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# **LYNC-715-7433G8**

**Fanless 15" Industrial Panel PC with Intel®  
Atom™ x7433RE Processor**

## **User's Manual**

**Version 1.0**

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## Revision History

Version	Time	Description
1.0	2025.04	Initial release

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## Copyright Notice

All Rights Reserved.

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Under no circumstances will the manufacturer be liable for any direct, indirect, special, incidental, or consequential damages arising from the use or inability to use the product or documentation, even if advised of the possibility of such damages.

This document contains proprietary information protected by copyright. All rights are reserved. No part of this document may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

## Declaration of Conformity

### CE

The CE symbol on your product indicates that it is in compliance with the directives of the European Union (EU). A Certificate of Compliance is available by contacting Technical Support.

This product has passed the CE test for environmental specifications when shielded cables are used for external wiring. We recommend the use of shielded cables. This kind of cable is available from ARBOR. Please contact your local supplier for ordering information.

### Warning

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

### FCC Class A

This device complies with Part 15 of the 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.

### NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

### RoHS

ARBOR Technology Corp. certifies that all components in its products are in compliance and conform to the European Union's Restriction of Use of Hazardous Substances in Electrical and Electronic Equipment (RoHS) Directive 2002/95/EC.

The above mentioned directive was published on 2/13/2003. The main purpose of the directive is to prohibit the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls (PBB), and polybrominated diphenyl ethers (PBDE) in electrical and electronic products. Member states of the EU are to enforce by 7/1/2006.

ARBOR Technology Corp. hereby states that the listed products do not contain unintentional additions of lead, mercury, hex chrome, PBB or PBDB that exceed a maximum concentration value of 0.1% by weight or for cadmium exceed 0.01% by weight, per homogenous material. Homogenous material is defined as a substance or mixture of substances with uniform composition (such as solders, resins, plating, etc.). Lead-free solder is used for all terminations (Sn(96-96.5%), Ag(3.0-3.5%) and Cu(0.5%)).

### SVHC / REACH

To minimize the environmental impact and take more responsibility to the earth we live, Arbor hereby confirms all products comply with the restriction of SVHC (Substances of Very High Concern) in (EC) 1907/2006 (REACH --Registration, Evaluation, Authorization, and Restriction of Chemicals) regulated by the European Union.

All substances listed in SVHC < 0.1 % by weight (1000 ppm)

## **Important Safety Instructions**

Read these safety instructions carefully

1. Read all cautions and warnings on the equipment.
2. Place this equipment on a reliable surface when installing. Dropping it or letting it fall may cause damage
3. Make sure the correct voltage is connected to the equipment.
4. For pluggable equipment, the socket outlet should be near the equipment and should be easily accessible.
5. Keep this equipment away from humidity.
6. The openings on the enclosure are for air convection and protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
7. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
8. Never pour any liquid into opening. This may cause fire or electrical shock.
9. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
10. If one of the following situations arises, get the equipment checked by service personnel:
  - a. The power cord or plug is damaged.
  - b. Liquid has penetrated into the equipment.
  - c. The equipment has been exposed to moisture.
  - d. The equipment does not work well, or you cannot get it to work according to the user's manual.
  - e. The equipment has been dropped or damaged.
  - f. The equipment has obvious signs of breakage.
11. Keep this User's Manual for later reference.

### **Warning**

The Panel PC and its components contain very delicately Integrated Circuits (IC). To protect the Panel PC and its components against damage caused by static electricity, you should always follow the precautions below when handling it:

1. Disconnect your Panel PC from the power source when you want to work on the inside.
2. Use a grounded wrist strap when handling computer components.
3. Place components on a grounded antistatic pad or on the bag that came with the Panel PC, whenever components are separated from the system.

### **Lithium Battery Replacement**

Incorrect replacement of the lithium battery may lead to a risk of explosion.

The lithium battery must be replaced with an identical battery or a battery type recommended by the manufacturer.

Do not throw lithium batteries into the trash can. It must be disposed of in accordance with local regulations concerning special waste.

### **Technical Support**

If you have any technical difficulties, please do not hesitate to call or e-mail our customer service when you still cannot find out the answer.

<http://www.arbor-technology.com>

E-mail: [info@arbor.com.tw](mailto:info@arbor.com.tw)

## **Warranty**

This product is warranted to be in good working order for a period of one year from the date of purchase. Should this product fail to be in good working order at any time during this period, we will, at our option, replace or repair it at no additional charge except as set forth in the following terms. This warranty does not apply to products damaged by misuse, modifications, accident or disaster.

Vendor assumes no liability for any damages, lost profits, lost savings or any other incidental or consequential damage resulting from the use, misuse of, or inability to use this product. Vendor will not be liable for any claim made by any other related party.

Vendors disclaim all other warranties, either expressed or implied, including but not limited to implied warranties of merchantability and fitness for a particular purpose, with respect to the hardware, the accompanying product's manual(s) and written materials, and any accompanying hardware. This limited warranty gives you specific legal rights.

Return authorization must be obtained from the vendor before returned merchandise will be accepted. Authorization can be obtained by calling or faxing the vendor and requesting a Return Merchandise Authorization (RMA) number. Returned goods should always be accompanied by a clear problem description.

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# Chapter 1

## Introduction

### 1.1. The Computer

ARBOR's LYNC-715-7433G8 is cost-effective industrial panel PC featuring light weight and slim form factor. The computer comes with rich I/O to meet the demand of the automation and manufacturing process required in modern factories. The system includes four serial ports, five USB ports, one Display port, and two LAN ports. The computer also supports one nano SIM card and features one 2.5" drive bay / one M.2 M-key 2242 (SATAIII only) for extensive data storage. One M.2 E-key / M.2 B-key is also built on the main board of the computer to enhance the system with Wi-Fi/4G/5G networking.



#### Product Highlights

- 15" 1024 x 768 XGA LCD display w/ LED backlight
- Flush front panel w/ IP65 waterproof compliant
- Support 2.5GbE LAN and USB 3.2 Gen2
- Support dTPM2.0 & Windows 11
- Rich I/O: 3~4xCOM/ 2x2.5G LAN/ 2xUSB3.2/ 3xUSB2.0/ 1x8bit DIO
- 9~36V wide-range DC input with reverse protection
- Optional wireless connectivity for 4G/ 5G & WiFi expansion
- Optional OOB mgt for remote access & status recovery
- Optional rear cover for cable management

### 1.2. About this Manual

This manual is meant for the experienced users and integrators with hardware knowledge of personal computers. If you are not sure about the description in this manual, consult your vendor before further handling.

We recommend that you keep one copy of this manual for the quick reference for any necessary maintenance in the future. Thank you for choosing ARBOR products.



### 1.3. Specifications

System	
CPU	Intel® Atom™ Amston Lake x7433RE (quad core) Processor
Memory	1 x DDR5 SO-DIMM slot supporting 4800 MHz up to 16GB (8GB pre-installed)
LAN Chipset	2 x Intel® KT1226LM supports TSN
TPM	Support dTPM2.0
Watchdog Timer	1~255 levels reset
Storage	
1st Device	1 x 2.5" SSD drive bay (SATAIII)
2nd Device	1 x M.2 M-key 2242 (SATAIII only)
Audio	
Speaker	2 x 1.5W speakers (optional)
LCD Display	
Size/Type	15" TFT LCD Panel
Max. Resolution	1024 x 768, XGA
Max. Colors	16.7M
Luminance	350 cd/m <sup>2</sup>
Touch Screen	5-wire Analog Resistive
View Angle (U/D/R/L)	88°/88°/88°/88°
Button & Indicator	
Function Key	Brightness up/down, Screen on/off
LED Indicator	Power on LED
Power System	
Power Input	DC 9~36V input (w/ 4-pin terminal block, combining remote power on/off switch, V+, V-, SW-, SW+)
Power Switch	ON/OFF
Power Consumption	Typical: 35W

Qualification	
Certification	CE, FCC Class A
OS Support	
Windows® 10 / Windows® 11	
Expansion	
Expansion Bus	1 x M.2 E-key 2230 (PCIe x1+USB2.0) for WiFi/BT
	1 x M.2 B-key 2242/2260/3042/3052 (PCIe Gen3 x1+USB3.0+USB2.0)
	w/ 1x nano SIM card slot for 4G/5G module
External I/O	
Serial Ports	4 x DB-9 connectors for RS-232(Default) /485* configurable (*RS-485, w/ auto-flow control)
DIO	1 x 8bit DIO (Optional) share I/O port with COM4
USB Ports	2 x Type-A USB 3.2 Gen 2 ports (Rear)
	2 x Type-A USB 2.0 ports (Rear)
	1 x Type-A USB 2.0 port with rubber cover on front bezel
LAN	2 x RJ-45 2.5GbE LAN ports
Video Output	1 x DisplayPort 1.4, up to 3840 x 2160@60Hz
Others	6 x Antenna holes
OOB	Optional RJ-45 connector to support OOB management (BTO)
Mechanical	
Mounting Type	Panel Mounting (Default) and VESA-75/100 Mounting (Optional)
Chassis	Panel-mounting chassis, aluminum front bezel and SECC steel chassis
Dimension (W x H x D)	390 x 310 x 56.1 mm (15.4" x 12.2" x 2.21")
Weight (Net)	3.6 kg (without VESA bracket)
Others	I/O Cable Cover (Optional)
Environmental	
Operating Temp.	-20° ~ 55°C (-4°F ~ 131°F)

Storage Temp.	-20°C ~ 70°C (-4°F ~ 158°F)
Operating Humidity	10 ~ 95% RH @ 55°C (non-condensing)
Vibration	5 ~ 500Hz, 2Grms X,Y,Z axis (with SSD)
Shock	Operating 20G, 11ms X,Y,Z axis (with SSD)

## 1.4. Inside the Package

Upon opening the package, carefully inspect the contents. If any of the items is missing or appears damaged, contact your local dealer or distributor. The package should contain the following items:



1 x LYNC-715-7433G8 industrial panel PC



1 x **Accessory Box** that contains the following items:

- 1 x Online documentation
- 1 x Rubber O-ring
- 4 x M3\*4L screws (for 2.5" SSD/HDD tray)
- 8 x Panel-mount Clamps w/ screws (clamps and M4\*18L screws)
- 1 x 4-pin plug for terminal block

## 1.5. Ordering Information

**LYNC-715-7433G8**

15" Intel® Atom™ x7433RE Processor industrial panel PC with 8GB memory

### 1.5.1. Optional Accessories

The following items are normally optional, but some vendors may include them in the standard package, or some vendors may not carry all the items.

**PAC-60W6A-FSP-ES** 12V/5A 60W AC/DC power adapter kit



**VMB-715** LYNC-715 VESA-mount bracket kit, w/ 75 x 75 mm & 100 x 100 mm VESA supports



### 1.5.2. Configure-to-Order Service

Make the computer more tailored to your needs by selecting one or more components from the list below to be fabricated to the computer.

**64/128/256 GB SSD** 2.5" SSD MLC 64/128/256GB



**64GB M.2 SSD** M.2 M-key 2242, 64GB, SATA3.0



**WiFi-AT3550** Atheros QCNFA364A M.2 WiFi+BT module w/ 2\*30cm internal wiring



**ANT-D11** 1 x WiFi Dual-band 2.4G/5G antenna



**ADK-712** LYNC-71x audio kit



**SCK-722C** Assembly kit for SiP-41B/42B  
(Note: SCK-722C can only be installed with VMB-712 Mounting Bracket)



**CBK-715** LYNC-715 Cable Cover Bracket

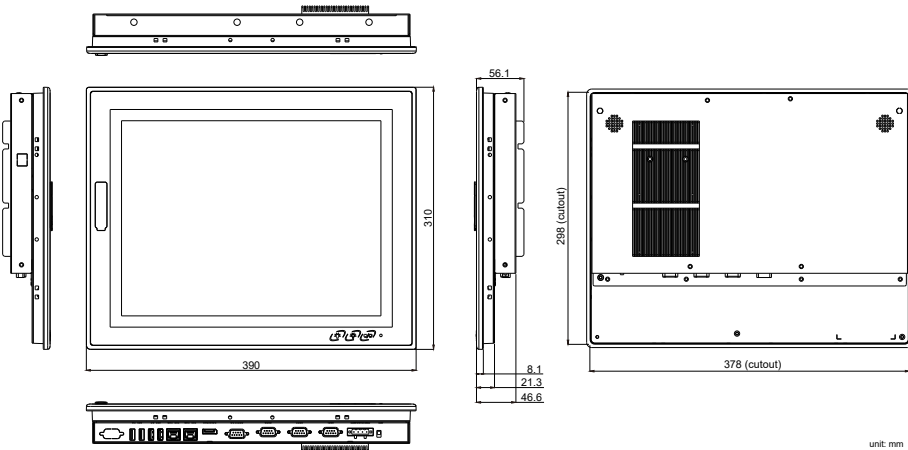


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# Chapter 2

## Getting Started

2.1. Dimensions



## 2.2. Tour the Computer

Take a look around the computer and find the external controls and connectors.

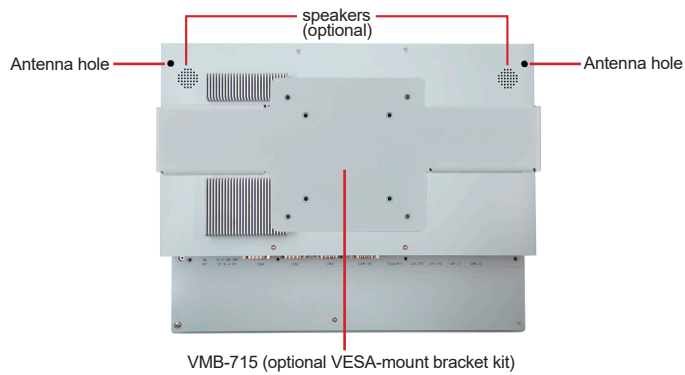
### 2.2.1. Front View



Use the function keys to launch the following actions from the computer:

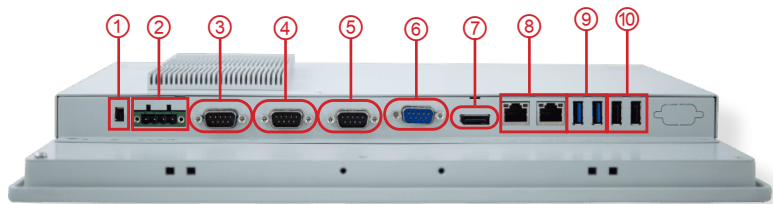
Icon	Description
	Turns on/off the LCD display.
	Decreases LCD backlight.
	Increases LCD backlight.

2.2.2. Rear View



2.2.3. Bottom View

The bottom side of the computer is where the computer's I/O ports are.



No.	Description
①	Power switch
②	9~36V DC In power terminal receptable
③ ④ ⑤ ⑥	DB-9 connectors of COM1, COM2, COM3, COM4, RS-232/485 configurable Note: 1 x 8bit DIO (optional) shares the I/O port with COM4, please select the pin header connection from "DIO1" or "COM4", please refer to page <a href="#">23</a> .
⑦	DisplayPort 1.4, up to 3840 x 2160@60Hz
⑧	2 x RJ-45 2.5GbE ports
⑨	2 x Type-A USB 3.2 Gen2 ports (rear)
⑩	2 x Type-A USB 2.0 ports (rear)



### 2.2.4. Top View



### 2.3. Driver Installation

To install the drivers, please visit our website at [www.arbor-technology.com](http://www.arbor-technology.com) and download the driver pack from the product page.

\*Note: Refer to [Appendix B: PenMount Utilities on page 77](#) for how to use touch panel.

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# Chapter 3

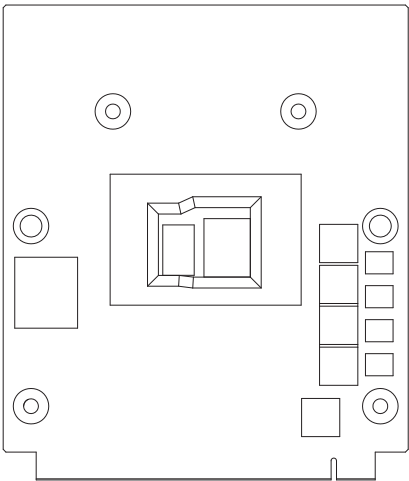
## Engine of the Computer

### 3.1. Board Layout

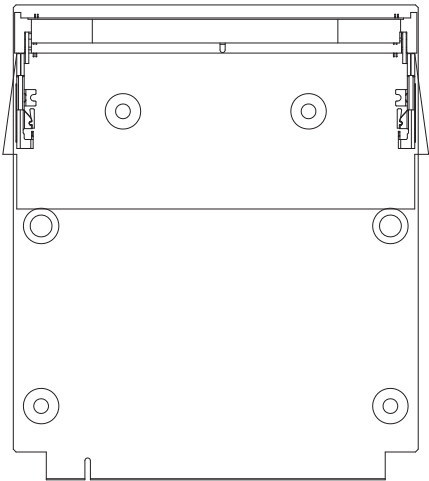
The engine of the computer is constructed by the CPU module EmQ-i2A21, the carrier board PBQ-9015 and the optional daughterboard SCDB-141B.

