**

In working mode, the **B420PADN1** is capable of operating at an ambient temperature of up to 50 °C. In such cases, the temperature of the top cover may reach a high value. Under such a condition, accidental contact with the B420PADN1 needs to be avoided. External surfaces do not need to be touched to operate the equipment. If touching cannot be avoided, please wear protective gloves.

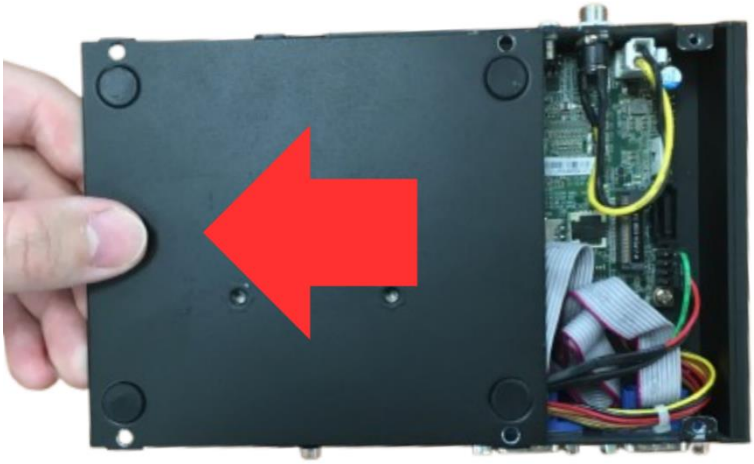
3-2 Dissemble the Chassis



1. Locate the screws at the spots marked on this side of the system and unscrew them one by one.

2. Remove the marked screw on the front IO panel.

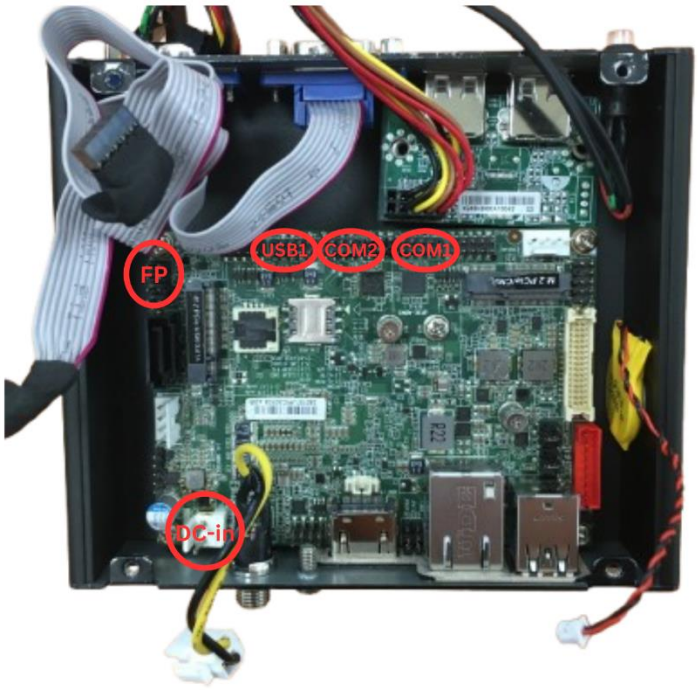
3. Remove the marked screw on the rear IO panel.



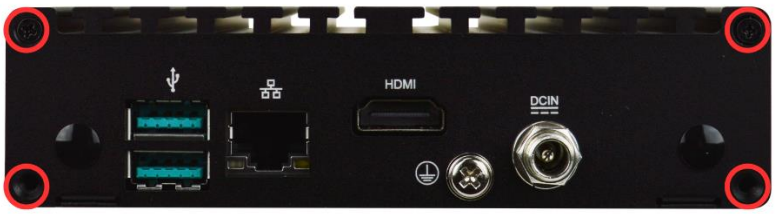
4. Lift the cover up to open the chassis.

5. The overview of the internal structure of the system with HDD tray pre-installed.

3-3 To Install SO-DIMM to the board

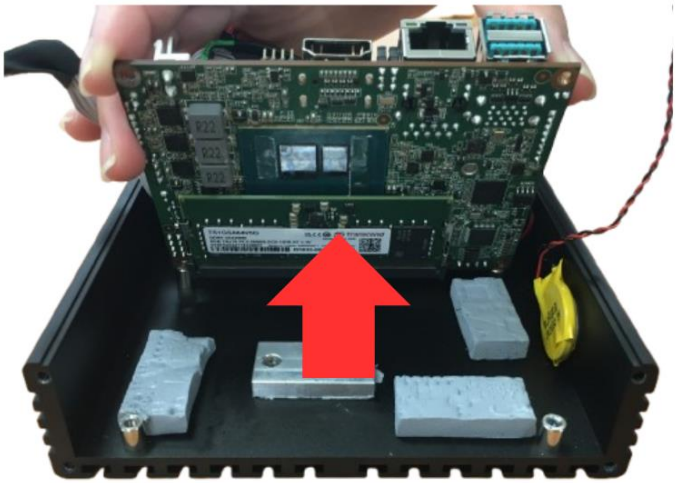


1. The SO-DIMM memory slot is located on the back of the motherboard. To replace or remove the SO-DIMM module, first disconnect all cables attached to the motherboard.

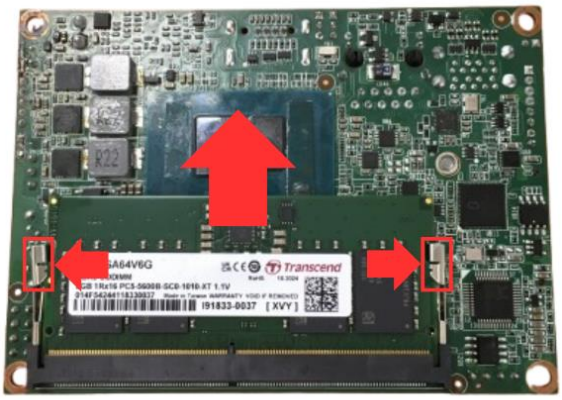


2. Remove the marked screw from the rear I/O panel, then carefully detach the rear IO panel.

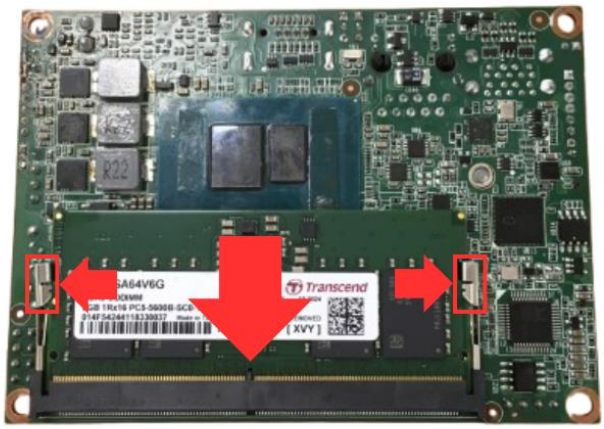
3. Remove the marked screw from the motherboard.



4. Carefully lift the motherboard to detach it from the chassis. The thermal compound may cause resistance, so apply steady and controlled force while lifting.



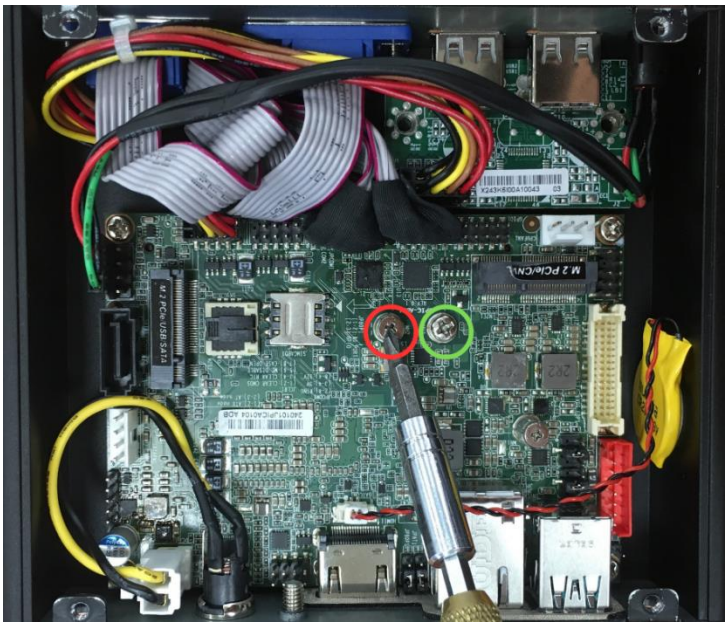
5. Flip the motherboard to its back side. Gently pull both marked ejector tabs outward simultaneously to unlock the SO-DIMM memory module, allowing it to be removed.



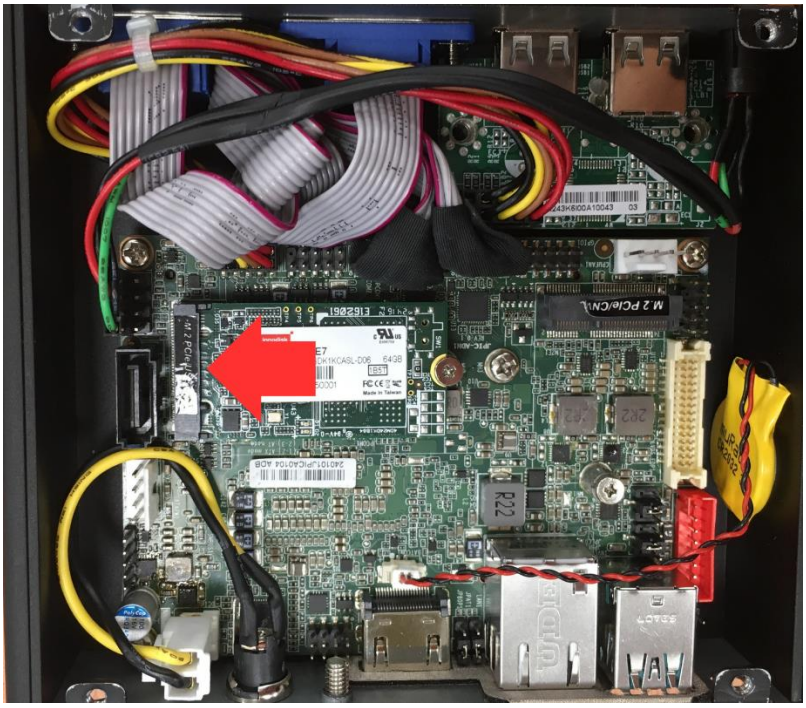
6. To Install the SO-DIMM memory, First, Insert the gold-figure side of the slot on the board compatible SO-DIMM into the slot at 30 degrees and press down. The eject tab will lock it if installed correctly. Press down to secure the SO-DIMM to the slot. The eject tabs will lock automatically if installing direction is correct.

3-4 To Install B+M-Key 2242/3042/3052 (USB 3.2/SATA III/PCIe 3.0 x2)

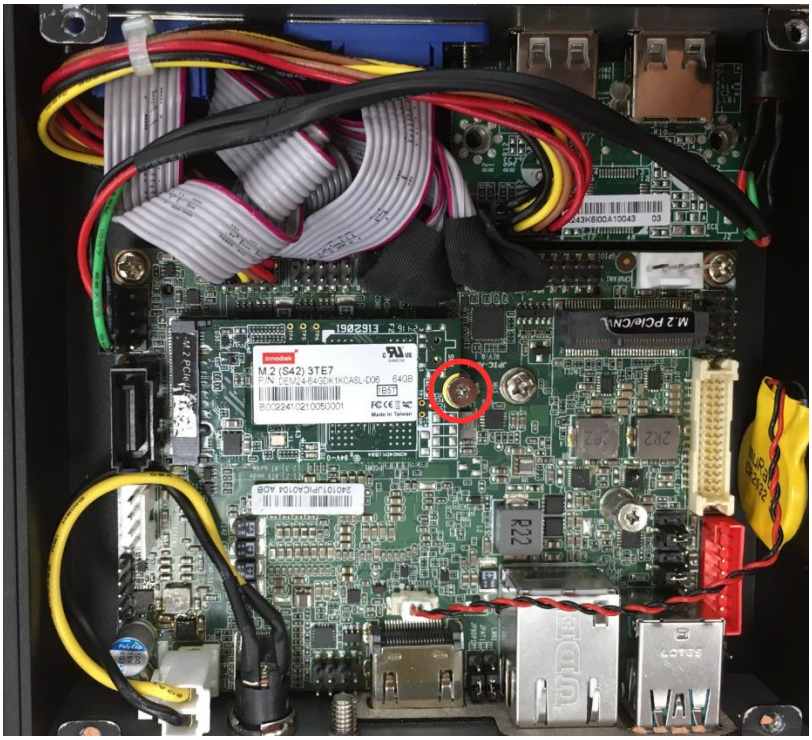
1. Locate the B+M-Key 2242/3042/3052 slot on the board. Prepare compatible M.2 M-Key PCIe (2242/3042/3052) card.



2. To install a compatible card, first remove the screw at the red-marked spot. When using an M.2 PCIe (3052) card, secure the pillar screw at the green-marked spot.



3. Insert compatible M.2 PCIe (2242/3042/3052) card into the slot. See to it that the golden-finger side should be fully plugged into the slot.



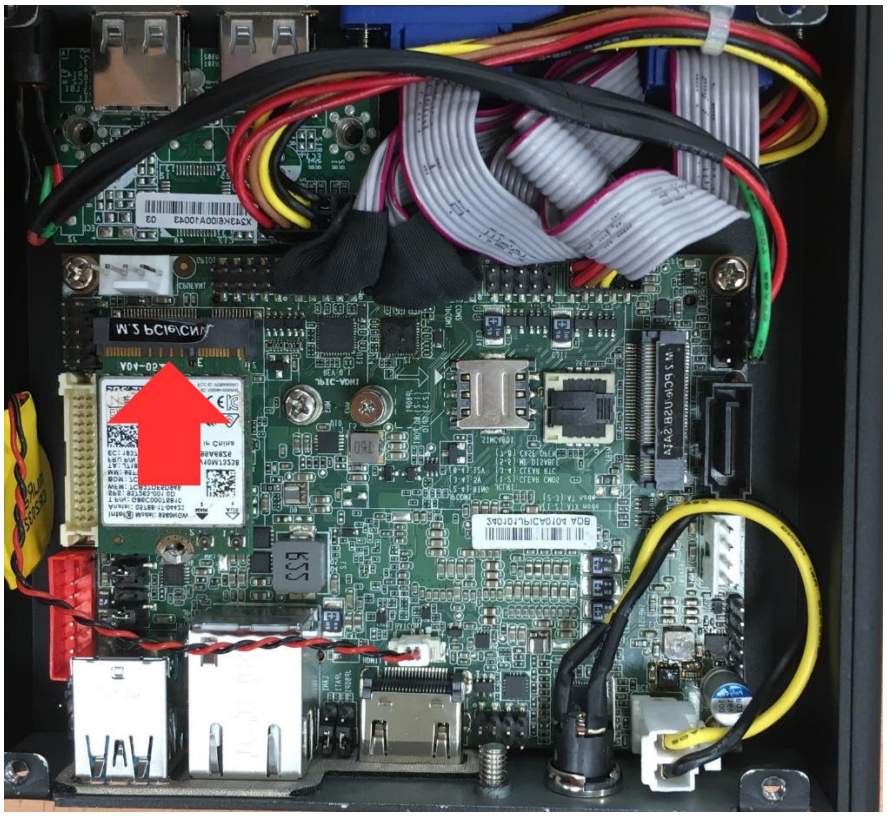
4. Tighten up the screw removed before to the marked spot to secure the card.

Note: *The screw post and nut fixed at location MH4 by default for 8cm type-2280 card installation.*

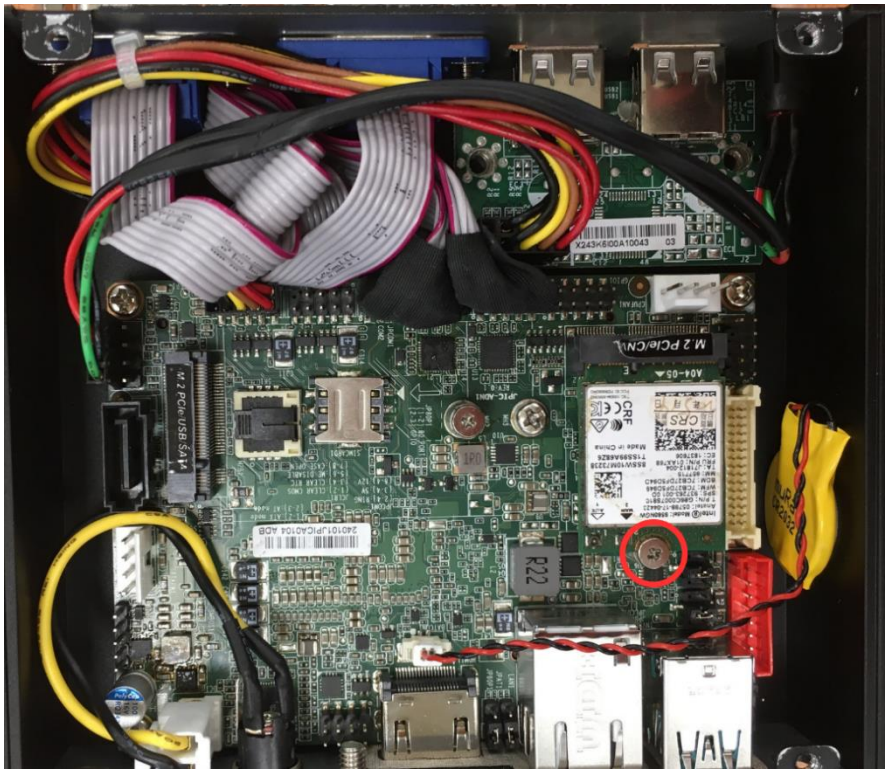
3-5 To Install M.2 E-Key (2230) USB 2.0/PCIe Card

1. Locate the M.2 E-Key PCIe (2230) slot on the board. Prepare compatible M.2 PCIe, type -2230 card.

2. Remove the marked screw and use it to lock compatible card to the slot in later installation.



3. Insert the gold-figure side of the compatible card into the slot and press down. See to it that the golden-finger side should be fully plugged into the slot.



4. Secure the card to the board by tightening up the screw to the marked spot.

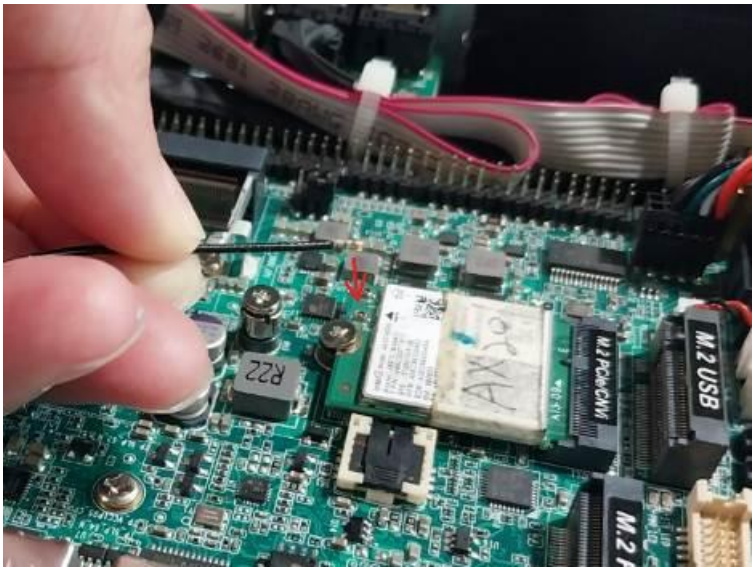
5. Locate the reserved antenna holes on the rear panels. Remove the dust-proof plugs at the marked locations on the panels to install the antennas.

6. Push this antenna screw head into antenna hole of the rear panel from the backside of the panel.

6-1 **6-2**

The washer ① & the hexagonal screw nut ②. Push the washer ① through the antenna head.

7. And then lock the antenna screw head to the front side of the rear panel with the hexagonal screw nut② and tighten it up.

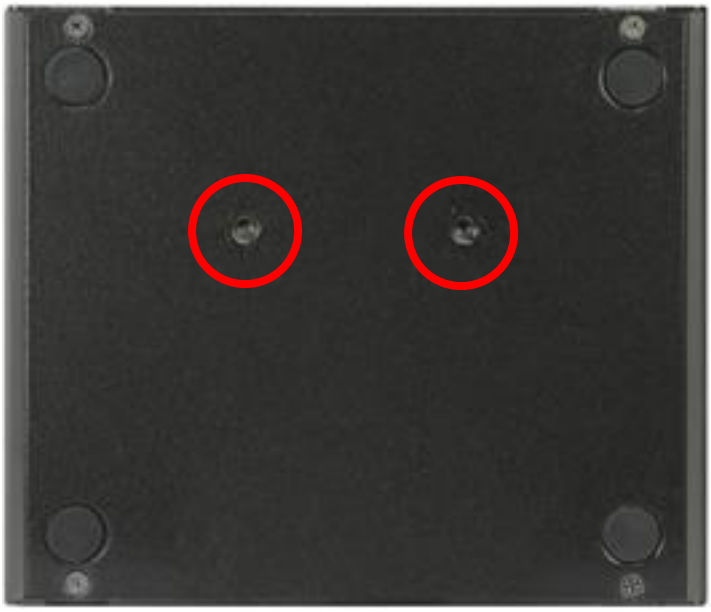


8. Press the metal hat on the end of the antenna string to corresponding antenna slot on the card as shown.

9. Repeat step 6 to 8, to finish installation of the other antenna.

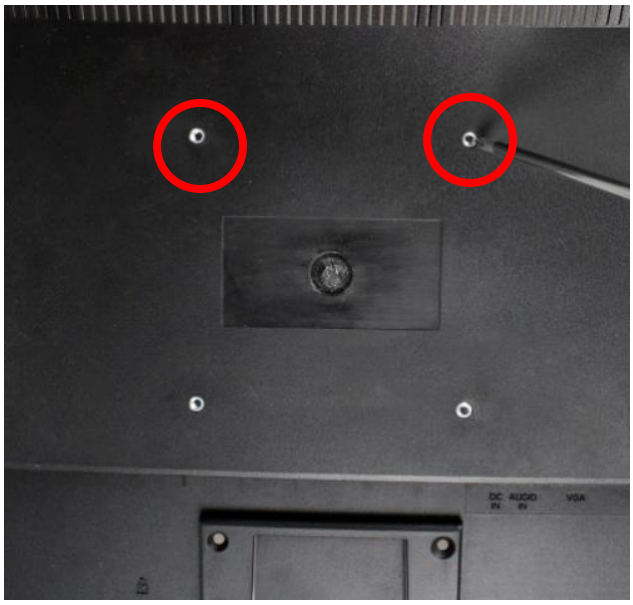
Notice: *When all necessary installations are finished, please make sure that all cables unplugged before installations are connected to their original locations before restoring the back cover to the chassis and screws on the front panel/back panel/top cover locked to its original locations* ***(Refer to Part I)****. See to it that the cables inside are not blocked or pressed.*

3-6 To VESA Mount the system

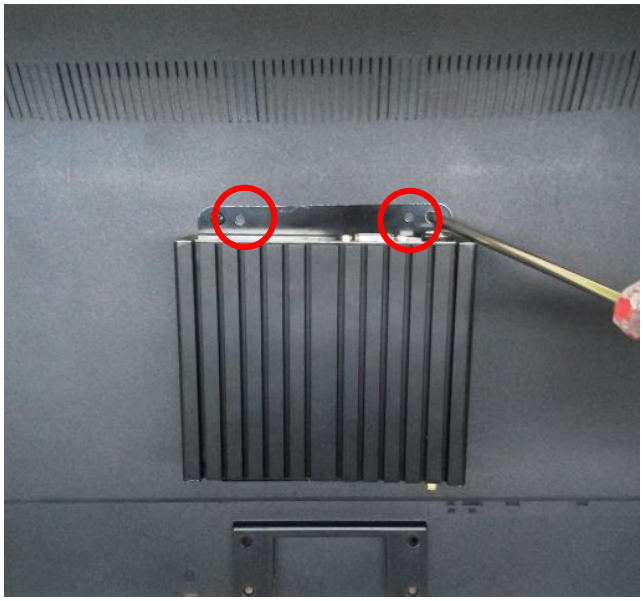


1. Locate the two screw holes reserved for VESA mount on the cover of the system. Take note of the directions of the system.

2. Place the VESA mount rack upon the cover in the direction as the photo shows. Tighten up compatible screws to lock the chassis to the rack.



3. Unlock the reserved screws for VESA mount on the back cover of the monitor.

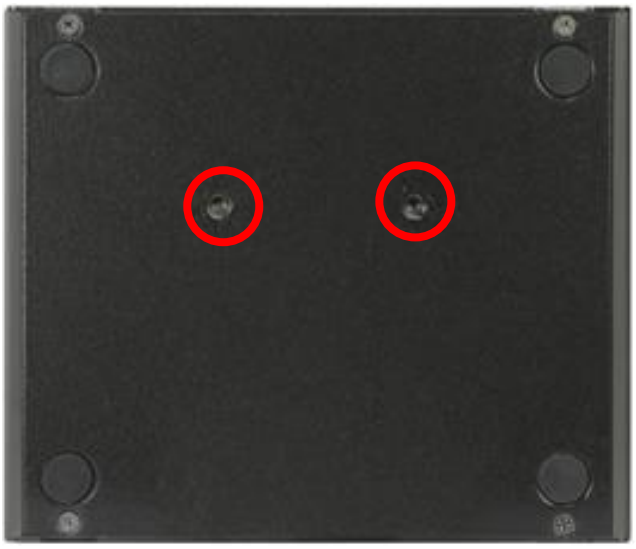


4. Adjust the chassis with VESA mount rack to the back cover of the monitor and lock it to the monitor by tightening up the above marked screws.

5. Check to make sure the screws are fixed stably.

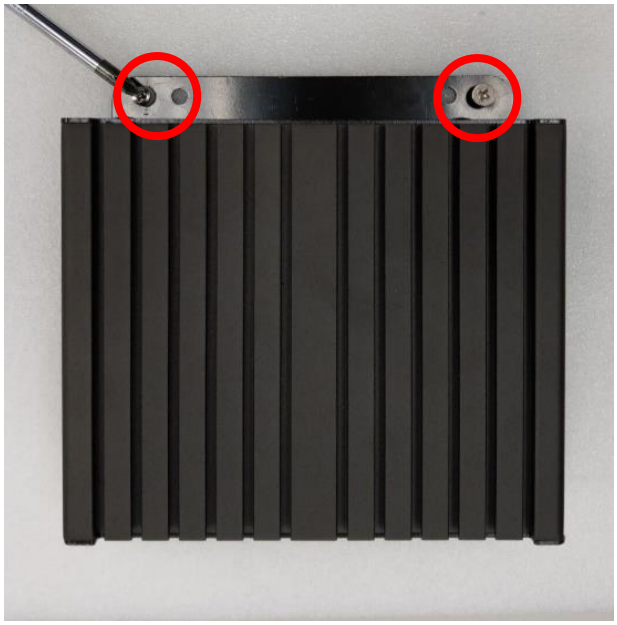
Note: See to it that the front IO side of the system is face upwards, in the direction as the above photo shows.

3-7 To Wall Mount the system

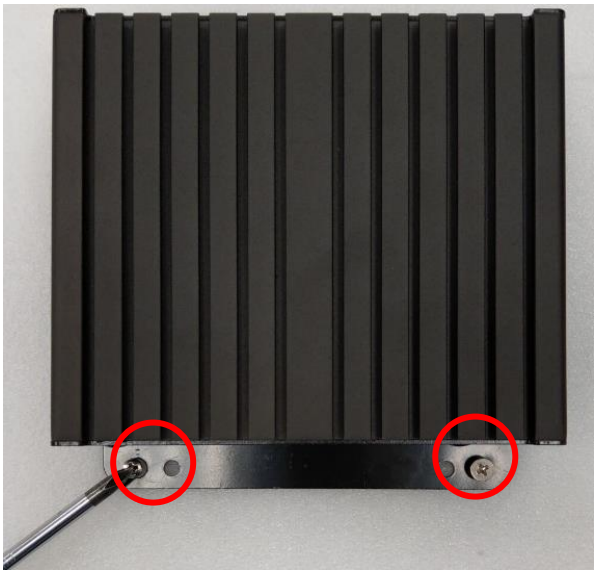


1. Locate the two screw holes reserved for VESA mount on the cover of the system. Take note of the directions of the system.

