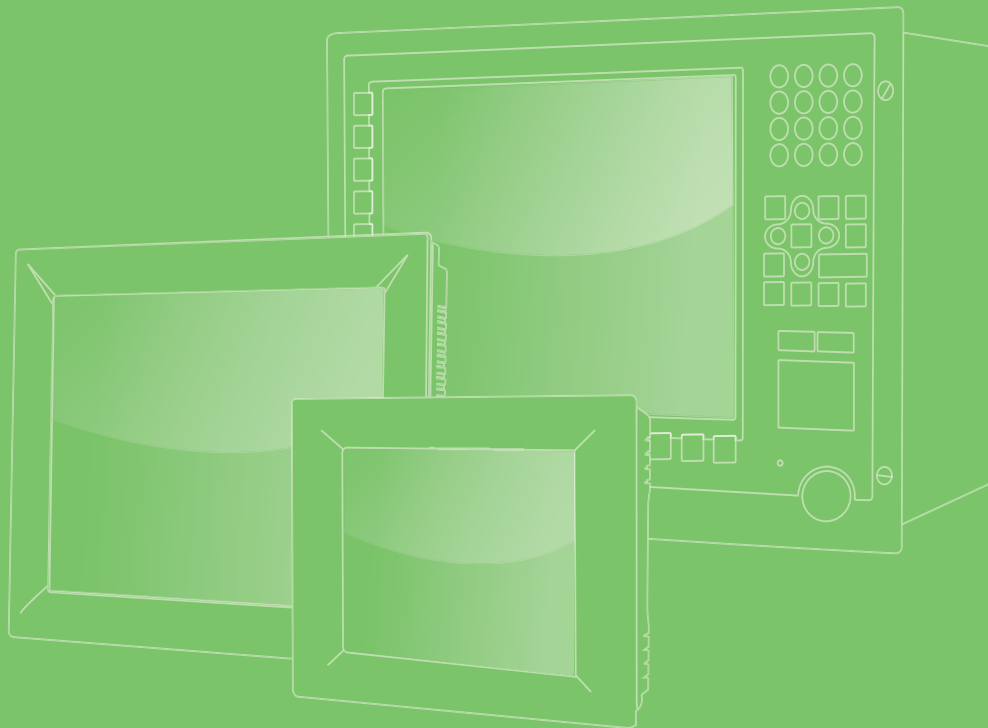


**User Manual**



# **PPC-415W PPC-421W**

**15.6"/21.5" Panel PC with TFT  
LCD and Intel<sup>®</sup> Core<sup>™</sup> i  
Processor**

**ADVANTECH**

*Enabling an Intelligent Planet*

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## Product Warranty (2 years)

Advantech warrants the original purchaser that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products that have been repaired or altered by persons other than repair personnel authorized by Advantech, or products that have been subject to misuse, abuse, accident, or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced free of charge during the warranty period. For out-of-warranty repairs, customers are billed according to the cost of replacement materials, service time, and freight. Please consult your dealer for more details.

If you believe that your product is defective, follow the steps outlined below.

1. Collect all information about the problem encountered (for example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any messages displayed onscreen when the problem occurs.
2. Call your dealer and describe the problem. Have your manual, product, and any relevant information readily available.
3. If your product is diagnosed as defective, obtain a return merchandise authorization (RMA) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a completed Repair and Replacement Order Card, and proof of purchase date (such as a photocopy of your sales receipt) into a shippable container. Products returned without a proof of purchase date are not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship the package prepaid to your dealer.

# Declaration of Conformity

## CE

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 type of cable is available from Advantech. Contact your local supplier for ordering information.

Test conditions for passing also include the equipment being operated within an industrial enclosure. In order to protect the product from damage due to electrostatic discharge (ESD) or electromagnetic interference (EMI) leakage, we strongly recommend the use of CE-compliant industrial enclosure products.

## FCC Class B

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and operated in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on again, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation distance between the equipment and receiver
- Connect the equipment to an outlet on a circuit that differs from that to which the receiver is connected
- Consult your dealer or an experienced radio/TV technician for assistance

# Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> to obtain the latest product information.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you require additional assistance. Please have the following information ready before calling:
  - Product name and serial number
  - Description of your peripheral attachments
  - Description of your software (operating system, version, application software, etc.)
  - A complete description of the problem
  - The exact wording of any error messages

---

## Safety Instructions

1. Read these safety instructions carefully. Veuillez lire attentivement ce manuel d'instructions de sécurité.
2. Retain this user manual for future reference. Veuillez conserver ce manuel d'instructions pour référence ultérieure.
3. Disconnect the equipment from all power outlets before cleaning. Use only a damp cloth for cleaning. Do not use liquid or spray detergents. Débranchez l'appareil de toutes les prises de courant avant le nettoyage. Nettoyez-le uniquement à l'aide d'un chiffon humide. Ne pas utiliser de détergents liquides ou pulvérisateurs.
4. For pluggable equipment, the power outlet socket must be located near the equipment and easily accessible. Pour les appareils enfichables, la prise de courant doit être placée près de l'appareil et facilement accessible.
5. Protect the equipment from humidity. Protégez l'appareil contre l'humidité.
6. Place the equipment on a reliable surface during installation. Dropping or letting the equipment fall may cause damage. Placez l'appareil sur une surface fiable pendant l'installation. L'abandon ou la chute de l'appareil pourrait causer des dommages.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. Do not cover the openings. Les ouvertures du boîtier sont pour la convection d'air. Protégez l'appareil contre la surchauffe. Ne couvrez pas les ouvertures.
8. Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet. The power outlet socket should have ground connection. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'appareil à une prise de courant. La prise de courant doit avoir une bonne connexion mise à la terre.
9. Position the power cord away from high-traffic areas. Do not place anything over the power cord. Placez le cordon d'alimentation à l'écart des zones à fort trafic. Ne placez rien sur le cordon d'alimentation.
10. All cautions and warnings on the equipment should be noted. Attention à toutes les précautions et avertissements indiqués sur l'appareil.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage from transient overvoltage. Si l'appareil n'est pas utilisé pendant une longue période, déconnectez-le de la source d'alimentation pour éviter les dommages causés par une surtension transitoire.
12. Never pour liquid into an opening. This may cause fire or electrical shock. Ne versez jamais de liquide dans une ouverture. Sinon, cela pourrait provoquer un incendie ou un choc électrique.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel. N'ouvrez jamais l'appareil. Pour des raisons de sécurité, l'appareil ne doit être ouvert que par un technicien qualifié.
14. If one of the following occurs, have the equipment checked by service personnel: Si l'un des cas suivants se produit, demandez aide à un technicien qualifié:
  - The power cord or plug is damaged. Le cordon d'alimentation ou la fiche est endommagé.
  - Liquid has penetrated the equipment. Le liquide a pénétré dans l'appareil.
  - The equipment has been exposed to moisture. L'appareil a été exposé à l'humidité.
  - The equipment is malfunctioning or does not function according to the user manual. L'appareil est défectueux ou ne fonctionne pas conformément aux instructions.

- The equipment has been dropped or damaged. L'appareil a été abandonné et endommagé.
  - The equipment shows obvious signs of breakage. L'appareil montre des signes évidents de rupture.
15. Do not leave the equipment in an environment with a storage temperature of below -20 °C (-4 °F) or above 60 °C (140 °F) as this may cause damage. The equipment should be kept in a controlled environment. Ne laissez pas cet appareil dans un environnement dont la température de stockage est inférieure à -20 °C (-4 °F) ou supérieure à 60 °C (140 °F), car cela pourrait causer des dommages. L'appareil doit être surveillé dans l'environnement.
  16. CAUTION: Batteries are at risk of exploding if incorrectly replaced. Replace only with the same or equivalent type as recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions. ATTENTION: Il y a danger d'explosion s'il y a remplacement incorrect de la pile. Remplacer uniquement avec une pile du même type ou d'un type équivalent recommandé par le constructeur.
  17. In accordance with the IEC 704-1:1982 specifications, the sound pressure level at the operator's position does not exceed 70 dB (A). Conformément aux spécifications de l'IEC 704-1:1982, le niveau de pression acoustique à la position de l'opérateur ne dépasse pas 70 dB (A).
  18. The PPC-415W/421W products are intended to be supplied by a UL-certified power supply (Adapter: FSP150-ABAN2) suitable for use at a TMA of 40 °C (104 °F) min., with output rated 19V<sub>DC</sub>, 7.89A min., ES1 (or SELV) or a UL-certified power supply or DC source suitable for use at a TMA of 50 °C (122 °F) min., with output rated 9 ~ 32V<sub>DC</sub>, 10 ~ 2.5A min., ES1 (or SELV). If you need further assistance, contact Advantech for more information. Le produit PPC-421W-X7XX doit être alimenté par une alimentation certifiée UL (Adaptateur: FSP150-ABAN2) approprié pour l'utilisation à une température de 40 °C (104 °F) au minimum, et la sortie nominale est 19V<sub>DC</sub>, 7.89A min., ES1 (ou SELV). Ou le produit doit être alimenté par une alimentation certifiée UL ou CC pour l'utilisation à une température de 50 °C (122 °F) au minimum, et la sortie nominale est 9 ~ 32V<sub>DC</sub>, 10 ~ 2.5A min., ES1 (ou SELV). Si vous avez besoin d'aide supplémentaire, veuillez contacter Advantech pour plus d'informations.
  19. DISCLAIMER: These instructions are provided in accordance with IEC 704-1 standards. Advantech disclaims all responsibility for the accuracy of any statements contained herein. AVERTISSEMENT: Ces instructions sont fournies conformément aux normes IEC 704-1. Advantech décline toute responsabilité quant à la précision de toute déclaration contenue dans le présent document.
  20. CAUTION: This product is not intended for use by children and is not suitable for use in locations where children are likely to be present (this product is not a toy). ATTENTION: Ce produit n'est pas un jouet et devrait être gardé hors de la portée des enfants.

## Safety Precautions - Static Electricity

Follow these simple precautions to protect yourself from harm and the products from damage:

- To avoid electrical shock, always disconnect the power from your PC chassis before manual handling. Do not touch any components on the CPU card or other cards while the PC is powered on.
- Disconnect the power before making any configuration changes. A sudden rush of power after connecting a jumper or installing a card may damage sensitive electronic components.

## Battery Information

Batteries, battery packs, and accumulators should not be disposed of as unsorted household waste. Please use the public collection system to return, recycle, or treat them in compliance with local regulations.