#### 3.1.1. CPU Module (EmQ-i2A21)

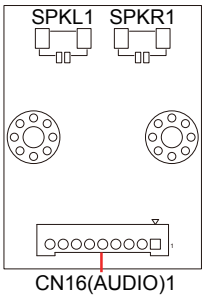
**Top View**



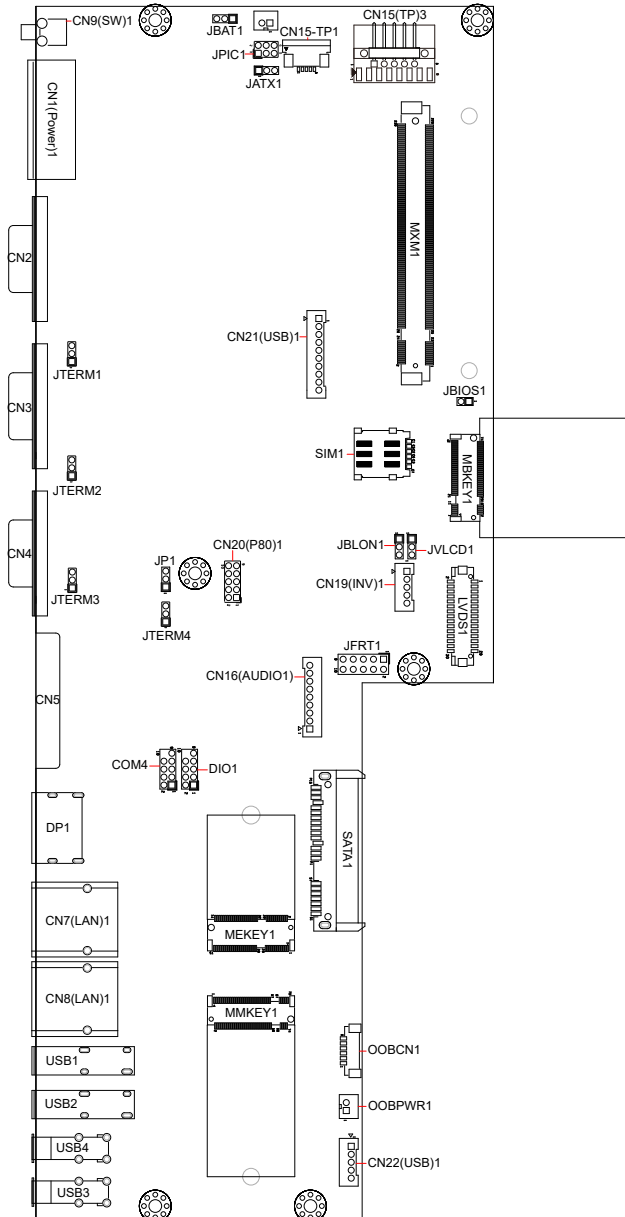
**Bottom View**



#### 3.1.2. Daughterboard (SCDB-141B, optional)



### 3.1.3. Carrier Board (PBQ-9015)



### 3.2. Jumpers and Connectors

This chapter will explicate each of the jumpers and connectors on the carrier board of the computer.

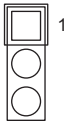
#### 3.2.1. Jumpers

##### JATX1

**Function:** AT/ATX MODE

**Selection**

**Jumper Type:** 2.00mm-pitch  
1x3-pin header



**Setting:**

Pin	Description	Setting
1-2	AT (default)	1
		2
		3
2-3	ATX	1
		2
		3

##### JBIOS1

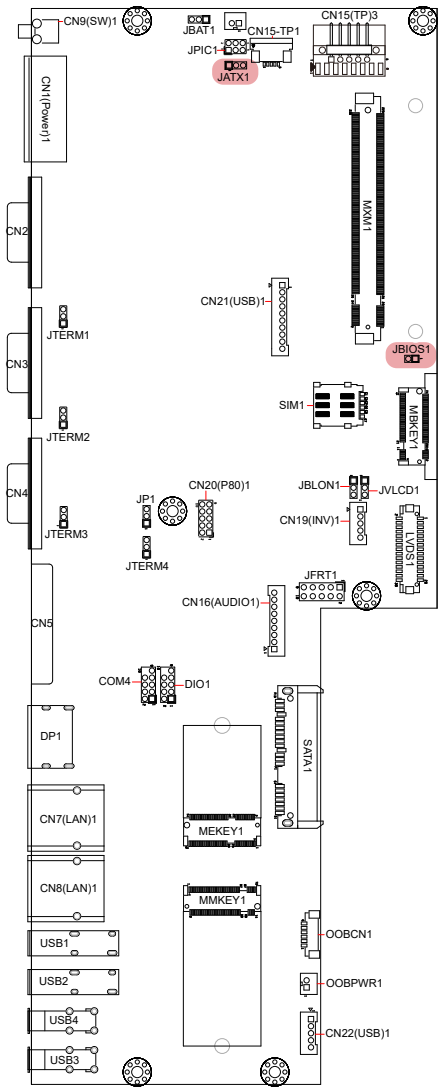
**Function:** BIOS selector

**Jumper Type:** 2.00mm-pitch  
1x2-pin open type jumper



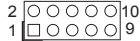
**Setting:**

Pin	Description	Setting
ON	Boot the computer from the carrier board's flash ROM BIOS.	1
		The short-circuit-cap is used on both pins.
OFF	Boot the computer from the CPU board's flash ROM BIOS. (default)	1
		The short-circuit-cap is removed.



## JFRT1

**Function:** front panel LED indication



**Jumper Type:** 2.54mm-pitch 2x5-pin header

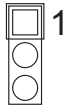
**Setting:**

Pin	Description	Setting
1-2	system reset	
3-4	power LED	
5-6	HDD LED	
7-8	speaker	
9-10	power button	

## JBAT1

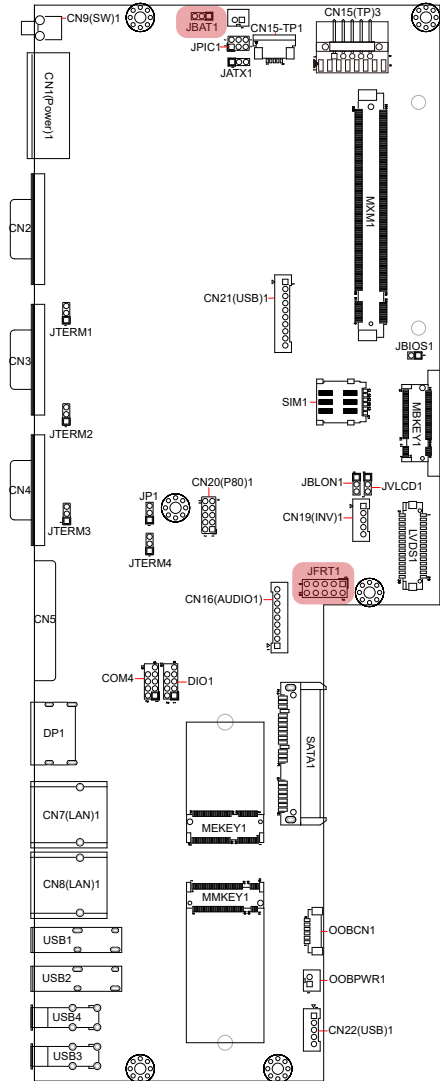
**Function:** COMS setting

**Jumper Type:** 2.00mm-pitch 1x3-pin header



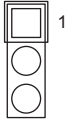
**Setting:**

Pin	Description	Setting
1-2	Keep CMOS (default)	
2-3	Clear CMOS	



JVLCD1

**Function:** LCD power selection  
**Jumper Type:** 2.00mm-pitch  
1x3-pin header



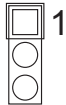
Setting:

Pin	Description	Setting
1-2	5V	1 2 3

2-3	3.3V (default)	1 2 3
-----	-------------------	-------------

JBLON1

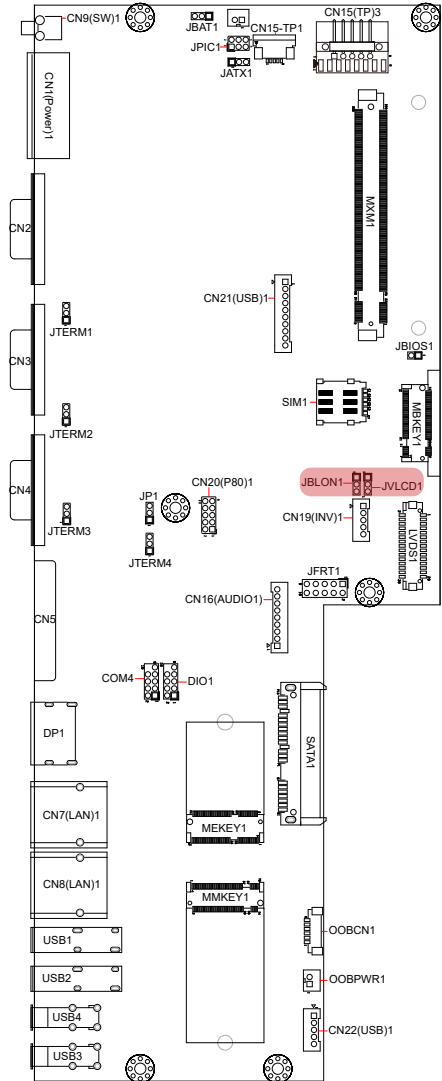
**Function:** LCD backlight active  
selection  
**Jumper Type:** 2.00mm-pitch  
1x3-pin header



Setting:

Pin	Description	Setting
1-2	negative active	1 2 3

2-3	positive active (default)	1 2 3
-----	------------------------------	-------------

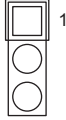




## JP1

**Function:** COM1 function selection

**Jumper Type:** 2.00mm-pitch 1x3-pin header



### Setting:

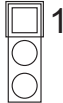
Pin	Description	Setting
1-2	for factory testing	

2-3	normal (default)	
-----	------------------	--

## JTERM1~M4

**Function:** RS485 Terminator Selection

**Jumper Type:** 2.00mm-pitch 1x3-pin header



### Setting:

Pin	Description	Setting
1-2	normal mode (default)	

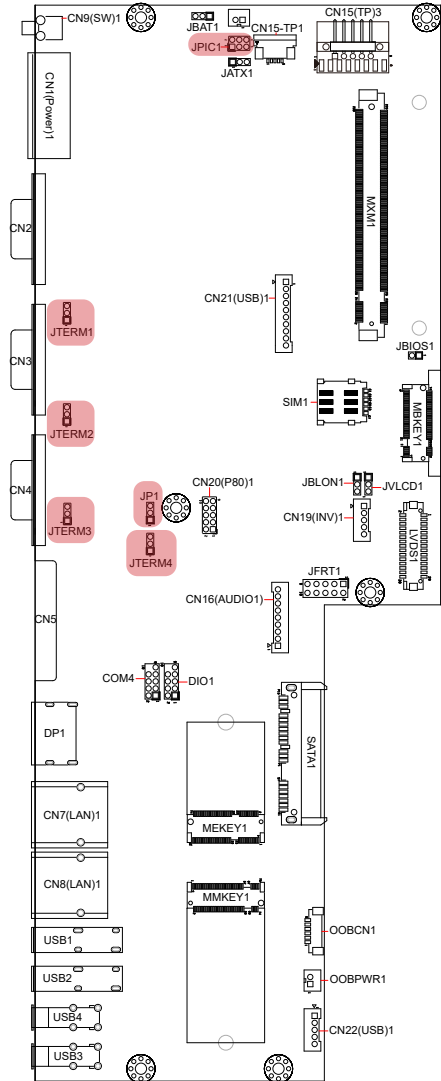
2-3	120 ohm terminal mode	
-----	-----------------------	--

## JPIC1

**Function:** PIC MCU Update Port

### Setting:

Pin	Description	Pin	Description
1	PIC_TX	4	GND
2	Clock	5	5V
3	Data	6	MCU_RST



3.2.2. Connectors

CN19(INV)1

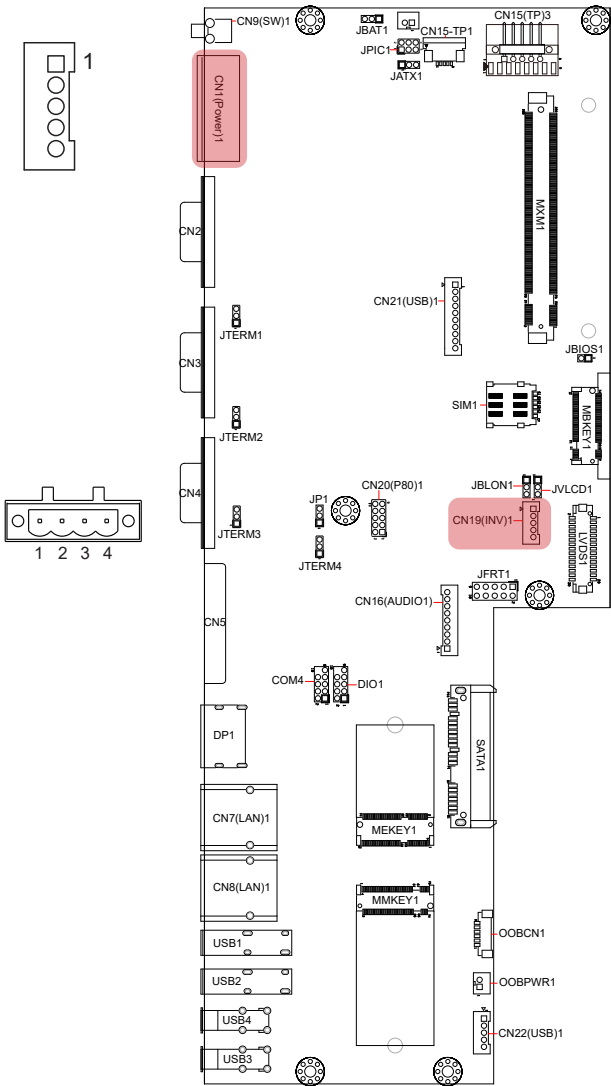
**Function:** inverter connector  
**Connector Type:** 2.00mm-pitch 1x5-pin 4-wall wafer connector  
**Setting:**

Pin	Description
1	+12V/+5V
2	GND
3	BL-ON
4	BL-Control
5	GND

CN1(Power)1

**Function:** power input  
**Connector Type:** 5.00mm-pitch 4-pole male-type euro-style terminal block  
**Setting:**

Pin	Description
1	POWER+(9~36V)
2	POWER-
3	SW-
4	SW+



## CN21

**Function:** USB 2.0 connectors

**Connector Type:** 1x10-pin header

**Setting:**

Pin	Desc.	Pin	Desc.
1	VCC5	6	NC
2	D-	7	NC
3	D+	8	NC
4	GND	9	NC
5	NC	10	GND

CN21(USB)1



## CN22

**Function:** USB connectors

**Connector Type:** 2.54mm-pitch 1x5-pin header

**Setting:**

Pin	Description
1	5VCC
2	Data-
3	Data+
4	GND
5	GND

CN22(USB)1



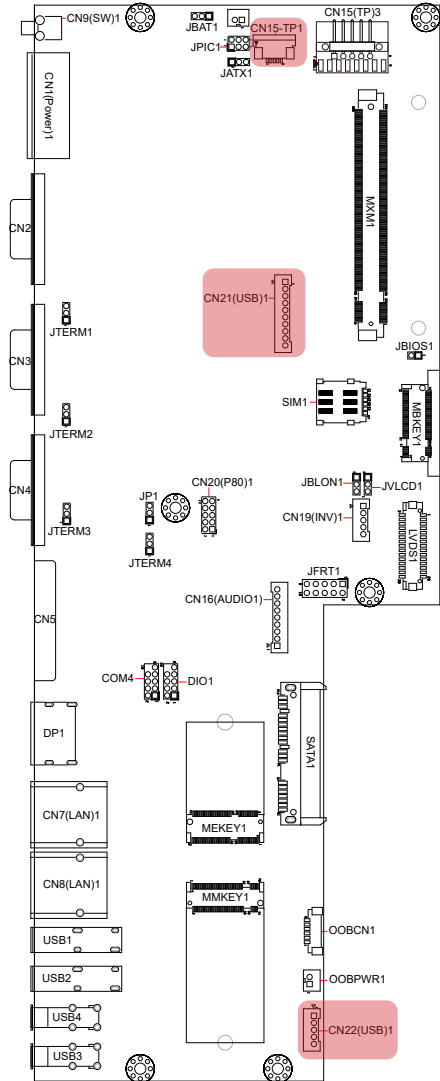
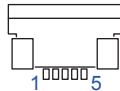
## CN15-TP1