2. Place the VESA mount rack upon the cover in the direction as the photo shows. Tighten up compatible screws to lock the chassis to the rack.

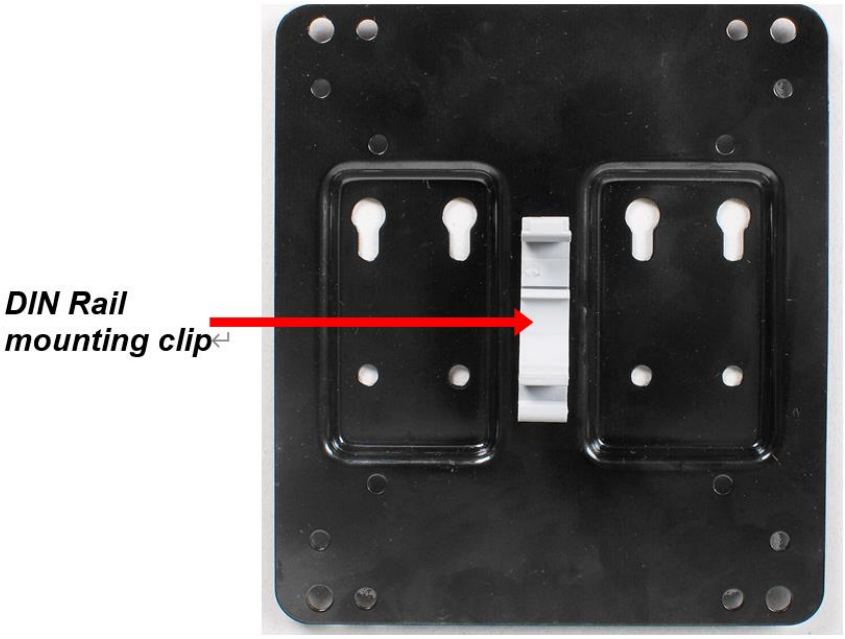


3. Adjust the chassis with wall mount rack to the wall and lock it to pre-punched holes in the wall by tightening up the above marked screws on the top side.

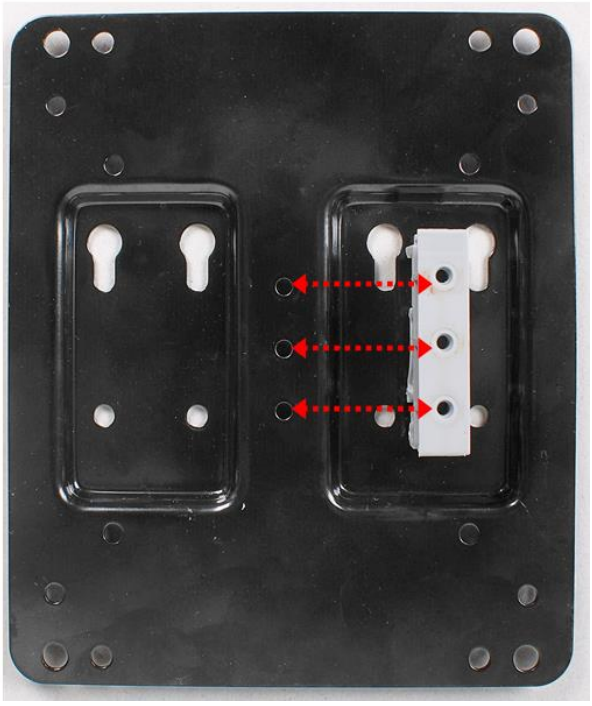


4. Tightening up the other screws on the bottom side. Check to make sure the screws are matched and fixed stably.

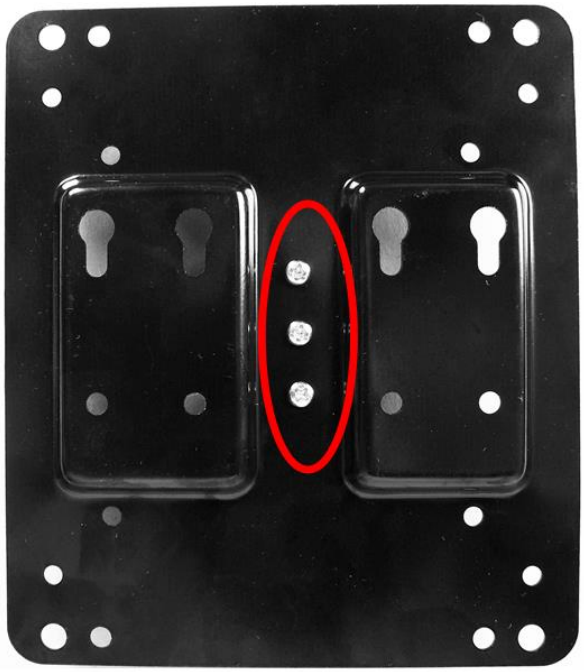
3-8 To Install Din Rail Mounting Clips



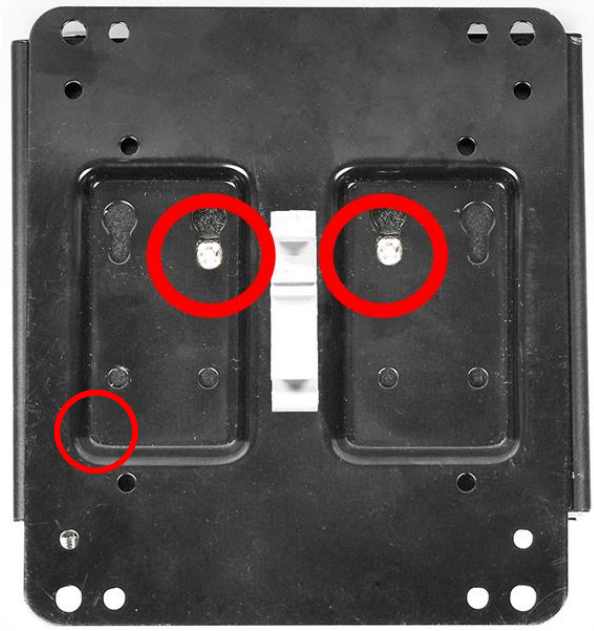
1. Find the DIN rail mounting clip in the attached accessories package. Place the clip upon VSEA mount rack, in the direction as the photo shows.



2. The screw holes on the back side of the clip should match those of the rack, as the photo shows.



3. Turn the rack over and use compatible 2.75 mm screws in the attached accessories package to lock the clip to the rack.



4. Install the rack to the barebone system by tightening up compatible screws in the above marked spots of the cover, as the photo shows.

Chapter 4 Introducing BIOS

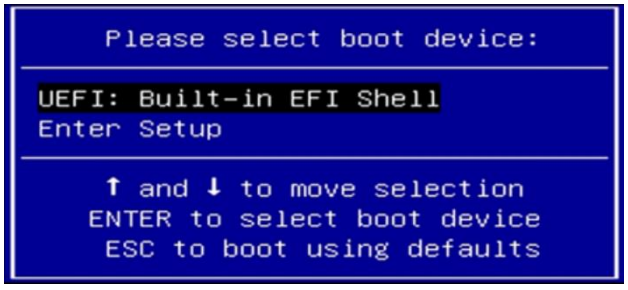
Notice!	The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version form our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self-test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

4-1 Entering Setup

Power on the computer and by pressing <Del> immediately allows you to enter Setup.
If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

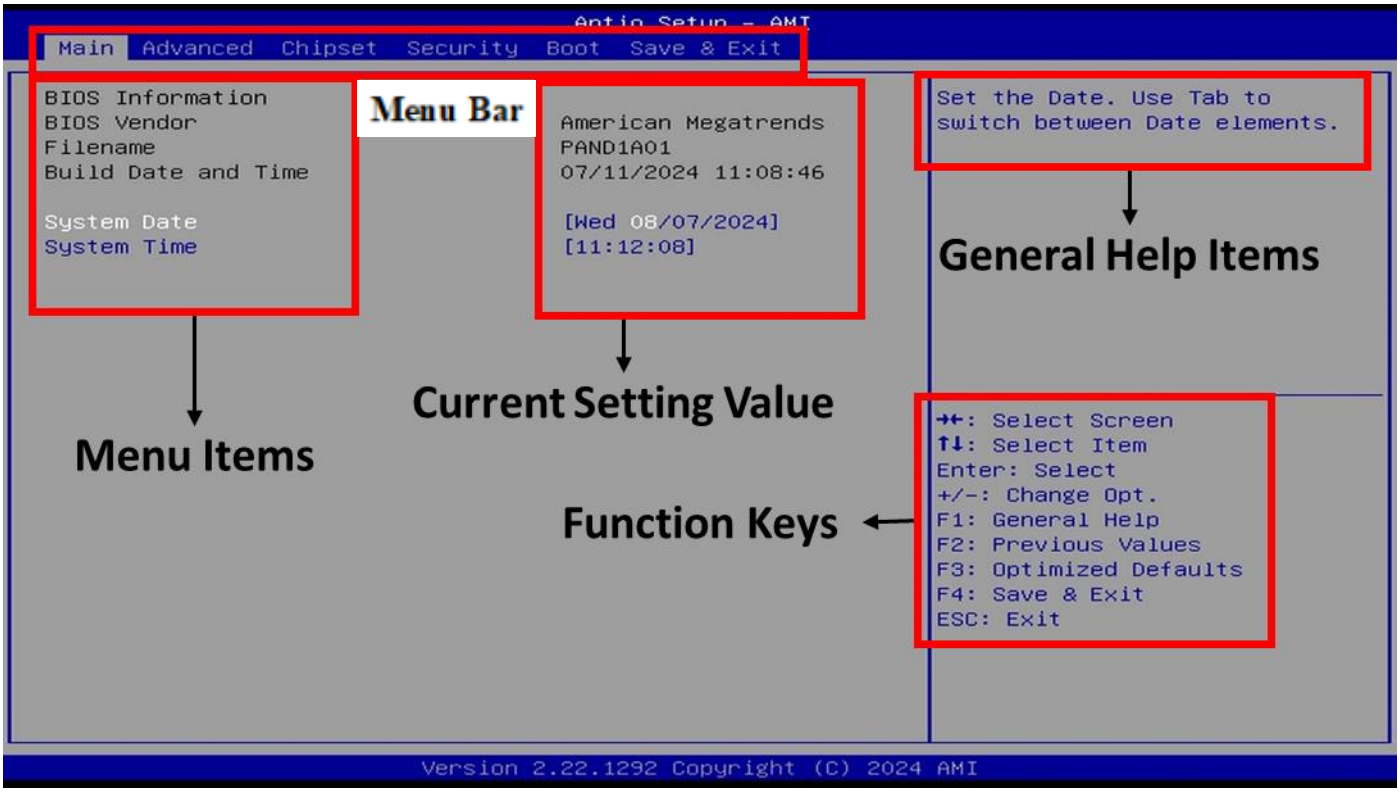
Press **<Del>** to enter Setup; press < **F7**> to enter pop-up Boot menu.



BIOS Boot Menu Screen (boot device options please refer to actual configuration)

4-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



4-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press←→ (left, right) to select screen.
- Press ↑↓ (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<–> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.

4-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press 【F1】 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <**Esc**>.

4-5 Menu Bars

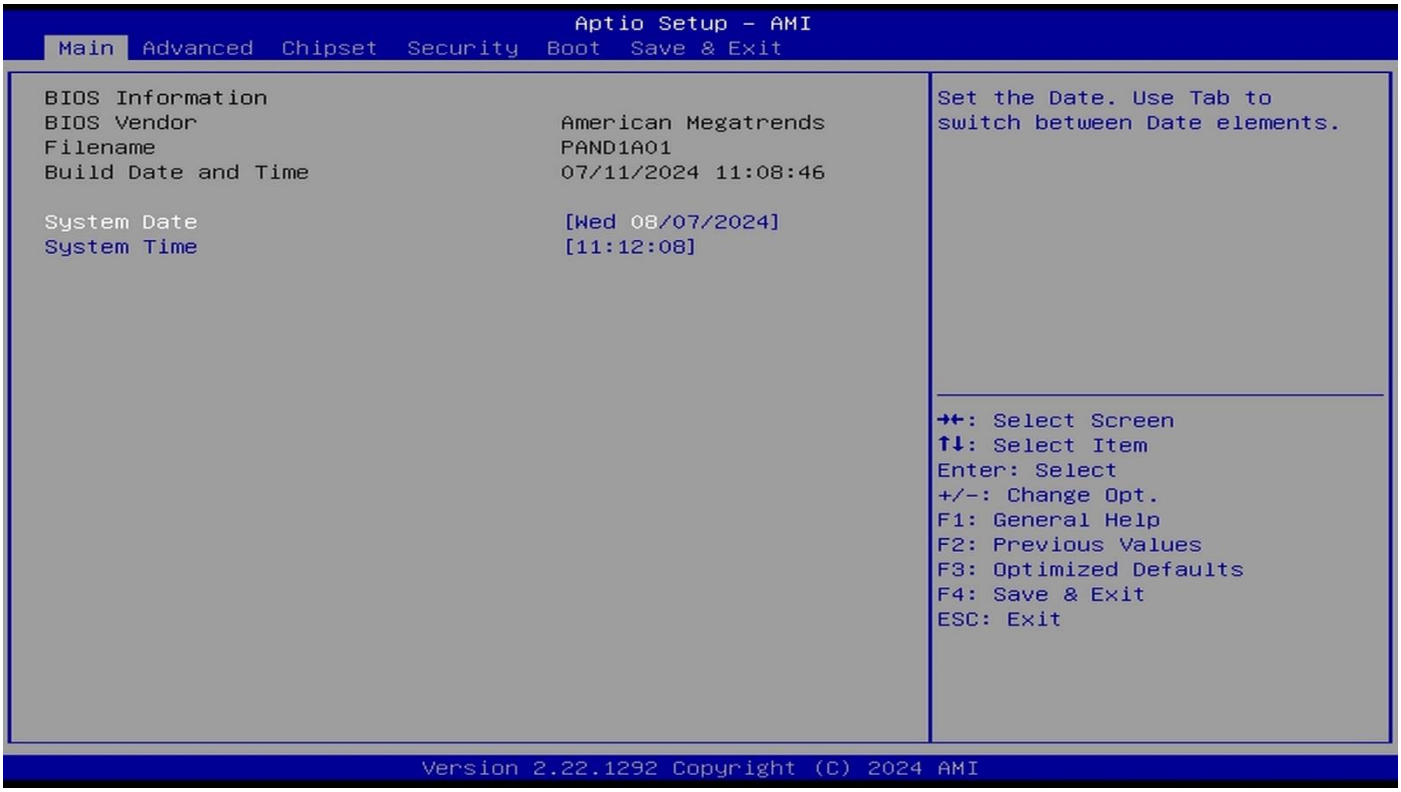
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Security	Password settings
Boot	To change boot settings
Save & Exit	Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

4-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



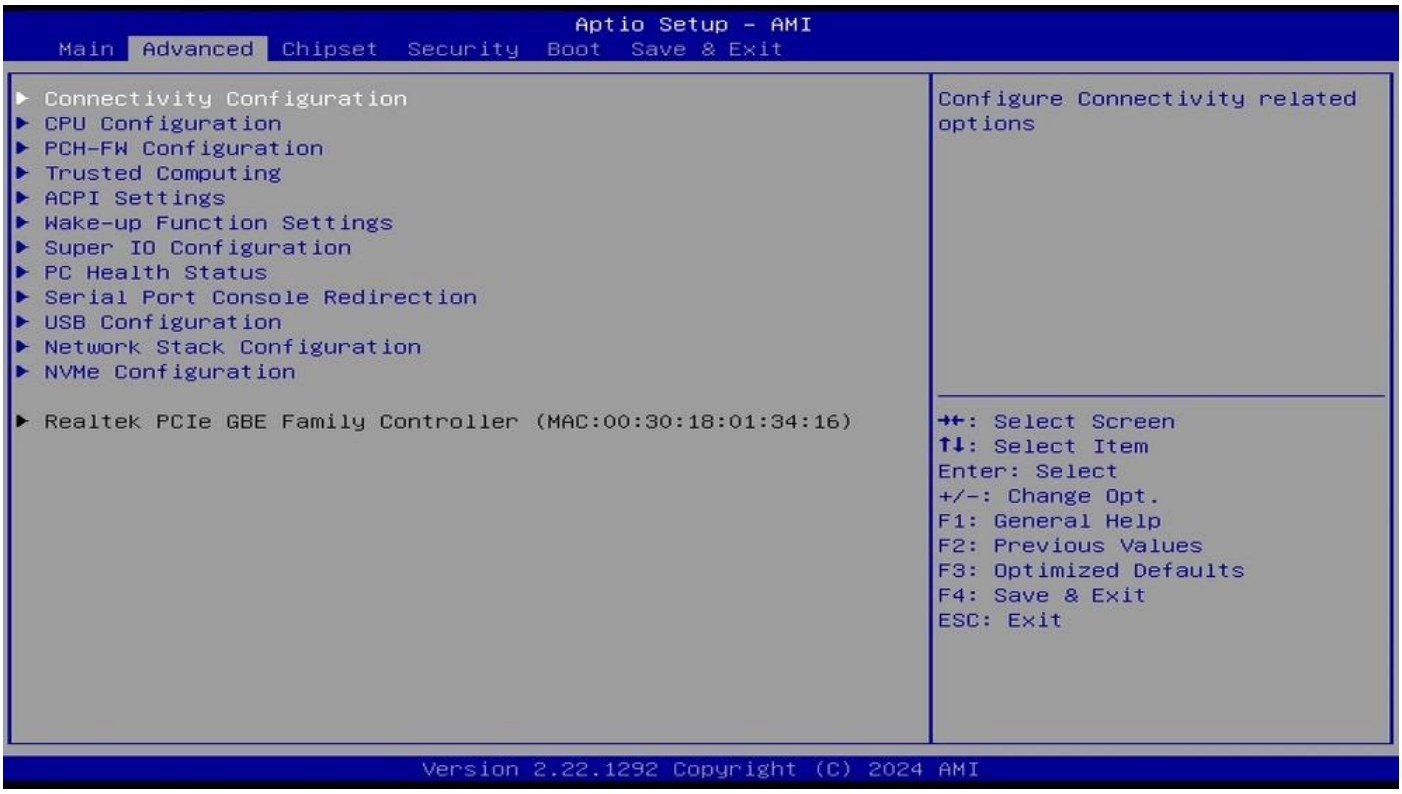
System Date

Set the date. Please use [Tab] to switch between date elements.

System Time

Set the time. Please use [Tab] to switch between time elements.

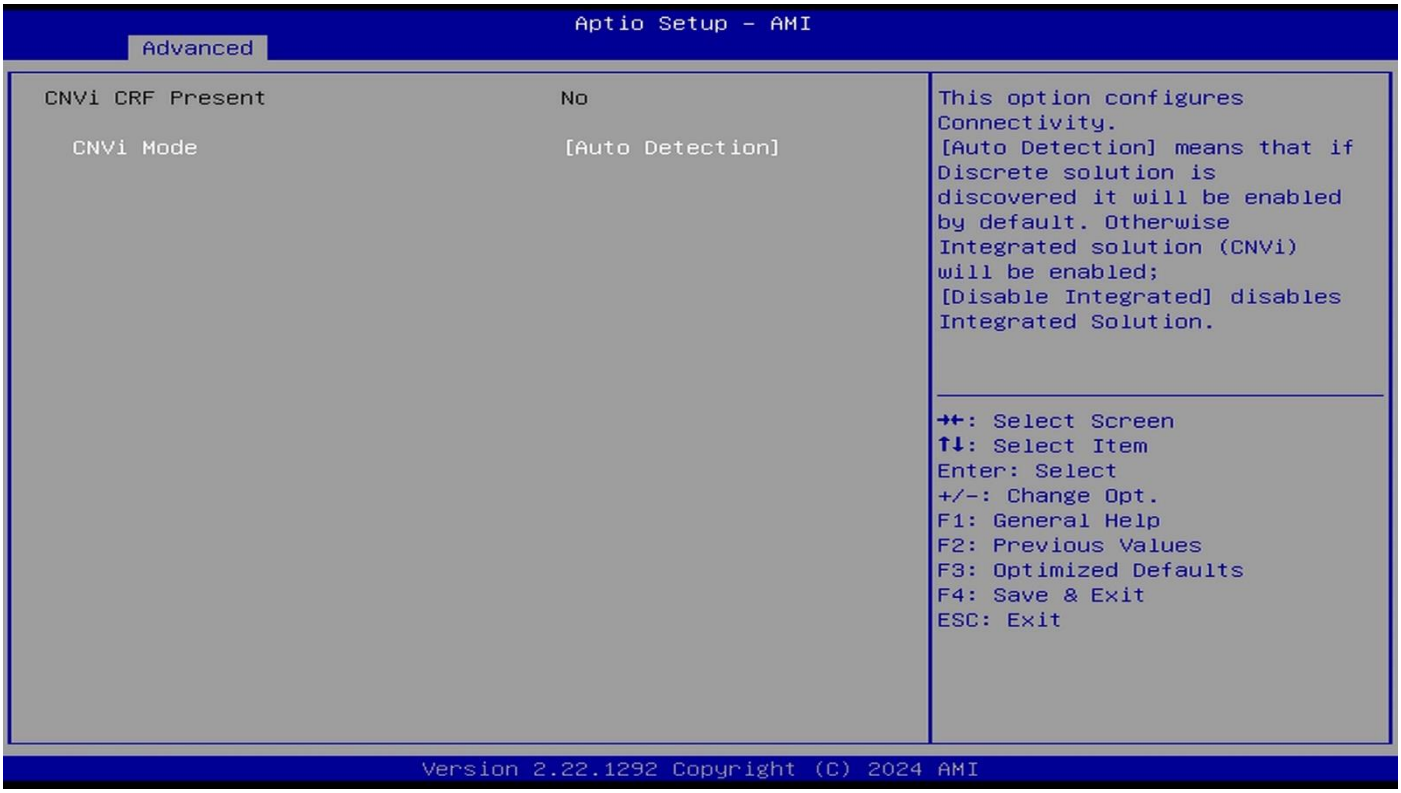
4-7 Advanced Menu



- **Connectivity Configuration**

  Use this item to configure Connectivity related options. Press [Enter] to make settings for the following sub-items:

- ***CNVi CRF Present***



CNVi Mode

This option configures Connectivity.

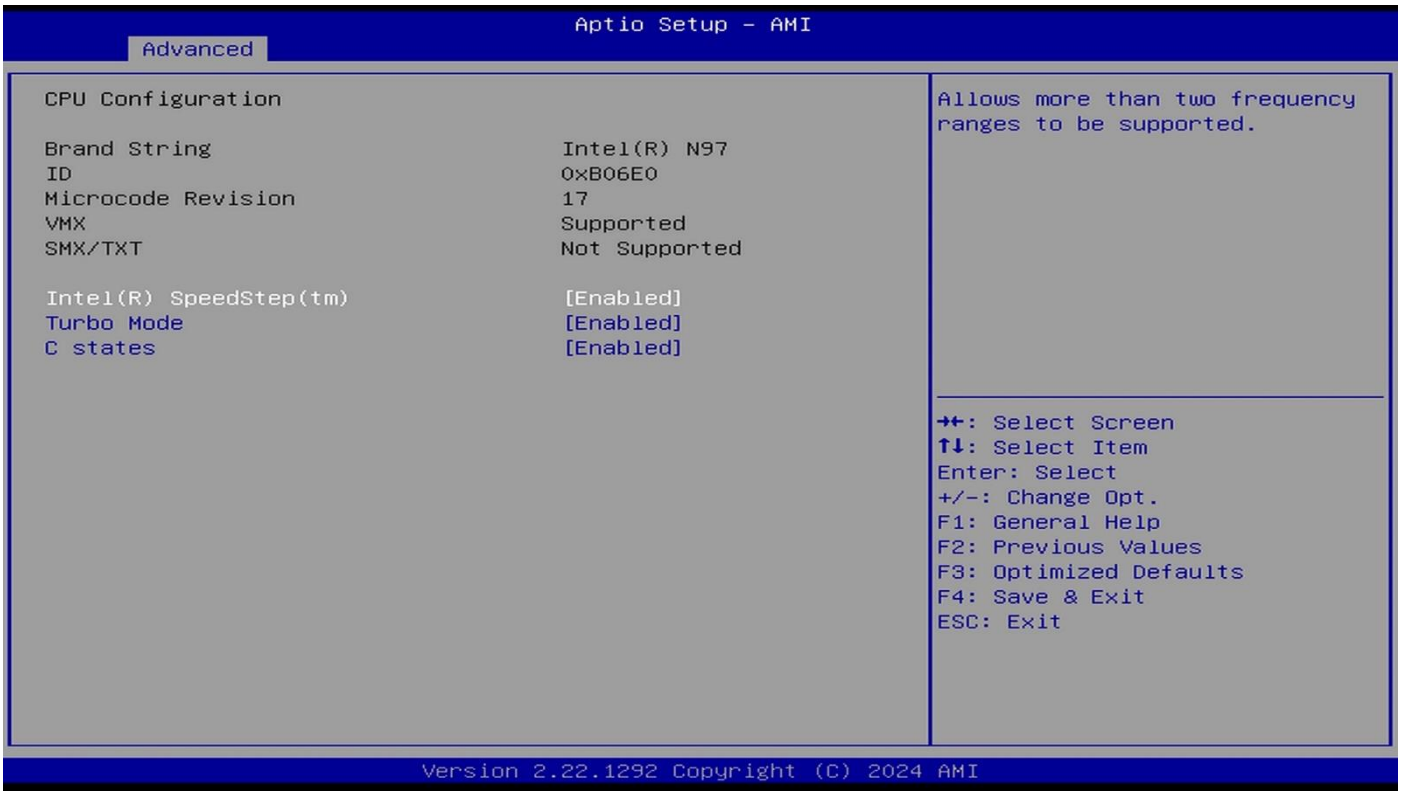
CNVi Mode Set the default value to: [Auto Detection]

The optional settings: [Disabled Integrated]; [Auto Detection].

[Auto Detection] means that if Discrete solution is discovered it will be enabled by default. Otherwise Integrated solution (CNVi) will be enabled;

[Disabled Integrated] disables Integrated Solution.

CPU Configuration



Press [Enter] to view current CPU configuration and make settings for the following sub-items:

Intel(R) SpeedStep(tm)

This item allows more than two frequency ranges to be supported.

Intel(R) SpeedStep(tm) Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].

Turbo Mode

Use this item to enable or disable processor Turbo Mode (requires Intel Speed Step or Intel Speed Shift to be available and enabled).

Turbo Mode Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled]

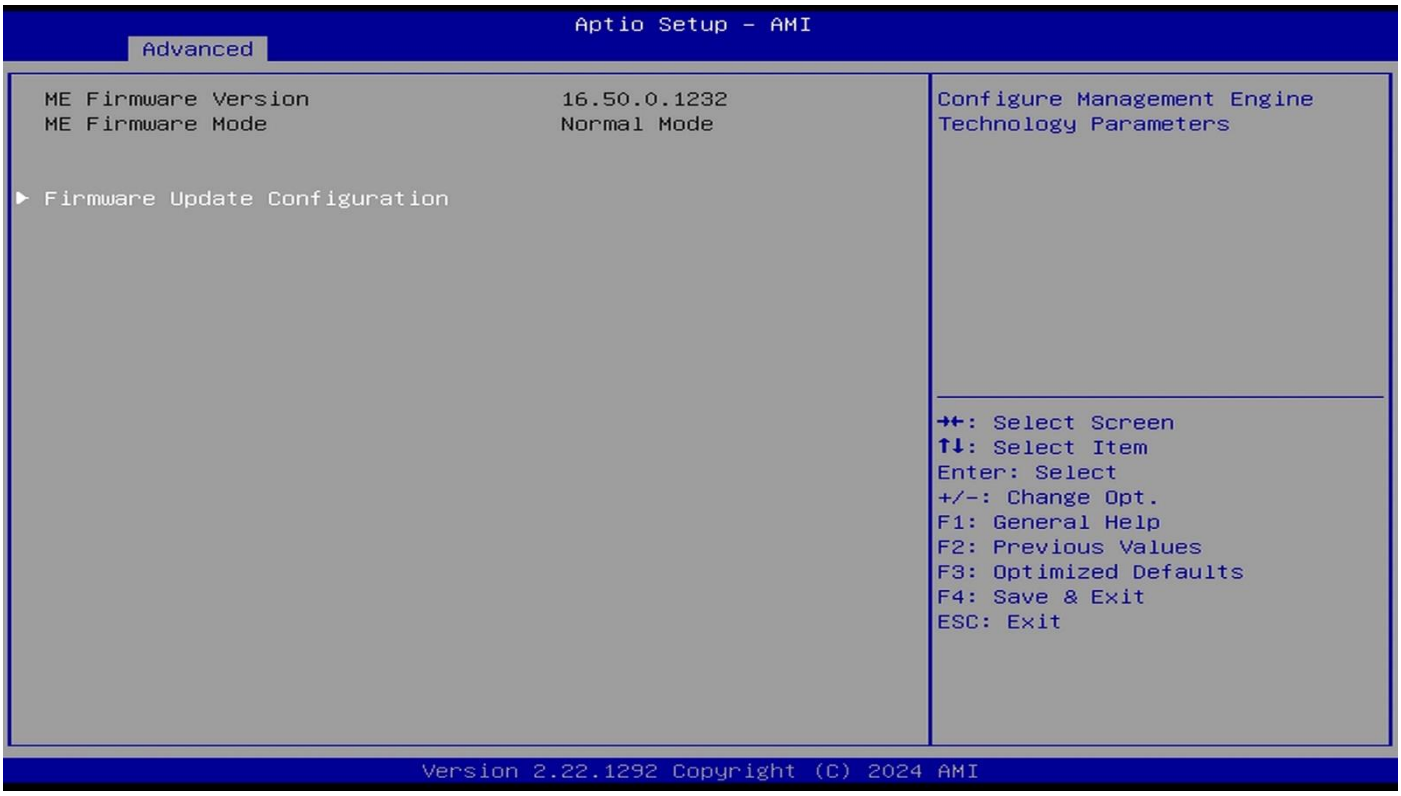
C states

Use this item to enable or disable CPU Power Management. When set as [Enabled], it allows CPU to go to C states when it's not 100% utilized.