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# Chapter 1

## General Information

- Introduction
- Specifications
- Dimensions

## 1.1 Introduction

Designed for high-performance computing 13th gen applications, PPC-415W/421W with a FHD provides a superior human-machine interface and reliability, with multi-touch screen, rich I/O and aluminum alloy front bezel. The inclusion of PCIe/PCI slot for fieldbus or proprietary card expansion increases the system's compatibility for diverse applications. In addition, Time Sensitive Network (TSN) configuration integrated allows more possibilities for optimized industrial applications.

## 1.2 Specifications

**Table 1.1: Specifications**

Product	PPC-415W	PPC-421W
LCD Display	15.6"	21.5"
Display Type	15.6" TFT LCD (LED backlight)	21.5" TFT LCD (LED backlight)
Resolution Max.	1920 x 1080	1920 x 1080
Brightness	450 cd/m <sup>2</sup>	300 cd/m <sup>2</sup>
Color	16.7M	16.7M
Viewing Angle	85 (Left), 85 (Right), 85 (up), 85 (Down)	89 (Left), 89 (Right), 89 (Up), 89 (Down)
Contrast	800	1000
Backlight Lifetime	50, 000 hours	30, 000 hours
Touchscreen type	Multi-touch projected capacitive	
Light Transmission	88 % ± 2 %	
Controller	USB interface	
CPU	Intel® Core™ i7-1365URE/i5-1345URE/i3-1315URE	
Memory	2 x SODIMM, DDR5 4800, max. 32GB x 2	
Storage	1 x 2.5" SATA bay; 1 x M.2 2242/2280 M Key slot for Storage (SATA or NVMe PCIe x 4, support SATA RAID)	2 x 2.5" SATA bay (supports Intel RAID); 1 x M.2 2242/2280 M Key slot for Storage (SATA or NVMe PCIe x 4, support SATA RAID)
Network (LAN)	2 x Intel I226LM controller; Speed: 10M/100M/1000M/2.5G	
I/O Ports	5 x Serial ports: 2 x RS-232, 1 x RS-422/485 with 1K VDC isolation 2 x RS-232 (on right side optional) 3 x USB3.2, 1 x USB2.0 1 x Line-Out, 1 x Mic-In 1 x HDMI 1.4 1 x DisplayPort (1.4a) 1 x 8bit GPIO (Optional)	
Hardware Security	1 x TPM2.0	
Expansion	1 x M.2 2230 E Key slot for wireless card 1 x PCIe x 4; 1 x PCI (optional)	
Speaker	2 x 1W	
OS Support	Microsoft® Windows 11 (64 bit), Win 10 IOT LTSC, Linux	
Power Supply	9 - 32 Vdc	

**Table 1.1: Specifications**

<b>Power Consumption</b>	Typ.70W Max.105W	Typ.75W Max.110W
<b>Operating Temperature</b>	-20 ~ 60 °C (-4 ~ 140 °F)	
<b>Storage Temperature</b>	-40 ~ 60 °C (-40 ~ 140 °F)	-30 ~ 60 °C (-22 ~ 140 °F)
<b>Relative Humidity</b>	95% @ 40°C (non-condensing)	
<b>Shock</b>	Operating 10 G Peak Acceleration (11 ms Duration), Follows IEC 60068-2-27	
<b>Vibration</b>	Operating random vibration test, 5 ~ 500Hz, 2Grms with SSD, following IEC 60068-2-64	
<b>Safety and EMC</b>	Safety: CB, UL, CCC, UKCA EMC: CE, FCC Class B, VCCI,UKCA, BSMI	
<b>Dimensions</b>	419.70mm x 269.00mm x 59mm (16.5 x 10.6 x 2.3 in)	558.4x 349.8 x 63.8 mm (21.9 x 13.7 x 2.5 in)
<b>Weight</b>	5.4kg (11.9 lb)	7.67kg (16.9lb)

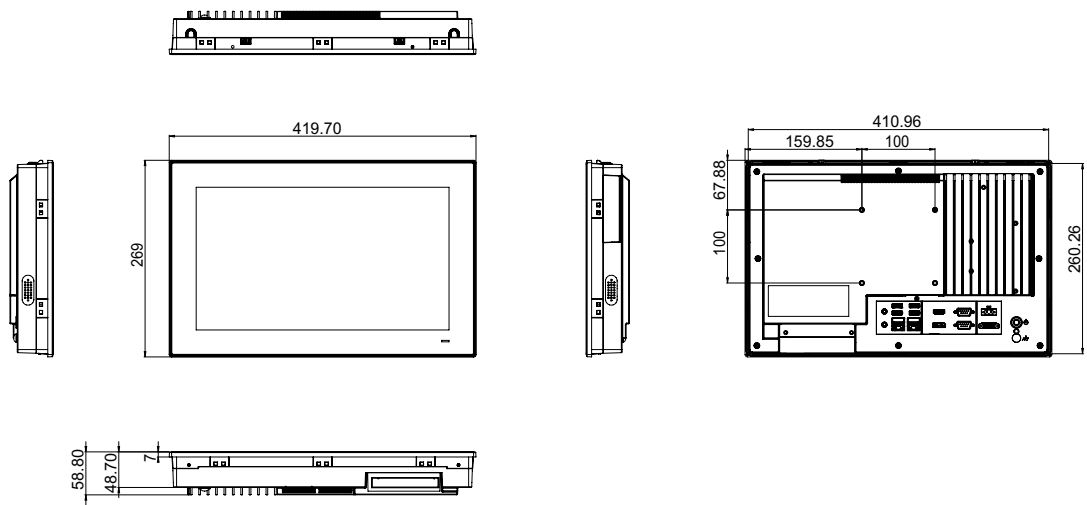
\* Test conditions of power consumption for PPC-415W-xD5:

Test condition	Test Configuration	Test System	Power Consumption (W)
Burn-in 8.1	Memory: 8G DDR5 SSD: 64G 2.5"SATAIII IO: COM Port RS232 loopback x 2, USB 3.2 x 3,USB 2.0 x 1	Window 10 64 bit	Typ.70W Max.105W

\* Test conditions of power consumption for PPC-421W-xD5:

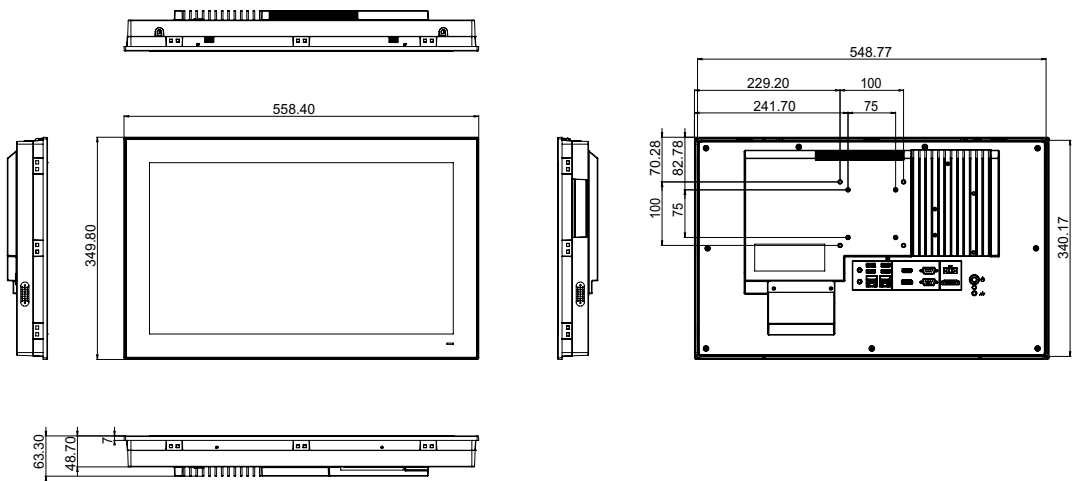
Test condition	Test Configuration	Test System	Power Consumption (W)
Burn-in 8.1	Memory: 8G DDR5 SSD: 64G 2.5"SATAIII IO: COM Port RS232 loopback x 2, USB 3.2 x 3,USB 2.0 x 1	Window 10 64 bit	Typ.75W Max.110W

## 1.3 Dimensions



Panel Cutout Dimensions: 413 x 262 mm (16.25 x 10.31 in)

**Figure 1.1 PPC-415W Dimensions**



Panel Cutout Dimensions: 550.3 x 341.8 mm (21.66 x 13.45 in)

**Figure 1.2 PPC-421W Dimensions**

**Note!** Both PPC-415W and PPC-421W support VESA 100 x 100 mm or 75 x 75 mm. For mounting, use M4 screws at an 8 mm max. depth and suitable mounting apparatus to avoid injury.



# Chapter 2

## System Installation & Setup

- Quick Installation Guide
- Installation Procedures
- Memory Installation
- HDD Installation
- M.2 Installation
- Wireless LAN Installation
- COM/GPIO Installation
- TPM Installation
- Expansion Card Installation
- AT/ATX Switch
- Grounding Installation
- Hook Installation
- Wall Mounting

## 2.1 Quick Installation Guide

Before setting up the panel PC, take a moment to familiarize yourself with the locations and functions of the controls, drives, connectors, and ports (shown in the figures below). When placed upright on a desk, the panel PC front panel should appear as shown in Figure 2.1.