**Function:** membrane connector

**Connector Type:** 1x5-pin FPC downside connector

**Setting:**

Pin	Description
1	Panel-PWM-
2	Panel-PWM+
3	Power SW
4	Power LED
5	GND



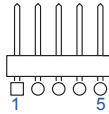
## CN15(TP)3

**Function:** touch panel connector

**Connector Type:** 2.54mm-pitch 1x5-pin header

**Setting:**

Pin	Description
1	Y+
2	X+
3	Sense
4	Y-
5	X-



## LVDS1

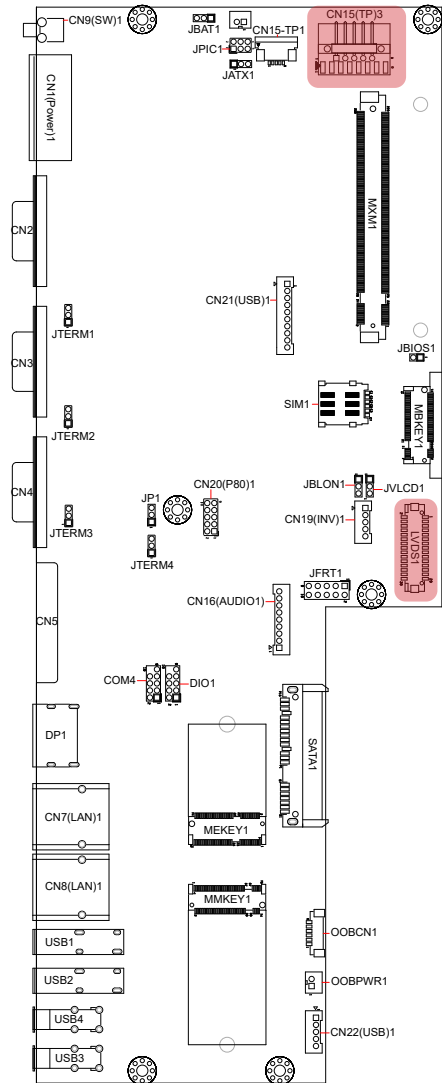
**Function:** LCD connector

**Connector Type:** DF-13-30DP-1.25V connector



**Setting:**

Pin	Description	Pin	Description
2	VDD	1	VDD
4	TX2CLK+	3	TX1CLK+
6	TX2CLK-	5	TX1CLK-
8	GND	7	GND
10	TX2D0+	9	TX1D0+
12	TX2D0-	11	TX1D0-
14	GND	13	GND
16	TX2D1+	15	TX1D1+
18	TX2D1-	17	TX1D1-
20	GND	19	GND
22	TX2D2+	21	TX1D2+
24	TX2D2-	23	TX1D2-
26	GND	25	GND
28	TX2D3+	27	TX1D3+
30	TX2D3-	29	TX1D3-



## CN2~CN5

**Function:** COM1~4

**Connector Type:** 9-pin

**Setting: RS-232**



Pin	Description	Pin	Description
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI1
5	GND		

**Setting: RS-485**

Pin	Description	Pin	Description
1	D-	6	NC
2	D+	7	NC
3	NC	8	NC
4	NC	9	NC
5	NC		

Note: COM4 for 1 x 8 bit DIO (optional) share I/O port with COM4.

Note: To switch the COM port mode, please refer to [5.2.5. F81866 Super IO Configuration on page 51](#).

## COM4

**Function:** COM Port Pin

Header (COM4)

**Connector Type:** 2x5 Pin

Header 2.0mm pitch



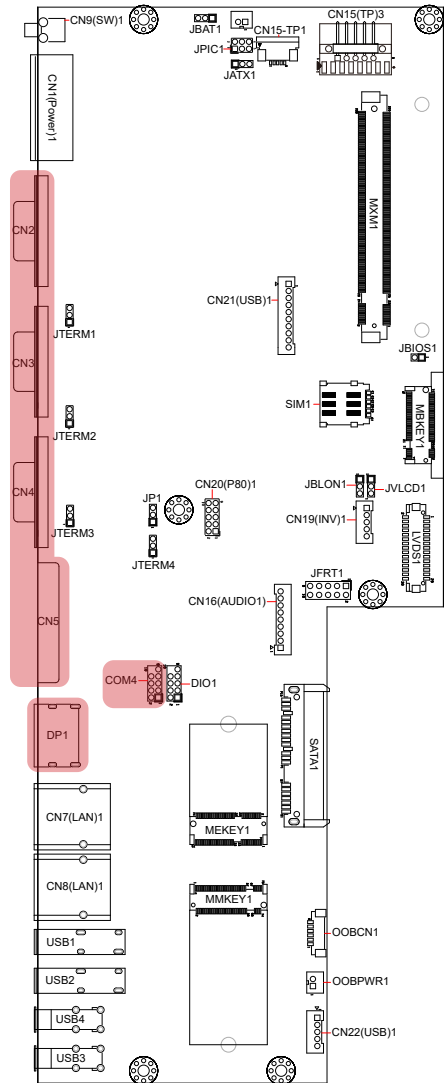
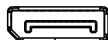
Pin	Description	Pin	Description
1	DCD/(RS485-)	2	RXD/(RS485+)
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	NC

## DP1

**Function:** DisplayPort 1.4

**Connector Type:** 20-pin

DIP-type female connector



DIO1

**Function:** Digital I/O Pin Header (DIO1)  
**Connector Type:** 2x5 Pin Header 2.0mm pitch



Pin	Description	Pin	Description
1	DIO0	2	DIO1
3	DIO2	4	DIO3
5	GND	6	DIO4
7	DIO5	8	DIO6
9	DIO7	10	NC

CN20(P80)1

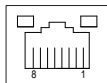
**Connector Type:** on board 2.0mm pitch 10-pin Header



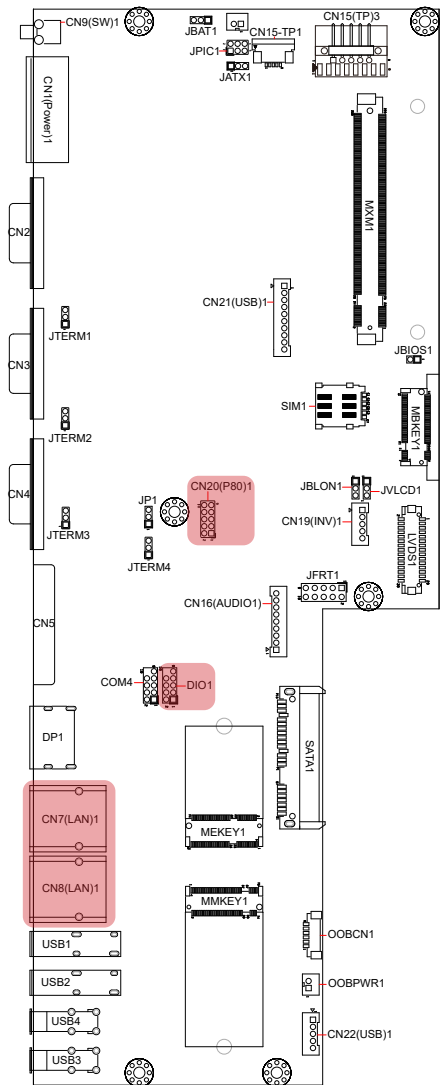
Pin	Description	Pin	Description
1	CLK	2	GND
3	FRAME#	4	LAD0
5	PLTRST#	6	NC
7	LAD3	8	LAD2
9	VCC3	10	LAD1

CN7~CN8

**Function:** RJ-45 Ethernet connectors  
**Connector Type:** 10/100/1000/2500Mbps Fast Ethernet  
**Setting:**



Pin	Description	Pin	Description
1	MDI0	5	MDI2
2	MDI0#	6	MDI2#
3	MDI1	7	MDI3
4	MDI1#	8	MDI3#



## USB1~2

**Function:** USB3.2 ports

**Connector Type:**

USB3.2 type A connector

**Pin Assignment:** The pin assignments conform to the industry standard

## USB3~4

**Function:** USB2.0 ports

**Connector Type:**

USB2.0 type A connector

**Pin Assignment:** The pin assignments conform to the industry standard

## SIM1

**Function:** Nano SIM Card Socket

**Connector Type:**

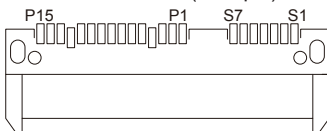
Nano SIM Card Socket

**Pin Assignment:** The pin assignments conform to the industry standard

## SATA1

**Function:** SATA1 connector

**Connector Type:** SATA port with data + power vertical connector (7+15pin)

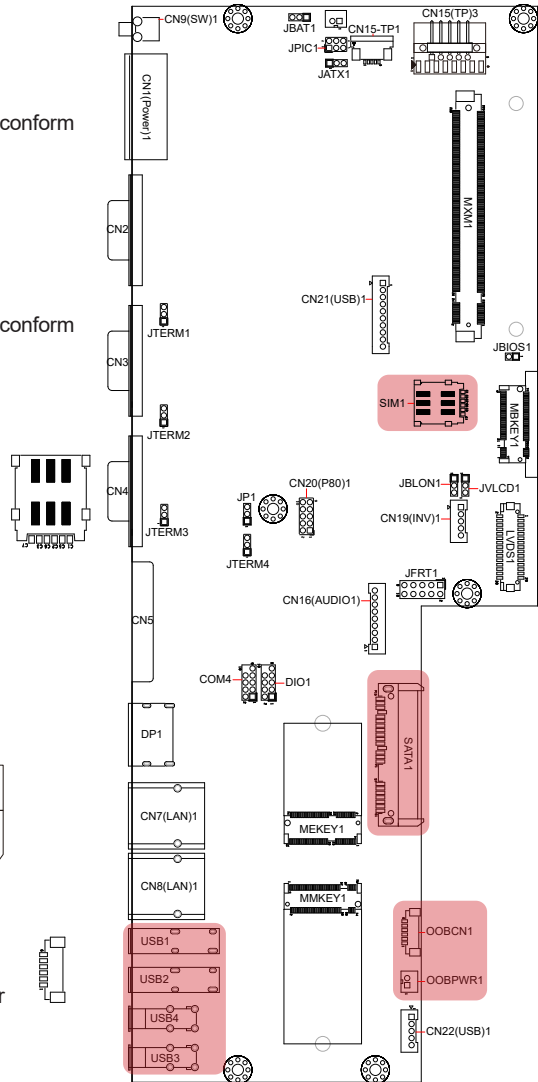


## OOBBCN1

**Function:** Optional OOB (Out-of-Band) Remote Management Module connector

## OOBPWR1

**Function:** Optional OOB (Out-of-Band) Remote Management Module power connector

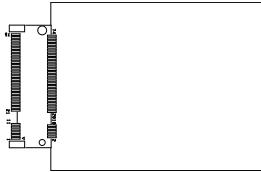


## MBKEY1

**Function:** M.2 B-Key socket

**Connector Type:** M.2 B-Key

**Pin Assignment:** The pin assignments conform to the industry standard

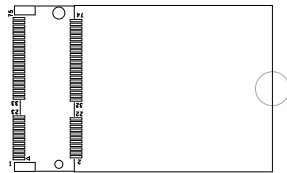


## MEKEY1

**Function:** M.2 E-Key socket (PCIe x1+USB2.0) for optional Wi-Fi/BT

**Connector Type:** M.2 E-Key 2230 Socket

**Pin Assignment:** The pin assignments conform to the industry standard

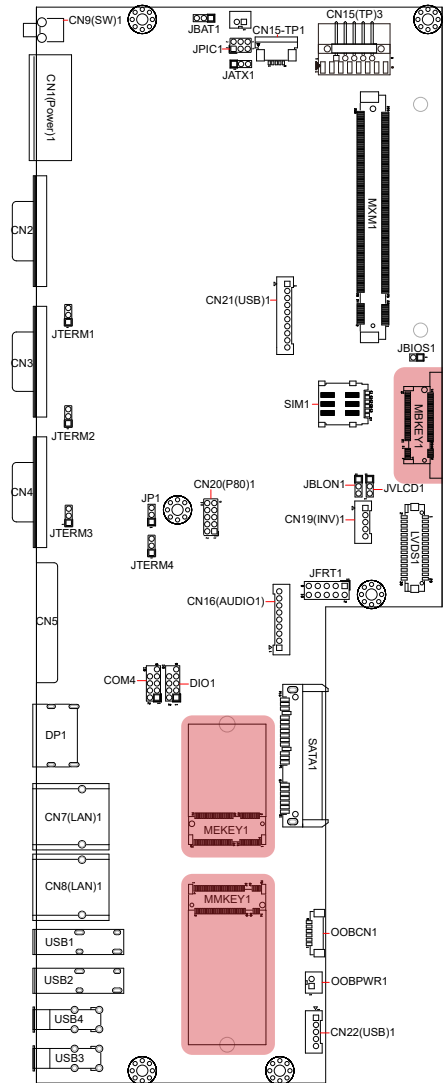


## MMKEY1

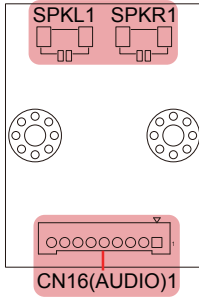
**Function:** M.2 M-Key socket

**Connector Type:** M.2 75-pin M-Key connector for only SATAIII storage, supporting 22x42 module

**Pin Assignment:** The pin assignments conform to the industry standard







## CN16(Audio)1

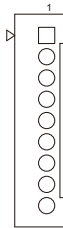
**Function:** audio connector

**Connector Type:** 2.00mm-pitch

1x9-pin 4-wall wafer connector

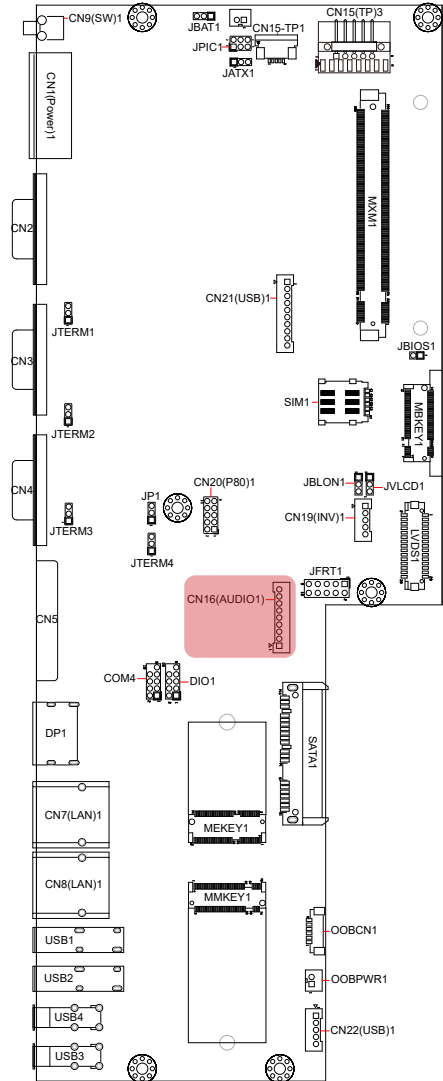
**Setting:**

Pin	Description
1	12VCC
2	3VCC
3	HDA_SYNC
4	HDA_SDOUT
5	GND
6	HDA_CLK
7	GND
8	HDA_RST#
9	HDA_SDIN0



## SPKL1 or SPKR1

**Function:** left or right speaker connector



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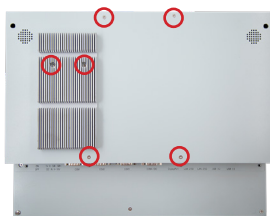
# Chapter 4

## Installation & Maintenance

### 4.1. Use Onboard Jumpers and Connectors

The computer's carrier board PBQ-9015 comes with some connectors to join some devices and also some jumpers to alter hardware configuration. Follow through the guide below to access these components inside the computer.