C states Set the default value to: [Enabled]

The optional settings: [Disabled]; [Enabled].

► **PCH-FW Configuration**



Press [Enter] to view ME information and make settings in the following sub-items:

► **Firmware Update Configuration**

Press [Enter] to make settings for '**ME FW Image RE-Flash**'.

ME FW Image Re-Flash

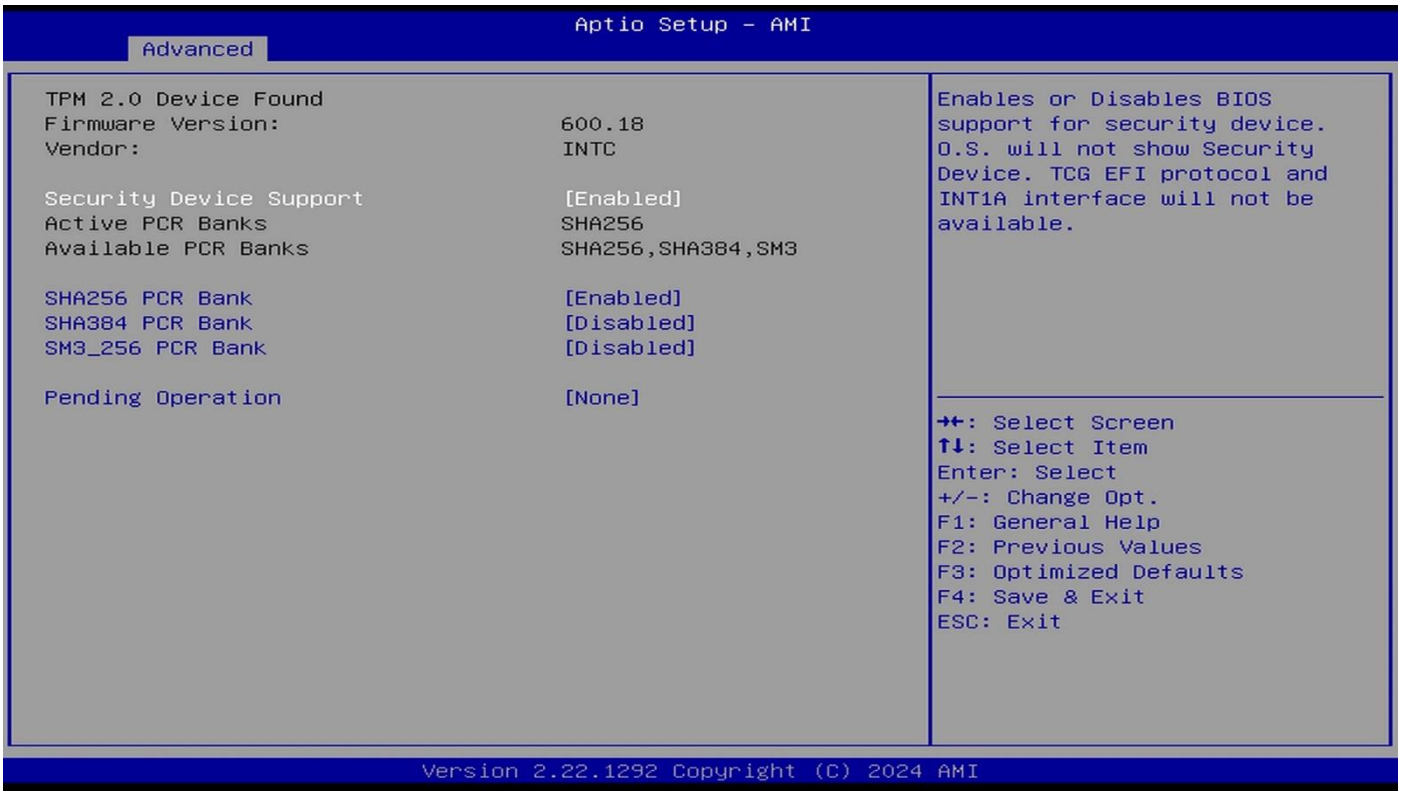
Use this item to enable or disable ME FW Image Re-Flash function.

ME FW Image Re-Flash Set the default value to: [Disabled]

The optional settings: [Disabled]; [Enabled].

** In the case that user needs to update ME firmware, user should set **'ME FW Image Re-Flash**' as [**Enabled**], save the settings and exit. The system will turn off and reboot after 4 seconds. If the user goes to BIOS screen again will find this item is set again as [**Disabled**], but user can still re-flash to update firmware next time.*

Trusted Computing



Press [Enter] to make settings in the following sub-items:

Security Device Support

Use this item to 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.

The optional settings: [Disabled]; [Enabled].

Security Device Support Set the default value to: [Enabled]

When set as [Enabled], user can make setting in the following items that appear:

SHA256 PCR Bank

Use this item to enable or disable SHA256 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA256 PCR Bank Set the default value to: [Enabled]

SHA384 PCR Bank

Use this item to enable or disable SHA384 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA384 PCR Bank Set the default value to: [Disabled]

SM3_256 PCR Bank

Use this item to enable or disable SM3_256 PCR Bank.

The optional settings: [Disabled]; [Enabled].

SHA384 PCR Bank Set the default value to: [Disabled]

Pending Operation

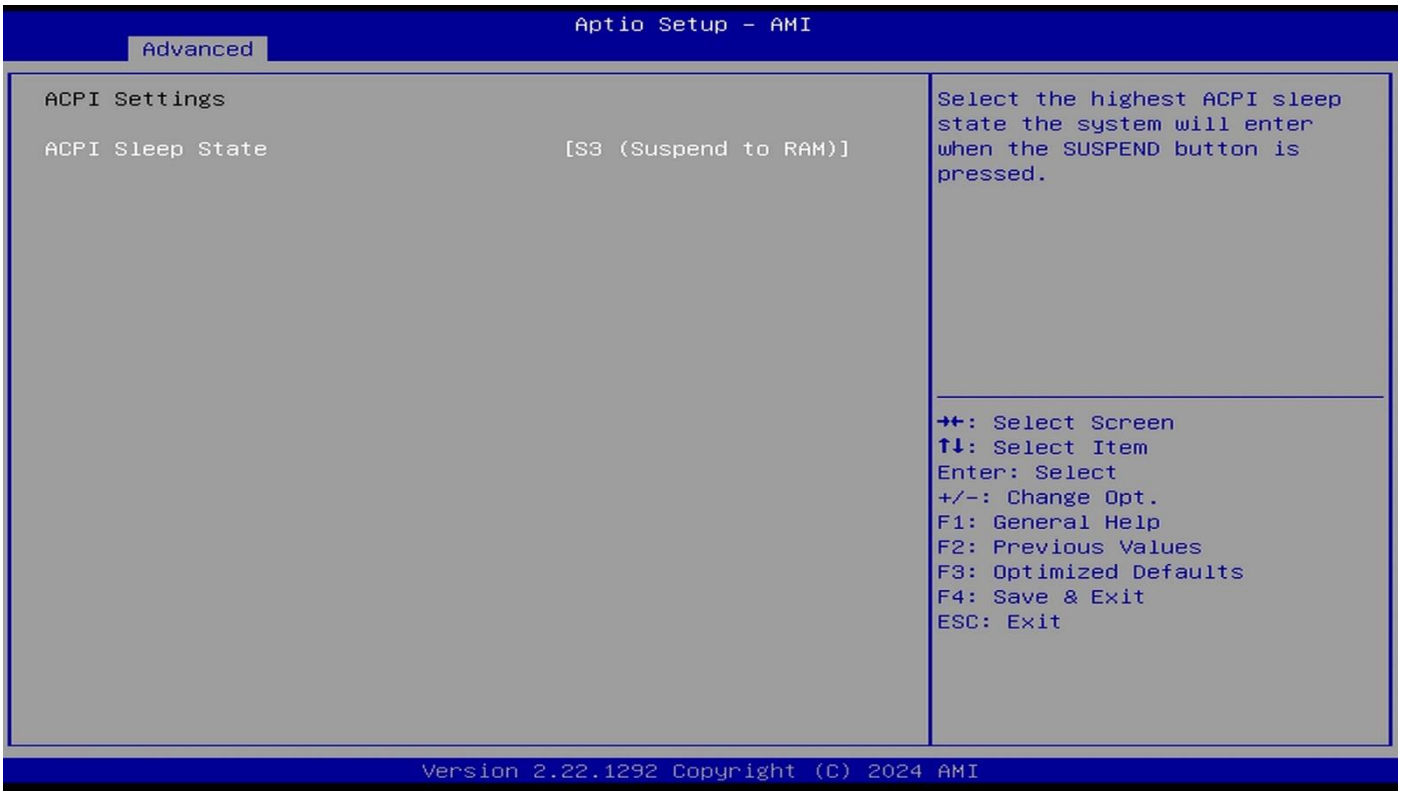
Use this item to schedule an operation for security device.

The optional settings: [None]; [TPM Clear].

Pending Operation Set the default value to: [None]

Note: Your computer will reboot during restart in order to change State of Security Device.

- **ACPI Settings**



Press [Enter] to make settings for the following sub-items:

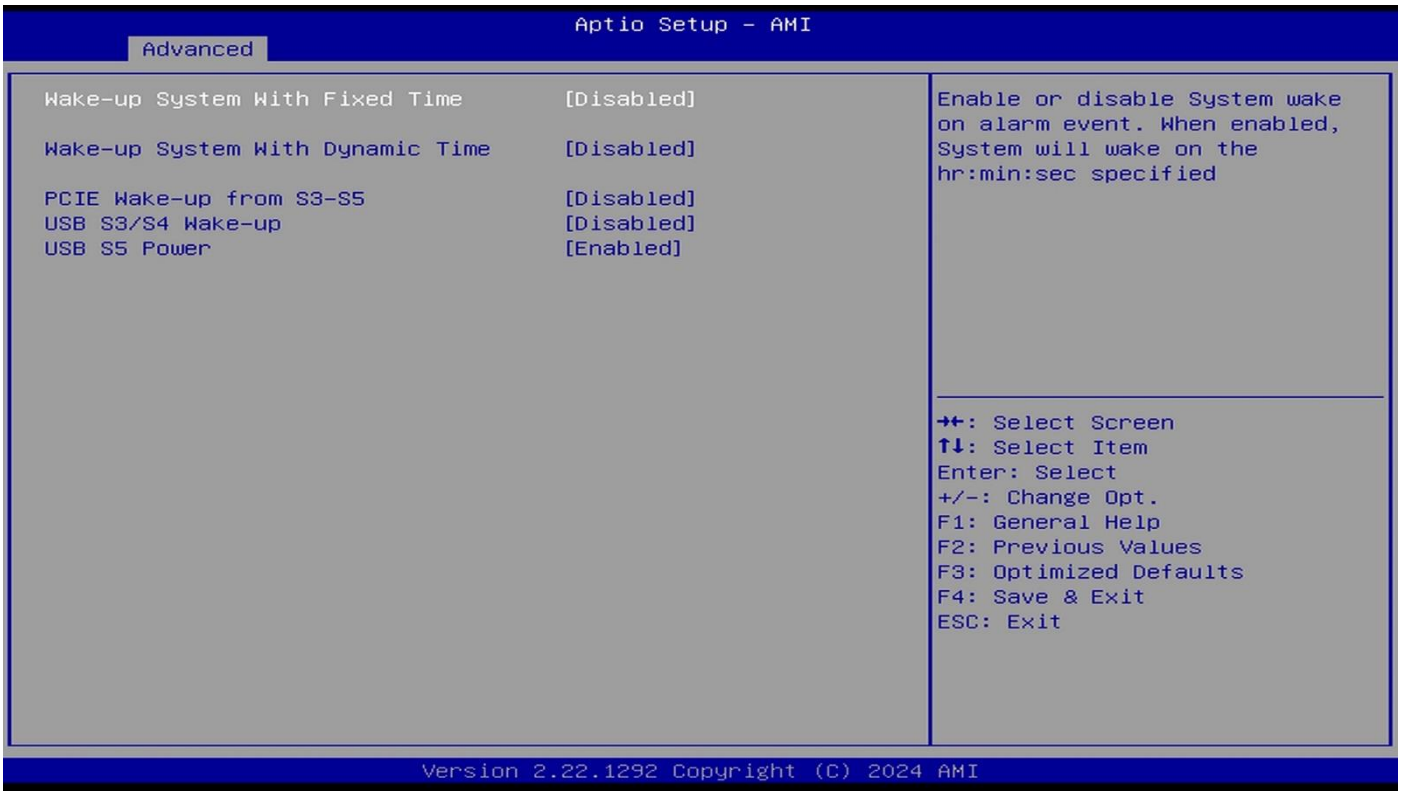
PCH-FW **ACPI Sleep State**

Use this item to select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.

The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

ACPI Sleep State Set the default value to: [S3 (Suspend to RAM)]

Wake-up Function Settings



Wake-up System With Fixed Time

This item will only show when* *'Wake-up System with Dynamic Time'*** *is set as [Disabled].*

Use this item to enable or disable system wake-up by RTC alarm. When this function is enabled, system will wake on the time (hr::min::sec) specified.

The optional settings: [Disabled]; [Enabled].

Wake-up System With Fixed Time Set the default value to: [Disabled]

When set as [Enabled], user can make settings in the following items that appear:

Wake-up Hour

Use this item to select 0-23 for example enter 3 for 3am and 15 for 3pm.

Wake-up Hour Set the default value to: [0]

Wake-up Minute

Use this item to select 0-59.

Wake-up Minute Set the default value to: [0]

Wake-up Second

Use this item to select 0-59.

Wake-up Second Set the default value to: [0]

Wake-up System with Dynamic Time

This item will only show when* *'Wake-up System with Fixed Time'*** *is set as [Disabled].*

Use this item to enable or disable system wake-up by RTC alarm. When enabled, system will wake on the current time + Increase minute(s).

Wake-up System with Dynamic Time Set the default value to: [Disabled]

When set as [Enabled], user can make settings in the following items that appear:

Wake-up Minute Increase

Use this item to select 1-60 minute(s).

Wake-up Minute Increase Set the default value to: [1]

PCIE Wake-up from S3-S5

Enable or Disable PCIE Wake-up Support.

The optional settings: [Disabled]; [Enabled].

PCIE Wake-up from S3-S5 Set the default value to: [Disabled]

USB S3/S4 Wake-up

Enable or Disable USB S3/S4 Wake-up Support Only Disable ERP Function.

The optional settings: [Disabled]; [Enabled].

USB S3/S4 Wake-up Set the default value to: [Disabled]

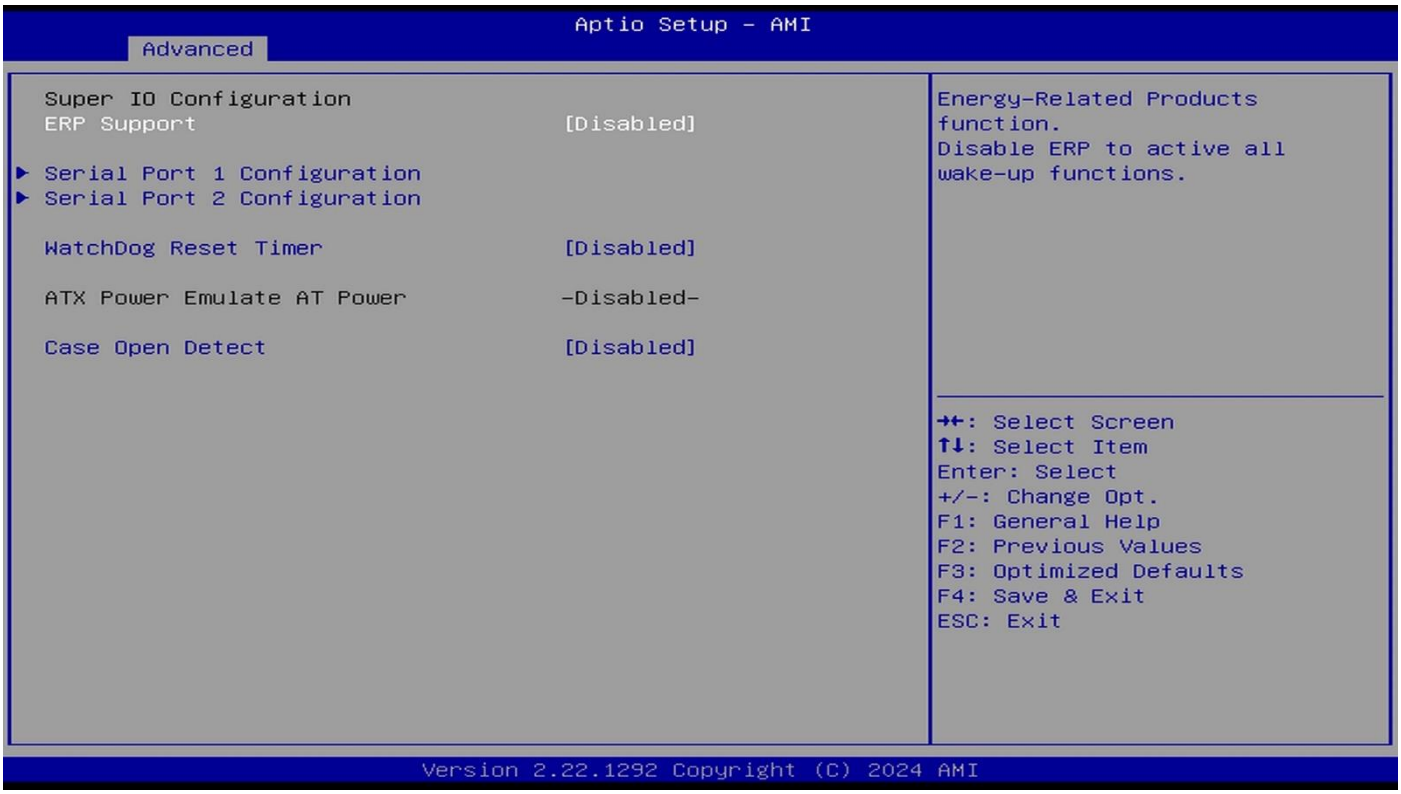
USB S5 Power

USB Power after System Shutdown Support Only Disable ERP Function

The optional settings: [Disabled]; [Enabled].

USB S5 Power Set the default value to: [Enabled]

- **Super IO Configuration**



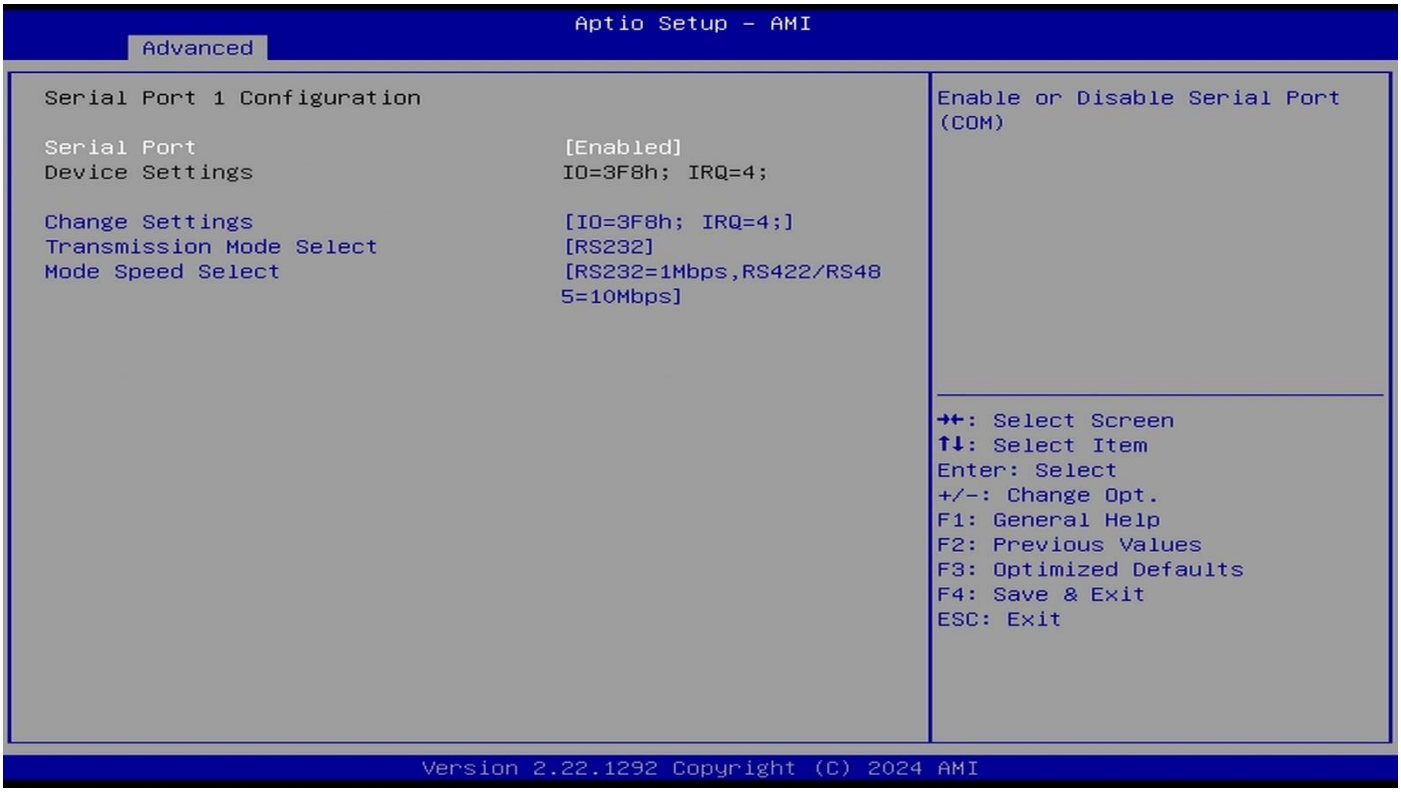
Press [Enter] to make settings for the following sub-items:

Super IO Configuration

- **ERP Support**

  Use this item to make setting for energy-related products function. Disable ERP to active all wake-up function.
  The optional settings: [Disabled]; [Enabled].
  ERP Support Set the default value to: [Disabled]

Serial Port 1 Configuration



Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable serial port (COM).

The optional settings: [Disabled]; [Enabled].

Serial Port Set the default value to: [Enabled]

When set as [Enabled], user can make settings in the following items that appear:

Change Settings

Use this item to select an optimal settings for super IO device.

The optional settings are:[IO=3F8h;IRQ=4];[IO=3F8h;IRQ=3,4,5,7,10,11];
[IO=2F8h;IRQ=3,4,5,7,10,11];[IO=3E8h;IRQ=3,4,5,7,10,11];[IO=2E8h;IRQ=3,4,5,7,10,11].

Change Settings Set the default value to: [IO=3F8h;IRQ=4]

Transmission Mode Select

The optional settings are: [RS422]; [RS232]; [[RS485].

Transmission Mode Select Set the default value to: [RS232]

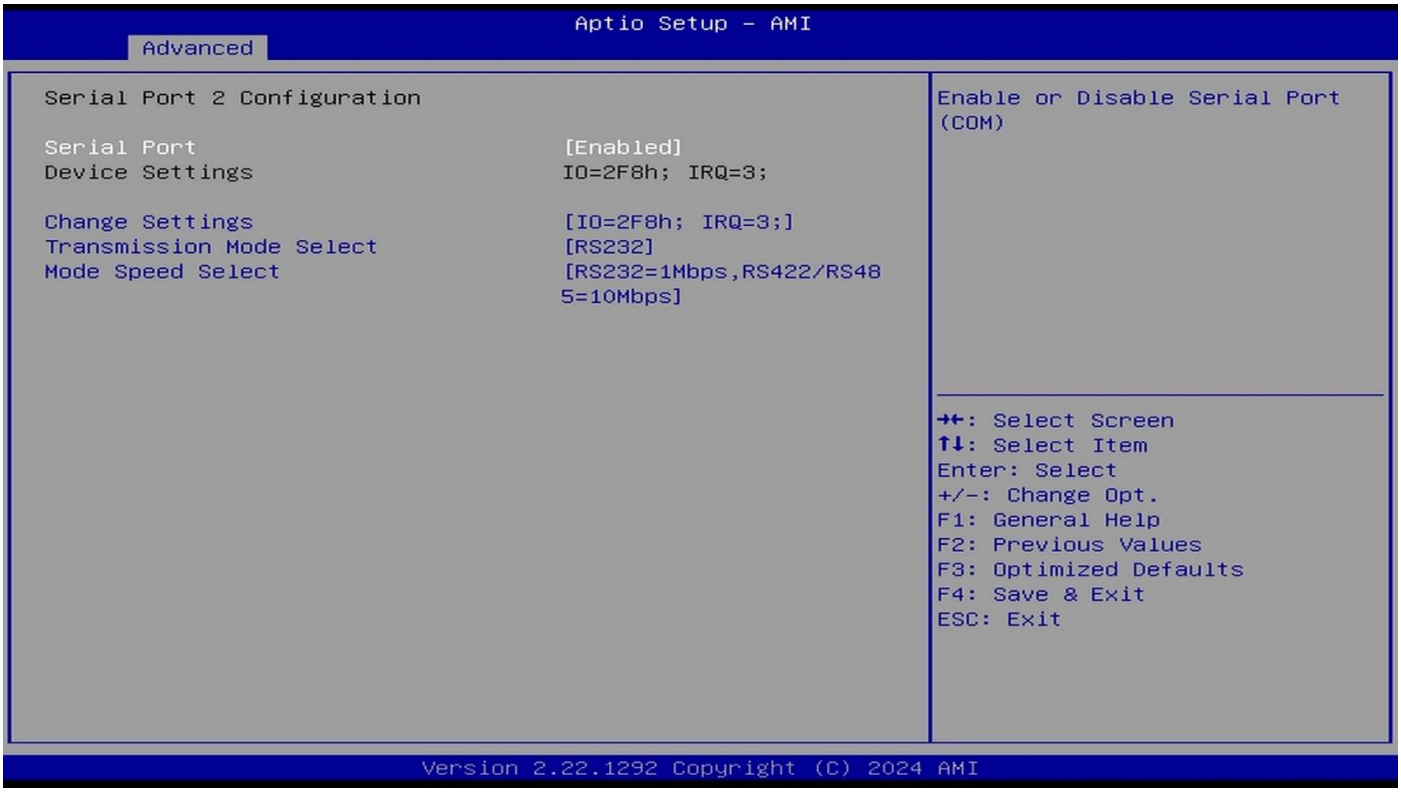
Mode Speed Select

Use this item to RS232/RS422/RS485 Speed Select.

The optional settings are: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

Mode Speed Select Set the default value to: [RS232=1Mbps, RS422/RS485=10Mbps]

Serial Port 2 Configuration



Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable serial port (COM).

The optional settings: [Disabled]; [Enabled].

Serial Port Select Set the default value to: [Enabled]

When set as [Enabled], user can make settings in the following items that appear:

Change Settings

Use this item to select an optimal setting for super IO device.

The optional settings are:

[IO=2F8h;IRQ=3]; [IO=3F8h;IRQ=3,4,5,7,10,11]; [IO=2F8h;IRQ=3,4,5,7,10,11]; [IO=3E8h;IRQ=3,4,5,7,10,11] ; [IO=2E8h;IRQ=3,4,5,7,10,11].