Figure 2.1 Front Panel

1. Power status indicator - Off (S5): orange; On (S0): blue

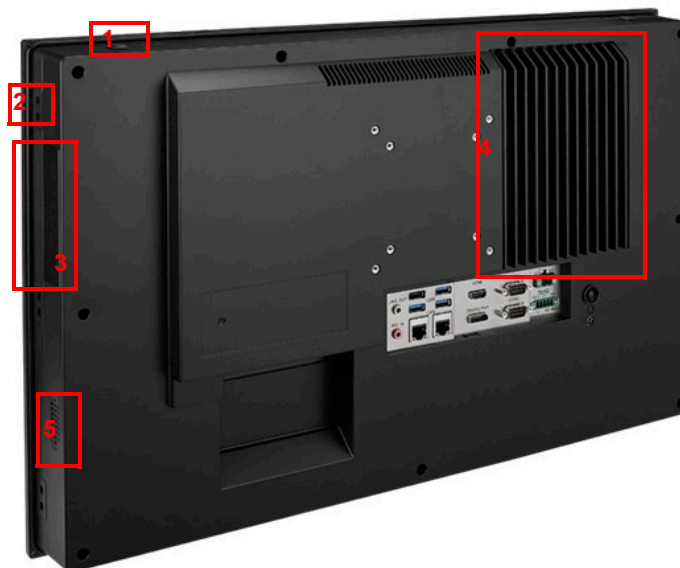


Figure 2.2 Side View

1. 2 x Antenna holes
2. 12 x Panel Mount Bracket holes
3. 2 x RS-232 (optional)
4. 1 x CPU cooler
5. 2 x Speakers

## 2.1.1 I/O Interfaces

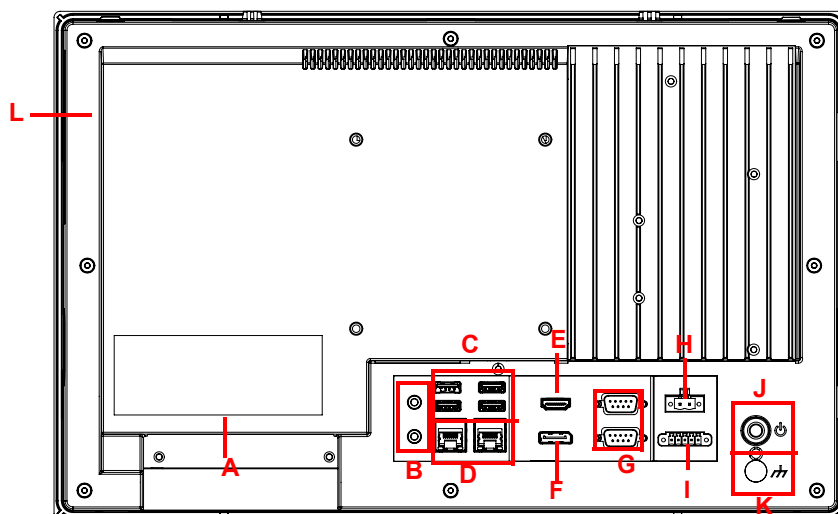


Figure 2.3 I/O Locations

- A: 1 x Expansion slot (PCIe x 4 or PCI)
- B: 1 x Line-out/Mic-in
- C: 3 x USB3.2, 1 x USB2.0
- D: 2 x Gigabit Ethernet
- E: 1 x HDMI
- F: 1 x DP
- G: 2 x COM RS-232
- H: 1 x DC inlet and AT/ATX switch
- I: 1 x Isolated RS-422/485
- J: 1 x Power button
- K: 1 x Grounding screw
- L: 2 x RS-232 (right side, optional)

## 2.2 Installation Procedures

### 2.2.1 Power Cable

The panel PC has DC power socket (9 ~ 32 V). Follow the procedures below to connect the power cable. When connecting the power cable, hold the cable at the plug end.

1. Connect the female end of the power cable to the DC input socket of the panel PC.
2. Connect the male end of the power cable to the power outlet.



Figure 2.4 Connecting the Power Cable

### 2.2.2 Keyboard and Mouse

Connect the keyboard and mouse to the I/O ports of the panel PC.



### 2.2.3 Activate Power

The power button is located at the bottom right side of the panel PC.

**Note!** *The power cable and adapter are not included with the product. Customers must purchase the items separately.*



## 2.3 Memory Card Installation

The following instructions are provided using the PPC-415W for reference:

1. Remove the screws circled in Figure 2.5.
2. Push the tabs circled in red in Figures 2.6 to open the rear cover (Figure 2.7).



Figure 2.5

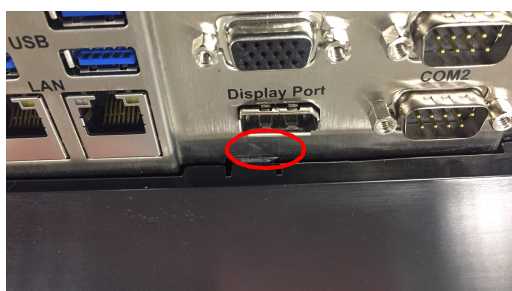


Figure 2.6



Figure 2.7

3. Remove the screws circled in red in Figure 2.8, and take out the reinforcement plate and CPU heat sink.

**Note!** Retrieve the gray and black thermal grease (shown in Figure 2.9) from the accessory box. Attach the CPU heat sink and reinforcement plate after the grease is applied.

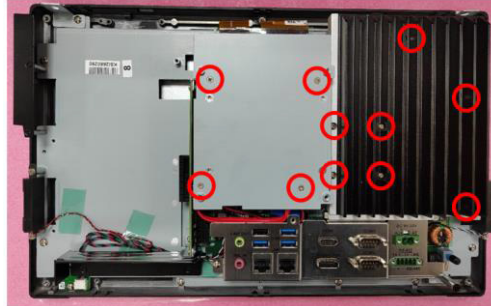
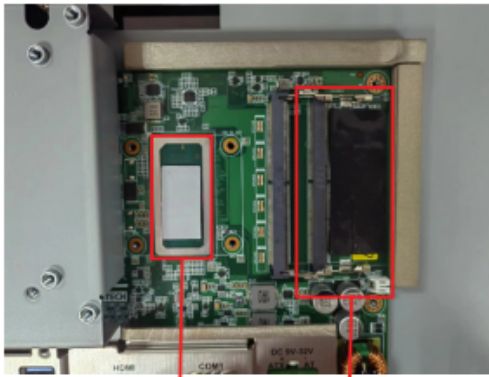
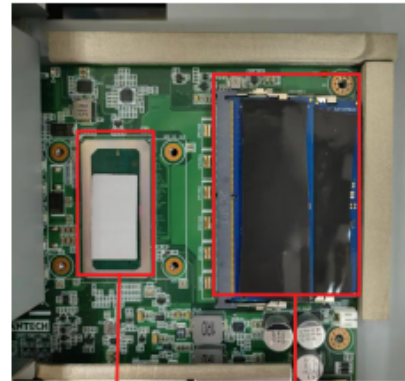


Figure 2.8



1 2 (black: 2mm x 1)

Figure 2.9



1 2 (black: 1mm x 2)

Figure 2.10

**Note!** The CPU cooler pad surface is isolated via anodization treatment to avoid static electricity (excluding the CPU contact side).



## 2.4 HDD/SSD Installation

### 2.4.1 For PPC-421W

1. Follow the procedures in Section 2.3 to open the rear cover. Remove the screws circled in red in Figure 2.11 to retrieve the SSD bracket(s).
2. Attach the SSD to the SSD bracket using four screws from the accessory box (eight screws if installing two SSDs) (see Figure 2.12 for reference).
3. Replace the SSD bracket and tighten screws to affix in place. Connect the SSD cable to the main board (Figure 2.13).

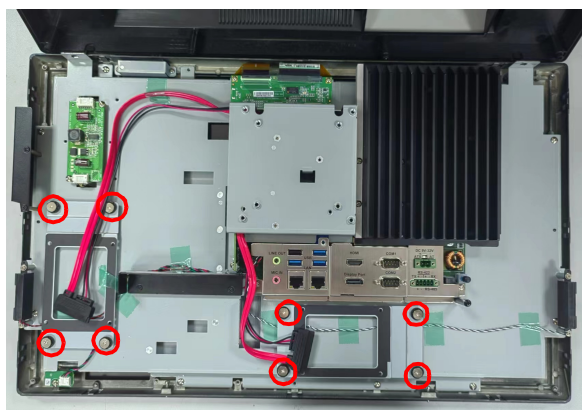


Figure 2.11



Figure 2.12

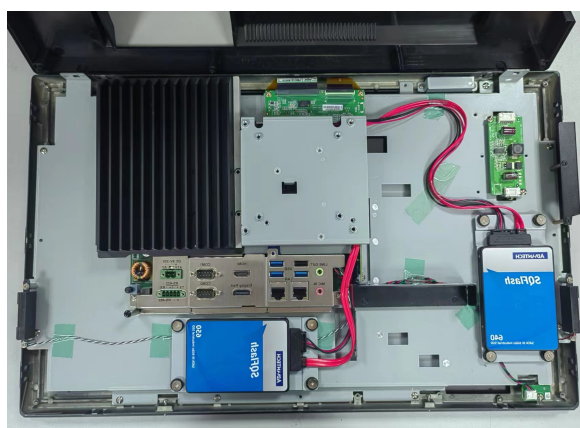


Figure 2.13

## 2.4.2 For PPC-415W

1. Follow the procedures in Section 2.3 to open the rear cover and remove the screws circled in red in Figure 2.14 to retrieve the reinforcement plate.

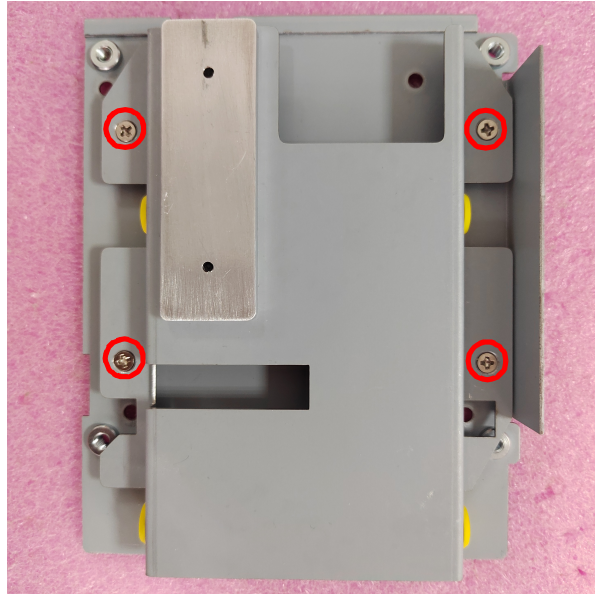


Figure 2.14

2. Using four screws from the accessory box, attach the SSD bracket with SSD onto the reinforcement plate (Figure 2.15).

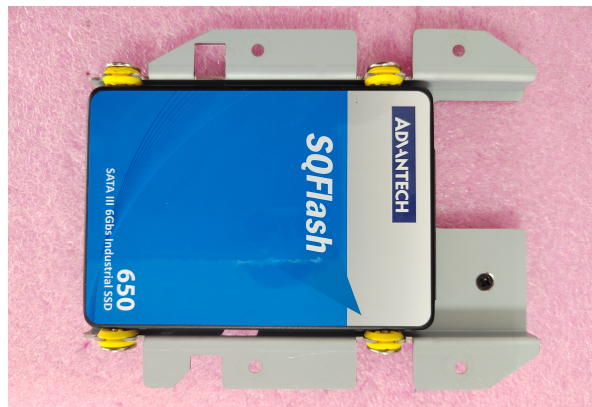


Figure 2.15

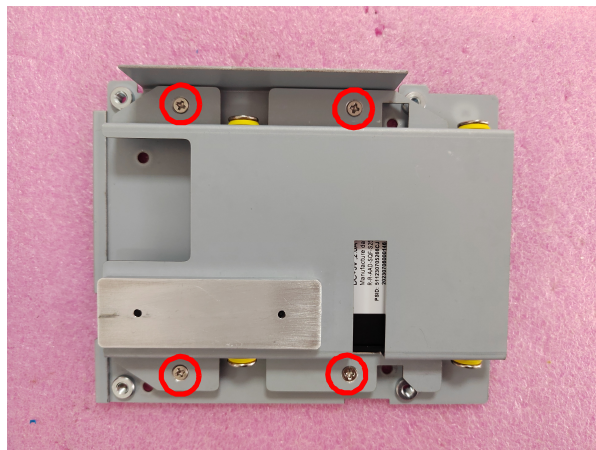


Figure 2.16

3. Replace the SSD bracket and reinforcement plate and use screws to affix it in place. Connect the SSD cable to the main board (Figure 2.17).