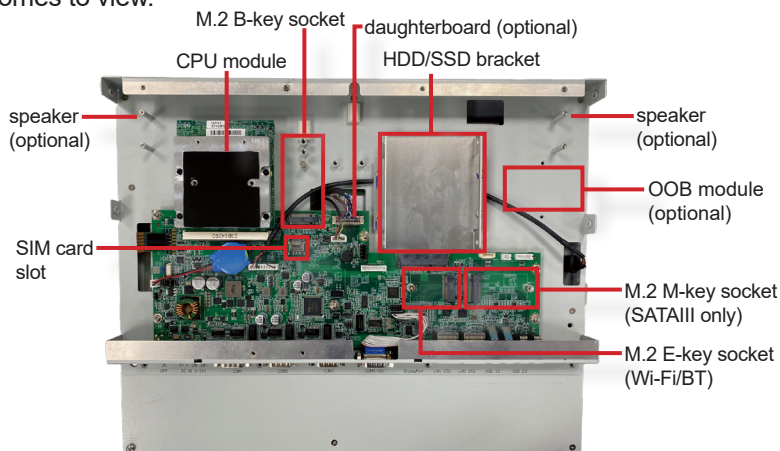
1. Loosen and remove the 6 screws from the computer's rear panel.



2. Loosen and remove the 2 screws from each of the left and right side respectively.



3. Dismount the rear cover from the computer. The inside of the computer comes to view.



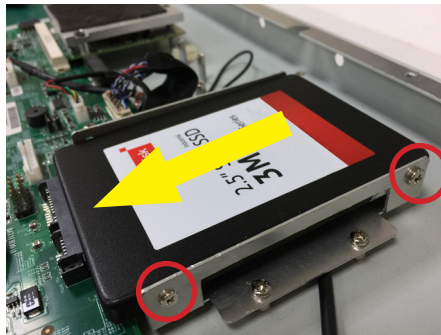
4. Adjust the jumpers or use the connectors on the carrier board as described in [3.2.1. Jumpers on page 16](#) and [3.2.2. Connectors on page 20](#). Be noted that the speakers and daughterboard are parts of ADK-712 module. Refer to [1.5.2. Configure-to-Order Service on page 6](#).

## 4.2. Install Hardware

The following sections will guide you through the basic hardware installation for the computer. Remember to turn off the panel PC before installing/removing inner hardware.

### 4.2.1. Install SSD or HDD

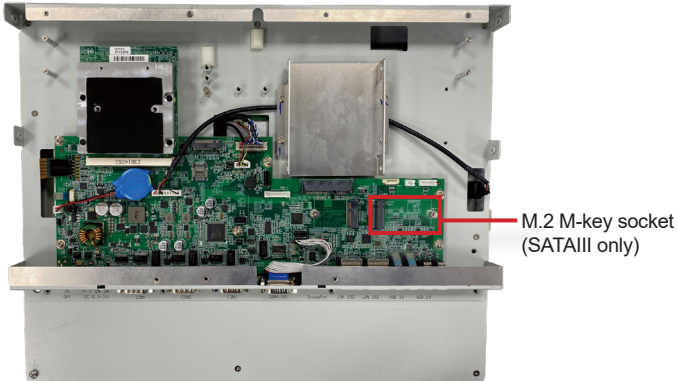
The computer supports a 2.5" HDD or SSD to work inside the computer. To install a 2.5" HDD or SSD to the computer, slide a 2.5" HDD or SSD storage device to the HDD/SSD bracket. Fix them together by using four screws at the bracket's both sides. See the illustration below.



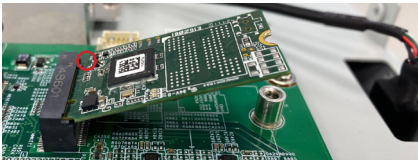
### 4.2.2. Install a M.2 M-Key Module

The computer has a M.2 M-key socket for 22 x 42 form factor SATAIII only.

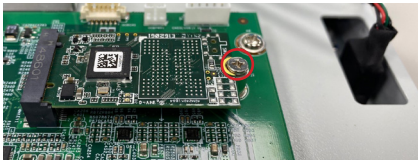
1. Locate the M.2 M-key on board connector.



2. Insert the M.2 module into the socket by aligning the notch on the module with a small slot on the M.2 socket.



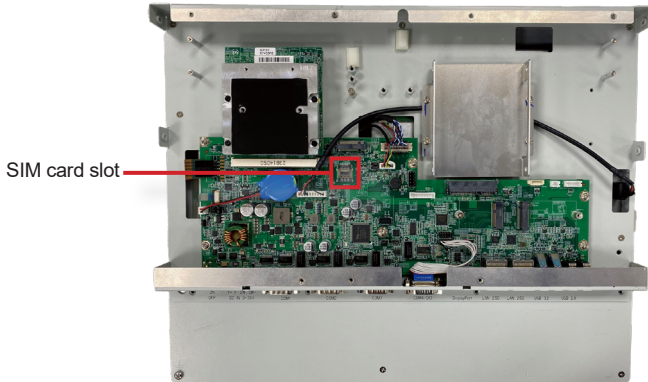
3. Insert and fasten the screw into the standoff.



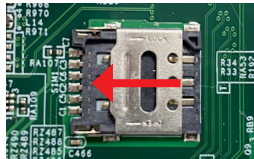
### 4.2.3. Install SIM Card

The computer comes with a SIM card slot. To install a SIM card to the computer:

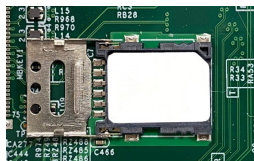
1. Locate the SIM card slot on the main board.



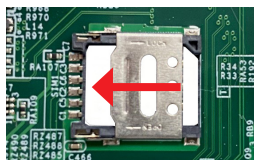
2. Slide the SIM card holder cover towards the OPEN edge and then lift the cover to open it.



3. Insert the SIM card into the card holder as shown below.



4. Close the card holder door and slide the door to the LOCK edge to lock into place.



### 4.2.3. Install Wi-Fi Module

The computer comes with one M.2 E-key socket to load the computer with a wireless module for Wi-Fi and Bluetooth. The configure-to-order Wi-Fi module available with the computer is WIFI-AT3550:



WiFi-AT3550  
Atheros QCNFA364A M.2 WiFi+BT module w/ 2\*30cm internal wiring

(See also [1.5.2. Configure-to-Order Service on page 6.](#))

- If you have ordered the Wi-Fi module WIFI-AT3550, see [Appendix A: WIFI-AT3550 Hardware Installation on page 72](#) to know how to install the hardware and software for the module.



## 4.3. Mount the Computer

Integrate the computer to where it works by mounting it to a wall in the surroundings or to the rear of a display monitor.

### 4.3.1. Panel Mounting

1. Have the panel-mounting clamps included in accessory pack. Put the clamps into holes around edges of the panel PC as below.



2. Put the panel PC into correct-sized frame on a wall or other devices, and tightly screw panel-mounting clamps around edges.

### 4.3.2. VESA Mounting

To support VESA-mounting, the computer needs a VESA bracket, which is available in [1.5.2. Configure-to-Order Service on page 6](#), to enable 75 x 75mm and 100 x 100mm VESA applications.

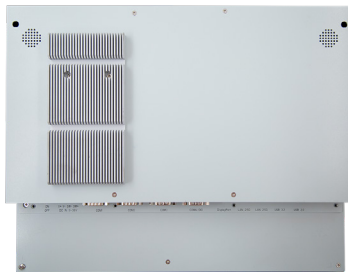
#### 4.3.2.1. Install VESA Bracket

Follow the guide below to install the VESA bracket to the computer:

1. Have the VESA-mount bracket, VMB-715 in this case, and the four mounting screws that come with it.

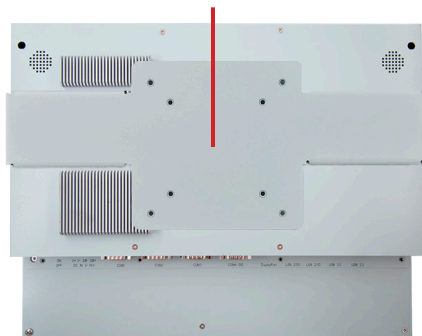


2. Place the computer on a flat surface, with the rear facing up.



3. Place the VESA bracket onto the computer.  
Note: Optional OOB module is not available when using VESA bracket. OOB module can only be used when using Panel Mount installation.

VMB-715



4. Fix the VESA bracket to the computer by two screws at each the left and right side of the computer.



Use another two screws on the left side.

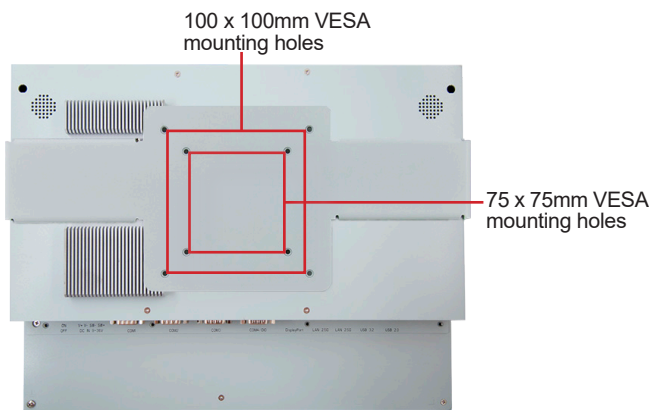


Use two screws on the right side.

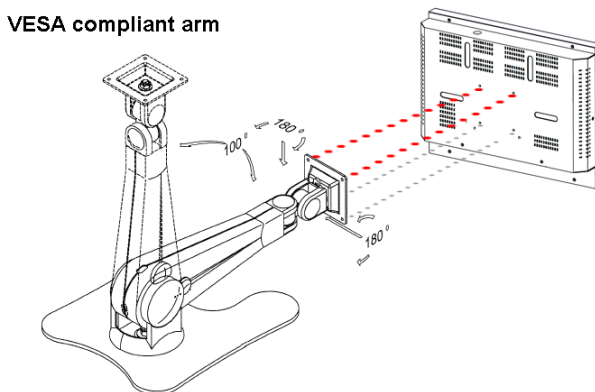
### 4.3.2.2. Use VESA Arm

To integrate the computer to a VESA arm:

1. Install the VESA-mount bracket to the computer as described in previous section.
2. Find the VESA mounting holes on the bracket.



3. Attach the VESA arm to the rear of the computer by meeting the mounting holes on the VESA arm and VESA bracket.
4. Fix the assemblage with four screws.



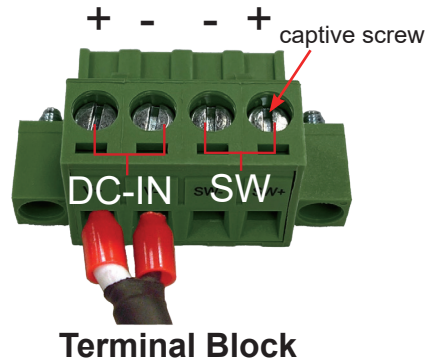
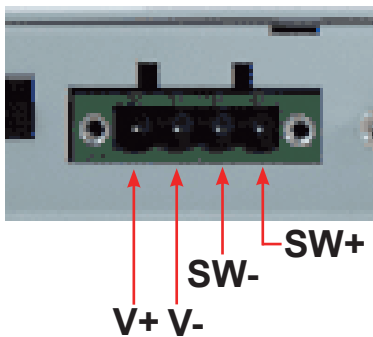
#### 4.4. Wire DC-Input Power Source



**Warning** Only trained and qualified personnel are allowed to install or replace this equipment.

Follow the instructions below to connect the computer to a DC-input power source:

1. Before wiring, make sure the power source is disconnected.
2. Find the terminal block in the accessory box.
3. Use the wire-stripping tool to strip a short insulation segment from the output wires of the DC power source.
4. Identify the positive and negative feed positions for the terminal block connection.
5. Insert the exposed wires into the terminal block plugs. Only wires with insulation should extend from the terminal block plugs. Note that the polarities between the wires and the terminal block plugs must be positive to positive and negative to negative.
6. Use a slotted screwdriver to tighten the captive screws. Plug the terminal block firmly, which wired, into the receptacle on the rear panel.

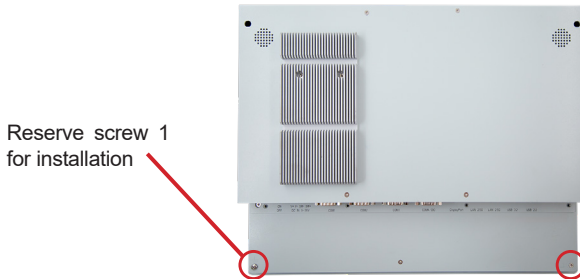


### 4.4.1. Use cable cover bracket

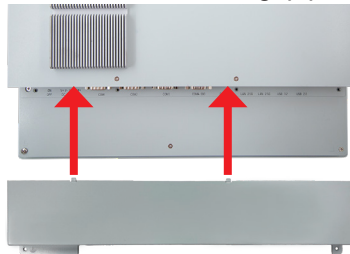
The optional cable cover bracket to prevent the accumulation of dust and dirt, also manage all cables and make the environment more tidy and clean.

Follow the instructions below to install the cable cover bracket:

1. Remove two screws on the bottom side. reserve screw 1 for installation.



2. Insert the optional I/O cable cover into the gap position on Panel PC.



3. Tighten the Screws with reserved screw1, and tight the other screw comes with the optional cable cover bracket (which is longer than original screw)



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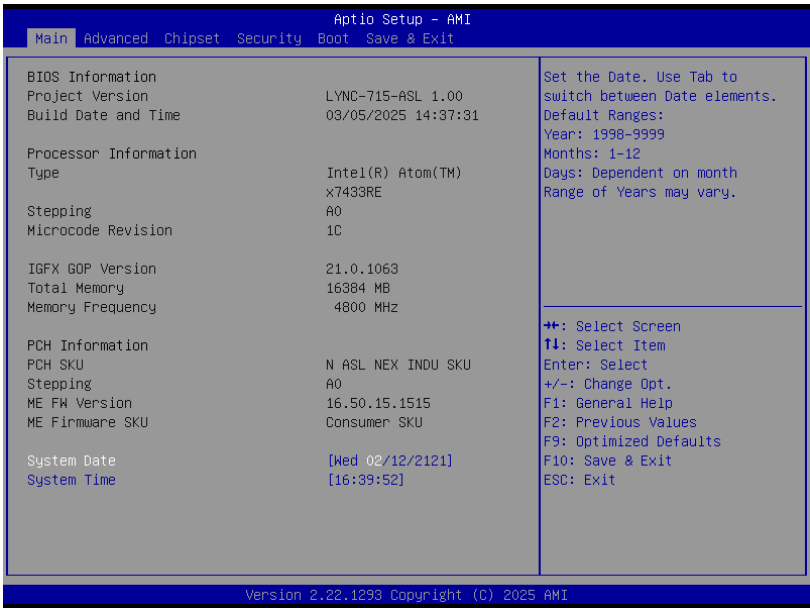
# Chapter 5

## BIOS

5.1. Main

The AMI BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS RAM of the system stores the Setup utility and configurations. When you turn on the computer, the AMI BIOS is immediately activated. To enter the BIOS SETUP UTILITY, press “Delete” once the power is turned on.