Change Settings Set the default value to: [IO=2F8h;IRQ=3]

Transmission Mode Select

The optional settings are: [RS422]; [RS232]; [[RS485].

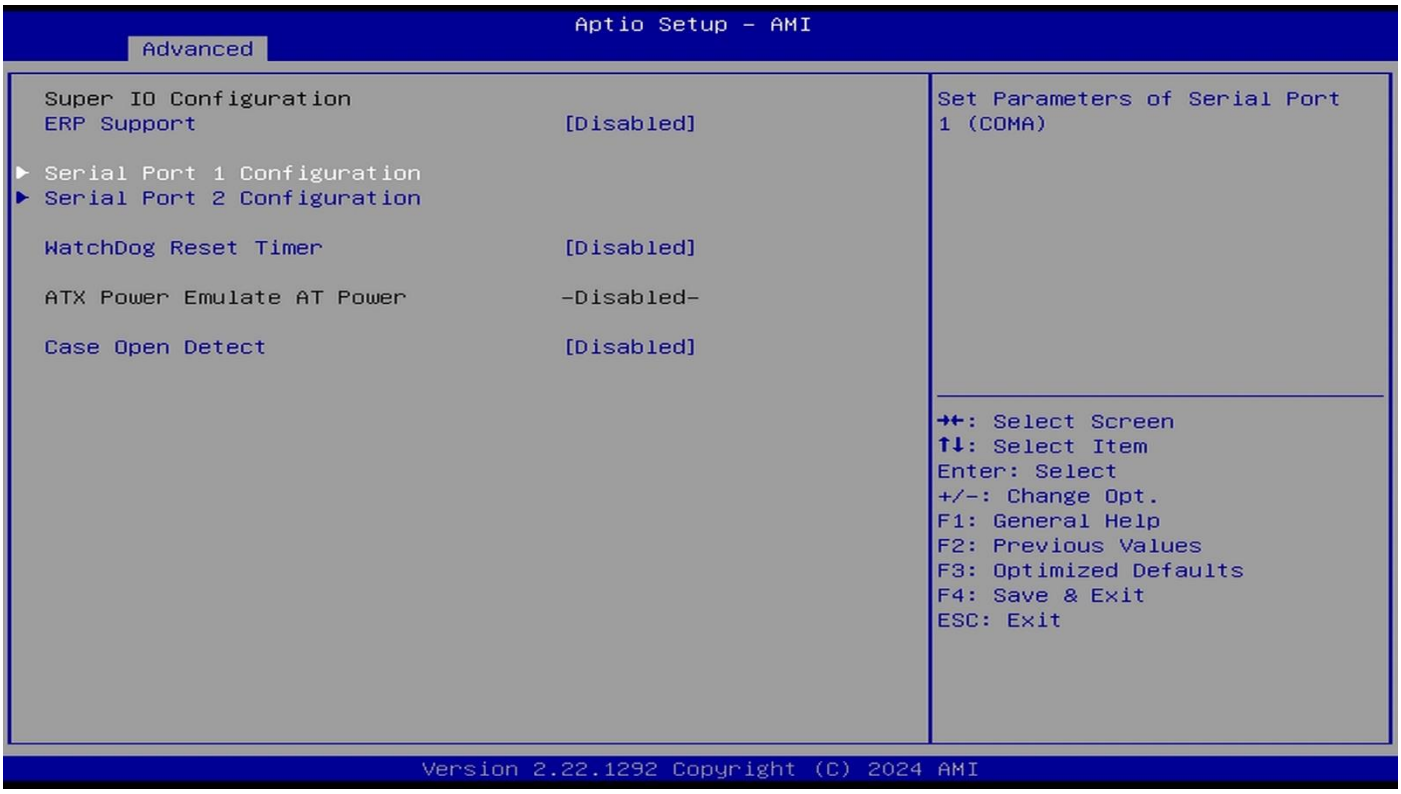
Transmission Mode Select Set the default value to: [RS232]

Mode Speed Select

Use this item to RS232/RS422/RS485 Speed Select.

The optional settings are: [RS232/RS422/RS485=250Kbps]; [RS232=1Mbps, RS422/RS485=10Mbps].

Mode Speed Select Set the default value to: [RS232=1Mbps, RS422/RS485=10Mbps]



WatchDog Reset Timer

Use this item to support WDT reset function.

The optional settings: [Disabled]; [Enabled].

WatchDog Reset Timer Set the default value to: [Disabled]

When set as [Enabled], user can make settings in the following items that appear:

WatchDog Reset Timer Value

User can set a value in the range of [10] to [255] seconds or [1] to [255] minutes.

WatchDog Reset Timer Value Set the default value to: [10]

WatchDog Reset Timer Unit

The optional settings are: [Sec.]; [Min.].

WatchDog Reset Timer Unit Set the default value to: [Sec]

ATX Power Emulate AT Power

This item support Emulate AT power function, MB power On/Off control by power supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (refer to J**PAT1** jumper setting Pin 1&2 of for **ATX Mode** & Pin 2&3 of **AT Mode** Select).

Case Open Detect

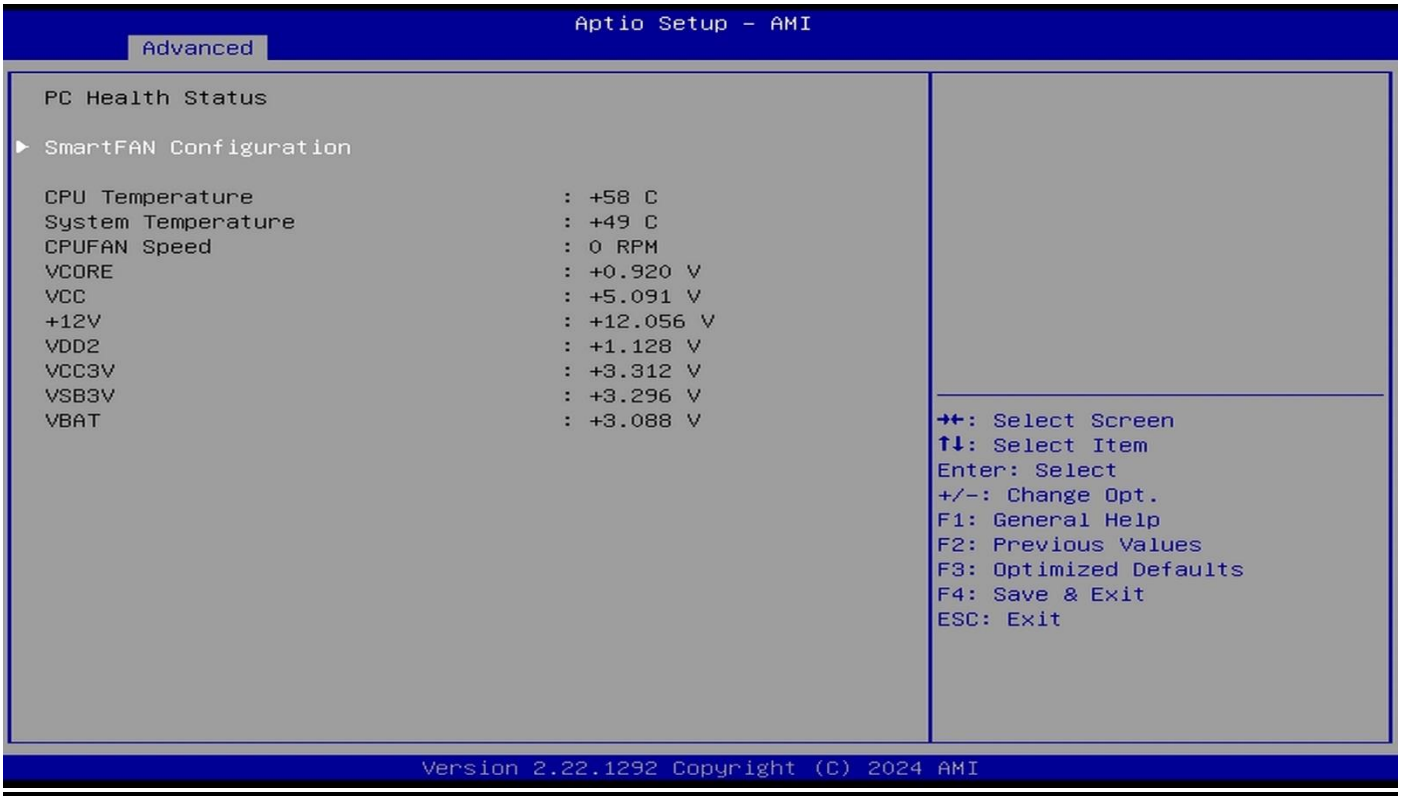
Use this item to detect if case have ever been opened. Show message in POST.

The optional settings: [Disabled]; [Enabled].

Case Open Detect Set the default value to: [Disabled]

- When set as [Enabled], system will detect if COPEN has been short or not (*refer to **JCLR1** jumper setting for Case Open Detection*); if Pin 7&8 of ***JCLR1*** are short, system will show Case Open Message during POST.

PC Health Status



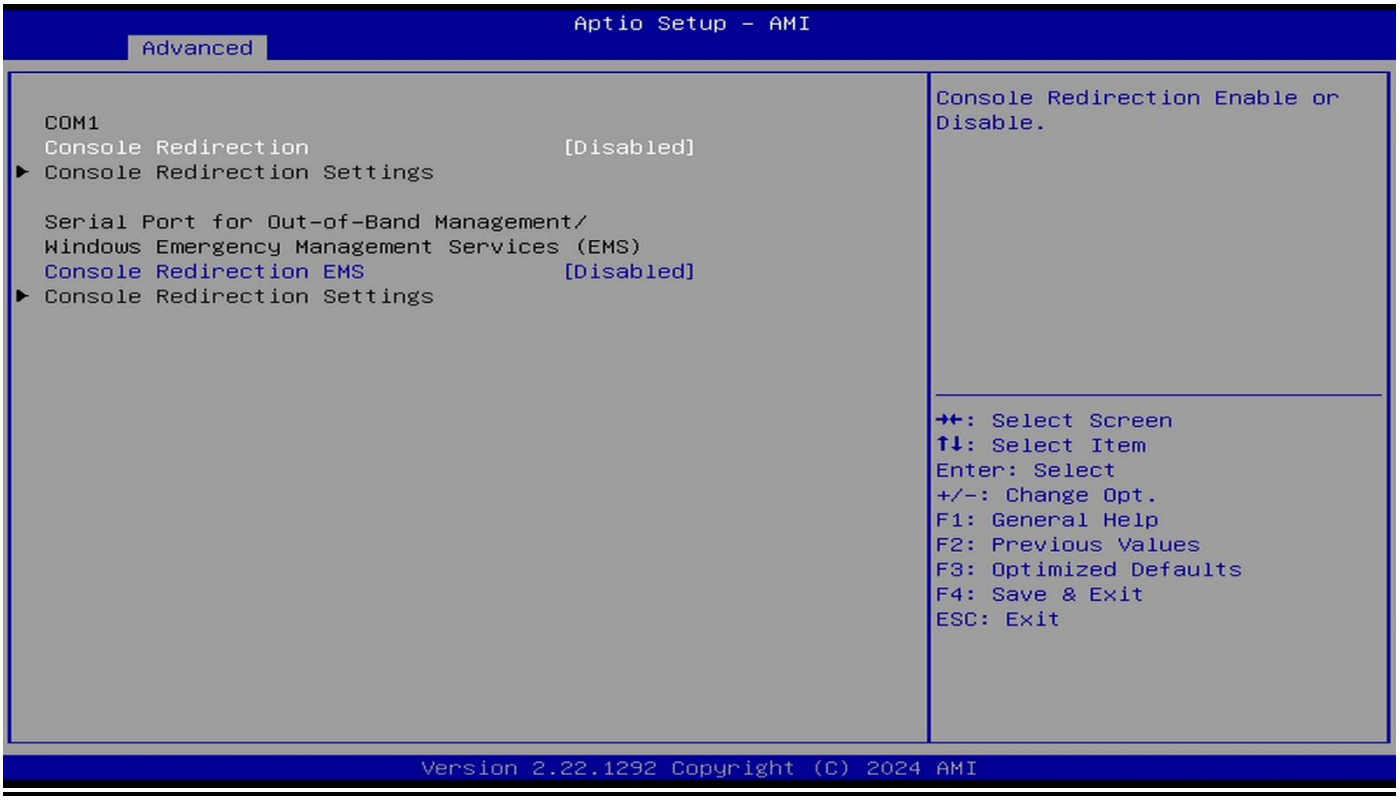
Press [Enter] to view current hardware health status, make further settings in '**SmartFAN Configuration**'.

- **Serial Port Console Redirection**

  Press [Enter] to make settings for the following sub-items:

  COM1

  Console Redirection



  Console Redirection enable or disable.

  The optional settings: [Disabled]; [Enabled].

  Console Redirection Set the default value to: [Disabled]

  When set as **[Enabled]**, user can make further settings in the '**Console Redirection Settings**' screen:

- **Console Redirection Settings**

  The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

  Press [Enter] to make settings for the following sub-items：

  Terminal Type

  The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].
  [ANSI]: Extended ASCII char set;
  [VT100]: ASCII char set;
  [VT100Plus]: Extends VT100 to support color, function keys, etc.
  [VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.
  Terminal Type Set the default value to: [ANSI]

  Bits per second

  Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

  The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].

Bits per second Set the default value to: [115200]

Data Bits

The optional settings: [7]; [8].

Data Bits Set the default value to: [8]

Parity

A parity bit can be sent with the data bits to detect some transmission errors.
The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].
[Even]: parity bit is 0 if the num of 1's in the data bits is even;
[Odd]: parity bit is 0 if num of 1's in the data bits is odd;
[Mark]: parity bit is always 1;
[Space]: parity bit is always 0;
Parity Set the default value to: [None]
[Mark] and **[Space]**: parity do not allow for error detection. They can be used as an additional data bit.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.
The optional settings: [1]; [2].
Stop Bits Set the default value to: [1]

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.
The optional settings: [None]; [Hardware RTS/CTS].
Flow Control Set the default value to: [None]

VT-UTF8 Combo Key Support

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.
The optional settings: [Disabled]; [Enabled].
VT-UTF8 Combo Key Support Set the default value to: [Enabled]

Recorder Mode

With this mode enabled only text will be sent. This is to capture Terminal data.
The optional settings: [Disabled]; [Enabled].
Recorder Mode Set the default value to: [Disabled]

Resolution 100x31

Use this item to enable or disable extended terminal resolution.
The optional settings: [Disabled]; [Enabled].
Resolution 100x31 Set the default value to: [Disabled]

Putty KeyPad

Use this item to select FunctionKey and KeyPad on Putty.
The optional settings: [VT100]; [LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].
Putty KeyPad Set the default value to: [VT100]

Serial Port for Out-of-Band Management/

Windows Emergency Management Services (EMS)

Console Redirection EMS

Use this item to enable or disable console redirection.

The optional settings: [Disabled]; [Enabled].

Console Redirection EMS Set the default value to: [Disabled]

When set as **[Enabled]**, user can make further settings in '**Console Redirection Settings**' screen:

- **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following sub-items.

Terminal Type EMS

The optional settings: [VT100]; [VT100Plus]; [VT-UTF8]; [ANSI].

[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is **[VT100+]** and then **[VT100]**. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

Terminal Type EMS Set the default value to: [VT-UTF8]

Bits per second EMS

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [57600]; [115200].

Bits per second EMS Set the default value to: [115200]

Flow Control EMS

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

The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Flow Control EMS Set the default value to: [None]

Data Bits EMS

The default setting is: [8].

**This item may or may not show up, depending on different configuration.*

Parity EMS

The default setting is: [None].

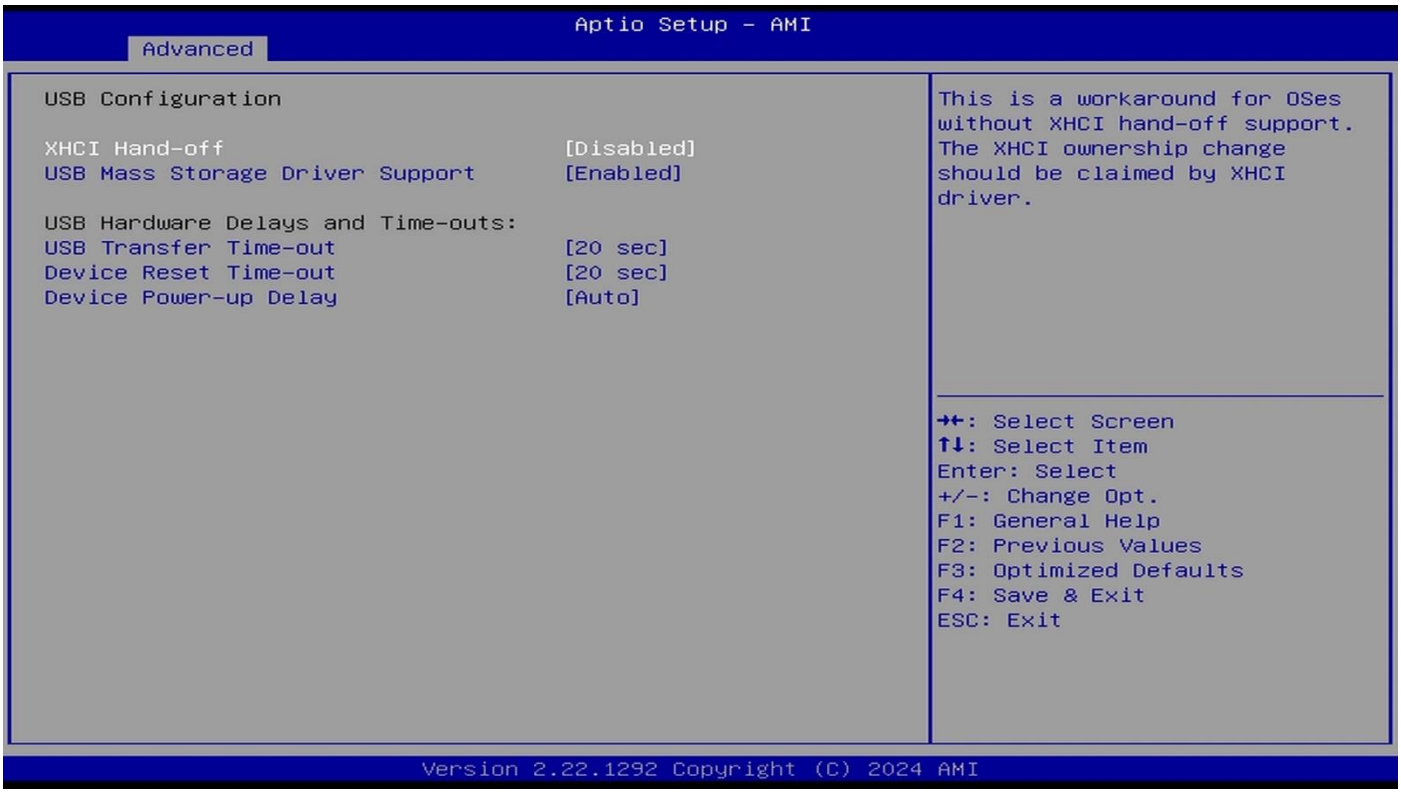
**This item may or may not show up, depending on different configuration.*

Stop Bits EMS

The default setting is: [1].

**This item may or may not show up, depending on different configuration.*

- **USB Configuration**



Press [Enter] to make settings for the following sub-items:

USB Configuration

XHCI Hand-off

This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings: [Enabled]; [Disabled].

XHCI Hand-off Set the default value to: [Disabled]

USB Mass Storage Driver Support

Use this item to enable or disable USB Mass storage driver support.

The optional settings: [Disabled]; [Enabled].

USB Mass Storage Driver Support Set the default value to: [Enabled]

USB hardware delay and time-out

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings: [1 sec]; [5 sec]; [10 sec]; [20 sec].

USB Transfer time-out Set the default value to: [20 sec]

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.

The optional settings: [10 sec]; [20 sec]; [30 sec]; [40 sec].

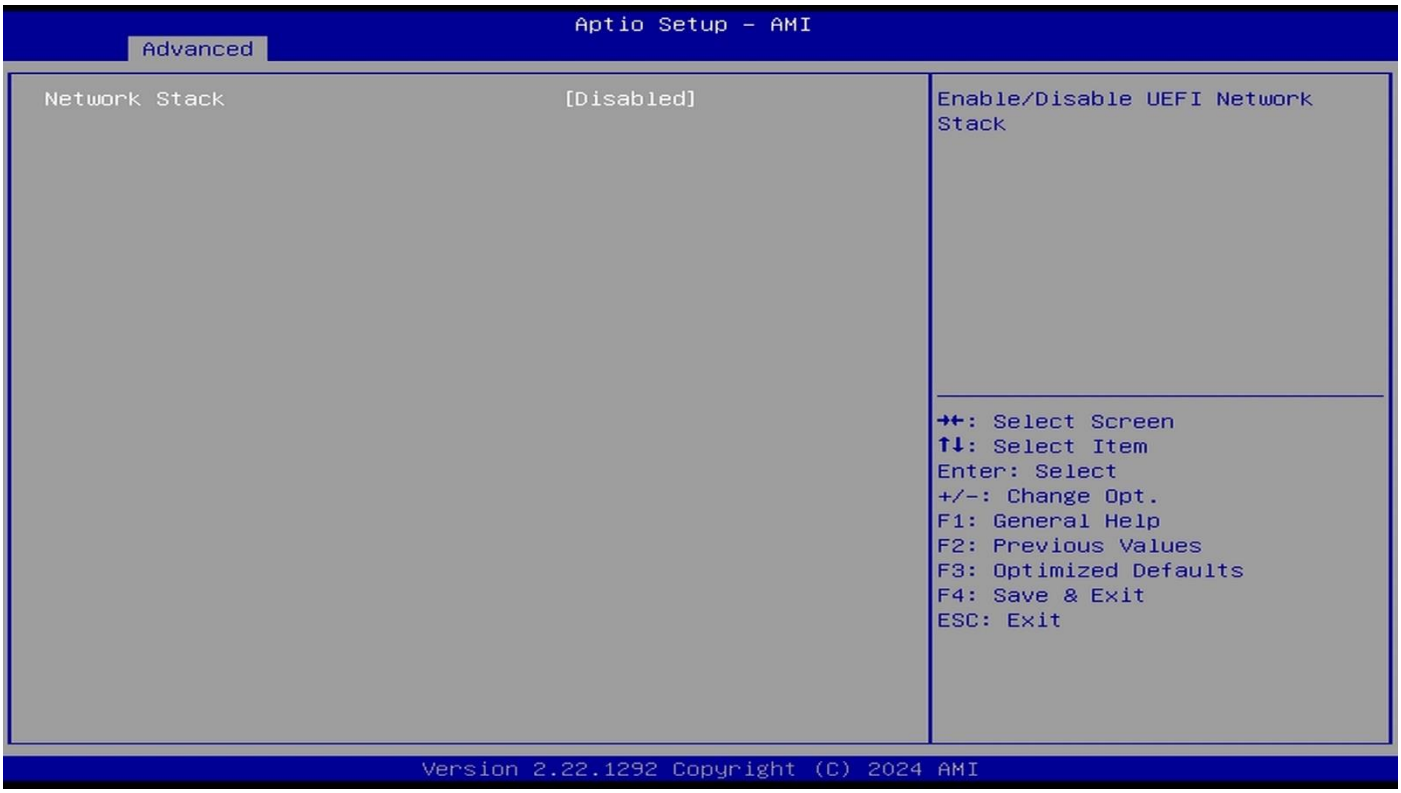
Device reset time-out Set the default value to: [20 sec]

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the

host controller. ‘Auto’ uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.
The optional settings: [Auto]; [Manual].
Device power-up delay Set the default value to: [Auto]
Select **[Manual]** you can set value for the following sub-item: ‘**Device power-up delay in seconds**’**,** the delay range is 1 .. 40 seconds, in one second increments.

- **Network Stack Configuration**

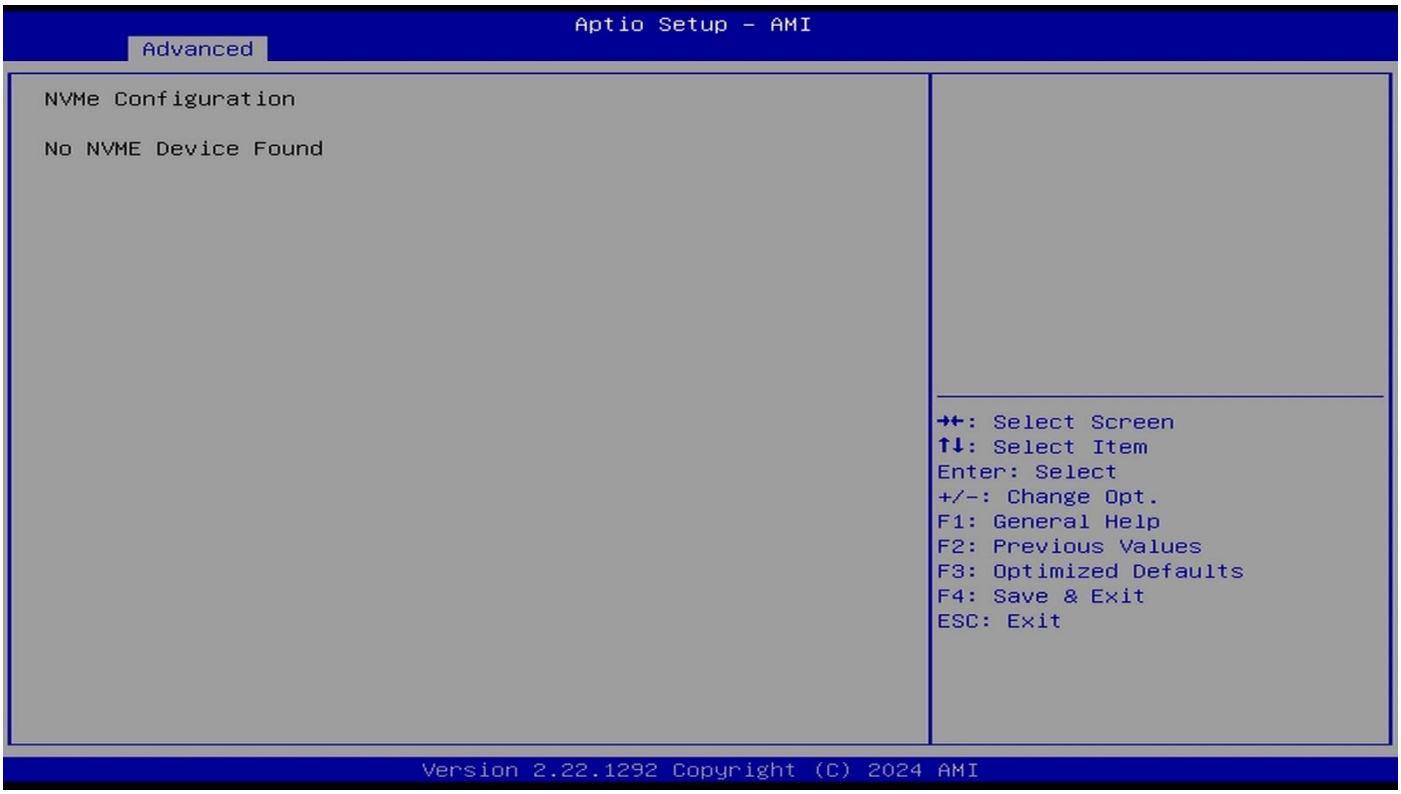


Press [Enter] to go to ‘**Network Stack**’ screen to make further settings.
Network Stack
Use this item to enable or disable UEFI Network Stack.
The optional settings: [Disabled]; [Enabled].
Network Stack Set the default value to: [Disabled]
When set as **[Enabled]**, the following sub-items shall appear:
IPv4 PXE Support
Use this item to enable/disable IPv4 PXE Boot Support. When set as [Disabled], IPv4 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv4 PXE Support Set the default value to: [Enabled]
IPv6 PXE Support
Use this item to enable/disable IPv6 PXE Boot Support. When set as [Disabled], IPv6 PXE boot support will not be available.
The optional settings: [Disabled]; [Enabled].
IPv6 PXE Support Set the default value to: [Disabled]

PXE boot wait time
Wait time in seconds to press [ESC] key to abort the PXE boot.
Use either [+]/[-] or numeric keys to set the value.
PXE boot wait time Set the default value to: [2]

Media detect count
Use this item to set number of times presence of media will be checked.
Use either [+]/[-] or numeric keys to set the value.
Media detect count Set the default value to: [5]

- **NVMe Configuration**

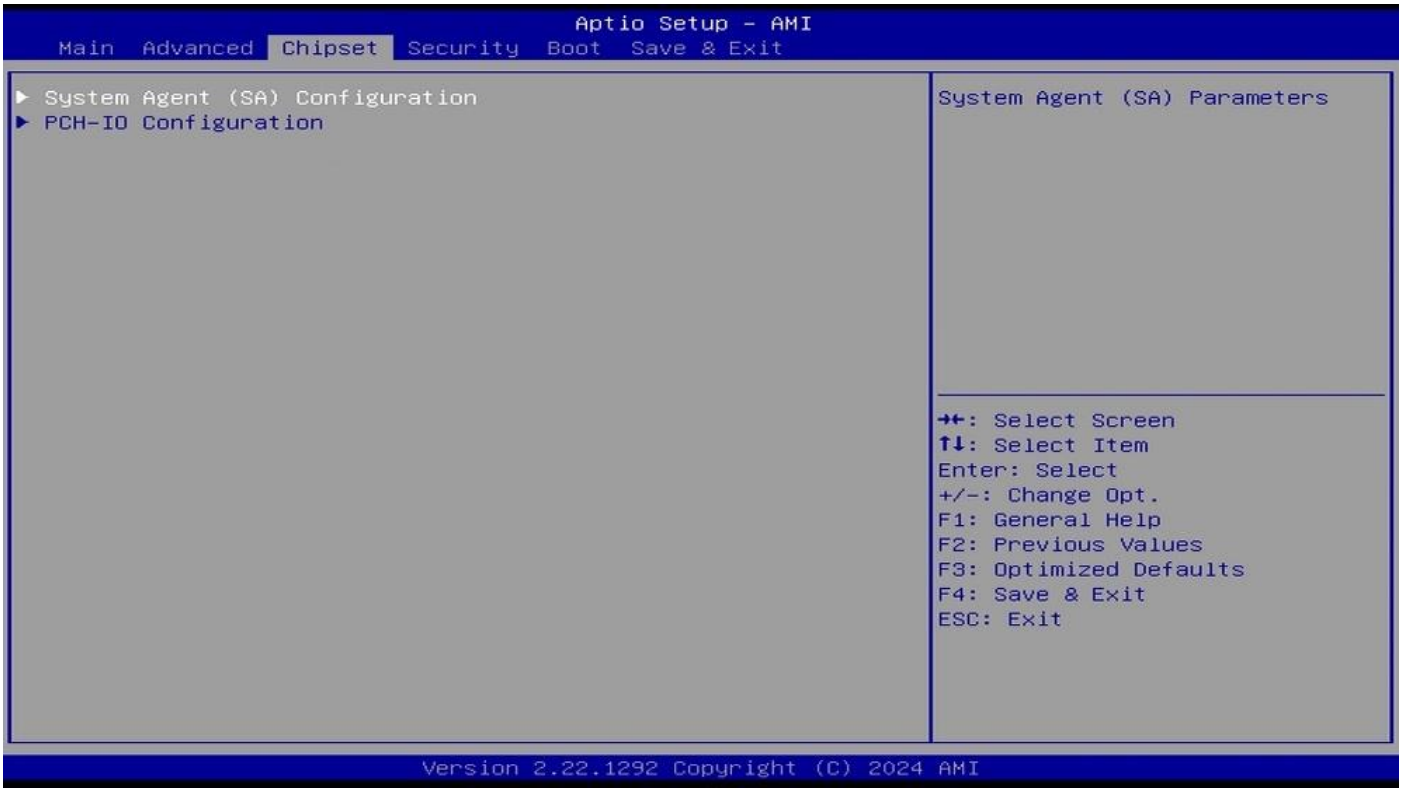


Use this item to set NVMe Device options settings.