**Figure 2.17**

## 2.5 M.2 Installation

The following instructions are provided using the PPC-415W model for reference:

1. Follow the procedures in Section 2.3 to open the rear cover and remove the reinforcement plate.
2. To install a 22X80mm size M.2 card, insert the M.2 card into the correct main board slot, and affix it in place using one M3x5L screws provided in the accessory box (see fig. 2.17.1).
3. To install a 22X42 mm size M.2 card, add a copper cylinder screw (see Fig. 2.17.2) which provided in the accessory box. Then insert the M.2 card into the correct main board slot, and affix it in place using one M2.5x3L screws.
4. Add Thermal pad for M.2(see Fig.2.18).
5. Replace the rear cover and reinforcement plate.

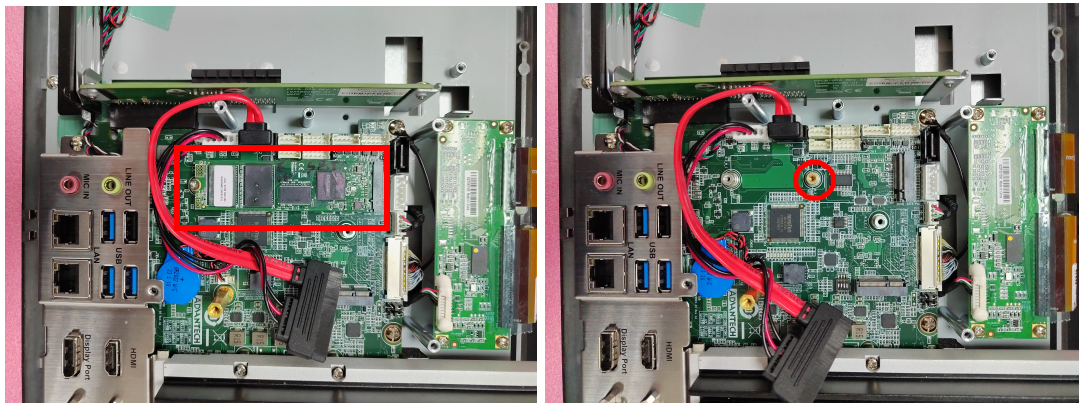


Figure 2.18

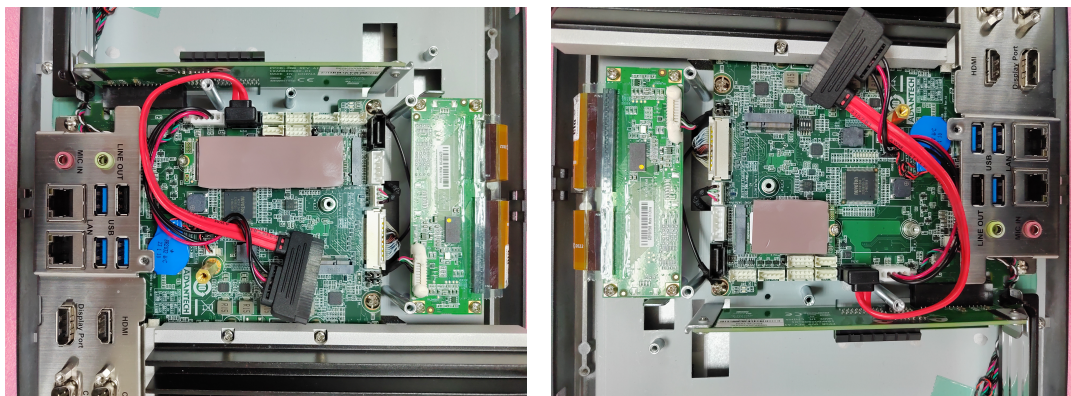
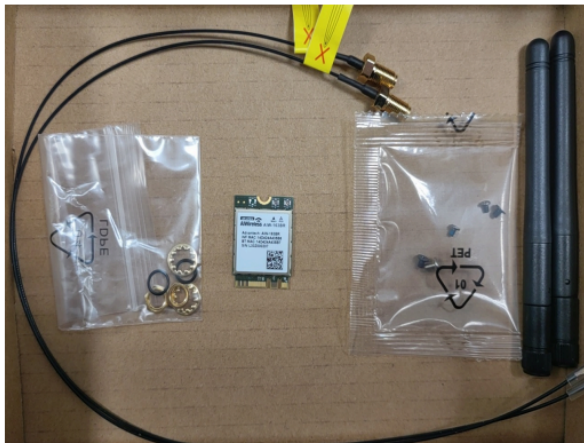


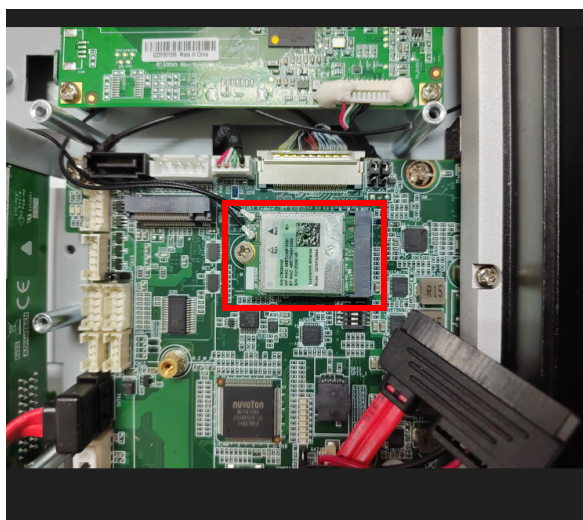
Figure 2.19 PPC-415W Reinforcement Plate

## 2.6 Wireless LAN Card Installation

1. Follow Steps 1 and 2 of Section 2.4 to remove the rear cover and VESA mount plate.
2. Affix the wireless LAN card to the bracket using the screws provided with the Wi-Fi module (model name: PPC-WLAN-D2).



3. Insert the wireless LAN card into the appropriate main board slot.



4. Connect the cables of the wireless LAN card to the antenna holder. Note the installation direction of the cable end and nut/washer.

- Secure the assembled antenna holder to the top of the panel PC. Then connect the cables to the wireless LAN card (see Fig. 2.20).



- Replace the VESA mount plate. Take out two plugs located at the top of the rear cover (see Fig. 2.22) for the antenna connectors. Then replace the rear cover and secure in place using screws. Finally, attach the antennas to the two antenna connectors located at the top of the panel (see Fig. 2.23).





## 2.7 COM/GPIO Installation

The following instructions are provided using the PPC-421W model for reference:

1. Refer to Section 2.3 to open the rear cover and remove the reinforcing plate. Remove the side COM flap by removing the two affixing screws.

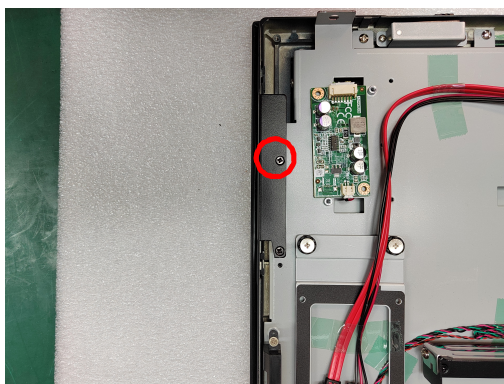


Figure 2.20

2. Retrieve the serial port module and assemble it as shown in Figure 2.27.

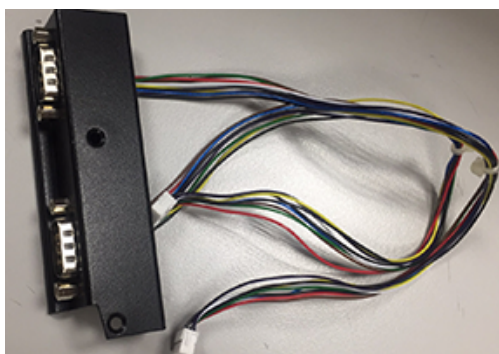


Figure 2.21

3. Install the assembled serial module in the system (the two screws circled in red in Figure 2.28 are fixed). Connect the COM4 cable to CN17 and the COM5 cable to CN18 as shown in Figure 2.28. Then replace the reinforcing plate and the rear cover. (If the COM5 cable is connected to CN23, COM5 will support GPIO.)

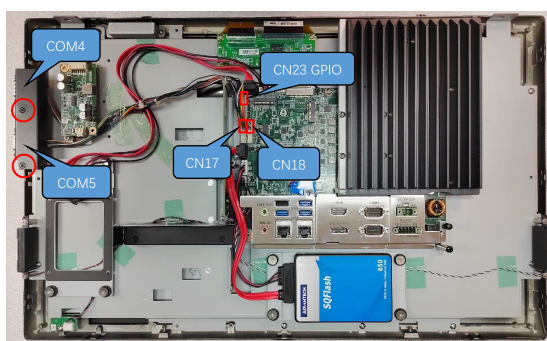


Figure 2.22

## 2.8 Riser Card Installation

1. Refer to Section 2.3 to open the rear cover and remove the reinforcement plate. Remove the screws and shield circled in red in Figure 2.32.
2. Install the expansion card.
3. The device is equipped with a PCIe x4 riser card (PCM-939) as a default (see Figures 2.32 and 2.33).
4. An expansion PCI riser card can be easily installed as shown in Figures 2.34 and 2.35.