The **Main** Setup screen lists the following information:



Setting	Description
System Date	Set the system date. Use Tab to switch between Date elements. Note that the 'Day' automatically changes when you set the date. ▶ The date format is: <b>Day: Sun to Sat</b> <b>Month: 1 to 12</b> <b>Date: 1 to 31</b> <b>Year: 1998 to 9999</b>
System Time	Set the system time. Use Tab to switch between Time elements. ▶ The time format is: <b>Hour: 00 to 23</b> <b>Minute: 00 to 59</b> <b>Second: 00 to 59</b>



## Key Commands

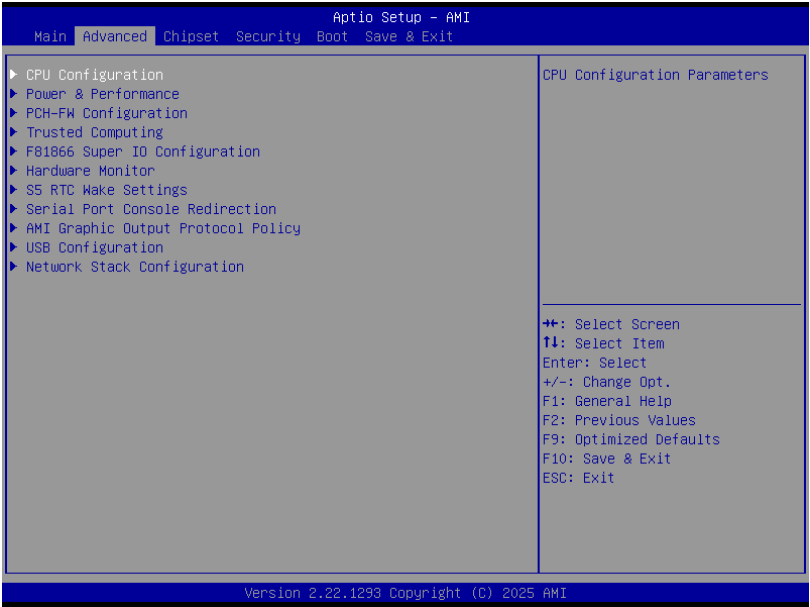
The BIOS Setup utility is mainly a key-based navigation interface. Please refer to the following key command instructions for navigation process.

Keystroke	Function
← →	Move to highlight a particular configuration screen from the top menu bar / Move to highlight items on the screen.
↓ ↑	Move to highlight previous/next item.
Enter	Select and access a setup item/field.
Esc	<ul style="list-style-type: none"> <li>▶ On the Main menu: Quit the setup and not save changes into CMOS (a message screen will display and ask you to select "Yes" or "No" for exiting and discarding changes. Use "←" and "→" to select and press "Enter" to confirm)</li> <li>▶ On the Sub Menu: Exit current page and return to main menu.</li> </ul>
Page Up / +	Increase the numeric value on a selected setup item / make change.
Page Down / -	Decrease the numeric value on a selected setup item / make change.
F1	Opens the <b>General Help</b> of the BIOS Setup utility.
F2	Previous values.
F9	Restore the Setup Default (The screen then prompts a message asking you to select <b>Yes</b> or <b>No</b> to restore to default.)
F10	Save the changes that have been made in the setup and exit. (a message screen will display and ask you to select "Yes" or "No" for exiting and saving changes. Use "←" and "→" to select and press "Enter" to confirm)

### Note:

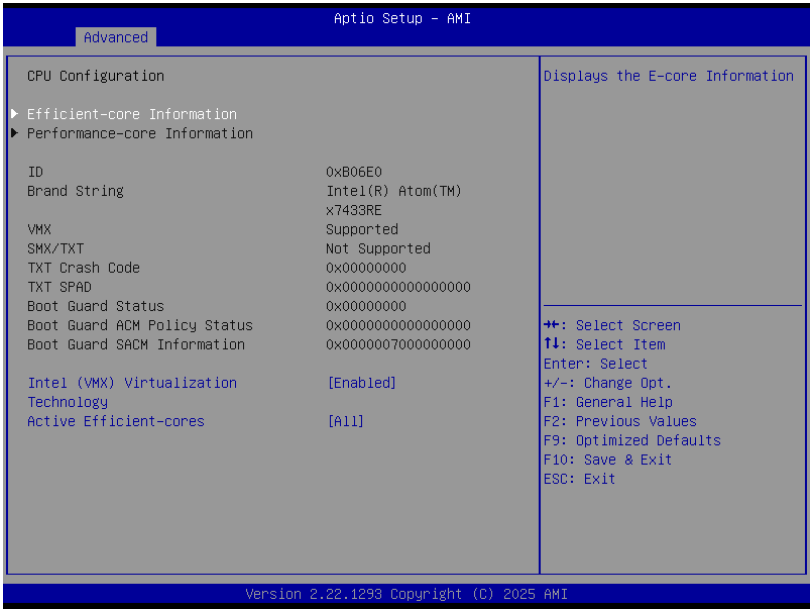
This BIOS Setup utility is updated from time to time to improve system performance and hence the screenshots hereinafter may not fully comply with what you actually have onscreen.

5.2. Advanced



Setting	Description
CPU Configuration	See <a href="#">5.2.1. CPU Configuration on page 45.</a>
Power & Performance	See <a href="#">5.2.2. Power &amp; Performance on page 46.</a>
PCH-FW Configuration	See <a href="#">5.2.3. PCH-FW Configuration on page 49.</a>
Trusted Computing	See <a href="#">5.2.4. Trusted Computing on page 50.</a>
F81866 Super IO Configuration	See <a href="#">5.2.5. F81866 Super IO Configuration on page 51.</a>
Hardware Monitor	See <a href="#">5.2.6. Hardware Monitor on page 54.</a>
S5 RTC Wake Settings	See <a href="#">5.2.7. S5 RTC Wake Settings on page 55.</a>
Serial Port Console Redirection	See <a href="#">5.2.8. Serial Port Console Redirection on page 56.</a>
AMI Graphic Output Protocol Policy	See <a href="#">5.2.9. AMI Graphic Output Protocol Policy on page 57.</a>
USB Configuration	See <a href="#">5.2.10. USB Configuration on page 58.</a>
Network Stack Configuration	See <a href="#">5.2.11. Network Stack Configuration on page 59.</a>

5.2.1. CPU Configuration



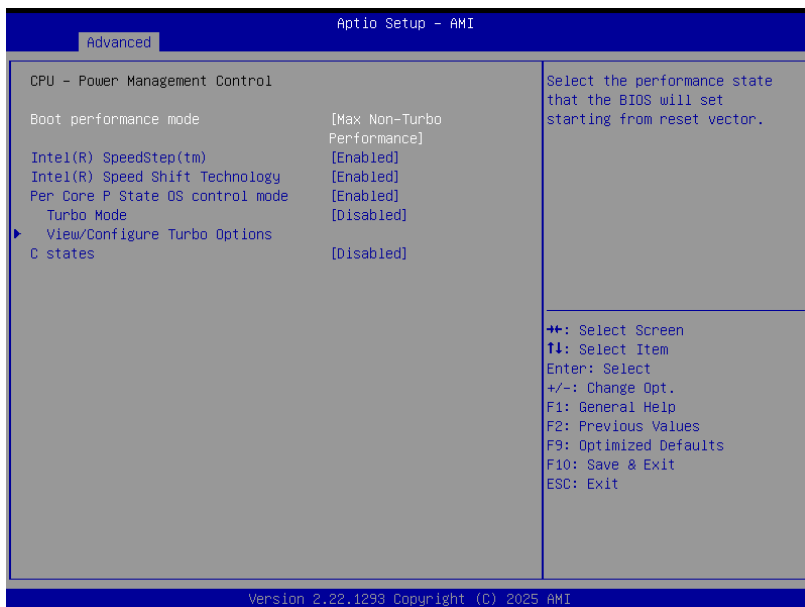
Setting	Description
Efficient-core Information	Displays the E-core Information.
Performance-core Information	Displays the P-core Information.
Intel (VMX) Virtualization Technology	Enable or disable Intel virtualization technology. When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology. ► Options: <b>Enabled</b> (default) or <b>Disabled</b> .
Active Efficient-cores	Number of E-cores to enable in each processor package. Note: Number of Cores and E-cores are looked at together. When both are {0,0}, Pcode will enable all cores. ► Options: <b>All</b> (default), <b>0</b> , <b>1</b> , <b>2</b> and <b>3</b> .

5.2.2. Power & Performance



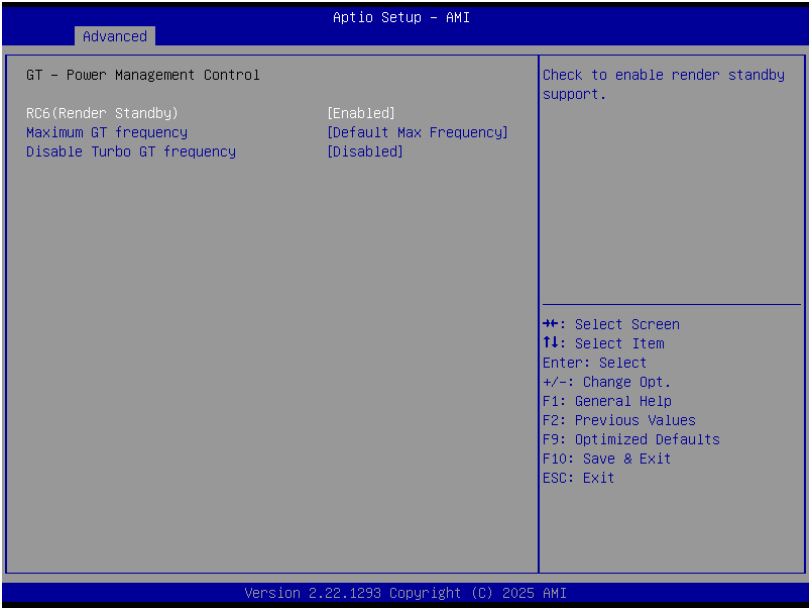
Setting	Description
CPU - Power Management Control	Configure CPU Power Management. See <a href="#">5.2.2.1. CPU - Power Management Control on page 47.</a>
GT - Power Management Control	Configure graphics processors Power Management. See <a href="#">5.2.2.2. GT - Power Management Control on page 48.</a>

### 5.2.2.1. CPU - Power Management Control



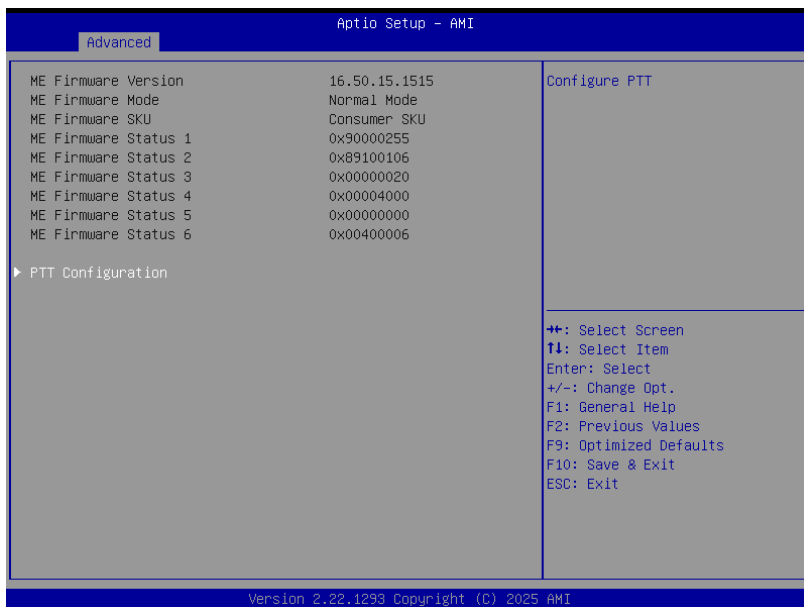
Setting	Description
<b>Boot performance mode</b>	Select the performance state that the BIOS will set starting from reset vector. ► Options: <b>Max Battery</b> , <b>Max Non-Turbo Performance</b> (default), <b>Turbo Performance</b>
<b>Intel(R) SpeedStep(tm)</b>	Allows more than two frequency ranges to be supported. ► Options: <b>Enabled</b> (default), <b>Disabled</b> .
<b>Intel(R) Speed Shift Technology</b>	Enable/Disable Intel(R) Speed Shift Technology support. Enabling will expose the CPPC v2 interface to allow for hardware controlled P-states. ► Options: <b>Enabled</b> (default), <b>Disabled</b> .
<b>Per Core P State OS control mode</b>	Enable/Disable Per Core P state OS control mode. ► Options: <b>Enabled</b> (default), <b>Disabled</b> .
<b>Turbo Mode</b>	Enable/Disable Processor Turbo Mode. ► Options: <b>Enabled</b> , <b>Disabled</b> (default).
<b>View/Configure Turbo Options</b>	View/Configure current Turbo options. ► Options: <b>Enabled</b> , <b>Disabled</b> .
<b>C States</b>	Enable/Disable CPU Power Management. Allows CPU to go to C states when it's not 100% utilized. ► Options: <b>Enabled</b> , <b>Disabled</b> (default).

5.2.2.2. GT - Power Management Control



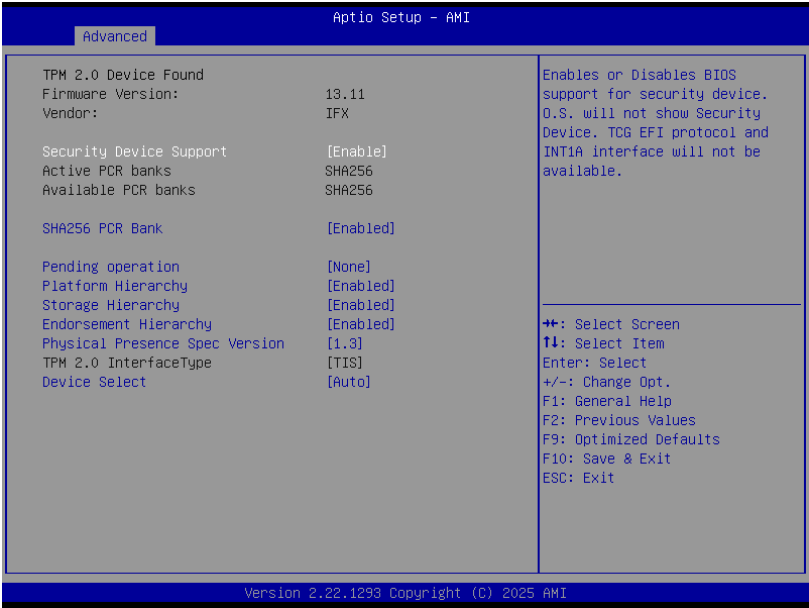
Setting	Description
RC6 (Render Standby)	Check to enable render standby support. ► Options: <b>Enabled</b> (default), <b>Disabled</b> .
Maximum GT frequency	Maximum GT frequency limited by the user. Choose between 200MHz (RPN) and 1000MHz (RP0). Value beyond the range will be clipped to min/max supported by SKU. ► <b>Default Max Frequency</b> (default).
Disable Turbo GT frequency	Enabled: Disables Turbo GT frequency. Disabled: GT frequency is not limited. ► Options: <b>Disabled</b> (default), <b>Enabled</b> .