NVMe Configuration

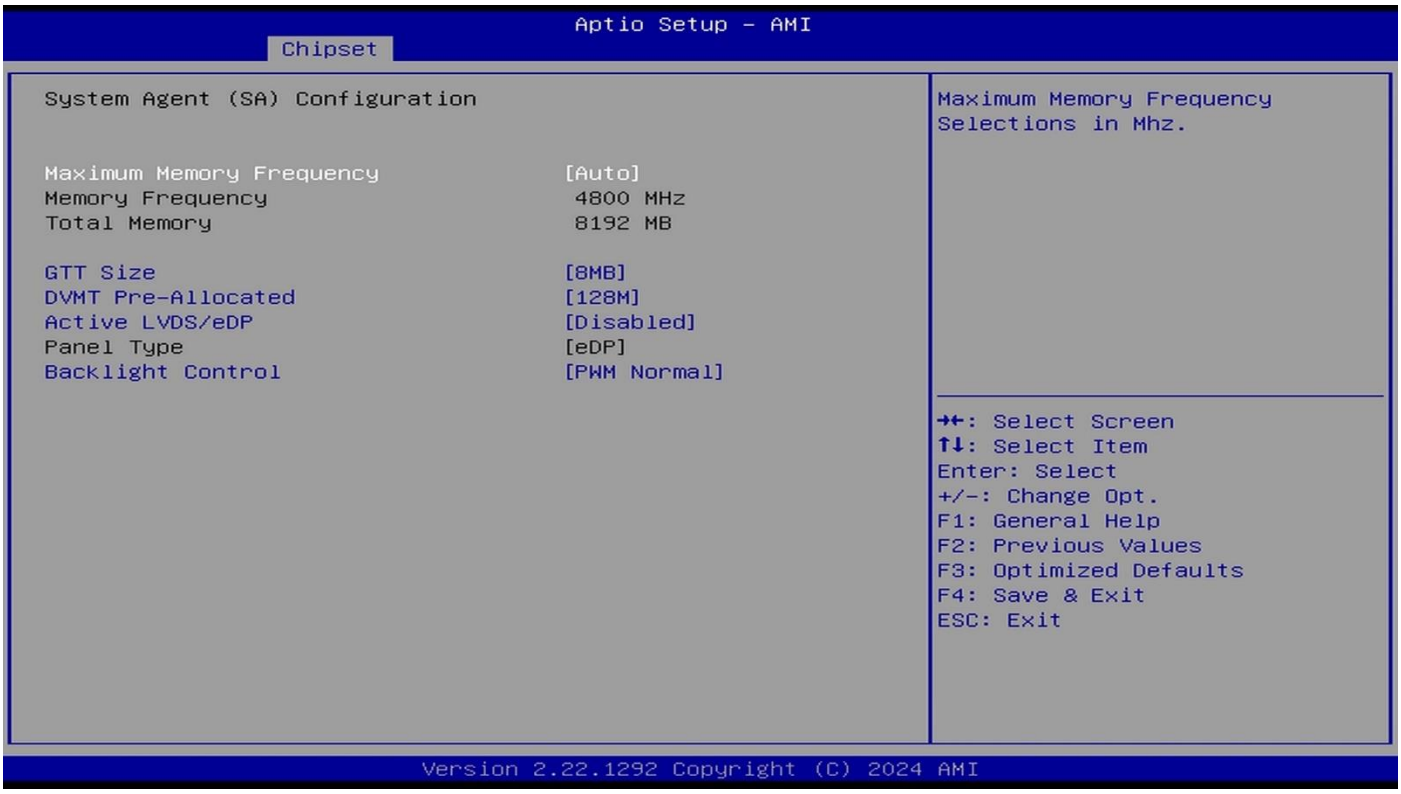
- **Realtek PCIe GBE Family Controller (MAC:XX:XX:XX:XX:XX:XX)**

4-8 Chipset Menu



- **System Agent (SA) Configuration**

  Press [Enter] to make settings for the following sub-items:
  System Agent (SA) Configuration
  Maximum Memory Frequency



Maximum Memory Frequency Selections in Mhz.

The optional settings are: [Auto]; [3200]; [3467]; [3600]; [3733]; [4000]; [4200] ; [4267]; [4400]; [4600]; [4800].

GTT Size Set the default value to: [Auto]

GTT Size

Use this item to select GTT Size.

The optional settings are: [2MB]; [4MB]; [8MB].

GTT Size Set the default value to: [8MB]

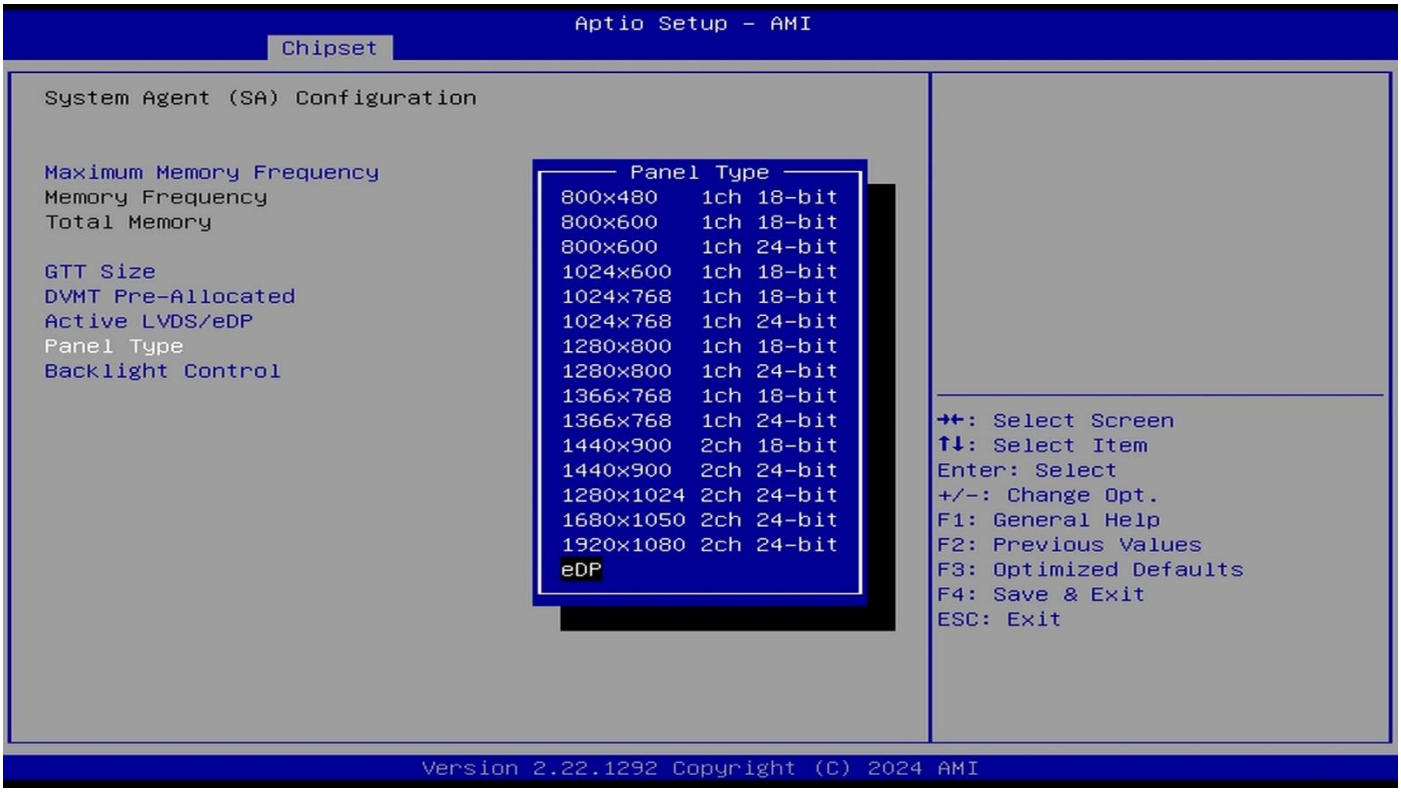
DVMT Pre-Allocated

Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

The optional settings: [32M]; [64M]; [96M]; [128M]; [160M]; [8M]; [12M]; [16M]; [20M]; [24M]; [28M]; [32M/F7]; [36M]; [40M]; [44M]; [48M]; [52M]; [56M]; [60M].

DVMT Pre-Allocated Set the default value to: [128M]

Panel Type



The optional settings are: [800x480 1ch 18-bit]; [800x600 1ch 18-bit]; [800x600 1ch 24-bit]; [1024x600 1ch 18-bit]; [1024x768 1ch 18-bit]; [1024x768 1ch 24-bit]; [1280x800 1ch 18-bit]; [1280x800 1ch 24-bit]; [1366x768 1ch 18-bit]; [1366x768 1ch 24-bit]; [1440x900 2ch 18-bit]; [1440x900 2ch 24-bit]; [1280x1024 2ch 24-bit]; [1680x1050 2ch 24-bit]; [1920x1080 2ch 24-bit]; [eDP].

Panel Type Set the default value to: [eDP]

Backlight Control

Use this item to make back light control setting.

The optional settings are: [PWM Inverted]; [PWM Normal].

Backlight Control Set the default value to: [PWM Normal]

- **PCH-IO Configuration**

Press [Enter] to make settings for the following sub-items:

PCH-IO Configuration

M.2

Port

Use this item to enable or disable SATA Port.

The optional settings are: [Disabled]; [Enabled].

Port Set the default value to: [Enabled]

M2B Slot Select

Select slot Function

The optional settings: [Auto]; [SATA] [PCIex2]; [PCIex1+USB3].

HD Audio Set the default value to: [Auto]

HD Audio

Use this item to control detection of the HD-Audio device.

Disabled= HDA will be unconditionally disabled.

Enabled= HDA will be unconditionally enabled.

The optional settings: [Disabled]; [Enabled].

HD Audio Set the default value to: [Enabled]

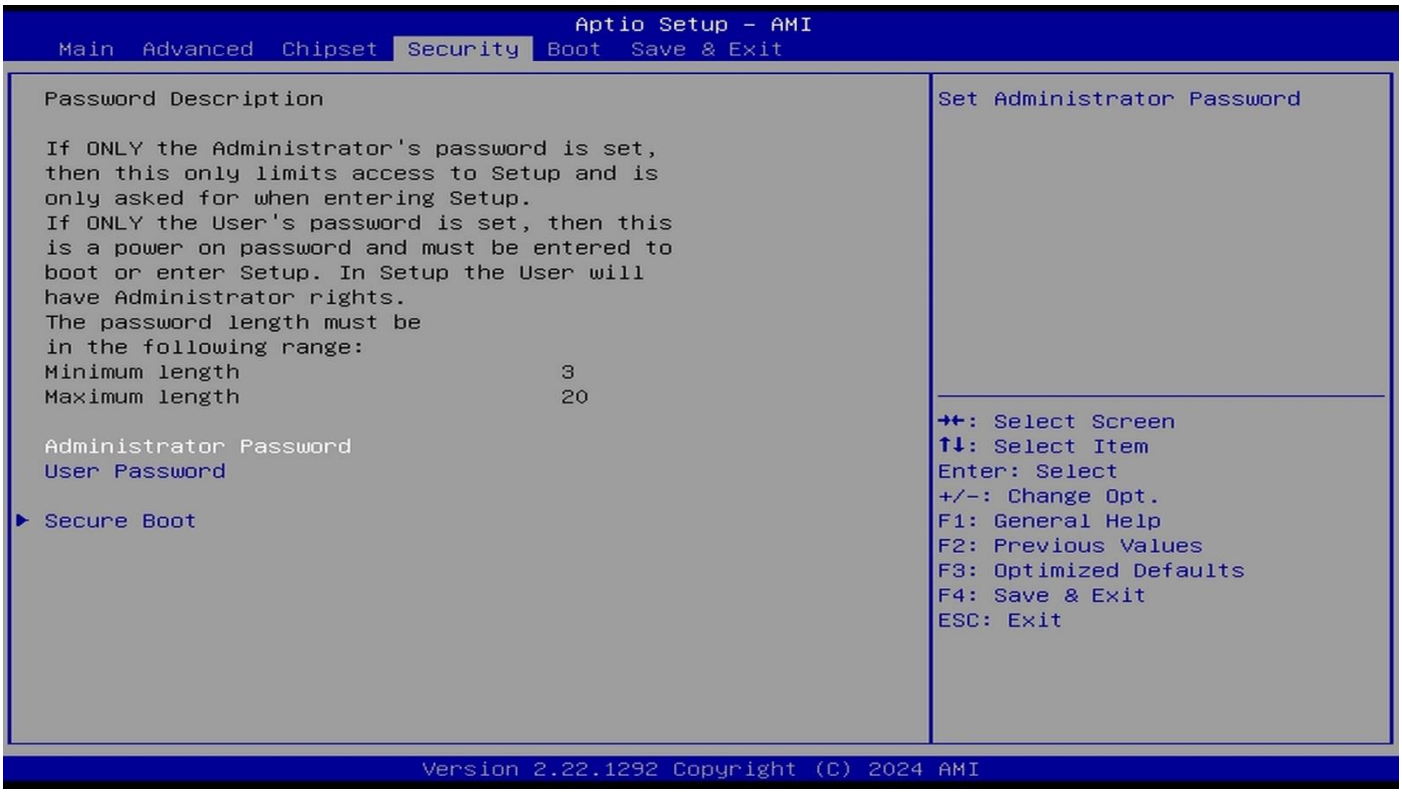
System State after Power Failure

Specify what state to go to when power is re-applied after a power failure (G3 state).

The optional settings: [Always On]; [Always Off]; [Former State].

System State after Power Failure Set the default value to: [Always Off]

4-9 Security Menu



Security menu allow users to change administrator password and user password settings.

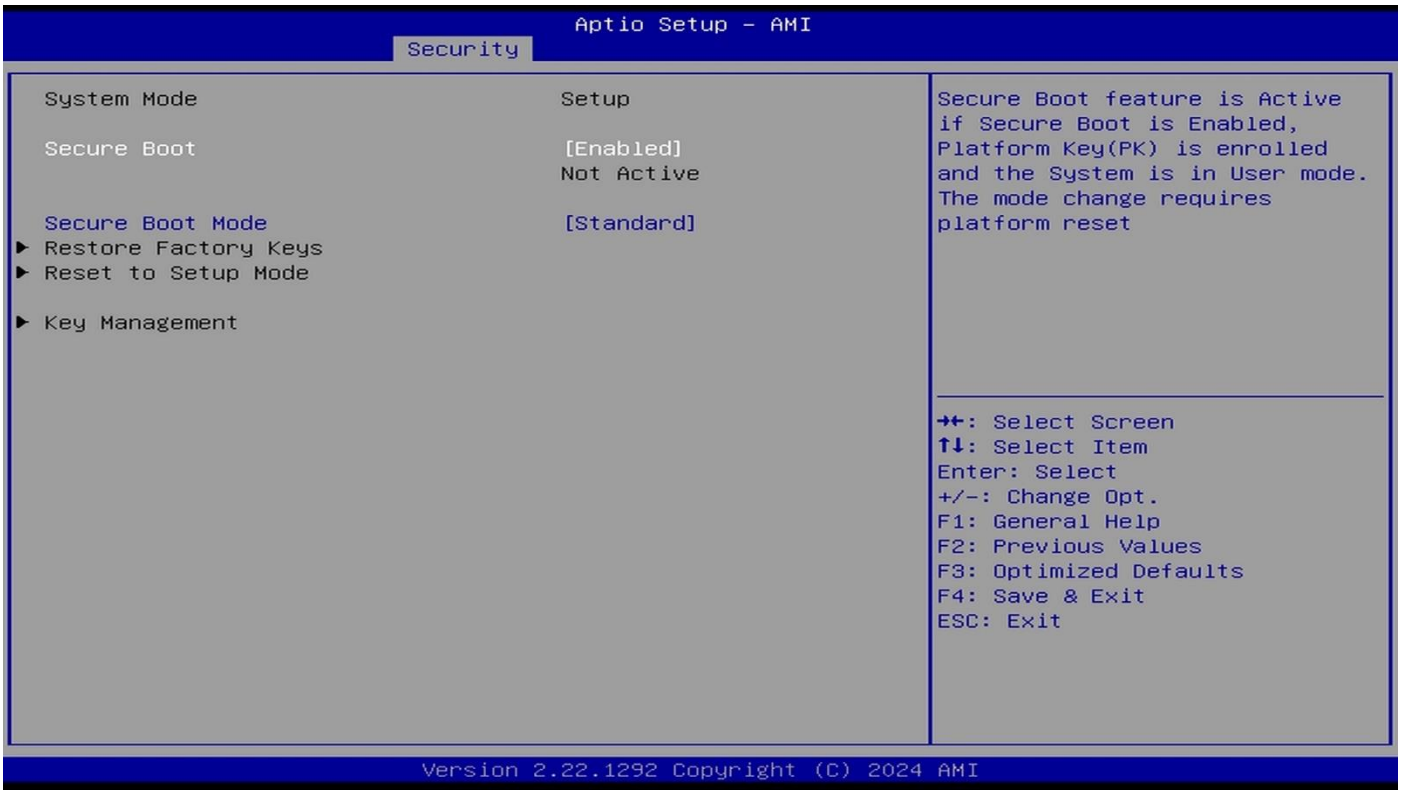
Administrator Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

User Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

- **Secure Boot**



Press [Enter] to make customized secure settings:

System Mode

Secure Boot

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.

The optional settings: [Disabled]; [Enabled].

Secure Boot Set the default value to: [Enabled]

Secure Boot Mode

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode.

In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.

The optional settings: [Standard]; [Custom].

Secure Boot Mode Set the default value to: [Standard]

When set as [**Custom**], user can make further settings in the following items that show up:

- **Restore Factory Keys**

Use this item to force system to User Mode, to install factory default Secure Boot key databases.

- **Reset To Setup Mode**

Use this item to Delete all secure boot key databases from NVRAM.

- **Key Management**

This item enables expert users to modify Secure Boot Policy variables without full authentication, which includes the following items:

Vendor Keys

Factory Key Provision

This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.
The optional settings: [Disabled]; [Enabled].
Factory Key Provision Set the default value to: [Disabled]

- **Restore Factory Keys**

Use this item to force system into User Mode. Install factory default Secure Boot key databases.

- **Reset To Setup Mode**

Use this item to Delete all Secure Boot key databases from NVRAM.

- **Enroll Efi Image**

This item allows the image to run in Secure Boot mode.
Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database (db).

- **Export Secure Boot variables**

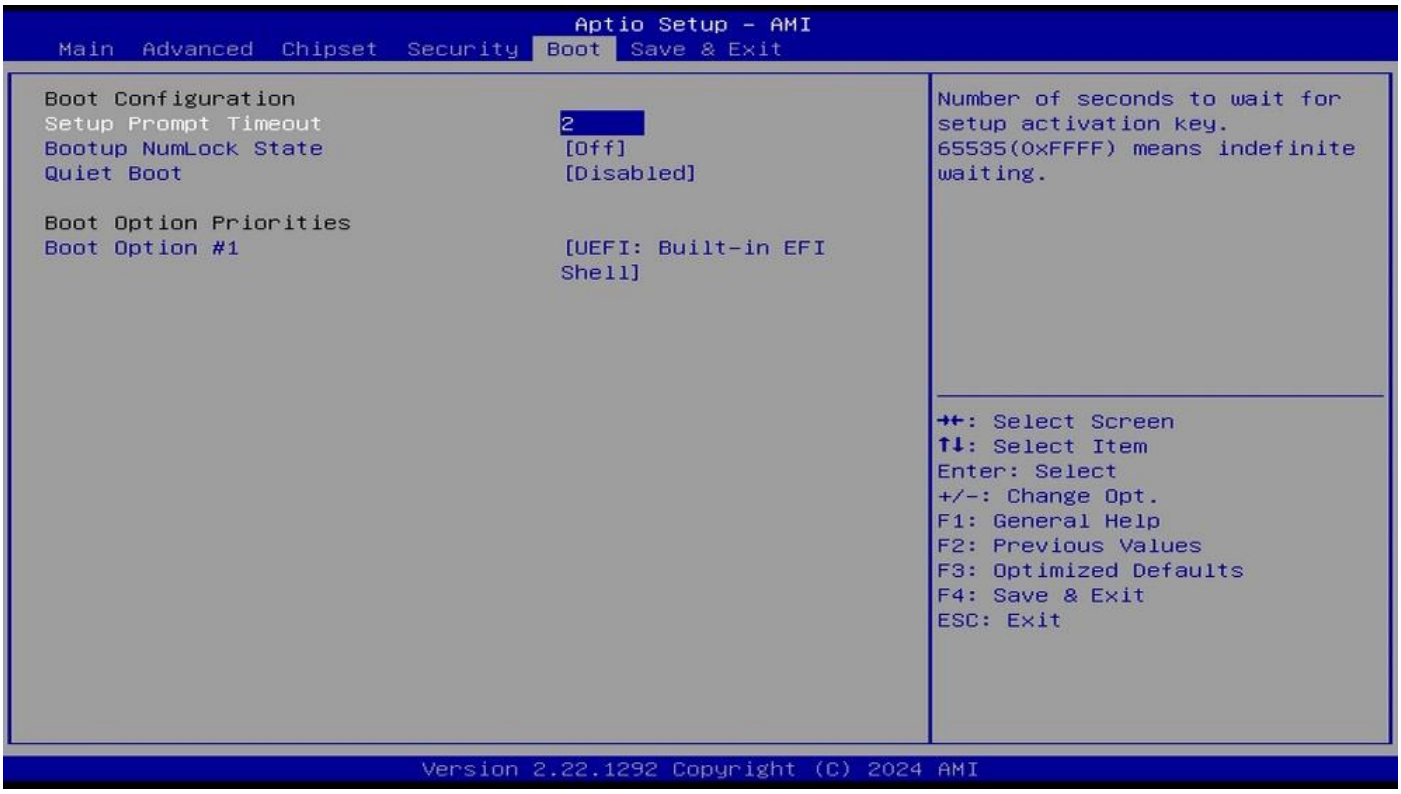
Use this item to save NVRAM content of Secure Boot variables to a file.

- **Platform Key(PK)/Key Exchange Keys(KEK)/Authorized Signatures(db)/Forbidden Signatures(dbx)/ Authorized TimeStamps(dbt)/OsRecovery Signatures(dbr)**

Use this item to enroll Factory Defaults or load certificates from a file:
1. Public Key Certificate:
   a) EFI_SIGNATURE_LIST
   b) EFI_ CERT_X509 (DER)
   c) EFI_ CERT_RSA2048 (bin)
   d) EFI_ CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256)

Key Source: Factory, Modified, Mixed

4-10 Boot Menu



Boot Configuration

Setup Prompt Timeout

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Setup Prompt Timeout Set the default value to: [2]

Bootup NumLock State

Use this item to select keyboard NumLock state.

The optional settings: [On]; [Off].

Bootup NumLock State Set the default value to: [Off]

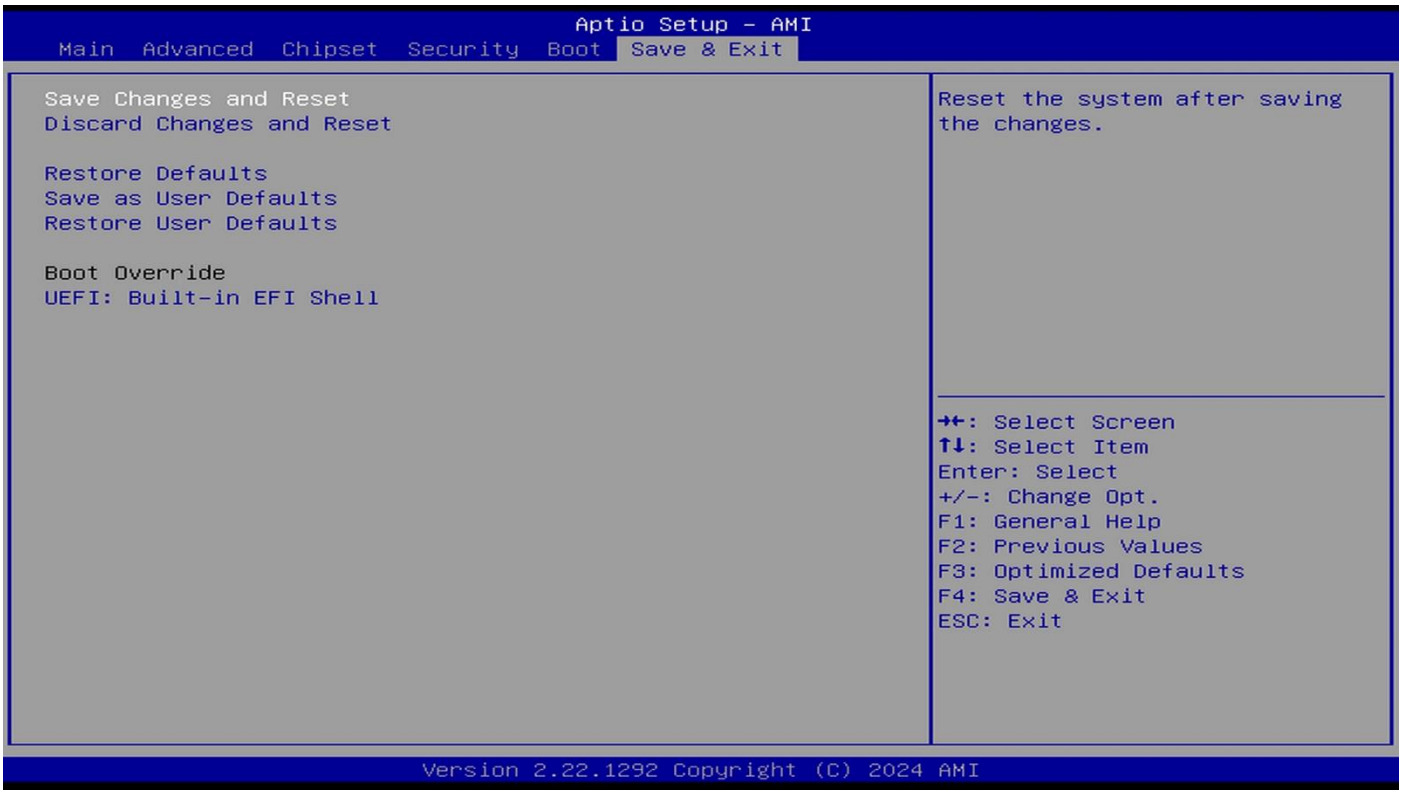
Quiet Boot

The optional settings: [Disabled]; [Enabled].