**Note!** The maximum dimensions supported for expansion cards is 175 x 106.7 mm/6.88 x 4.2 in.

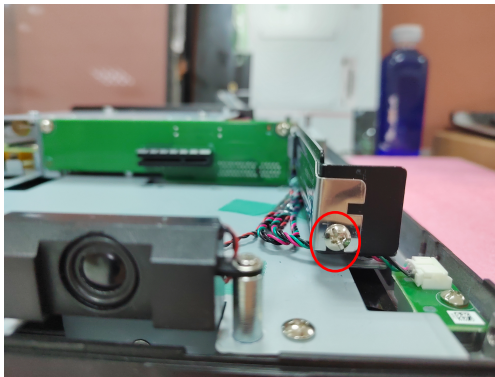


Figure 2.23

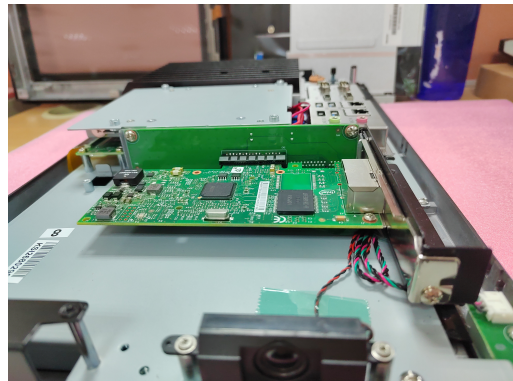


Figure 2.24



Figure 2.25



Figure 2.26

## 2.9 Grounding Installation

1. Remove the plastic cover of the grounding screw.
2. Connect the grounding cable to the grounding screw.
3. Tighten the screw to secure the connection.



Figure 2.27



Figure 2.28

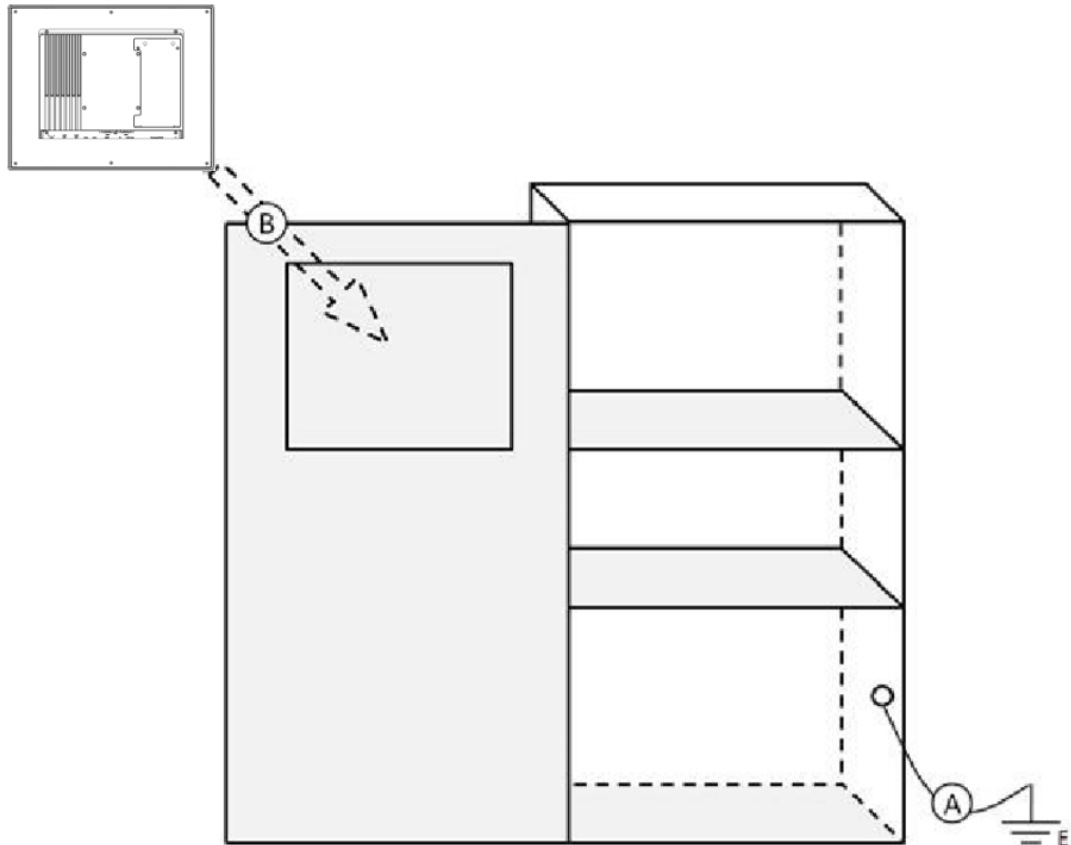
**Note!** A grounding cable is not provided with the product. Customers will need to purchase this cable separately.



## 2.9.1 Cabinet Installation and Grounding

Follow these instructions to install the PPC system, and pay attention to the ground pin which should be connected to the earth/ground. PPC system should give the best performance for EMI optimum EMI immunity, ESD immunity, surge immunity, and system isolation. If the PPC system is embedded in the cabinet, the PPC system's ground, cabinet's ground and earth/ground should be connected together.

1. Install the PPC system into the cabinet.

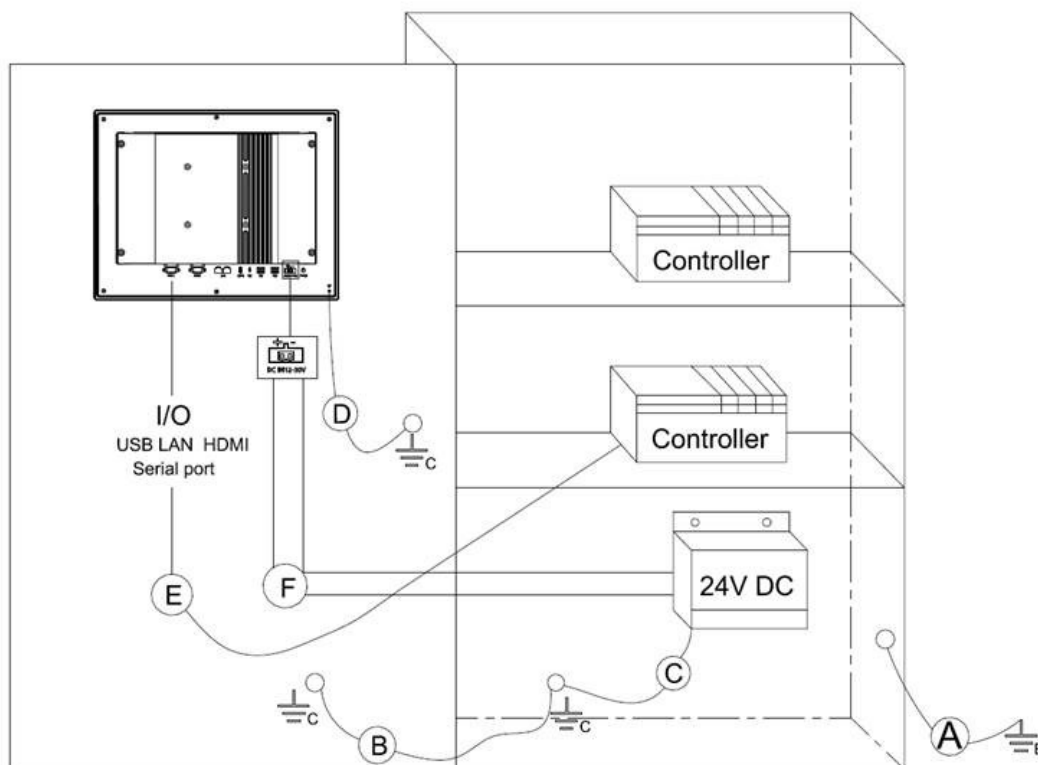


**Figure 2.29 Cabinet Installation**

Step A: Connect the cabinet to the earth/ground.

Step B: Embed null PPC system into the cabinet without any I/O cable and power.

## 2. System wiring.



**Figure 2.30 System Wiring Diagram**

Step A: Connect the cabinet to the earth/ground.

Step B: Ensure that all cabinets have been grounded together.

Step C: Connect the ground of the power supply to the cabinet.

Step D: Connect the ground pin of PPC system to the cabinet.

**Note!** *The wire of the protective earthing conductor shall be green-and-yellow, xx AWG/0.75mm<sup>2</sup> and connecting to earth of building.*



*Ensure that the voltage of the power source is correct before connecting the equipment to a power outlet. By means of a power cord connected to a socket-outlet with earthing connection.*

## 2.10 Mount Bracket Installation

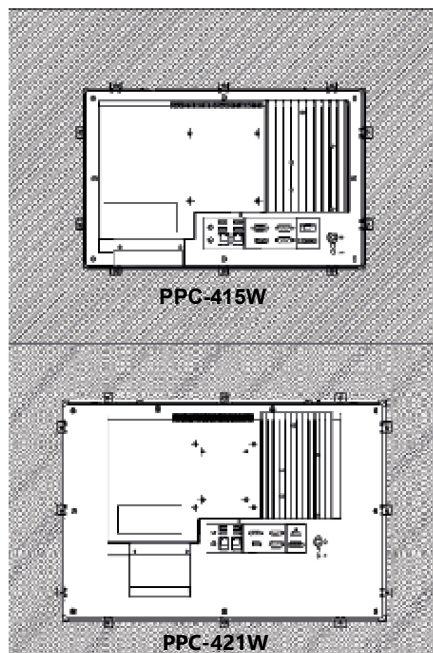
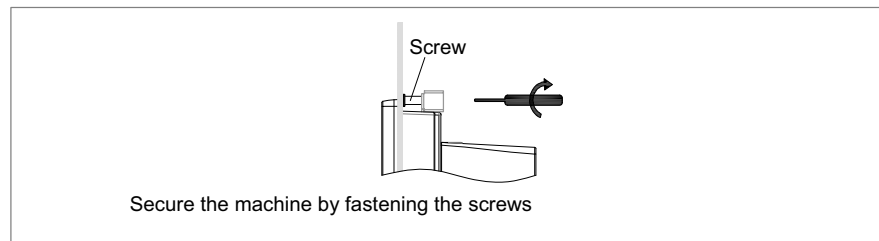
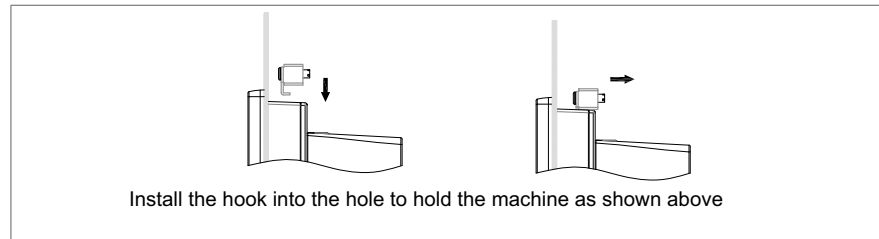
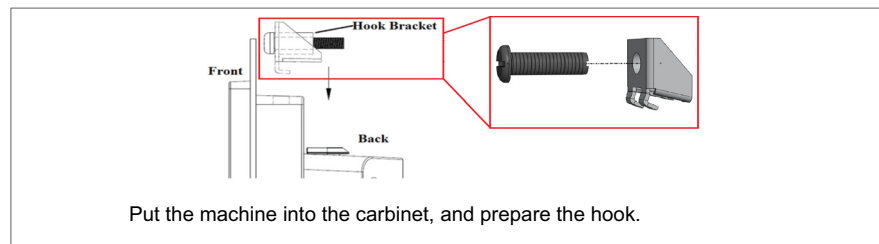