### 5.2.3. PCH-FW Configuration



Setting	Description
PTT Configuration	<p>Select TPM device: PTT or dTPM.            PTT - Enables PTT in SKuMgr            dTPM1.2 - Disables PTT in SKuMgr Warning!            PTT/dTPM will be disabled and all data saved on it will be lost.</p> <p>► Options: <b>dTPM</b> (default) / <b>PTT</b></p>

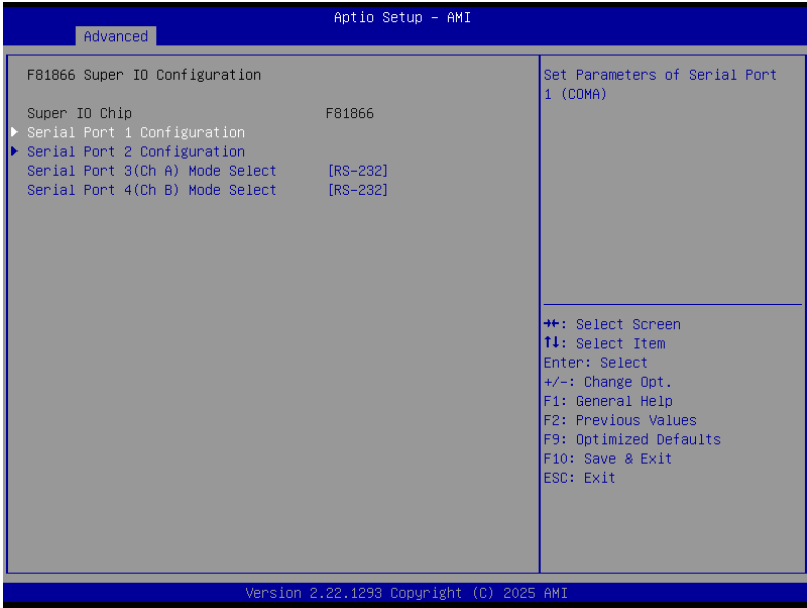
5.2.4. Trusted Computing



Setting	Description
Security Device Support	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. ► Options: <b>Enabled</b> (Default), <b>Disabled</b> When set as <b>[Enabled]</b> , user can make setting in the following items that appear:
SHA256 PCR Bank	<b>Enable</b> (default) or <b>Disable</b> SHA256 PCR Bank.
Pending Operation	Schedule an operation for the security Device. Your computer will reboot during restart in order to change state of Security Device. ► Options: <b>None</b> (default) and <b>TPM Clear</b>
Platform Hierarchy	<b>Enable</b> (default) or <b>Disable</b> Platform Hierarchy.
Storage Hierarchy	<b>Enable</b> (default) or <b>Disable</b> Storage Hierarchy.
Endorsement Hierarchy	<b>Enable</b> (default) or <b>Disable</b> Endorsement Hierarchy.
Physical Presence Spec Version	Select to tell O.S. to support PPI Spec Version 1.2 or 1.3. Note some HCK tests might not support 1.3. ► Options: <b>1.2</b> or <b>1.3</b> (default)
Device Select	Select TPM devices options: <b>TPM1.2</b> , <b>TPM2.0</b> and <b>Auto</b> (default)



## 5.2.5. F81866 Super IO Configuration



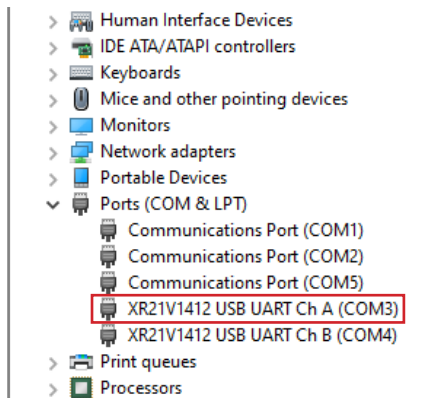
Setting	Description
<b>Serial Port 1 Configuration</b>	<p>Use this item to set parameters of Serial Port1 (COMA) Press [Enter] to make settings for the following items:</p> <ul style="list-style-type: none"> <li>Serial Port: The optional settings: Enabled (default)/Disabled</li> <li>Change Settings: Use this item to select an optimal setting for Super IO Device. The optional settings: [Auto]; [IO=3F8h; IRQ=4]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12]</li> <li>Mode Select: Select the mode of Serial port, The options: RS-232(default) / RS-485</li> </ul>
<b>Serial Port 2 Configuration</b>	<p>Use this item to set parameters of Serial Port2 (COMB) Press [Enter] to make settings for the following items:</p> <ul style="list-style-type: none"> <li>Serial Port: The optional settings: Enabled (default)/Disabled</li> <li>Change Settings: Use this item to select an optimal setting for Super IO Device. The optional settings: [Auto]; [IO=2F8h; IRQ=3]; [IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12]; [IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12]</li> <li>Mode Select: Select the mode of Serial port, The options: RS-232(default) / RS-485</li> </ul>

<b>Serial Port 3(Ch A) Mode Select</b>	▶ Mode Select: Select the mode of Serial port, The options: RS-232(default) / RS-485
<b>Serial Port 4(Ch B) Mode Select</b>	▶ Mode Select: Select the mode of Serial port, The options: RS-232(default) / RS-485

**Note:** To configure COM 3&4 to RS-485, you need to set the COM port type to RS485 in BIOS and configure the port settings in Windows OS. Please follow the steps as below to setup.

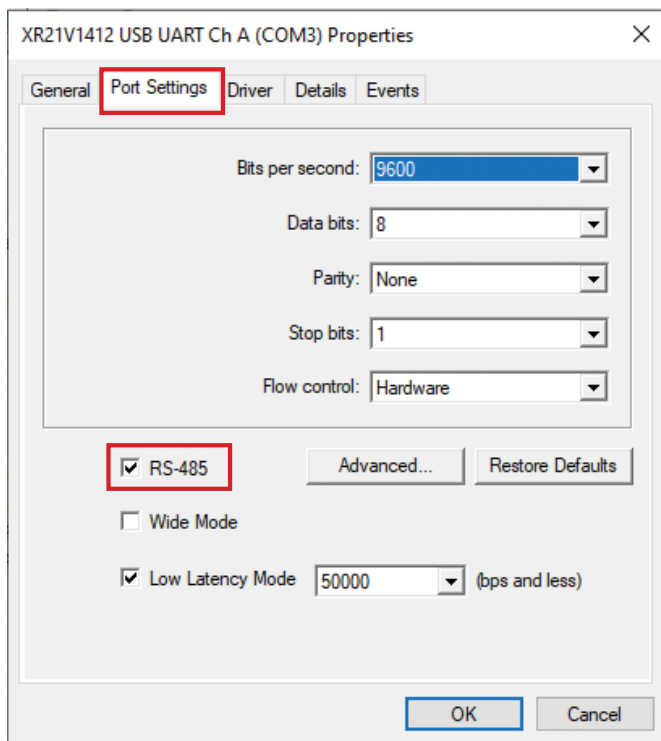
### 5.2.5.1. COM3&4 RS-485 Configuration Windows

1. Right-click the **Start** button, then select **Device Manager** from the context menu.
2. Click **Ports (COM & LPT)** to open the list.



3. Right-click on the **XR21V1412 USB UART Ch A (COM3)** or **XR21V1412 USB UART Ch B (COM4)** and then click **Property** from the context menu.

4. Select the **Port Settings** tab and check the **RS-485** checkbox to enable it.

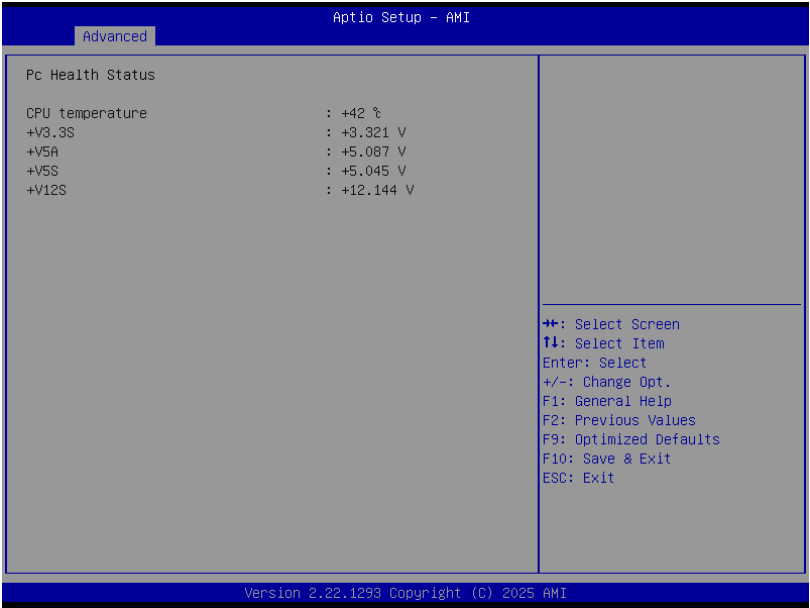


5. Reboot the PC to enable the setting.

#### 5.2.5.2. COM3&4 Port Number in Windows

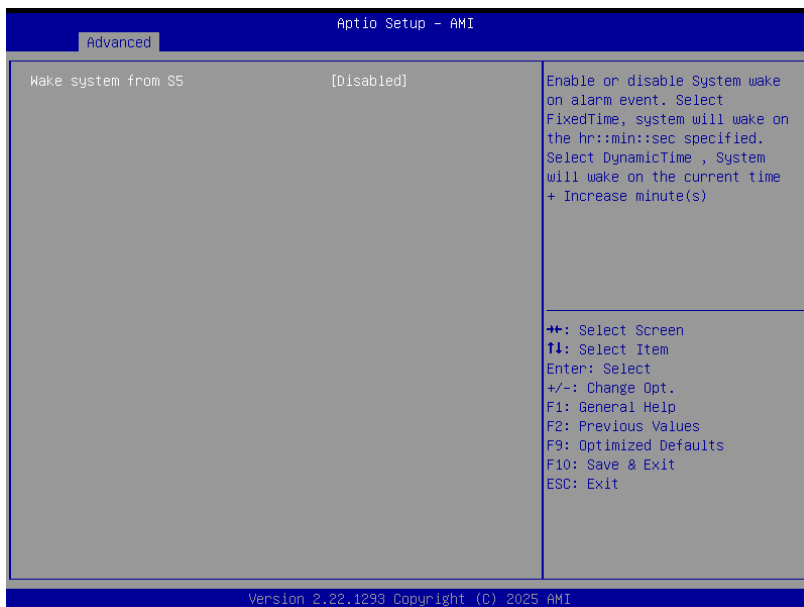
**Note:** Based on the hardware design, USB UART **Ch A** always refers to **COM3** while **Ch B** refers to **COM4**. If you find the COM port numbers in reverse order in Windows Device Manager, please ignore it. It doesn't affect actual port assignment of the COM ports.

5.2.6. Hardware Monitor



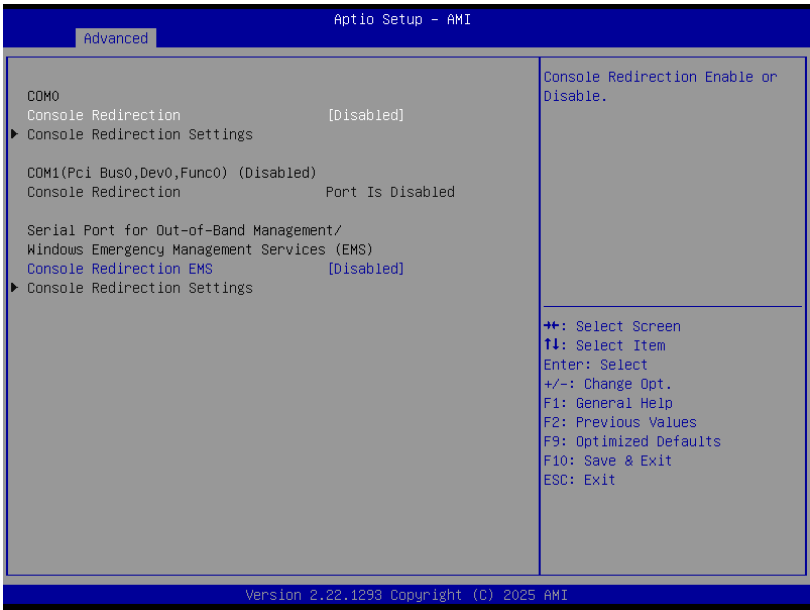
Access this submenu to monitor the hardware status.

## 5.2.7. S5 RTC Wake Settings



Setting	Description
Wake System from S5	<p>Enable or Disable (Default) system wake on alarm event.</p> <p>► Options available are:</p> <p><b>Disabled</b> (Default):</p> <p><b>Fixed Time:</b> System will wake on the hr::min::sec specified.</p> <p><b>DynamicTime:</b> If selected, you need to set <b>Wake up minute increase</b> from 1 - 5. System will wake on the current time + increase minute(s).</p>

5.2.8. Serial Port Console Redirection



Setting	Description
Console Redirection	<p>Use this item to enable or disable Console Redirection. The optional settings: <b>[Disabled]</b>; <b>[Enabled]</b>. When set as <b>[Enabled]</b>, user can make further settings in the following items:</p> <ul style="list-style-type: none"><li>▶ Terminal Type: The options: VT100/VT100Plus(default)/VT-UTF8/ANSI</li><li>▶ Bits per second: The options: 9600/19200/38400/57600/115200(default)</li><li>▶ Data Bits: The options: 7 / 8(default)</li><li>▶ Parity: The options: None(default)/Even/Odd/Mark/Space</li><li>▶ Stop Bits: The options: 1(default) / 2</li><li>▶ Flow Control: The options: None(default) ; Hardware RTS/CTS</li><li>▶ VT-UTF8 Combo Key Support: The options: Enabled(default) /Disabled</li><li>▶ Recorder Mode: The options: Enabled / Disabled(default)</li><li>▶ Resolution 100x31: The options: Enabled / Disabled(default)</li><li>▶ Putty KeyPad: The options: VT100(default)/LINUX/XTERMR6/SCO/ESCN/VT400</li></ul>

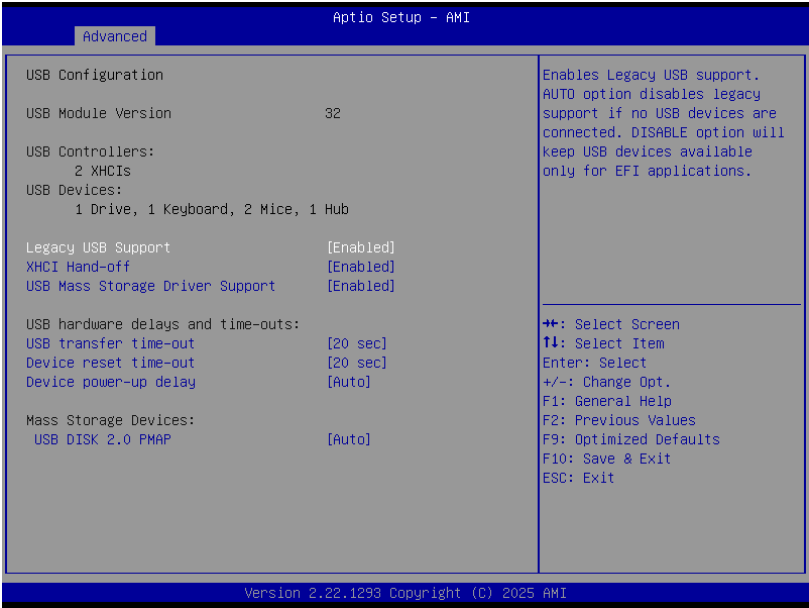
<b>Console Redirection EMS</b>	<p>Use this item to enable or disable Console Redirection EMS. The optional settings: <b>[Disabled]</b>; <b>[Enabled]</b>. When set as <b>[Enabled]</b>, user can make further settings in the following items:</p> <ul style="list-style-type: none"> <li>▶ Out-of-Band Mgmt Port: The options: COM0(default)/COM1(Pci Bus0,Dev0,Func0) (Disabled)</li> <li>▶ Terminal Type EMS: The options: VT100/VT100Plus(default)/VT-UTF8/ANSI</li> <li>▶ Bits per second EMS: The options: 9600/19200/57600/115200(default)</li> <li>▶ Flow Control EMS: The options: None(default); Hardware RTS/CTS; Software Xon/Xoff</li> </ul>
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### 5.2.9. AMI Graphic Output Protocol Policy



Setting	Description
<b>Output Select</b>	Output Interface Selection ▶ Option: EDP1[ACTIVE] (default)

5.2.10. USB Configuration

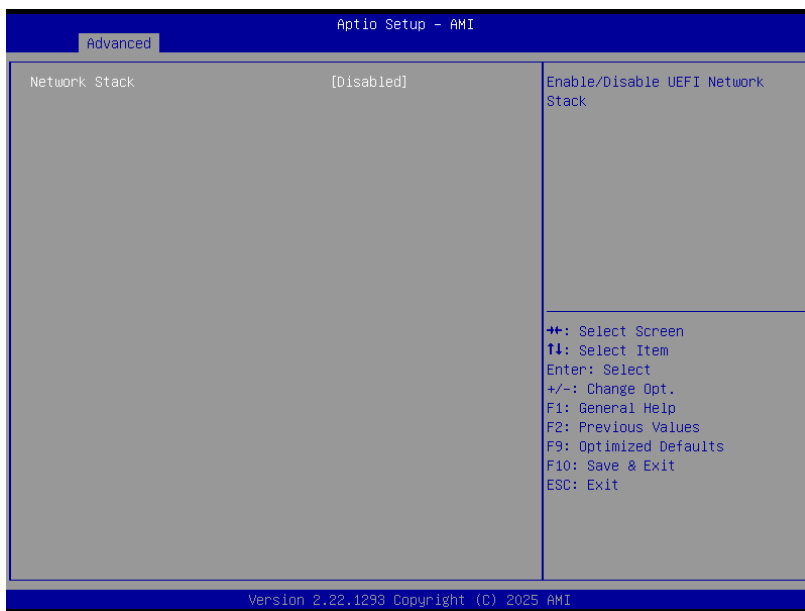


Setting	Description
<b>Legacy USB Support</b>	<p>Enables/disables legacy USB support.</p> <ul style="list-style-type: none"> <li>Options available are Enabled (default), Disabled and Auto.</li> <li>Select Auto to disable legacy support if no USB device are connected.</li> <li>Select Disabled to keep USB devices available only for EFI applications.</li> </ul>
<b>XHCI Hand-off</b>	<p>This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.</p> <ul style="list-style-type: none"> <li>The optional settings are: Enabled (default) / Disabled.</li> </ul>
<b>USB Mass Storage Driver Support</b>	<p>Enables/disables USB Mass Storage Driver Support.</p> <ul style="list-style-type: none"> <li>The optional settings are: Enabled (default) / Disabled.</li> </ul>
<b>USB hardware delay and time-out</b>	
<b>USB transfer time-out</b>	<p>Use this item to set the time-out value for control, bulk, and interrupt transfers.</p> <ul style="list-style-type: none"> <li>Options: 1 sec, 5 sec, 10 sec, 20 sec (default)</li> </ul>
<b>Device reset time-out</b>	<p>Use this item to set USB mass storage device start unit command timeout.</p> <ul style="list-style-type: none"> <li>Options available are: 10 sec, 20 sec (default), 30 sec, 40 sec</li> </ul>