Quiet Boot Set the default value to: [Disabled]

Boot Option Priorities

4-11 Save & Exit Menu



Save Changes and Reset

This item allows user to reset the system after saving the changes.

Discard Changes and Reset

This item allows user to reset the system setup without saving any changes.

Restore Defaults

Use this item to restore /load default values for all the setup options.

Save as User Defaults

Use this item to save the changes done so far as user defaults.

Restore User Defaults

Use this item to restore the user defaults to all the setup options.

Boot Override

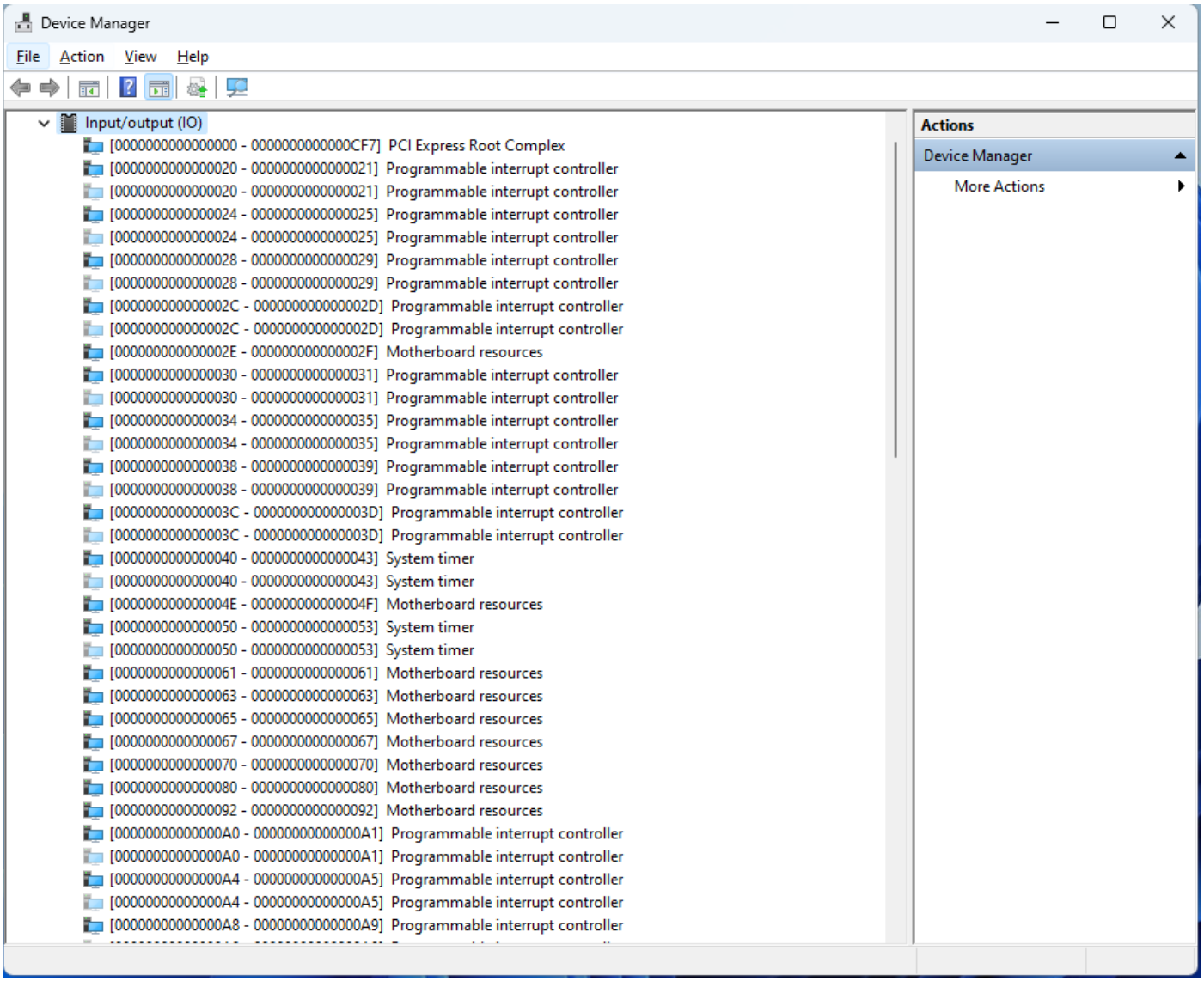
Appendix A

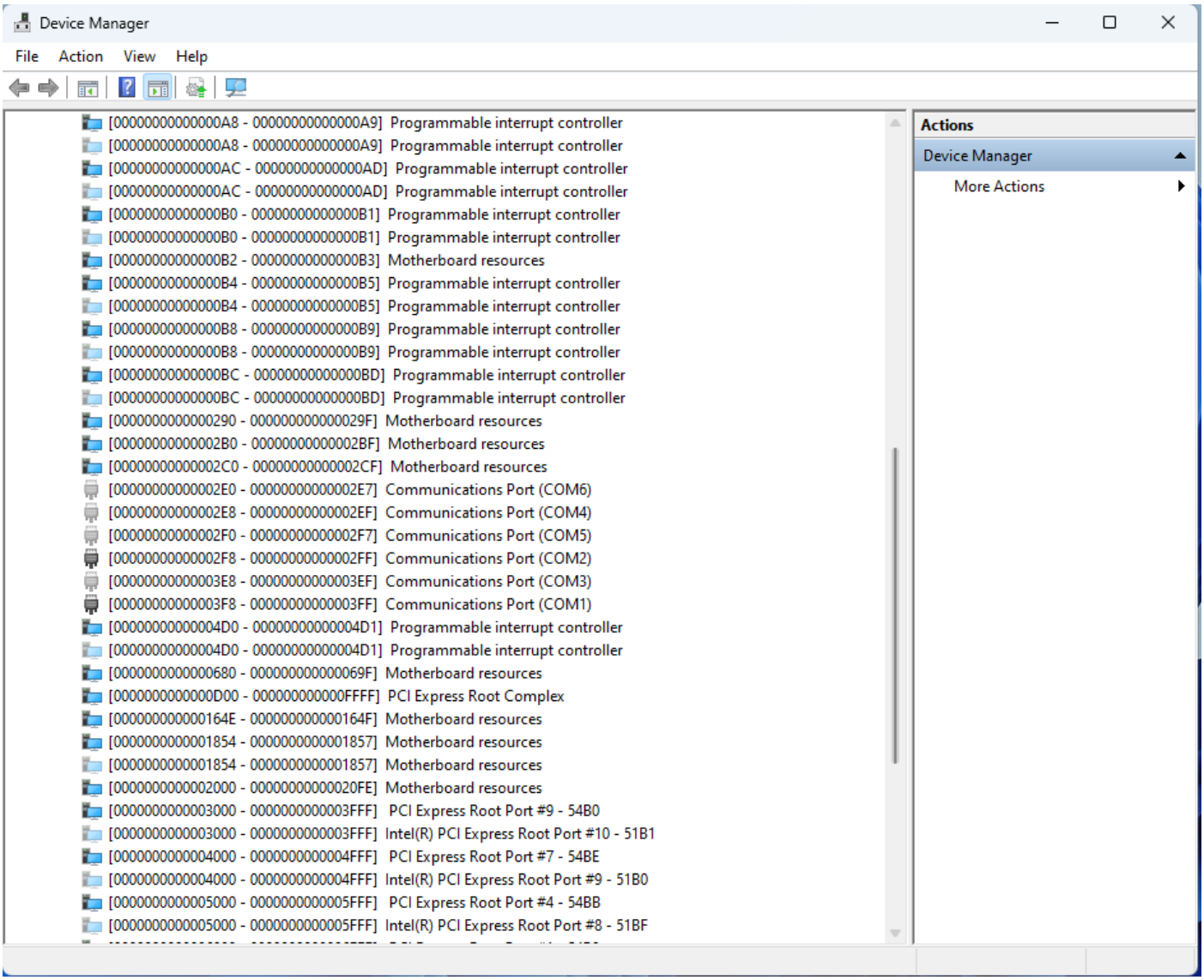
Mating Connectors

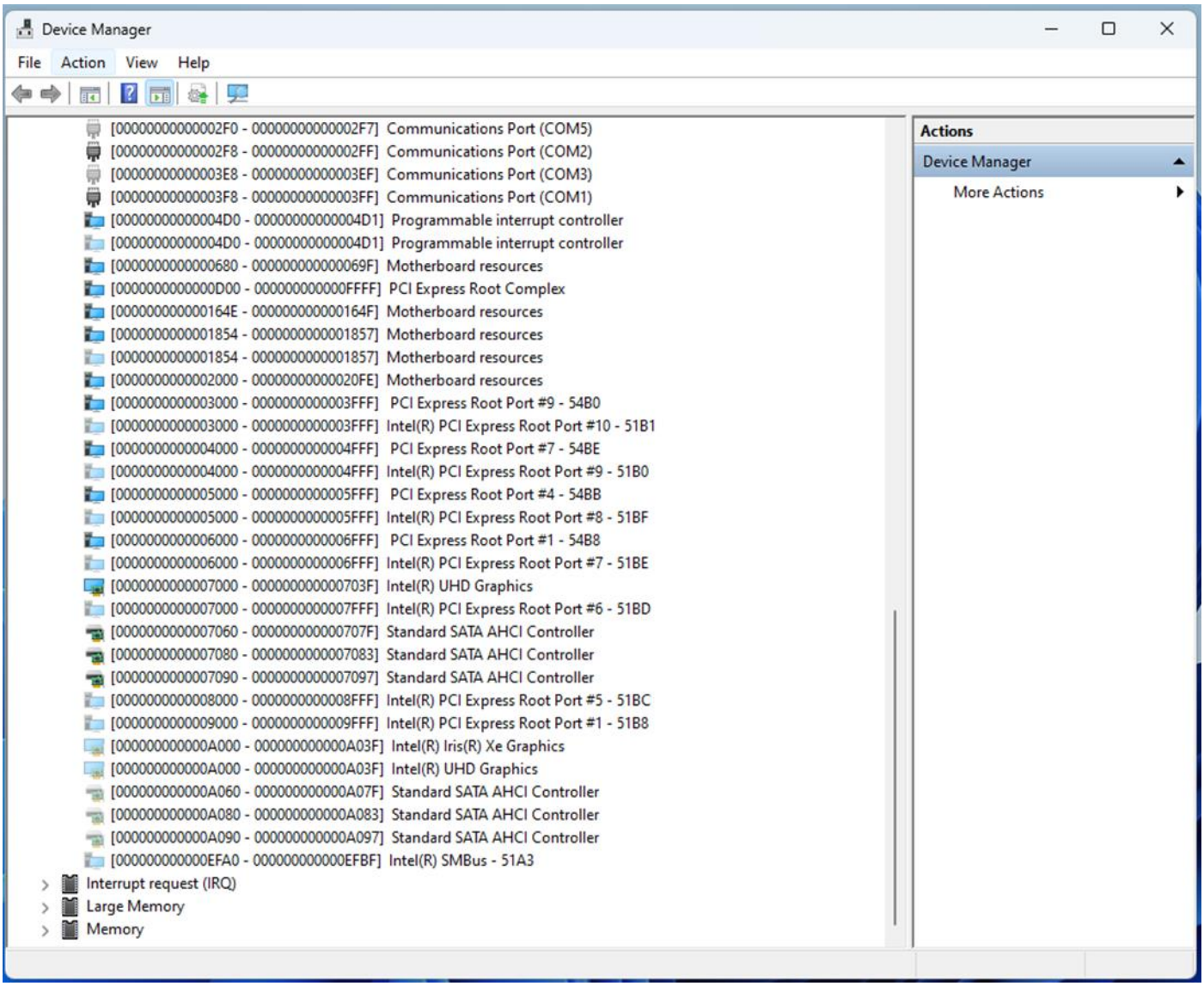
Location Printing	Function	Vendor	Vendor P/N
COM1	RS232 / RS422 / RS485 Serial Port Header	topt	PH200-205M-GBB00010D
COM2	RS232 / RS422 / RS485 Serial Port Header	topt	PH200-205M-GBB00010D
DCIN2	Internal 12V DC-IN Power connector	TE	1-1123723-2
USB1 & USB4	Front Panel USB 2.0 Type-A connector	ZONY	K01-195
HDMI1	HDMI2.0b Port Connector	ZONY	A881912004
USB1	USB3.2 Gen2 Connector	LOTES	AUSB0108-K015C10
LAN1	RJ45 2.5GbE Lan Connector	UDE	RT7-JT-0004

Appendix B

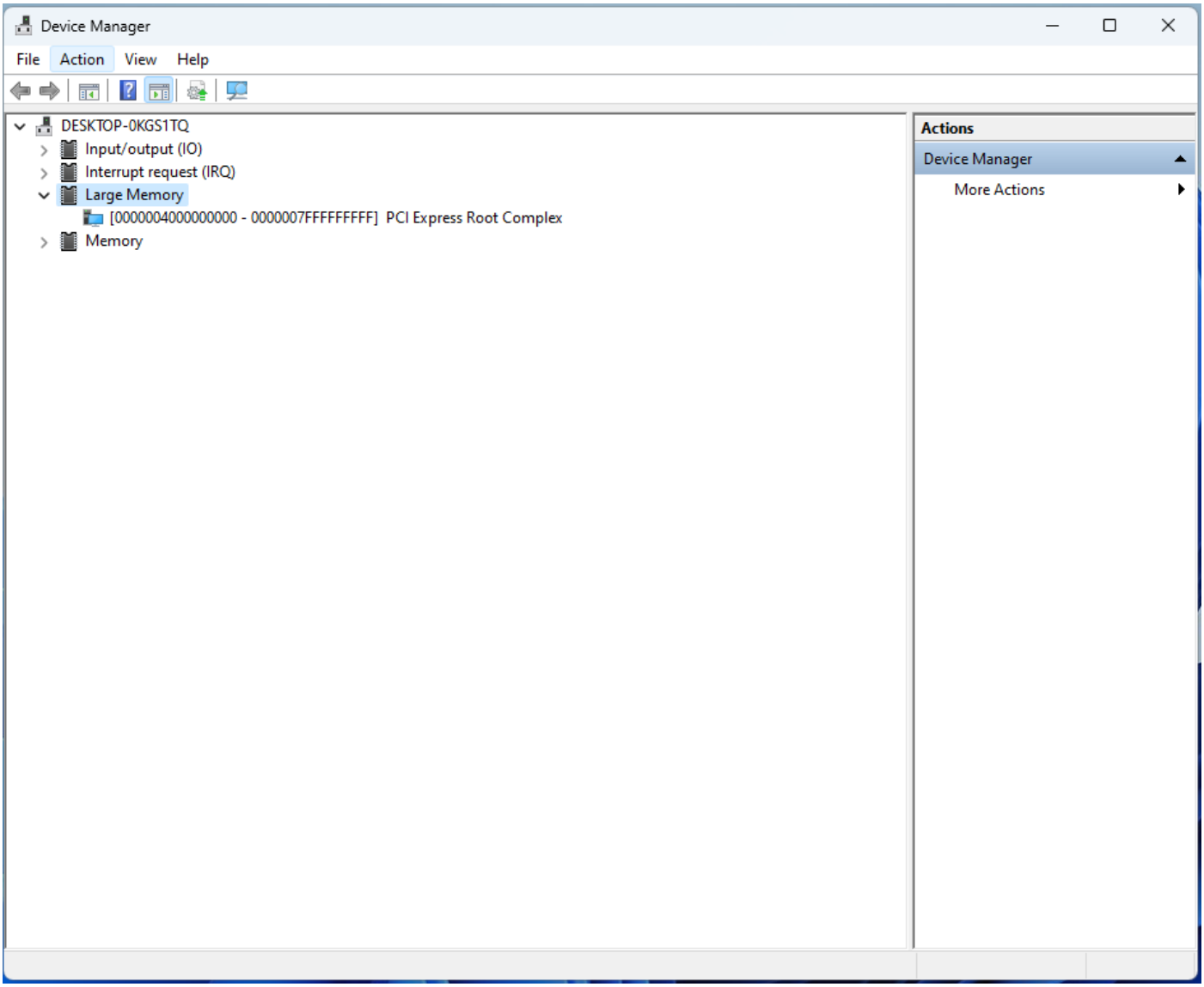
I/O Address Map

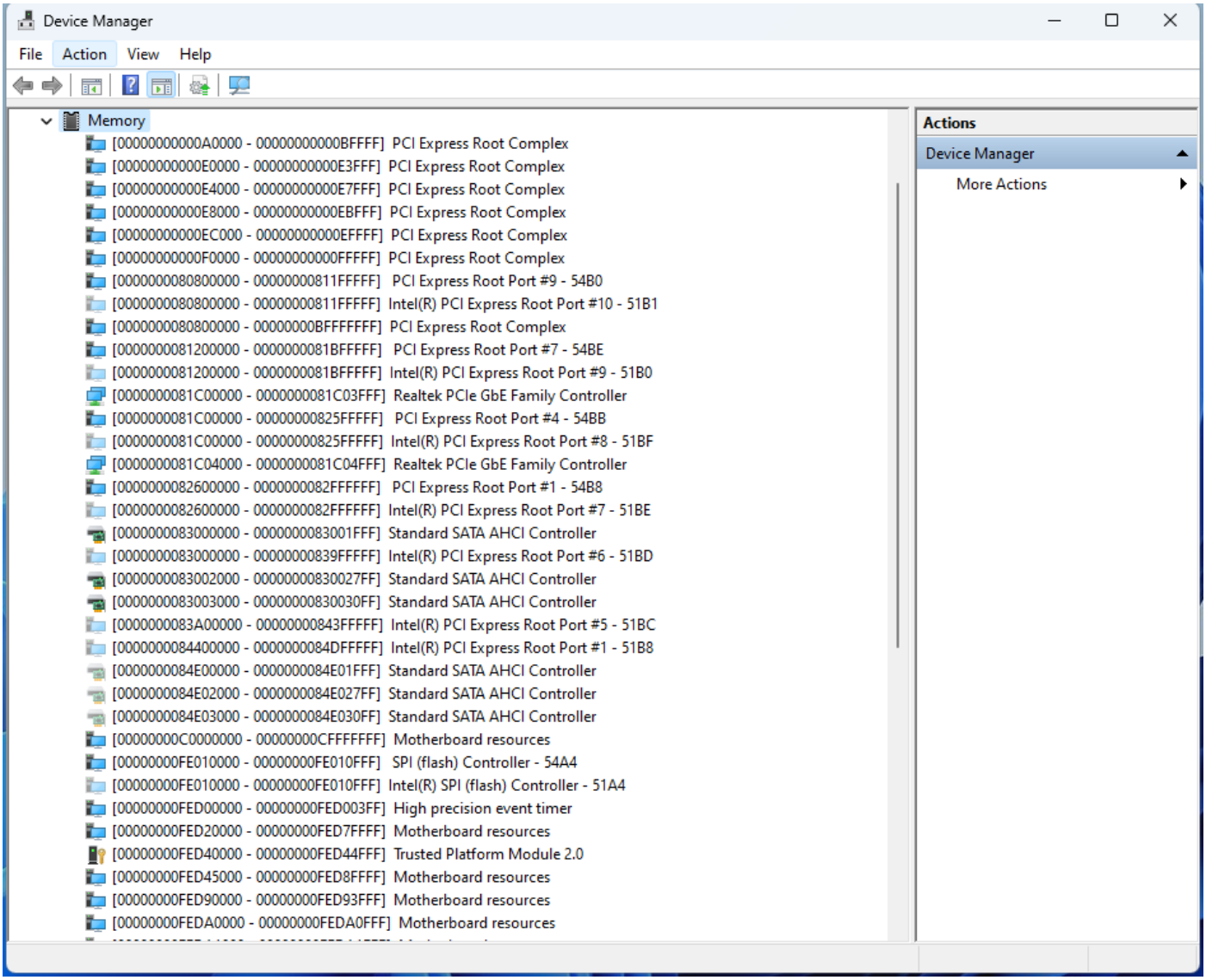


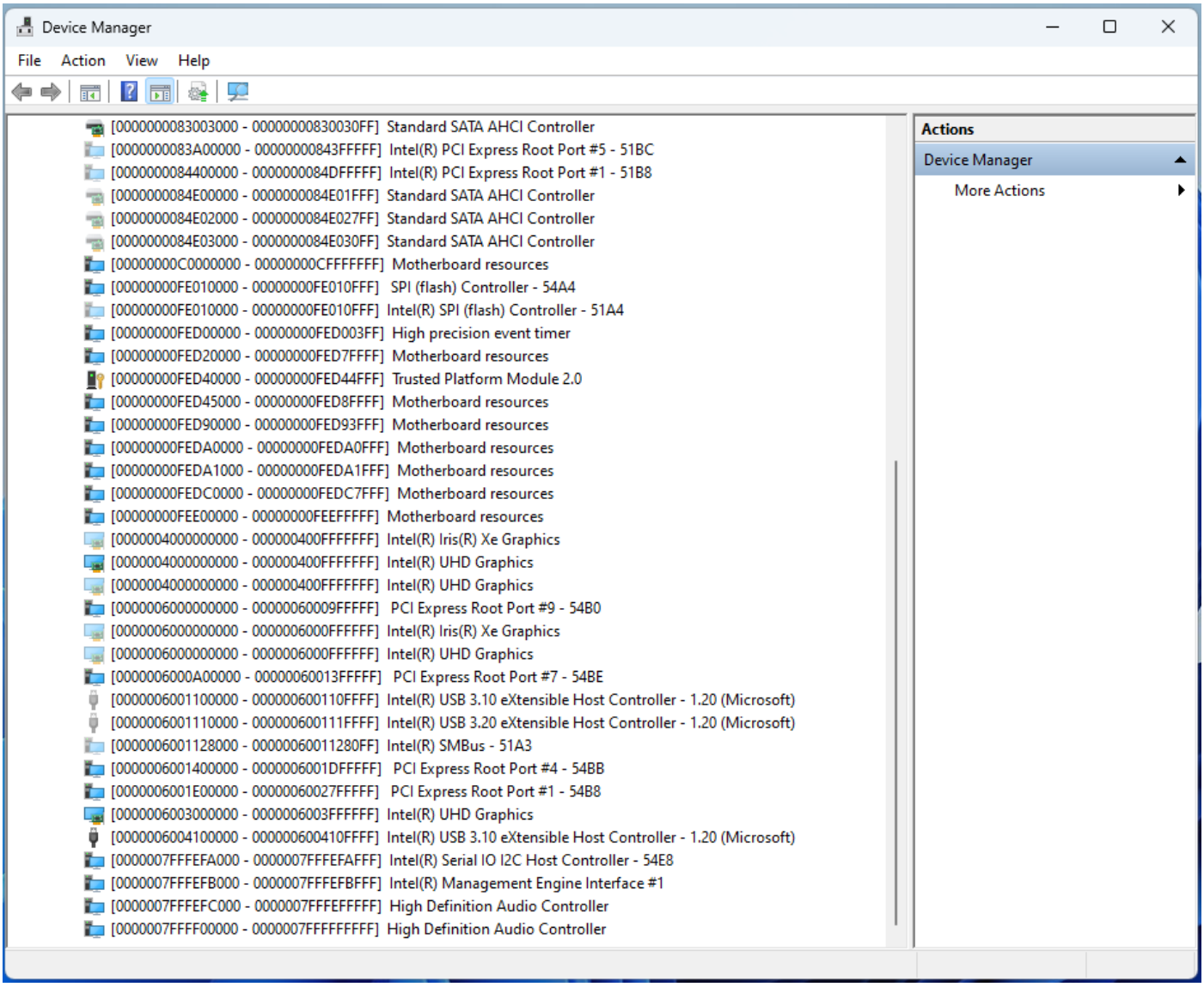

Device Manager
File Action View Help
[00000000000000A8 - 00000000000000A9] Programmable interrupt controller
[00000000000000A8 - 00000000000000A9] Programmable interrupt controller
[00000000000000AC - 00000000000000AD] Programmable interrupt controller
[00000000000000AC - 00000000000000AD] Programmable interrupt controller
[00000000000000B0 - 00000000000000B1] Programmable interrupt controller
[00000000000000B0 - 00000000000000B1] Programmable interrupt controller
[00000000000000B2 - 00000000000000B3] Motherboard resources
[00000000000000B4 - 00000000000000B5] Programmable interrupt controller
[00000000000000B4 - 00000000000000B5] Programmable interrupt controller
[00000000000000B8 - 00000000000000B9] Programmable interrupt controller
[00000000000000B8 - 00000000000000B9] Programmable interrupt controller
[00000000000000BC - 00000000000000BD] Programmable interrupt controller
[00000000000000BC - 00000000000000BD] Programmable interrupt controller
[0000000000000290 - 000000000000029F] Motherboard resources
[00000000000002B0 - 00000000000002BF] Motherboard resources
[00000000000002C0 - 00000000000002CF] Motherboard resources
[00000000000002E0 - 00000000000002E7] Communications Port (COM6)
[00000000000002E8 - 00000000000002EF] Communications Port (COM4)
[00000000000002F0 - 00000000000002F7] Communications Port (COM5)
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[00000000000003E8 - 00000000000003EF] Communications Port (COM3)
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
[000000000000164E - 000000000000164F] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000002000 - 00000000000020FE] Motherboard resources
[0000000000003000 - 0000000000003FFF] PCI Express Root Port #9 - 54B0
[0000000000003000 - 0000000000003FFF] Intel(R) PCI Express Root Port #10 - 51B1
[0000000000004000 - 0000000000004FFF] PCI Express Root Port #7 - 54BE
[0000000000004000 - 0000000000004FFF] Intel(R) PCI Express Root Port #9 - 51B0
[0000000000005000 - 0000000000005FFF] PCI Express Root Port #4 - 54BB
[0000000000005000 - 0000000000005FFF] Intel(R) PCI Express Root Port #8 - 51BF
Actions
Device Manager
More Actions


Device Manager
File Action View Help
[00000000000002F0 - 00000000000002F7] Communications Port (COM5)
[00000000000002F8 - 00000000000002FF] Communications Port (COM2)
[00000000000003E8 - 00000000000003EF] Communications Port (COM3)
[00000000000003F8 - 00000000000003FF] Communications Port (COM1)
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
[0000000000000680 - 000000000000069F] Motherboard resources
[0000000000000D00 - 000000000000FFFF] PCI Express Root Complex
[000000000000164E - 000000000000164F] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000001854 - 0000000000001857] Motherboard resources
[0000000000002000 - 00000000000020FE] Motherboard resources
[0000000000003000 - 0000000000003FFF] PCI Express Root Port #9 - 54B0
[0000000000003000 - 0000000000003FFF] Intel(R) PCI Express Root Port #10 - 51B1
[0000000000004000 - 0000000000004FFF] PCI Express Root Port #7 - 54BE
[0000000000004000 - 0000000000004FFF] Intel(R) PCI Express Root Port #9 - 51B0
[0000000000005000 - 0000000000005FFF] PCI Express Root Port #4 - 54BB
[0000000000005000 - 0000000000005FFF] Intel(R) PCI Express Root Port #8 - 51BF
[0000000000006000 - 0000000000006FFF] PCI Express Root Port #1 - 54B8
[0000000000006000 - 0000000000006FFF] Intel(R) PCI Express Root Port #7 - 51BE
[0000000000007000 - 000000000000703F] Intel(R) UHD Graphics
[0000000000007000 - 0000000000007FFF] Intel(R) PCI Express Root Port #6 - 51BD
[0000000000007060 - 000000000000707F] Standard SATA AHCI Controller
[0000000000007080 - 0000000000007083] Standard SATA AHCI Controller
[0000000000007090 - 0000000000007097] Standard SATA AHCI Controller
[0000000000008000 - 0000000000008FFF] Intel(R) PCI Express Root Port #5 - 51BC
[0000000000009000 - 0000000000009FFF] Intel(R) PCI Express Root Port #1 - 51B8
[000000000000A000 - 000000000000A03F] Intel(R) Iris(R) Xe Graphics
[000000000000A000 - 000000000000A03F] Intel(R) UHD Graphics
[000000000000A060 - 000000000000A07F] Standard SATA AHCI Controller
[000000000000A080 - 000000000000A083] Standard SATA AHCI Controller
[000000000000A090 - 000000000000A097] Standard SATA AHCI Controller
[000000000000EFA0 - 000000000000EFBF] Intel(R) SMBus - 51A3
Interrupt request (IRQ)
Large Memory
Memory
Actions
Device Manager
More Actions