Figure 2.31 Hook Installation

# Chapter 3

## Jumper Configuration

- Jumpers & Connectors
- External COM Pin Definitions

## 3.1 Jumpers & Connectors

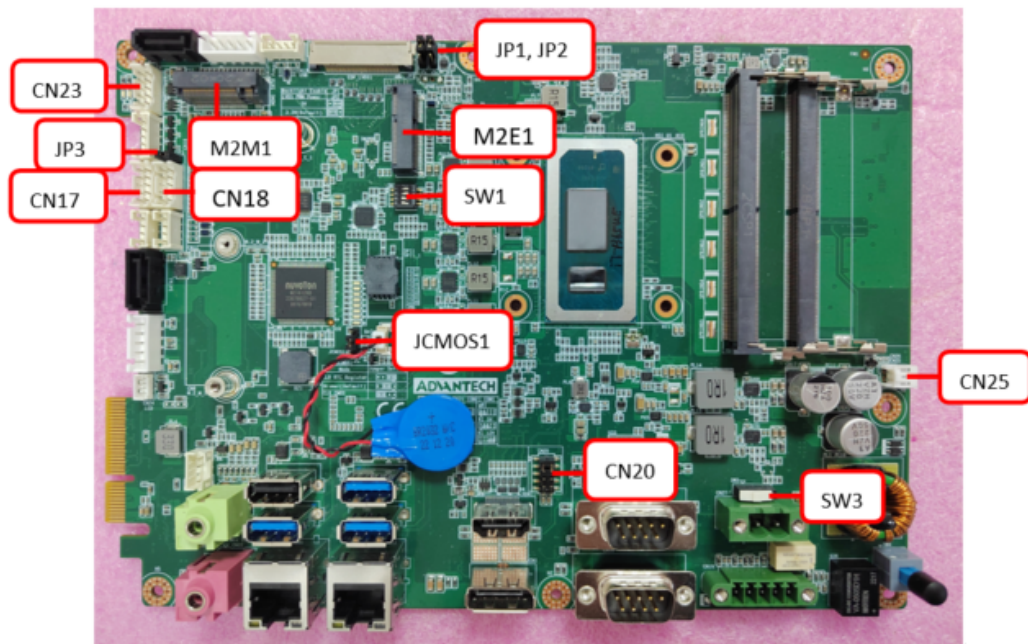


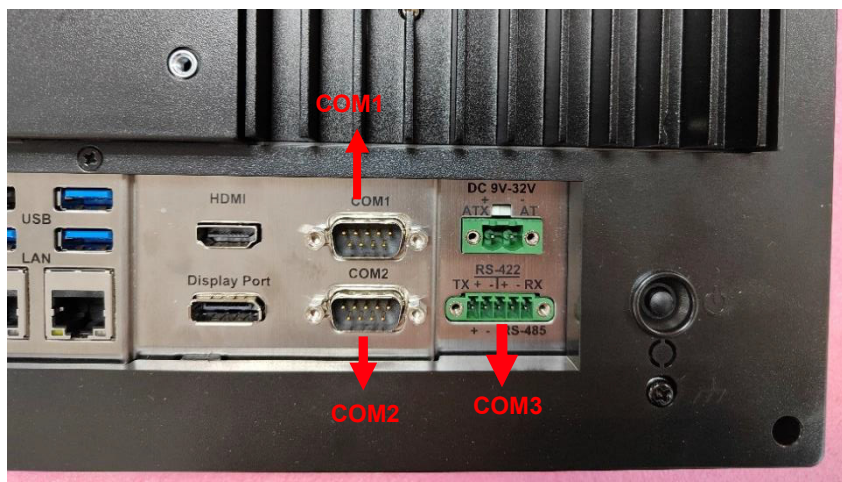
Figure 3.1 EAMB-7709 Front View

**Table 3.1: Jumpers & Connectors**

Connector	Function
M2M1	M.2 M-Key 2242 or 2280
M2E1	M.2 E-Key 2230
JCMOS1	RTC Select
JP3	Resistance Touch Power Select
CN17	Internal COM 4
CN18	Internal COM 5
CN23	GPIO
CN20	Pin9 power selection (COM 1 and COM 2)
SW3	ATX/AT Select
CN25	Power button connection
SW1	Resolution setting
JP1, JP2	Backlight enable level, Brightness PWM level



## 3.2 External COM Ports and Pin Definitions

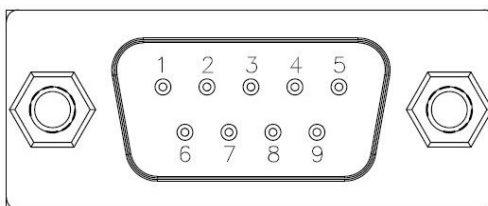


**COM1/COM2:** RS-232

COM1/COM2 Pin 9 is set as “RI” by default. This setting can be changed to 5V or 12V output using a jumper.

**Table 3.2: External COM Ports and Pin Definitions**

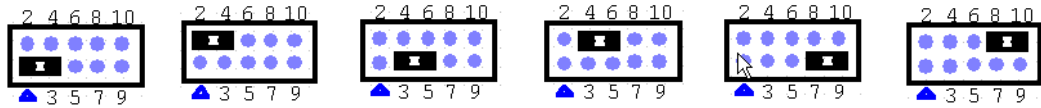
Pin	COM1/COM2	COM4/COM5	GPIO
1	DCD	DCD	GND
2	RXD	RXD	GPIO4
3	TXD	TXD	GPIO0
4	DTR	DTR	GPIO5
5	GND	GND	GPIO1
6	DSR	DSR	GPIO6
7	RTS	RTS	GPIO2
8	CTS	CTS	GPIO7
9	RI or 5V/12V output	RI	GPIO3



### 3.2.1 COM1/COM2 Pin9 power Select

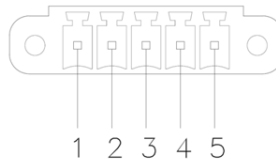
**Table 3.3: COM1/COM2 Pin9 power Select**

CN22	Function
(1-3)/(2-4) pin	COM1/COM2 RI (Default*)
(3-5)/(4-6) pin	COM1/COM2 pin9 5V
(7-9)/(8-10) pin	COM1/COM2 pin9 12V



### 3.2.2 COM3

COM 3: RS-422/485 with isolated 1000 V<sub>DC</sub> (configurable via the BIOS Setup Utility).



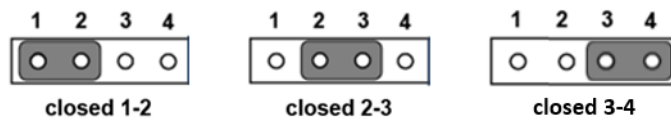
**Table 3.4: COM3**

COM3	1pin	2pin	3pin	4pin	5pin
RS422	TX+	TX-	RX+	RX-	GND
RS485	D+	D-			GND

### 3.2.3 RTC Select

**Table 3.5: RTC Select**

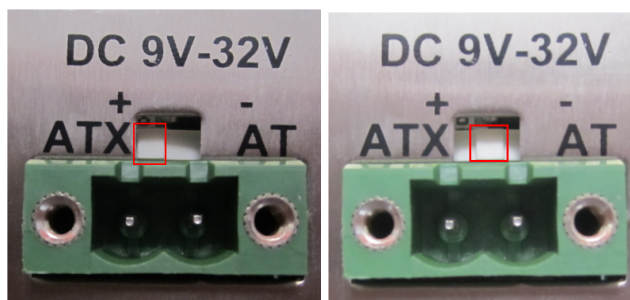
JCMOS1	Function
1-2 pin	CLR RTC Register
2-3 pin	Normal (Default*)
3-4 pin	CLR CMOS



### 3.2.4 ATX/AT Select

**Table 3.6: ATX/AT Select**

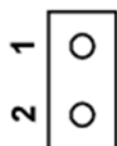
SW3	Function
1-3pin	ATX power (Default*)
2-3pin	AT power



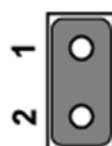
### 3.2.5 Touch Power Select

**Table 3.7: Touch Power Select**

JP3	Function
Open	capacitive PCT
Closed	Resistive RES



open



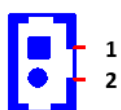
closed

Note: A jumper needs to be connected to resistive screen JP3 and removed from capacitive screen JP3.

### 3.2.6 Power Button Connection

**Table 3.8: Power Button Connection**

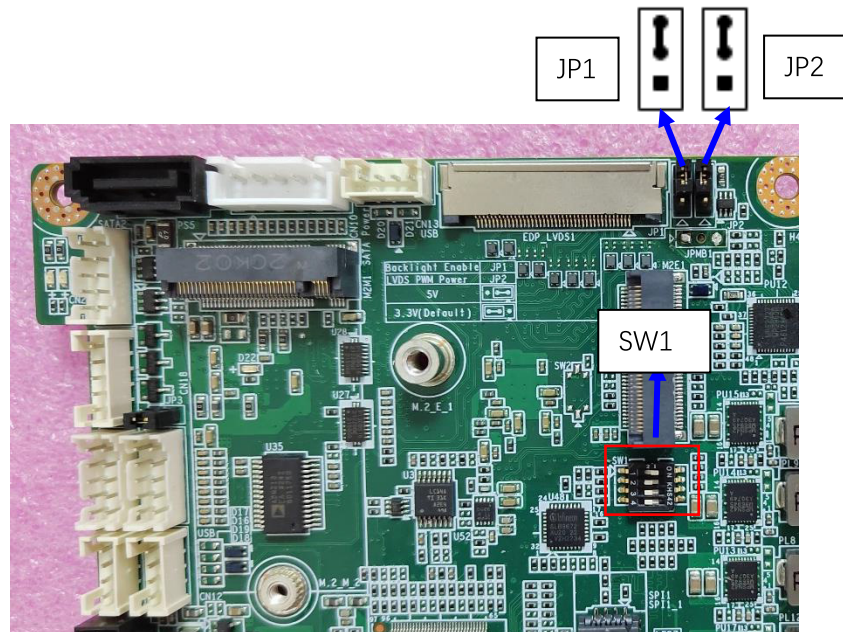
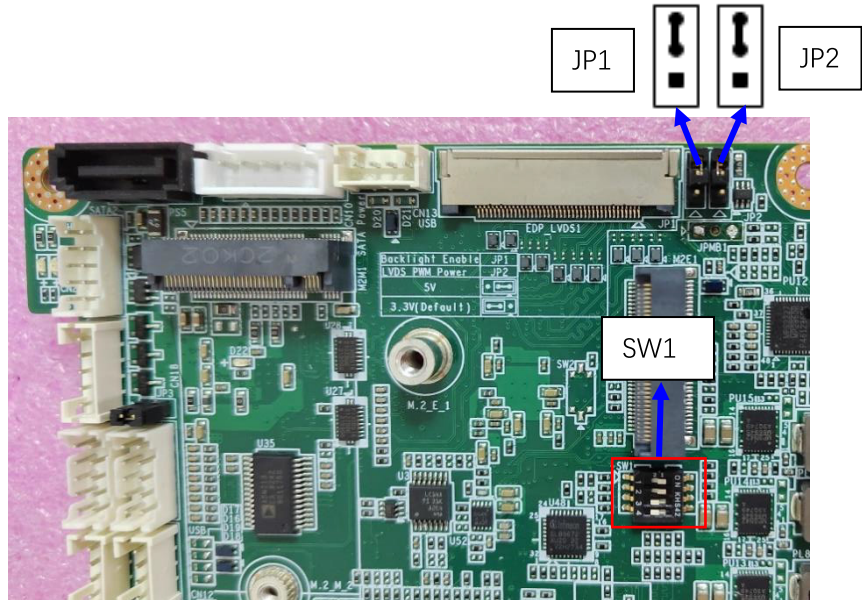
CN25	Function
Power button	Can be used as an external extension cord switch