<b>Device power-up delay</b>	<p>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.</p> <p>► Options available are: Auto (default) / Manual: Select Manual you can set value for the following sub-item: 'Device Power-up delay in seconds', the delay range in from 1 to 40 seconds, in one second increments.</p>
<b>Mass Storage Devices</b>	<p>Mass storage device emulation type. "AUTO" enumerates devices according to their media format. Optical drives are emulated as "CDROM", drives with no media will be emulated according to a drive type.</p> <p>► Options available are: Auto, Floppy, Forced FDD, Hard Disk, CD-ROM</p>

### 5.2.11. Network Stack Configuration



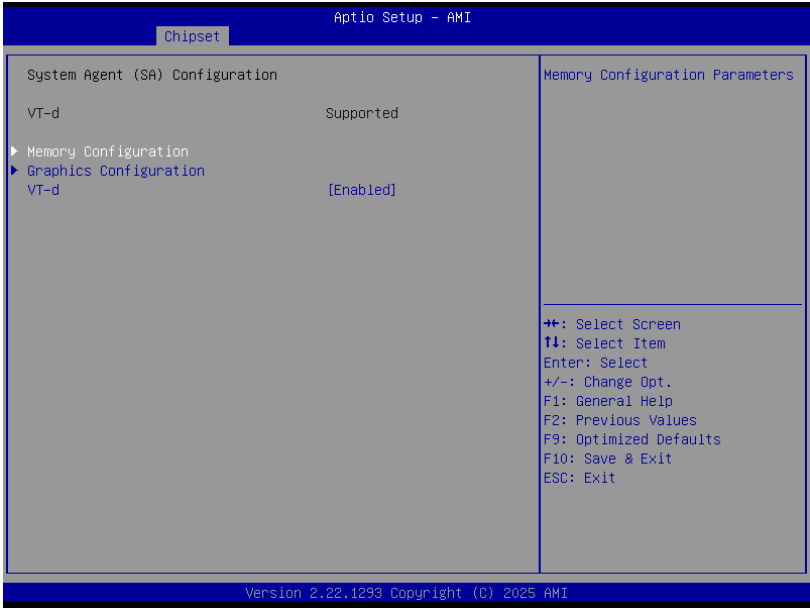
Setting	Description
Network Stack	Enable or Disable (default) UEFI network stack.

5.3. Chipset



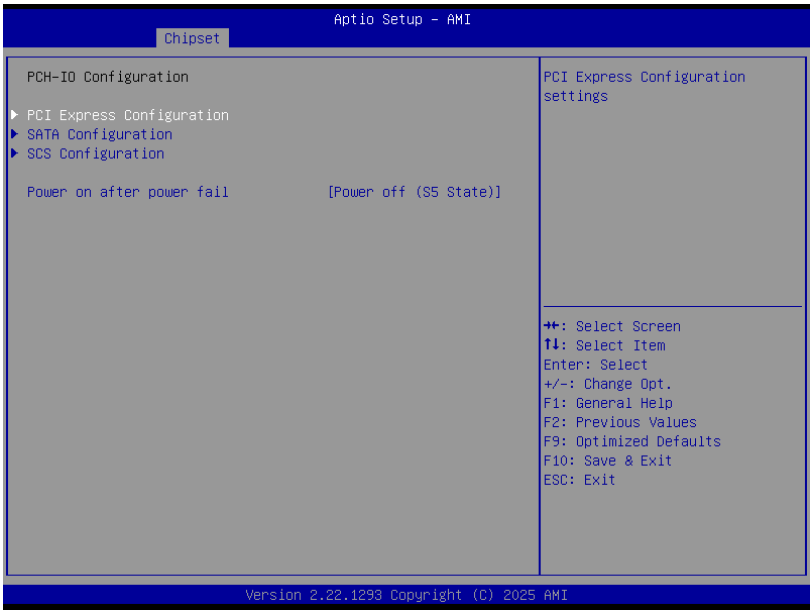
Setting	Description
System Agent (SA) Configuration	See <a href="#">5.3.1. System Agent (SA) Configuration on page 61.</a>
PCH-IO Configuration	See <a href="#">5.3.2. PCH-IO Configuration on page 62.</a>

### 5.3.1. System Agent (SA) Configuration



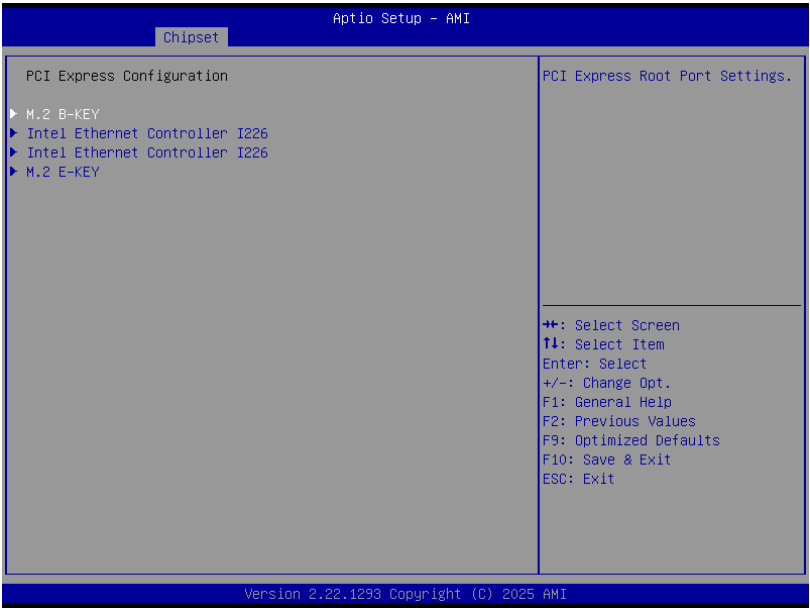
Setting	Description
Memory Configuration	Access submenu to view the memory configuration.
Graphics Configuration	<p>Access submenu to make further settings in the following items:</p> <ul style="list-style-type: none"> <li>▶ <b>Graphics Turbo IMON Current:</b> Graphics turbo IMON current values supported (14-31)</li> <li>▶ <b>Primary Display:</b> Select which of IGFX/PEG/PCI Graphics device should be Primary Display or select HG for Hybrid GFX. The options: Auto (default), IGFX, PEG Slot, PCH PCI</li> <li>▶ <b>Aperture Size:</b> Select the Aperture Size. The options: 128MB, 256MB (default), 512MB and 1024MB. Note: Above 4GB MMIO BIOS assignment is automatically enabled when selecting &gt; 2048MB aperture. To use this feature, please disable CSM Support.</li> <li>▶ <b>DVMT Pre-Allocated:</b> Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.</li> </ul>
VT-d	<p>Enable/Disable VT-d capability.</p> <ul style="list-style-type: none"> <li>▶ Options: <b>Enabled</b> (default) / <b>Disabled</b>.</li> </ul>

5.3.2. PCH-IO Configuration



Setting	Description
PCI Express Configuration	See <a href="#">5.3.2.1. PCI Express Configuration on page 63.</a>
SATA Configuration	See <a href="#">5.3.2.2. SATA Configuration on page 64.</a>
SCS Configuration	See <a href="#">5.3.2.3. SCS Configuration on page 65.</a>
Power on after power fail	Specify what state to go to when power is re-applied after a power failure (G3 state). ► Options: Power off (S5 State) (default) / Power on (S0 State)

5.3.2.1. PCI Express Configuration



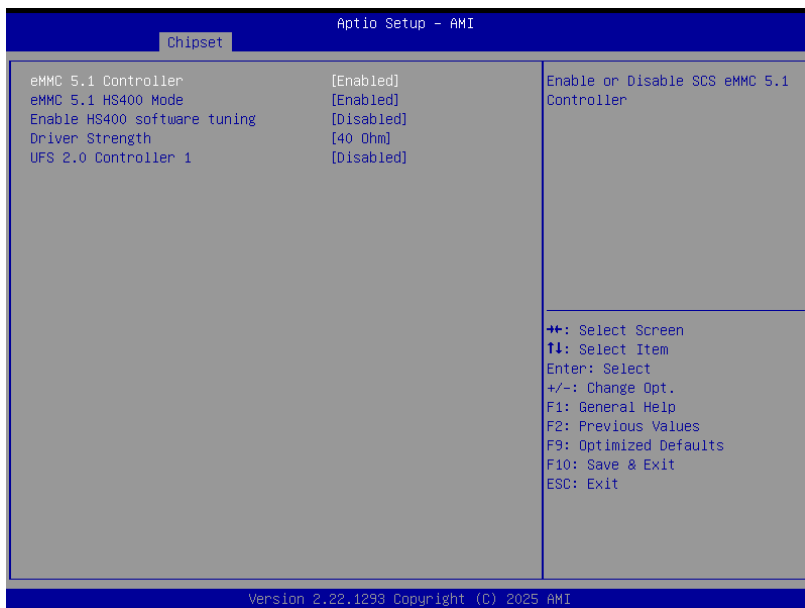
Setting	Description
M.2 B-KEY / Intel Ethernet Controller I226/ M.2 E-KEY	<b>ASPM:</b> Set the ASPM Level ▶ Options: <b>Disabled</b> (default), <b>L1</b> , <b>Auto</b> <b>L1 Substates:</b> PCI Express L1 Substates settings ▶ Options: <b>Disabled</b> (default), <b>L1.1</b> , <b>L1.1 &amp; L1.2</b> <b>PCIe Speed:</b> Configure PCIe Speed ▶ Options: <b>Auto</b> (default), <b>Gen1</b> , <b>Gen2</b> , <b>Gen3</b>

5.3.2.2. SATA Configuration



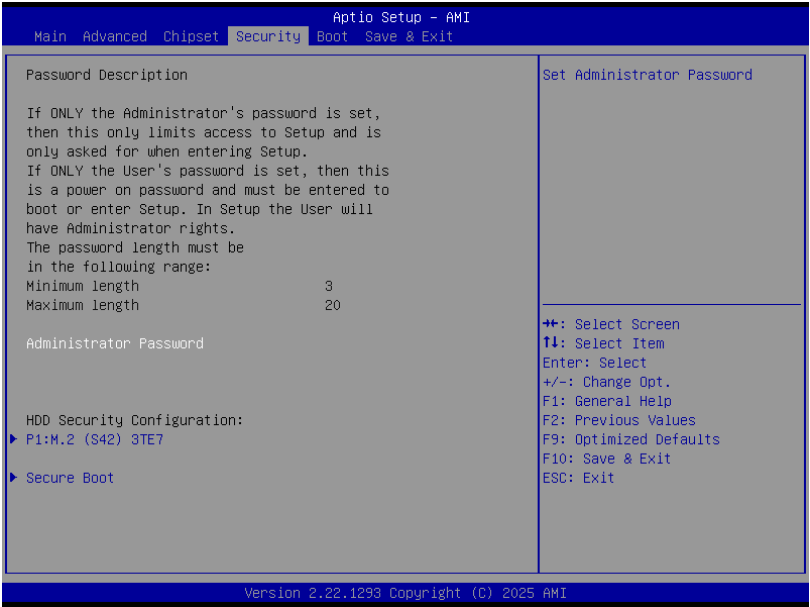
Setting	Description
SATA Controller(s)	Enables (default) / disables SATA device(s).
Serial ATA Port 0/1	SATA device information. *Available SATA ports depend on your device.
Port 0/1	Enables (default) / disables SATA port.

### 5.3.2.3. SCS Configuration



Setting	Description
<b>eMMC 5.1 Controller</b>	Enable or Disable SCS eMMC 5.1 Controller. ► Options: <b>Enabled</b> (default) / <b>Disabled</b>
<b>eMMC 5.1 HS400 Mode</b>	Enable or Disable SCS eMMC HS400 Mode. ► Options: <b>Enabled</b> (default) / <b>Disabled</b>
<b>Enable HS400 software tuning</b>	Software tuning should improve eMMC HS400 stability at the expense of boot time. ► Options: <b>Enabled</b> / <b>Disabled</b> (default)
<b>Driver Strength</b>	Sets I/O driver strength. ► Options: <b>33 Ohm</b> / <b>40 Ohm</b> (default) / <b>50 Ohm</b>
<b>UFS 2.0 Controller 1</b>	Enable or Disable UFS 2.0 Controller. ► Options: <b>Enabled</b> / <b>Disabled</b> (default)

5.4. Security

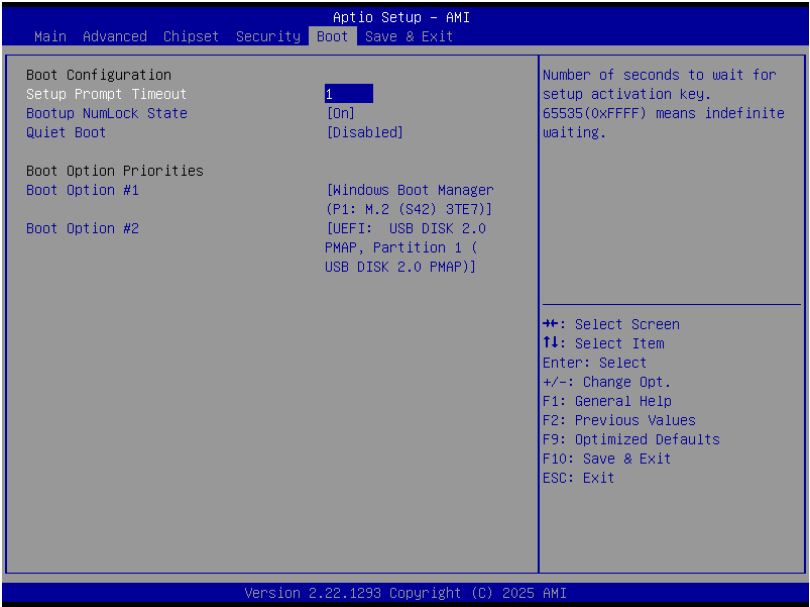


Setting	Description
Administrator Password	To set up an administrator password: <ol style="list-style-type: none"><li>1. Select <b>Administrator Password</b>.</li><li>2. An <b>Create New Password</b> dialog then pops up onscreen.</li><li>3. Enter your desired password that is no less than 3 characters and no more than 20 characters.</li><li>4. Hit [Enter] key to submit.</li></ol>
HDD Security Configuration	
HDD Security Configuration for selected drive.	