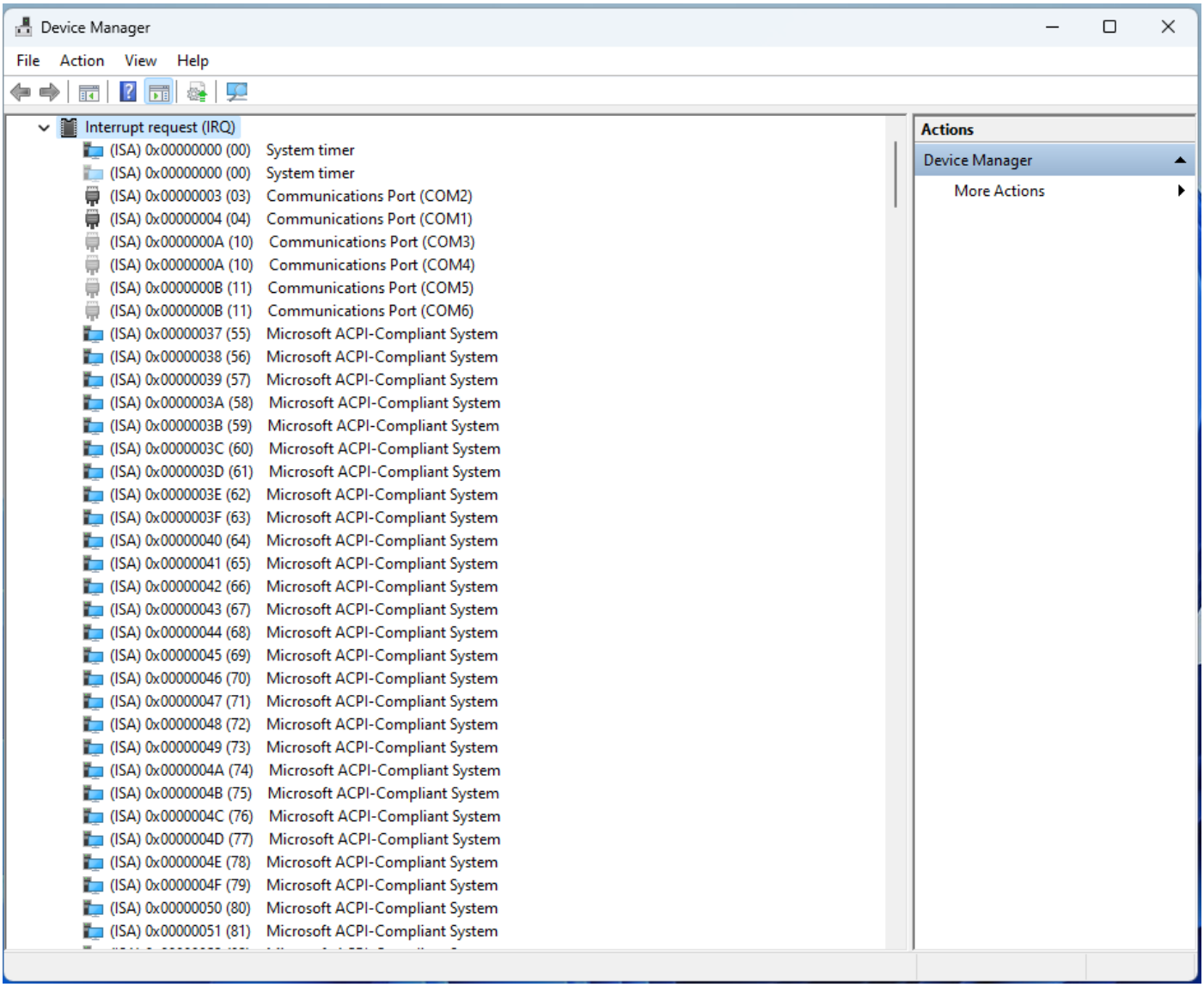
Memory Address Map

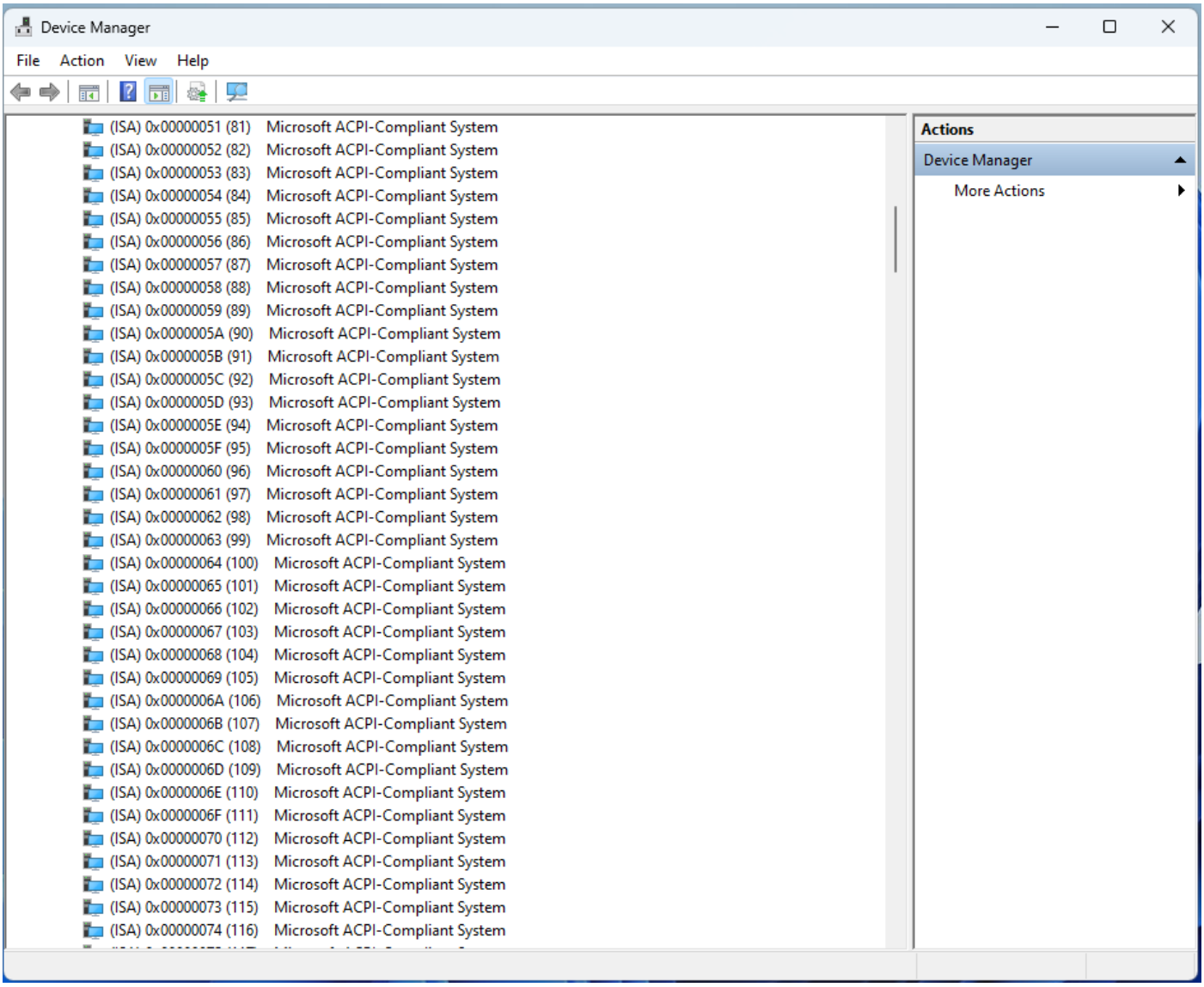


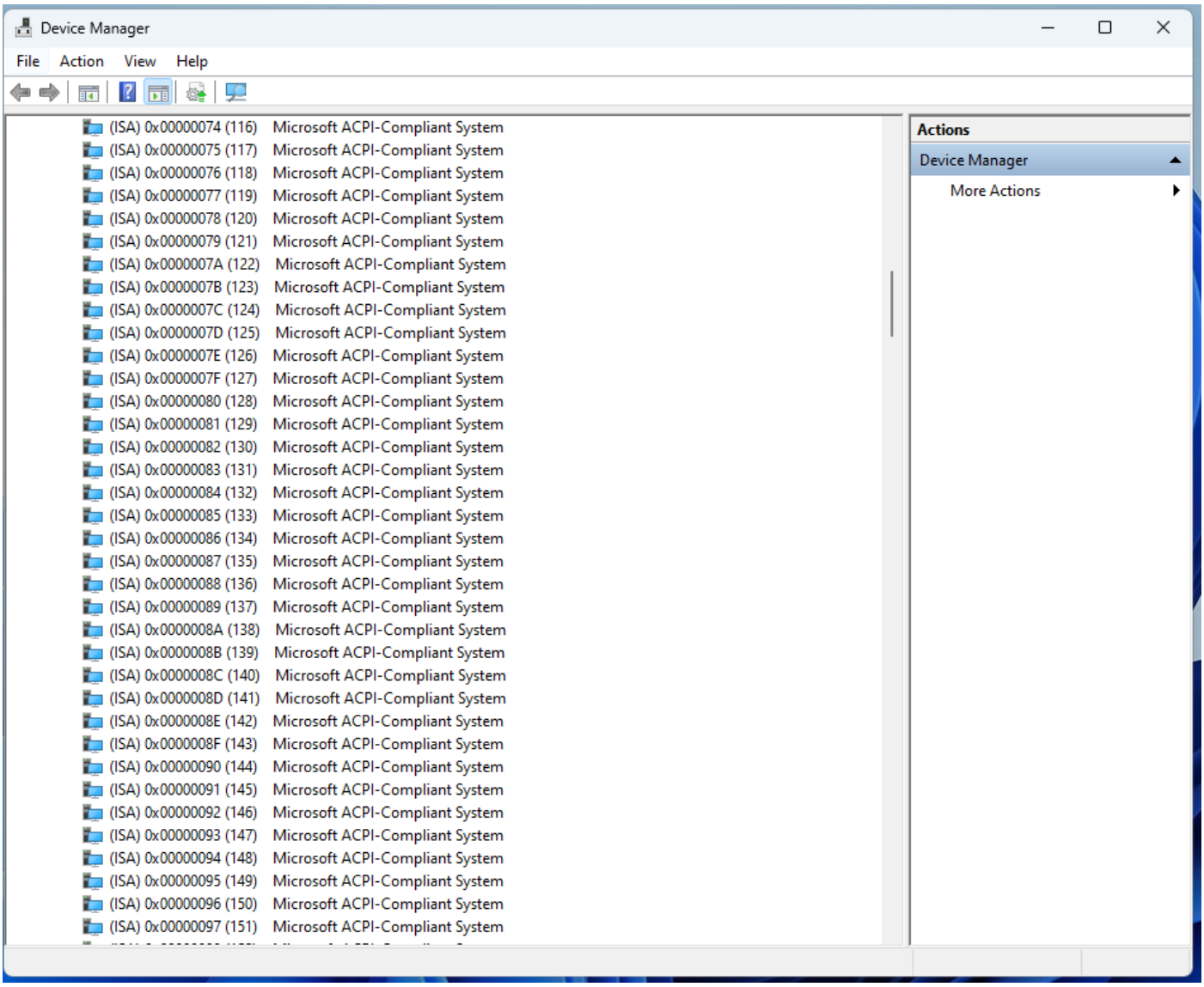

Device Manager
File
Action
View
Help
Memory
[00000000000A0000 - 00000000000BFFFF] PCI Express Root Complex
[00000000000E0000 - 00000000000E3FFF] PCI Express Root Complex
[00000000000E4000 - 00000000000E7FFF] PCI Express Root Complex
[00000000000E8000 - 00000000000EBFFF] PCI Express Root Complex
[00000000000EC000 - 00000000000EFFFF] PCI Express Root Complex
[00000000000F0000 - 00000000000FFFFF] PCI Express Root Complex
[0000000080800000 - 00000000811FFFFF] PCI Express Root Port #9 - 54B0
[0000000080800000 - 00000000811FFFFF] Intel(R) PCI Express Root Port #10 - 51B1
[0000000080800000 - 00000000BFFFFFFF] PCI Express Root Complex
[0000000081200000 - 0000000081BFFFFF] PCI Express Root Port #7 - 54BE
[0000000081200000 - 0000000081BFFFFF] Intel(R) PCI Express Root Port #9 - 51B0
[0000000081C00000 - 0000000081C03FFF] Realtek PCIe GbE Family Controller
[0000000081C00000 - 00000000825FFFFF] PCI Express Root Port #4 - 54BB
[0000000081C00000 - 00000000825FFFFF] Intel(R) PCI Express Root Port #8 - 51BF
[0000000081C04000 - 0000000081C04FFF] Realtek PCIe GbE Family Controller
[0000000082600000 - 0000000082FFFFFF] PCI Express Root Port #1 - 54B8
[0000000082600000 - 0000000082FFFFFF] Intel(R) PCI Express Root Port #7 - 51BE
[0000000083000000 - 0000000083001FFF] Standard SATA AHCI Controller
[0000000083000000 - 00000000839FFFFF] Intel(R) PCI Express Root Port #6 - 51BD
[0000000083002000 - 00000000830027FF] Standard SATA AHCI Controller
[0000000083003000 - 00000000830030FF] Standard SATA AHCI Controller
[000000083A00000 - 00000000843FFFFF] Intel(R) PCI Express Root Port #5 - 51BC
[0000000084400000 - 0000000084DFFFFF] Intel(R) PCI Express Root Port #1 - 51B8
[0000000084E00000 - 0000000084E01FFF] Standard SATA AHCI Controller
[0000000084E02000 - 0000000084E027FF] Standard SATA AHCI Controller
[0000000084E03000 - 0000000084E030FF] Standard SATA AHCI Controller
[00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
[00000000FE010000 - 00000000FE010FFF] SPI (flash) Controller - 54A4
[00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 51A4
[00000000FED00000 - 00000000FED003FF] High precision event timer
[00000000FED20000 - 00000000FED7FFFF] Motherboard resources
[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
[00000000FED90000 - 00000000FED93FFF] Motherboard resources
[00000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
Actions
Device Manager
More Actions

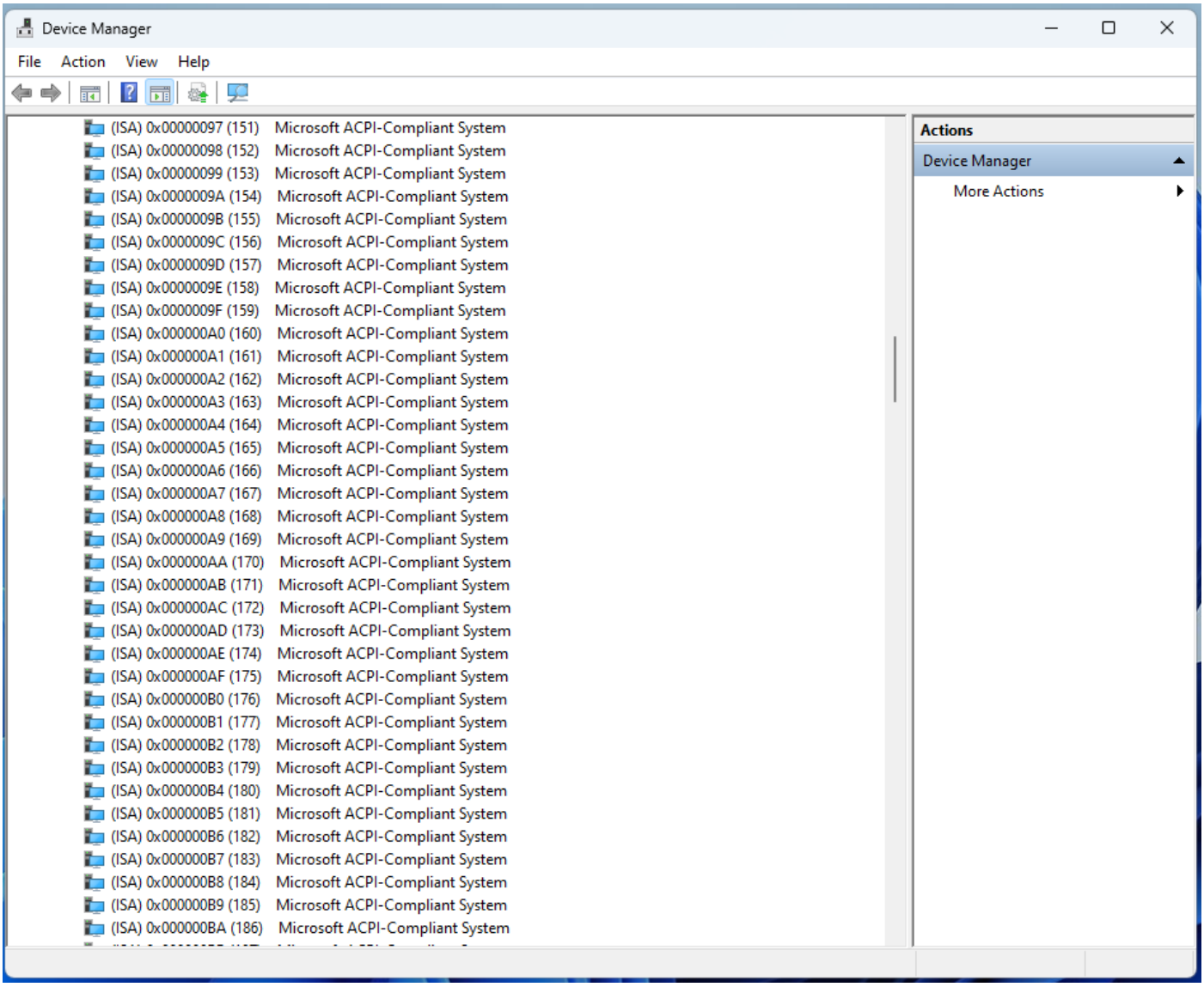

Device Manager
File Action View Help
[0000000083003000 - 00000000830030FF] Standard SATA AHCI Controller
[0000000083A00000 - 00000000843FFFFF] Intel(R) PCI Express Root Port #5 - 51BC
[0000000084400000 - 0000000084DFFFFF] Intel(R) PCI Express Root Port #1 - 51B8
[0000000084E00000 - 0000000084E01FFF] Standard SATA AHCI Controller
[0000000084E02000 - 0000000084E027FF] Standard SATA AHCI Controller
[0000000084E03000 - 0000000084E030FF] Standard SATA AHCI Controller
[00000000C0000000 - 00000000CFFFFFFF] Motherboard resources
[00000000FE010000 - 00000000FE010FFF] SPI (flash) Controller - 54A4
[00000000FE010000 - 00000000FE010FFF] Intel(R) SPI (flash) Controller - 51A4
[00000000FED00000 - 00000000FED003FF] High precision event timer
[00000000FED20000 - 00000000FED7FFFF] Motherboard resources
[00000000FED40000 - 00000000FED44FFF] Trusted Platform Module 2.0
[00000000FED45000 - 00000000FED8FFFF] Motherboard resources
[00000000FED90000 - 00000000FED93FFF] Motherboard resources
[00000000FEDA0000 - 00000000FEDA0FFF] Motherboard resources
[00000000FEDA1000 - 00000000FEDA1FFF] Motherboard resources
[00000000FEDC0000 - 00000000FEDC7FFF] Motherboard resources
[00000000FEE00000 - 00000000FEEFFFFF] Motherboard resources
[0000004000000000 - 000000400FFFFFFF] Intel(R) Iris(R) Xe Graphics
[0000004000000000 - 000000400FFFFFFF] Intel(R) UHD Graphics
[0000004000000000 - 000000400FFFFFFF] Intel(R) UHD Graphics
[0000006000000000 - 00000060009FFFFF] PCI Express Root Port #9 - 54B0
[0000006000000000 - 0000006000FFFFFF] Intel(R) Iris(R) Xe Graphics
[0000006000000000 - 0000006000FFFFFF] Intel(R) UHD Graphics
[0000006000A00000 - 00000060013FFFFF] PCI Express Root Port #7 - 54BE
[0000006001100000 - 000000600110FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
[0000006001110000 - 000000600111FFFF] Intel(R) USB 3.20 eXtensible Host Controller - 1.20 (Microsoft)
[0000006001128000 - 00000060011280FF] Intel(R) SMBus - 51A3
[0000006001400000 - 0000006001DFFFFF] PCI Express Root Port #4 - 54BB
[0000006001E00000 - 00000060027FFFFF] PCI Express Root Port #1 - 54B8
[0000006003000000 - 0000006003FFFFFF] Intel(R) UHD Graphics
[0000006004100000 - 000000600410FFFF] Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
[0000007FFFEFA000 - 0000007FFFEFAFFF] Intel(R) Serial IO I2C Host Controller - 54E8
[0000007FFFEFB000 - 0000007FFFEFBFFF] Intel(R) Management Engine Interface #1
[0000007FFFEFC000 - 0000007FFFEFFFFF] High Definition Audio Controller
[0000007FFFF00000 - 0000007FFFFFFFFF] High Definition Audio Controller
Actions
Device Manager
More Actions

IRQ Mapping Chart




Device Manager
File Action View Help
(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
Actions
Device Manager
More Actions


Device Manager
File Action View Help
(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
Actions
Device Manager
More Actions