### 3.2.7 LVDS SW1 and Jumper Setting

**Table 3.9: PPC-415W (EAMB-7709)**

Resolution	1920 x 1080
SW1	SW1=1100, i.e. 1,2=on, 3,4=off
Backlight enable level	JP1(2-3), +3.3V
Brightness PWM level	JP2(2-3), +3.3V



# Chapter 4

## Software Configuration

- Driver Installation
- BIOS Setup Utility

## 4.1 Driver Installation

Before installing software on the panel PC, the corresponding drivers must be installed for full functionality.

All drivers can be downloaded from the Advantech website:

<http://www.advantech.com>

## 4.2 BIOS Setup Utility

### 4.2.1 Entering Main BIOS Setup

You can enter BIOS setup utility by pressing "Delete".

You should always press "F4" to save the settings you have made and exit the setup utility, otherwise those settings will not be saved in BIOS.



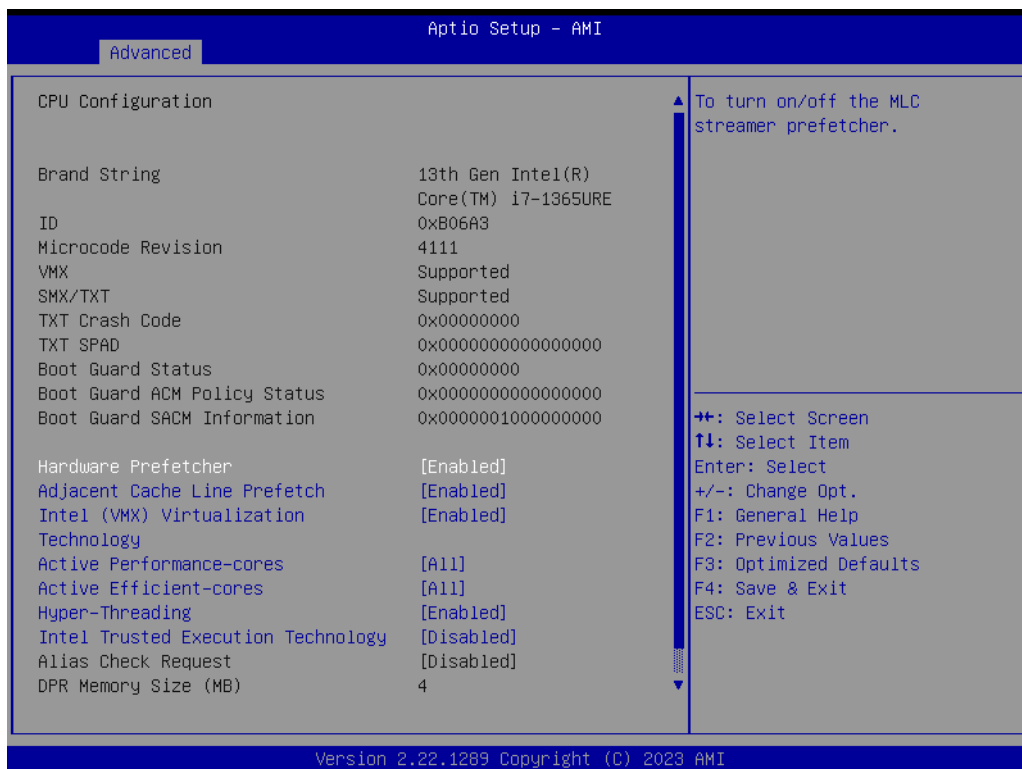
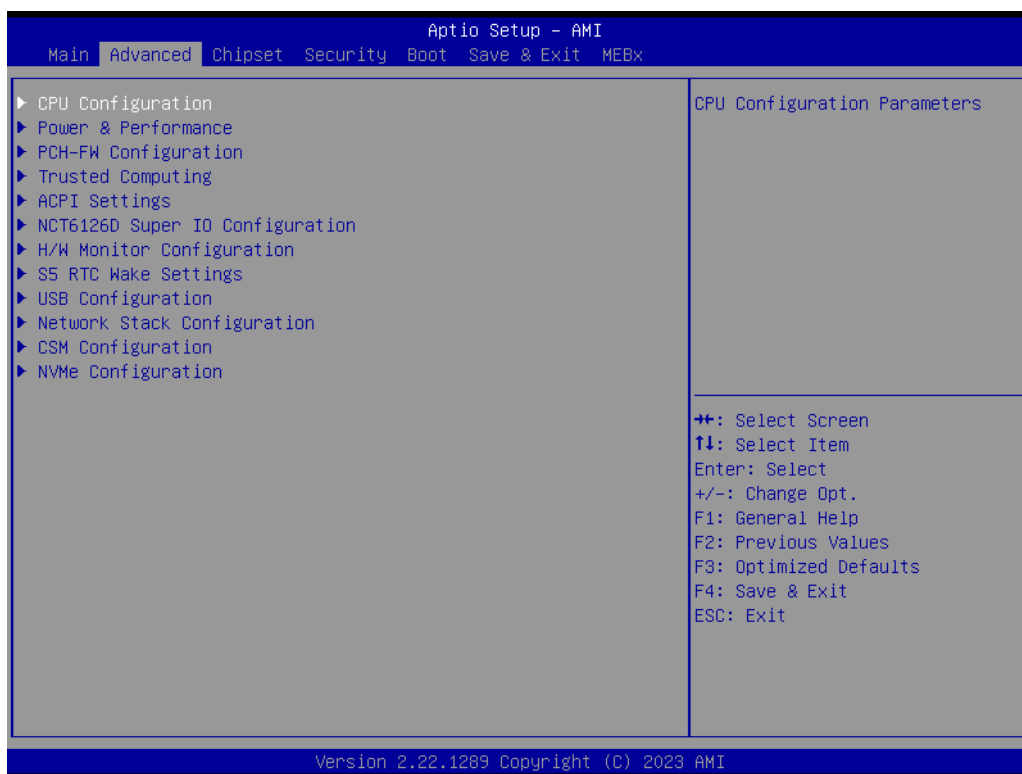
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured; options in blue can. The right frame displays the key legend.

Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

#### ■ System Time/System Date

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

## 4.2.2 CPU Configuration



- **CPU Configuration**  
This item allows users to view the CPU model and frequency.
- **Intel Virtualization Technology**  
This item allows users to enable or disable Intel Virtualization Technology. When

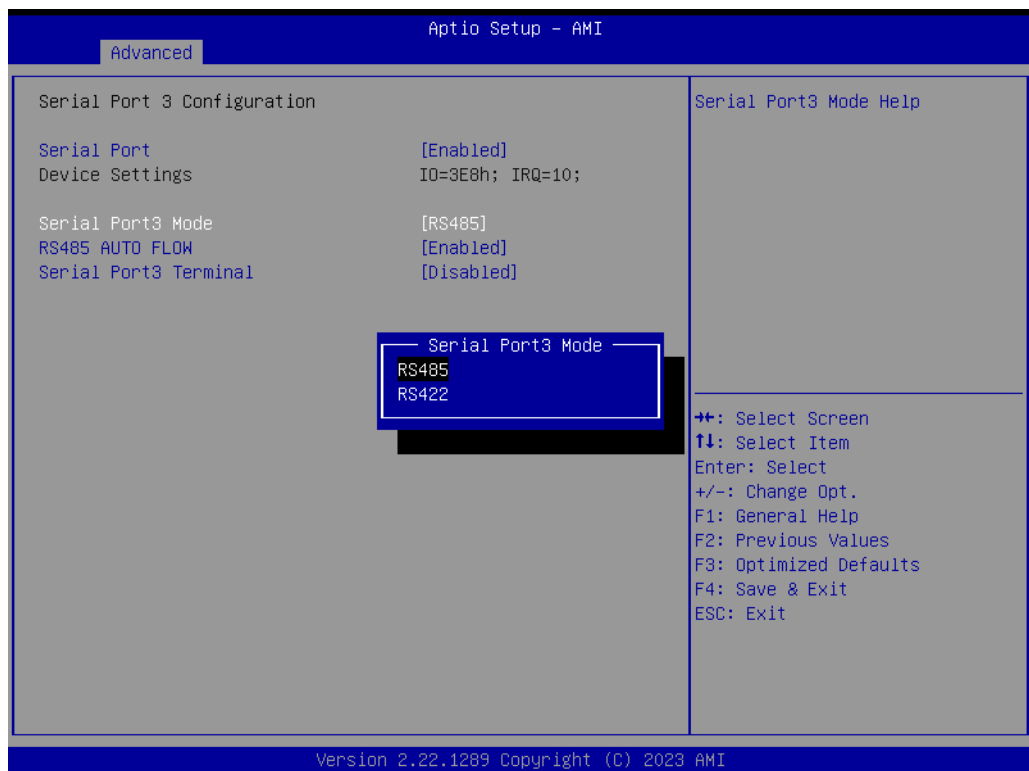
enabled, a VMM can utilize additional hardware capabilities provided by Vanderpool Technology.