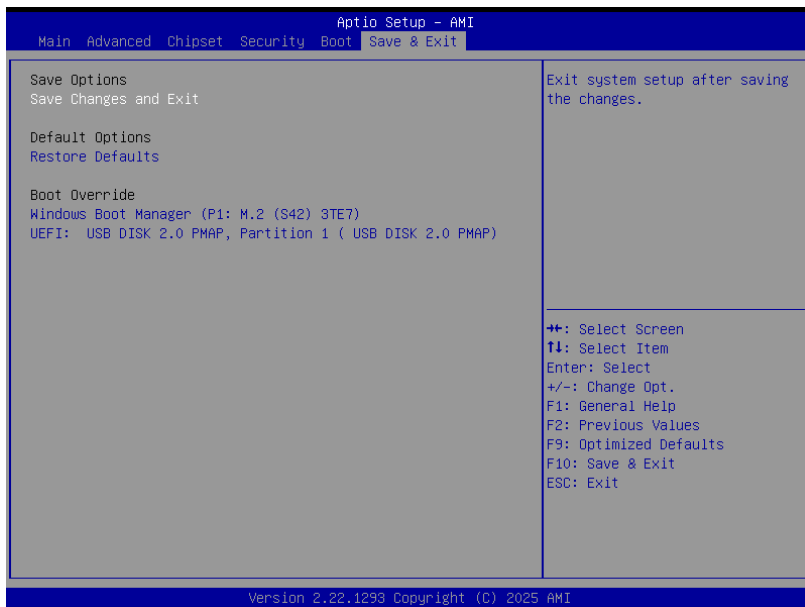
<b>Secure Boot</b>	<p><b>Secure Boot</b> Secure Boot feature is Active id Secure Boot is Enabled, Platform Key (PK) is enrolled and the System is in User mode. The mode change requires platform reset. Press [Enter] to make customized secure settings:</p> <ul style="list-style-type: none"><li>▶ Options: Disabled or Enabled.</li></ul> <p><b>Secure Boot Mode</b> In Custom mode, Secure Boot Policy variables can be configured by a physically present user without full authentication.</p> <ul style="list-style-type: none"><li>▶ Options : Custom or Standard.</li></ul> <p><b>Restore Factory Keys</b></p> <ul style="list-style-type: none"><li>▶ Force system to User Mode. Install factory default Secure Boot key databases.</li></ul> <p><b>Reset To Setup Mode</b></p> <ul style="list-style-type: none"><li>▶ Delete all Secure Boot key databases from NVRAM.</li></ul> <p><b>Expert Key Management</b></p> <ul style="list-style-type: none"><li>▶ Enables expert users to modify Secure Boot Policy variables without variable authentication.</li></ul>
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5.5. Boot



Setting	Description
Setup Prompt Timeout	Set how long to wait for the prompt to show for entering BIOS Setup. <ul style="list-style-type: none"><li>▶ The default setting is <b>1</b> (sec).</li><li>▶ Set it to <b>65535</b> to wait indefinitely.</li></ul>
Bootup NumLock State	Sets whether to enable or disable the keyboard's NumLock state when the system starts up. <ul style="list-style-type: none"><li>▶ Options available are <b>On</b> (default) and <b>Off</b>.</li></ul>
Quiet Boot	Sets whether to display the POST (Power-on Self Tests) messages or the system manufacturer's full screen logo during booting. <ul style="list-style-type: none"><li>▶ Select <b>Disabled</b> to display the normal POST message, which is the default.</li></ul>
Boot Option Priorities	Set the system boot priorities.

## 5.6. Save & Exit



Setting	Description
<b>Save Changes and Exit</b>	Exit system setup after saving the changes.
<b>Restore Defaults</b>	Restore/Load Default values for all the setup options. <ul style="list-style-type: none"> <li>► This is a command to launch an action from the BIOS Setup utility.</li> </ul>
<b>Boot Override</b>	Boot Override presents a list in context with the boot devices in the system. <ul style="list-style-type: none"> <li>► <b>P0:</b> Select the device to boot up the system regardless of the currently configured boot priority.</li> <li>► <b>Launch EFI Shell from filesystem device:</b> Attempts to launch EFI Shell Application (Shell.efi) from one of the available filesystem devices.</li> </ul>

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# Appendices

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## Appendix A: WIFI-AT3550 Hardware Installation

This appendix will guide you to install the Wi-Fi module WIFI-AT3550.

### A.1. Install WIFI-AT3550

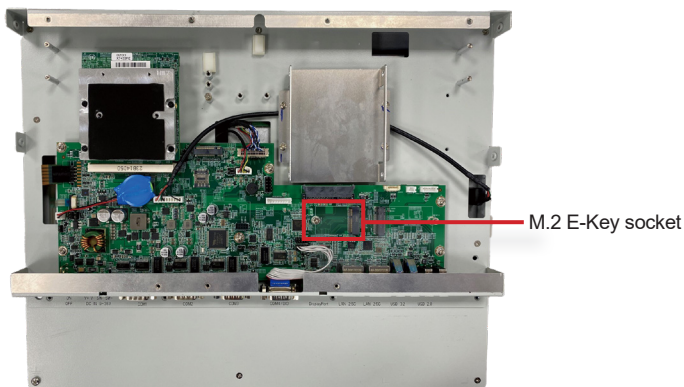
1. Loosen and remove the 6 screws from the computer's rear panel.



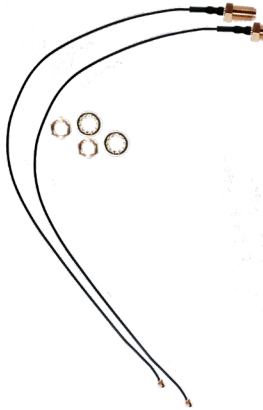
2. Loosen and remove the 2 screws from each of the left and right side respectively.



3. Dismount the rear cover from the computer. Locate the **M.2 E-Key** socket for wireless module.



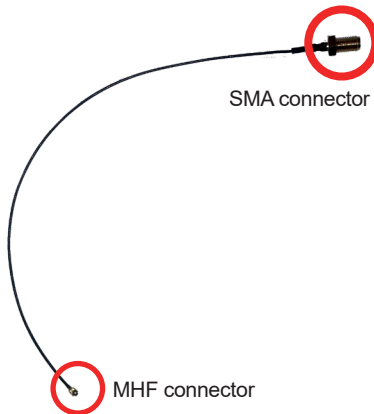
4. Prepare the Wi-Fi module kit. The module use a **M.2 E-Key** socket form factor, with two MHF connectors, one is “MAIN”, and the other is “AUX”.



Two MHF connectors, one is “MAIN” (marked 1), the other is “AUX” (marked 2).



5. Have the RF antenna. The antenna has an SMA connector on one end and an MHF connector on the other.

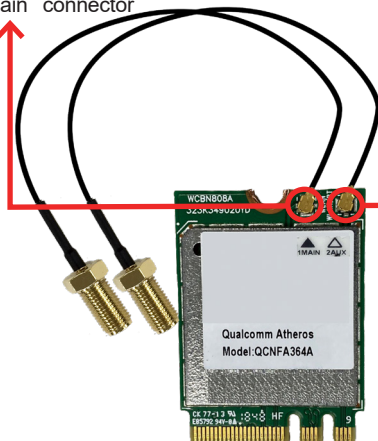


SMA connector

MHF connector

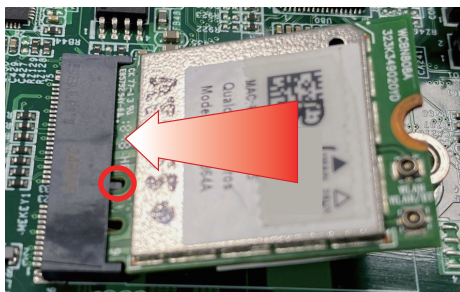
6. Connect the RF antenna's MHF connector to the Wi-Fi module's main connector marked 1. If you are going to connect a secondary antenna, connect it to the connector marked 2.

Connect the RF antenna's MHF connector to the Wi-Fi module's main connector (marked 1)



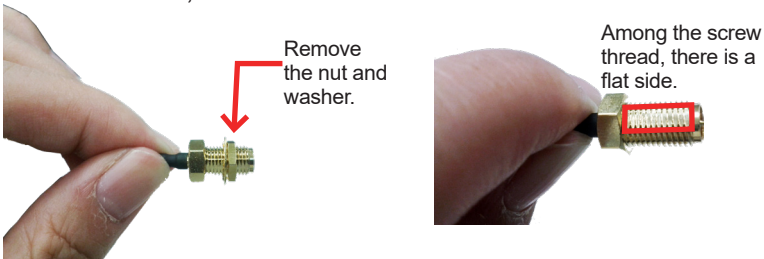
Connect the secondary RF antenna's MHF connector to the Wi-Fi module's secondary connector (marked 2)

7. Plug the WIFI-AT3550 into the socket's connector by a slanted angle. Fully plug the module, and note the notch on the Wi-Fi module should meet the break of the connector, then fasten the screw.

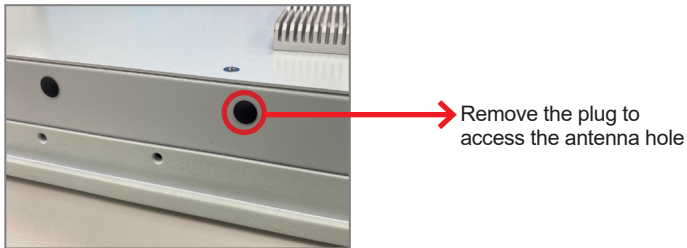




8. From the SMA end of the RF antenna, remove the washer and the nut. Save the washer and nut for later use. Note that the SMA connector is in the form of a threaded bolt, with one flat side.



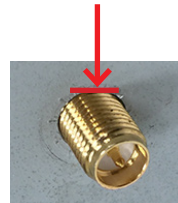
9. Remove the plastic plug from the antenna hole. Keep the plastic plug for any possible restoration in the future.



10. Pass the SMA connector through the above mentioned antenna hole. Make sure that you align the connector's flat side with the antenna hole's flat side.



Arrange the flat side of the SMA connector to meet the flat side of the antenna hole.

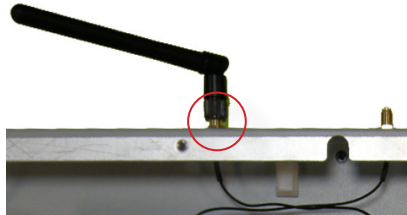


11. Mount the washer first and then the nut to the SMA connector. Make sure the nut is tightened.



Mount the washer and the nut to the SMA connector. Tighten the nut.

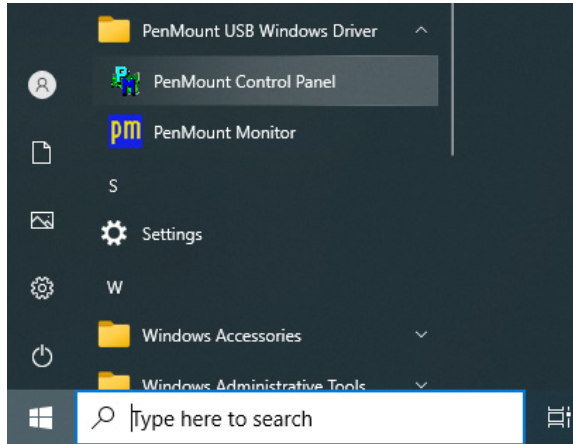
12. If you are using two antennas, repeat steps above for another antenna.
13. Restore the rear panel to the computer. Have an external antenna. Screw and tightly fasten the antenna to the SMA connector. Swivel the antenna to an angle of best signals.



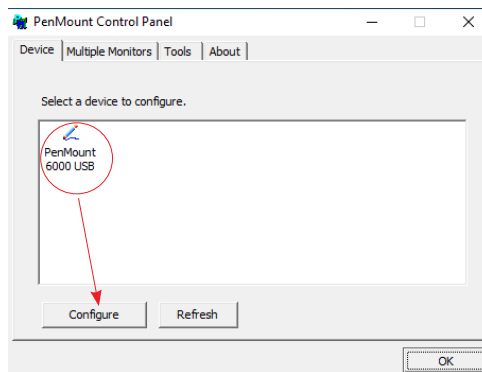
## Appendix B: PenMount Utilities

### B.1. PenMount Control Panel

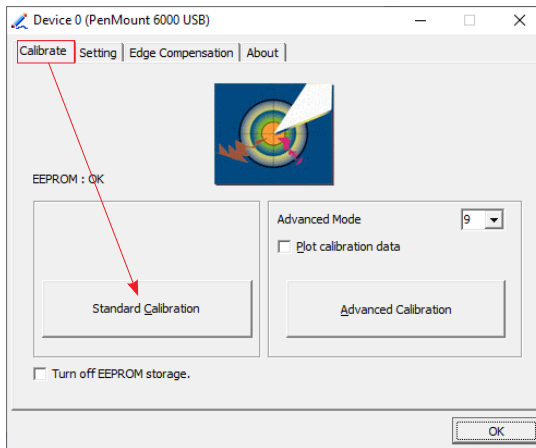
After everything is installed properly, there will be a touch screen application named **PenMount Control Panel** in **All Programs**. Execute this application.



1. The program consists of 4 tabs. The left one is **Device**, in it, you can find how many devices are detected in your system. Select one device icon and tap **Configure**, or double tap the device icon for touch screen calibration.



2. And then another window with **Calibrate** tab will jump out.



## Device Calibration Dialog

### a. The Calibrate Tab

This function offers two ways to calibrate your touch screen. '**Standard Calibration**' adjusts most touch screens while '**Advanced Calibration**' adjusts aging touch screens.

#### a.1 Standard Calibration

The Standard Calibration function lets you match the touch screen to your display so that the point you touch is accurately tracked on screen. Standard Calibration only requires four points for calibration and one point for confirmation. Under normal circumstance, Standard Calibration is all you need to perform an accurate calibration.

- i. Please tap the Standard Calibration button to start calibration procedures.
- ii. After that, the 1st crosshair will appear on white screen. Use your finger or stylus to touch the red center and hold down until the screen shows the message - "Lift off to proceed".
- iii. The 2nd crosshair follows immediately. Do the process again. After the fifth red point calibration is complete, the program will jump out automatically, or you may press ESC key to quit it during calibration process. Alternatively, doing nothing for a while equates to pressing ESC.



## a.2 Advanced Calibration

The Advanced Calibration function improves the accuracy of calibration by using more involved engineering calculations. Use this function only if you have tried the Standard Calibration and there is still a discrepancy in the way the touch screen maps to the display. You can choose 9, 16 or 25 points to calibrate, though we suggest that you first try 9 points, if it is still not tracking well then try 16 or 25 points. The more points you use for calibration, the greater the accuracy is. Errors in calibration may occur due to viewing angle, or individual skill, and there may be little difference in using 16 or 25 points. Note that a stylus is recommended for most accurate results.

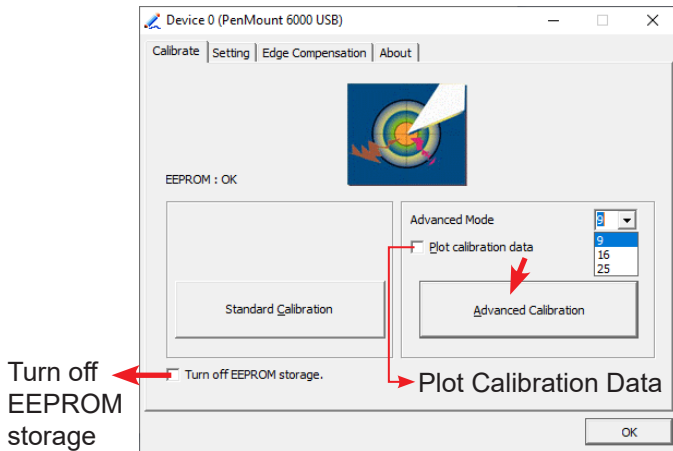
### Plot Calibration Data

Check this function to have touch panel linearity comparison graph appear when you finish Advanced Calibration. The black lines reflect the ideal linearity assumed by PenMount's application program while the blue lines show the approximate linearity calculated by PenMount's application program as the result of user's execution of Advance Calibration.

### Turn off EEPROM storage

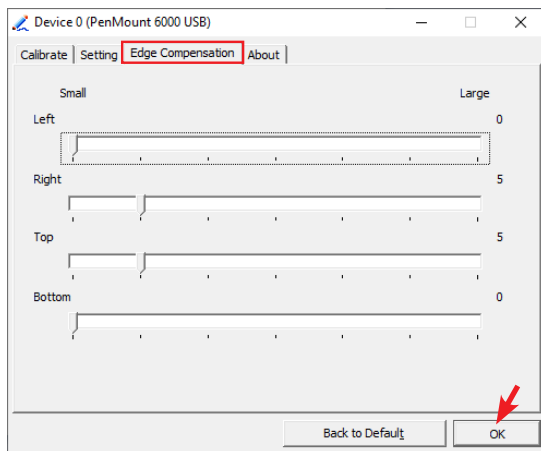
Tick this function to disable the write-in of calibration data in Controller.

Please tap the Advanced Calibration button to start calibration procedures and do the rest as explained in Standard Calibration.



### b. The Edge Compensation Tab

Under the same level where you calibrate your screen, you may find the tab. This tab is the edge compensation settings for the advanced calibration. You can adjust the settings from 0 to 30 for accommodating the difference of each touch panel.



3. Press **OK** to close former window and back to upper level. As mentioned before, the program consists of 4 tabs, and third one is **Tools**, switch to it. and click **Draw** to test PenMount touch screen operation.