Device Manager
File Action View Help
(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
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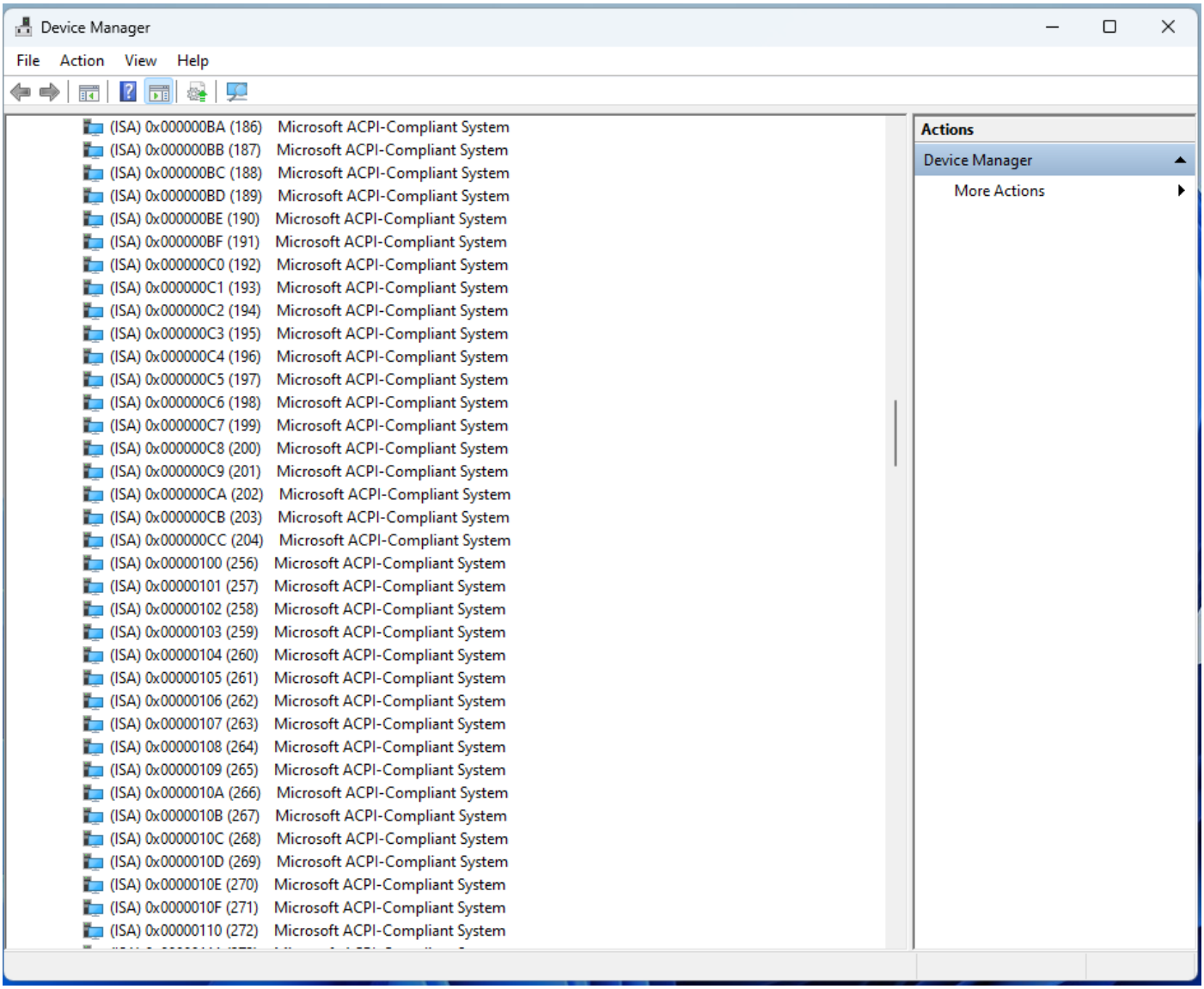
More Actions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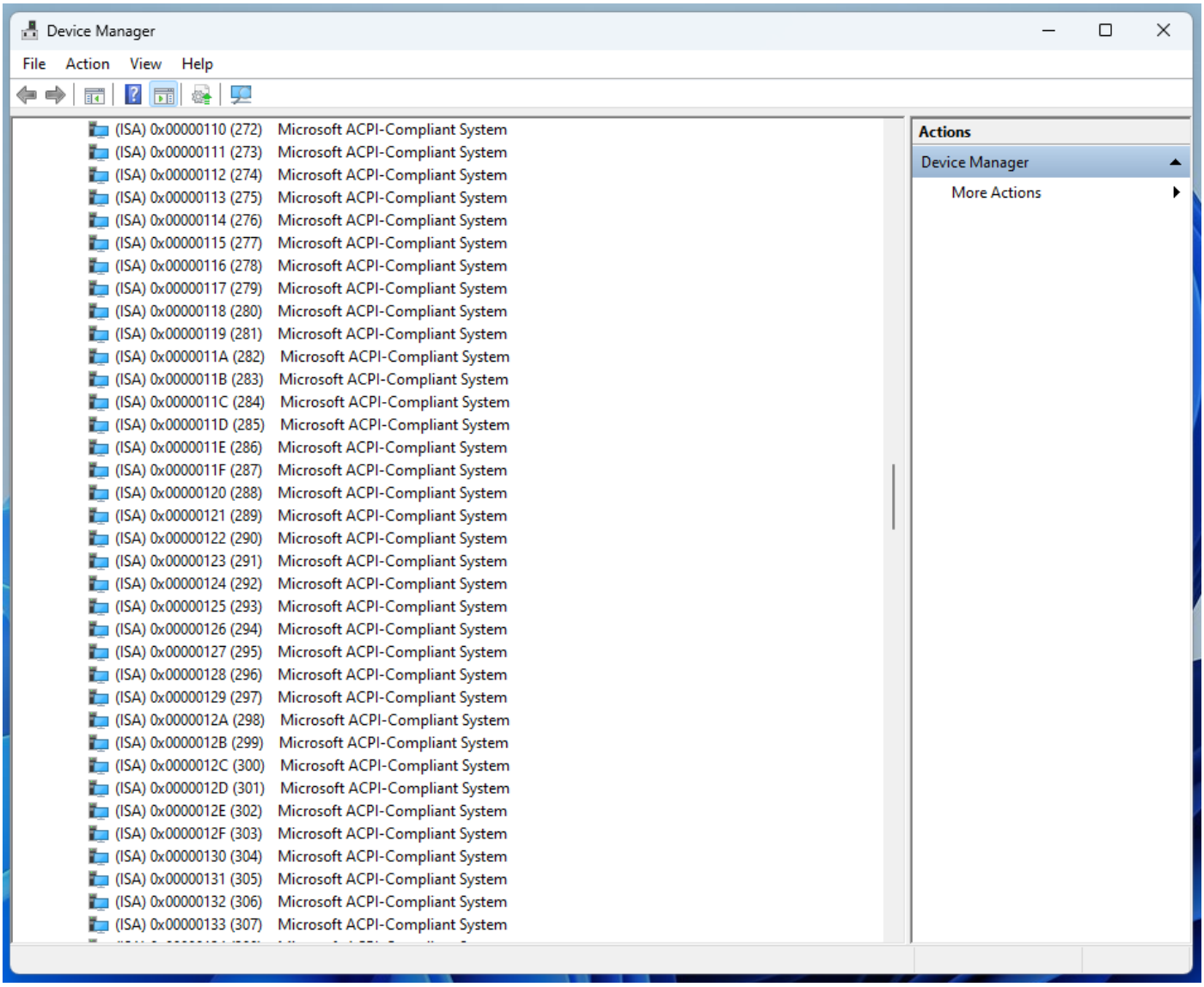
More Actions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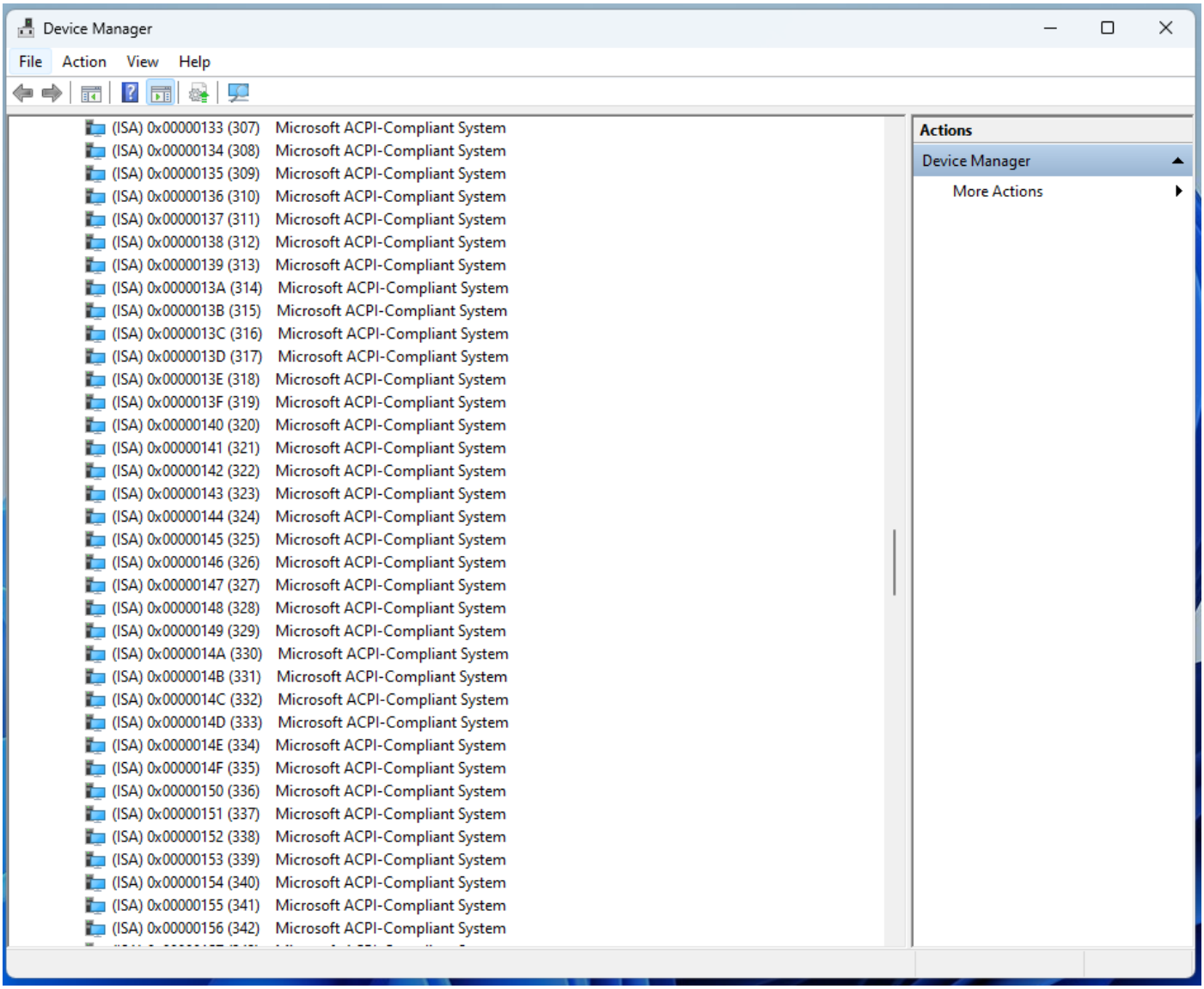
Device Manager
More Actions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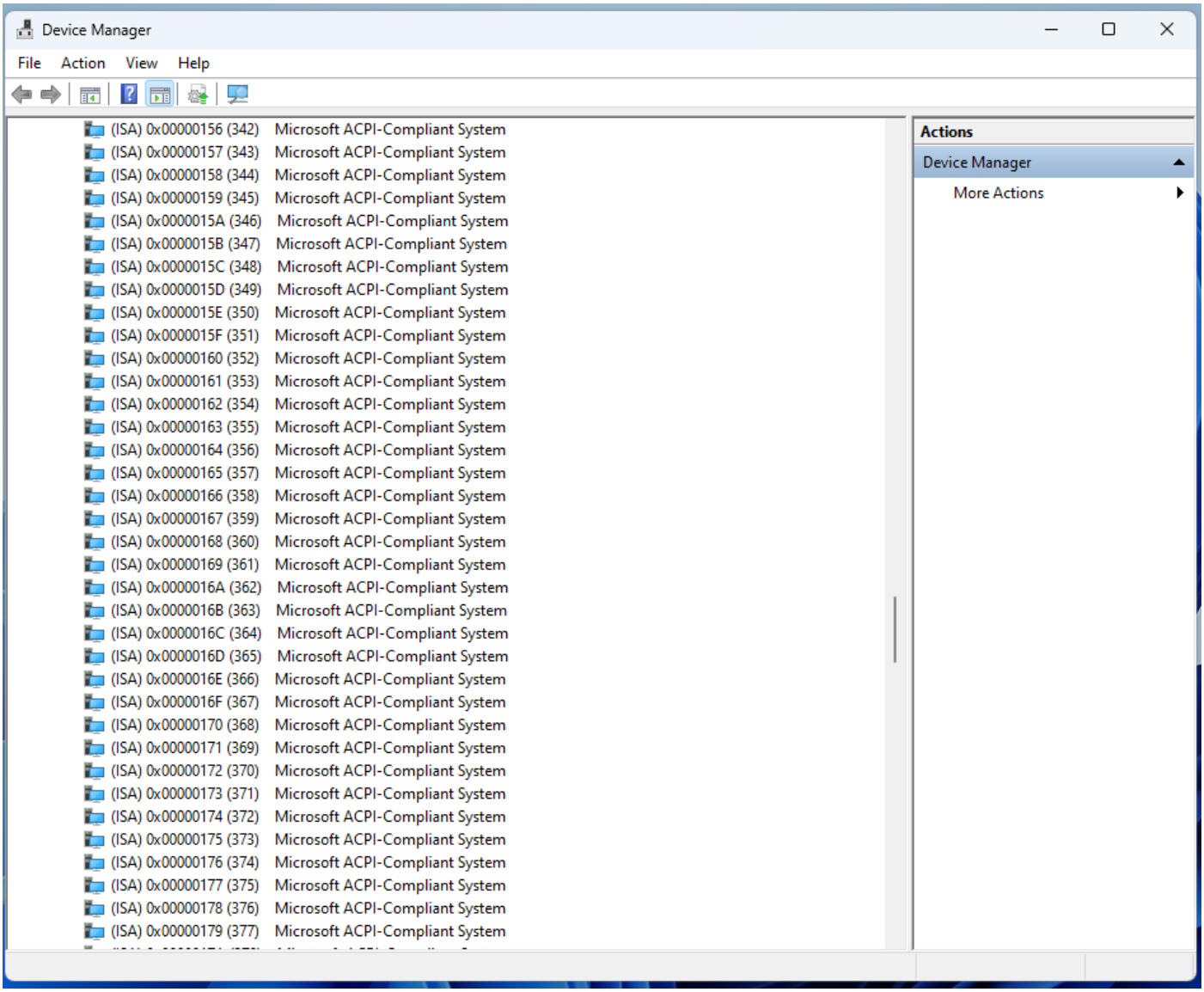
Device Manager
More Actions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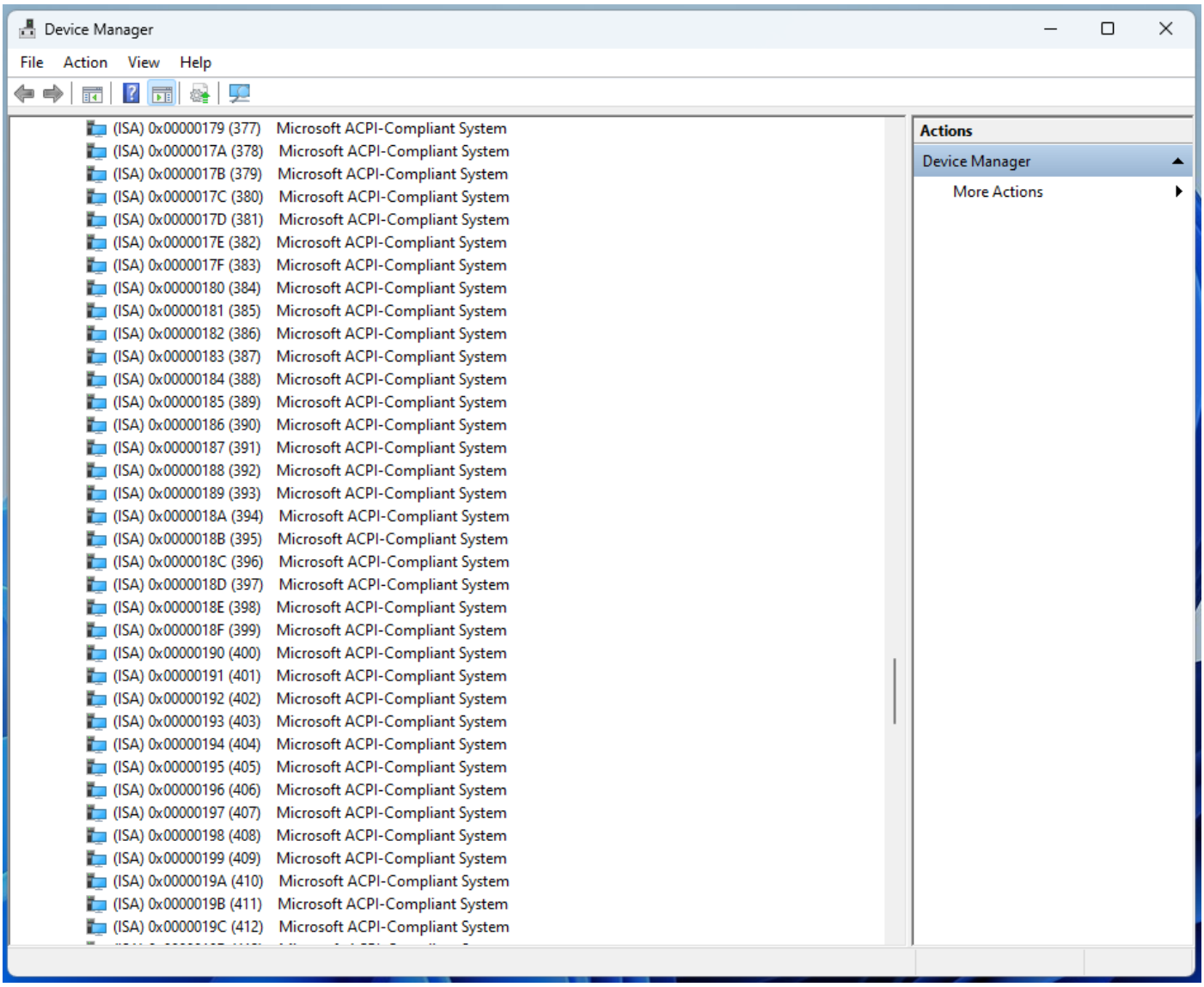
Device Manager
More Actions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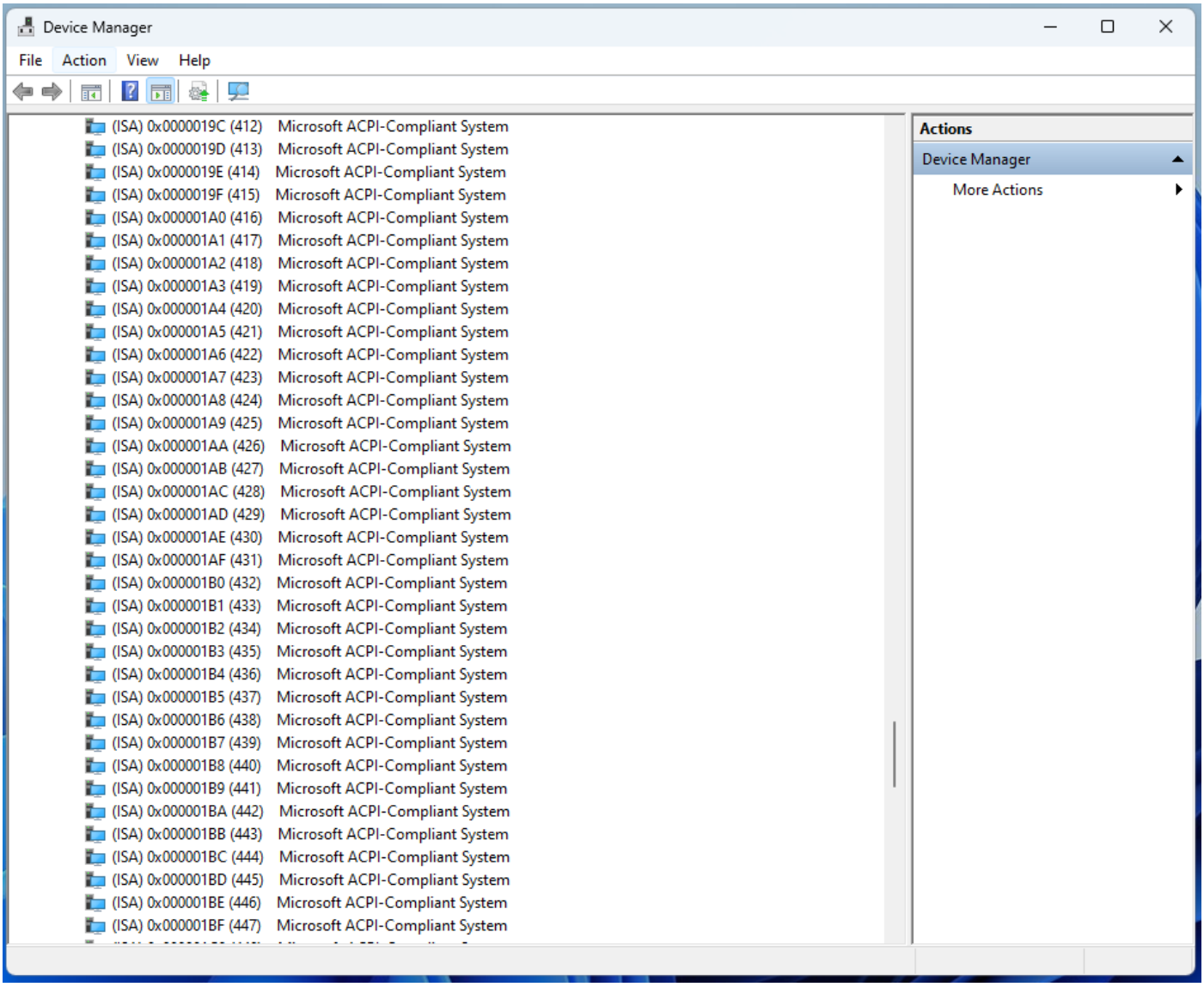
Device Manager
More Actions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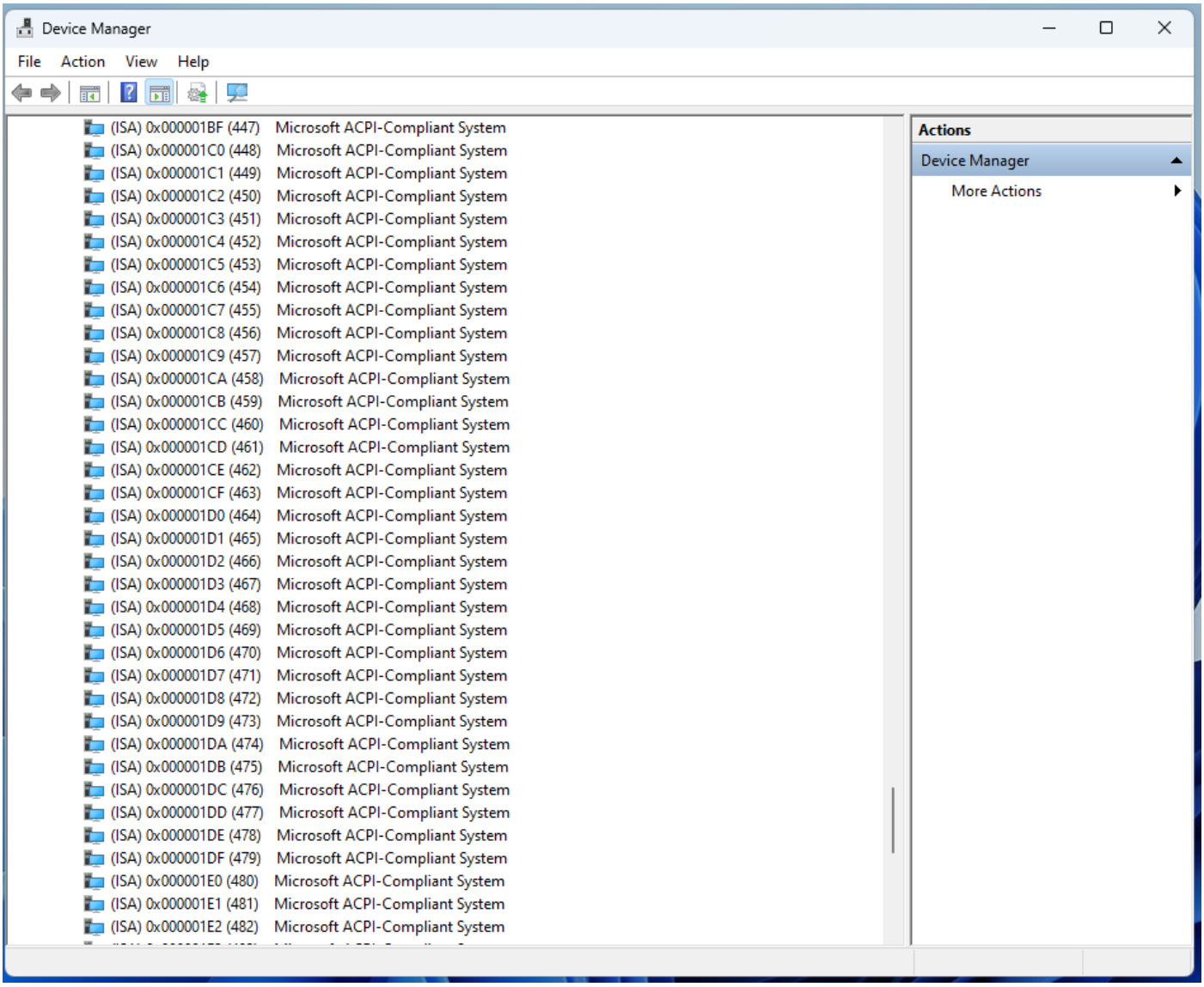
More Actions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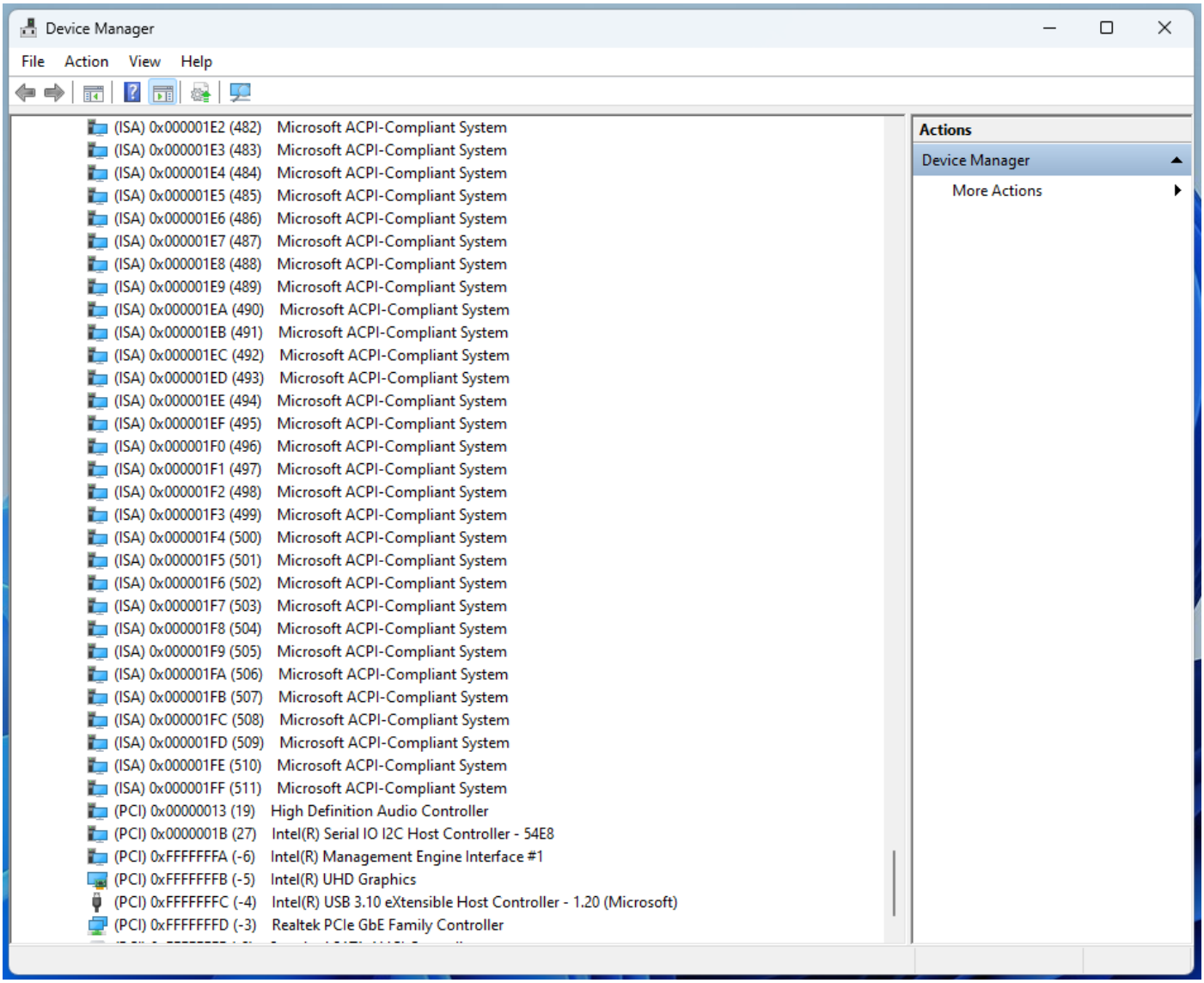
More Actions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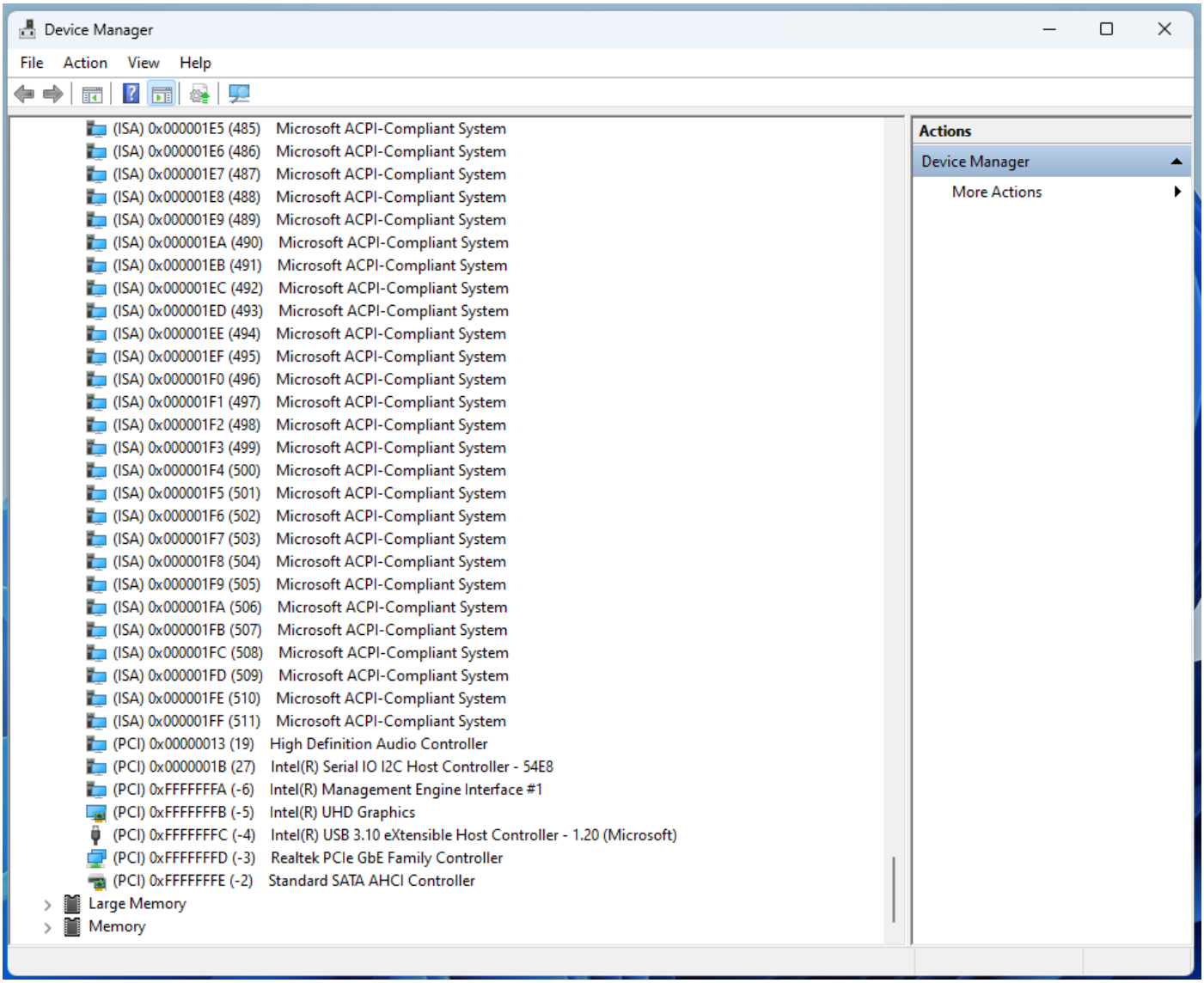
(PCI) 0xFFFFFFFB (-5) Intel(R) UHD Graphics
(PCI) 0xFFFFFFFC (-4) Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFFD (-3) Realtek PCIe GbE Family Controller
Actions
Device Manager
More Actions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(PCI) 0x00000013 (19) High Definition Audio Controller
(PCI) 0x0000001B (27) Intel(R) Serial IO I2C Host Controller - 54E8
(PCI) 0xFFFFFFFA (-6) Intel(R) Management Engine Interface #1
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(PCI) 0xFFFFFFFC (-4) Intel(R) USB 3.10 eXtensible Host Controller - 1.20 (Microsoft)
(PCI) 0xFFFFFFFD (-3) Realtek PCIe GbE Family Controller
(PCI) 0xFFFFFFFE (-2) Standard SATA AHCI Controller
Large Memory
Memory
Actions
Device Manager
More Actions