### 4.2.3 COM3 Mode Selection (RS422/RS485)

1. Select **NCT6126D Super IO Configuration** in the **Advanced** tab.

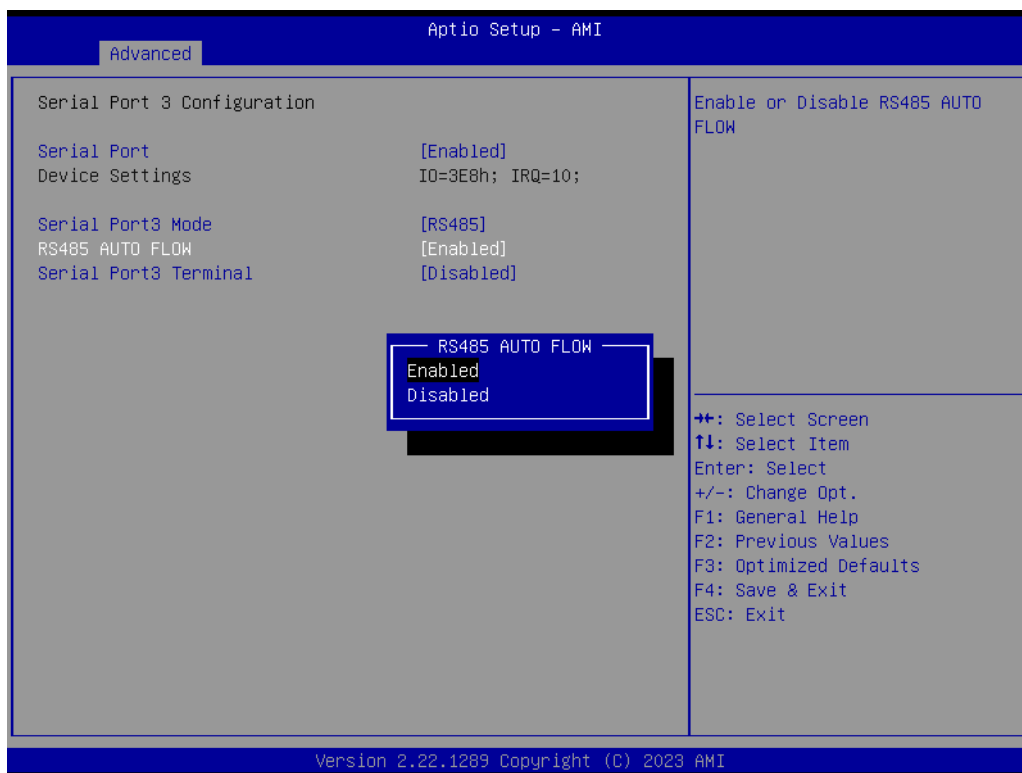


2. Select **Serial Port 3 Configuration** option setting (RS422/RS485).

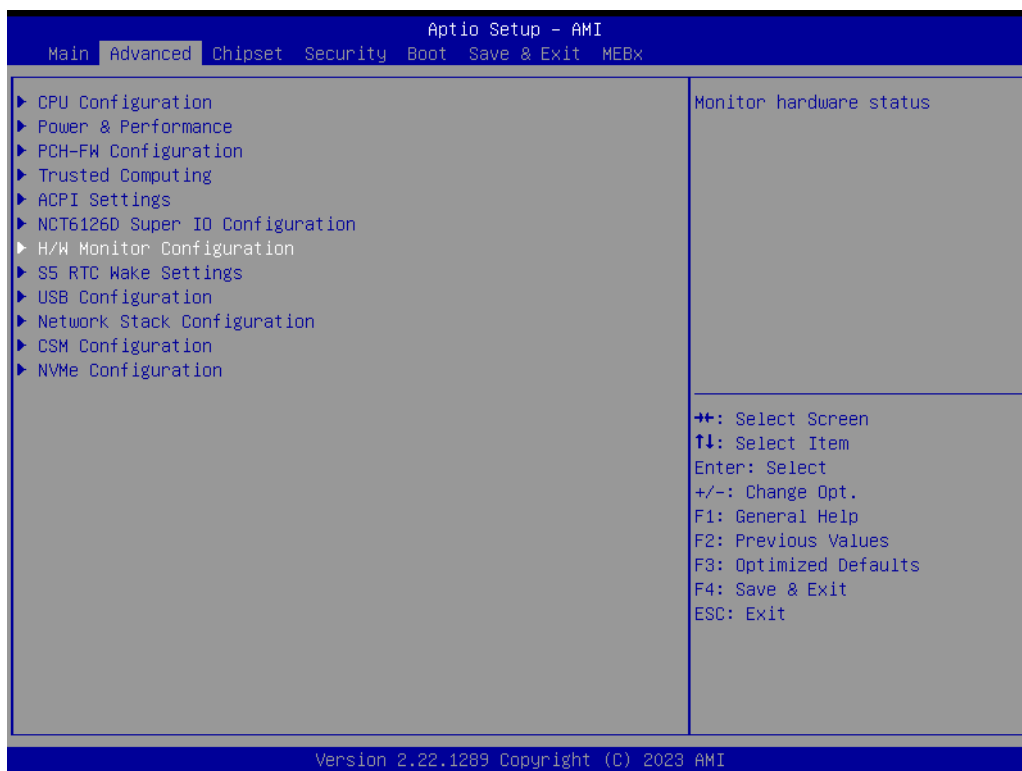


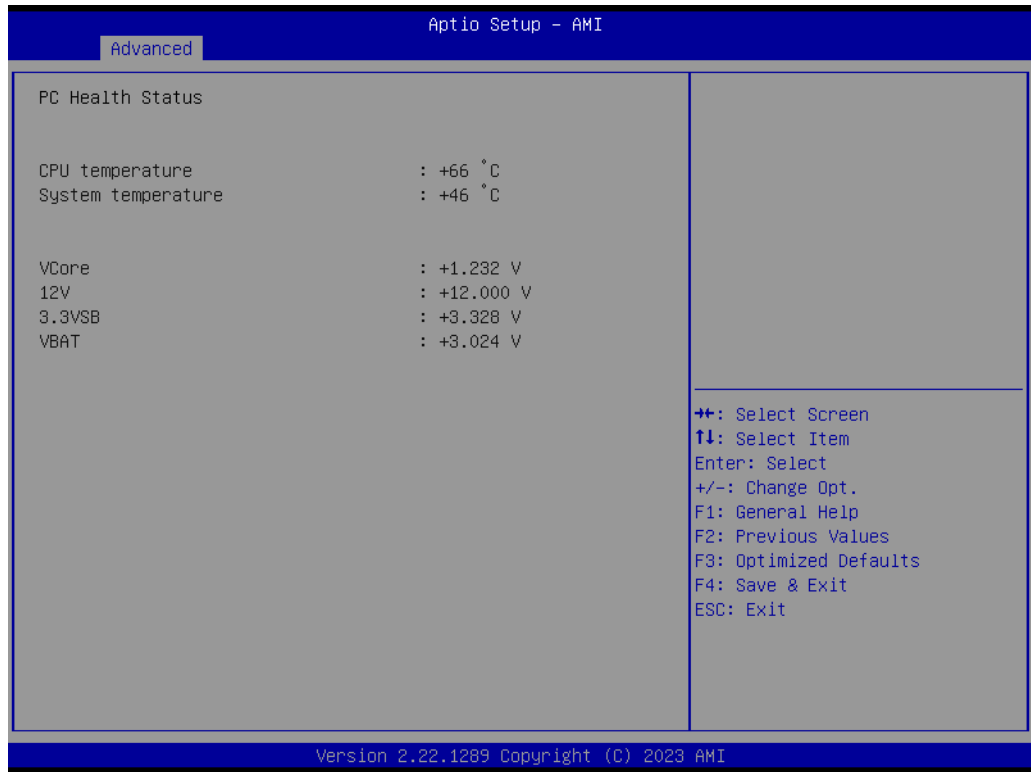


3. If COM3 mode is set as RS485, the **RS485 Auto Flow** control option can be Enabled or Disabled.



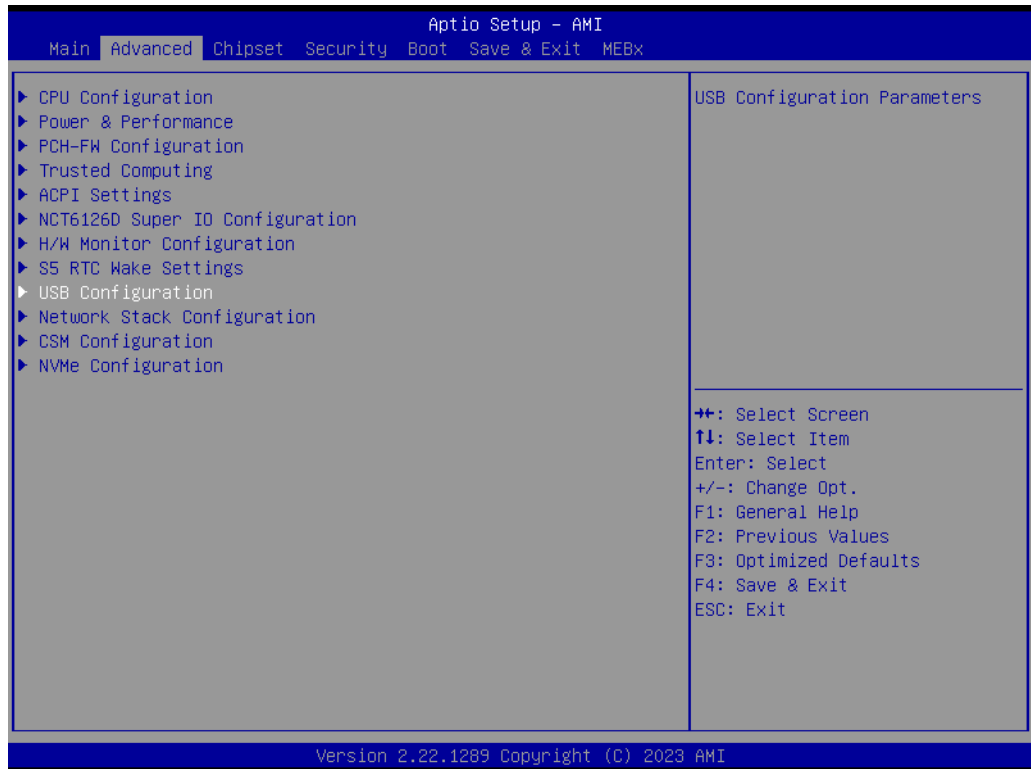
#### 4.2.4 Hardware Monitor

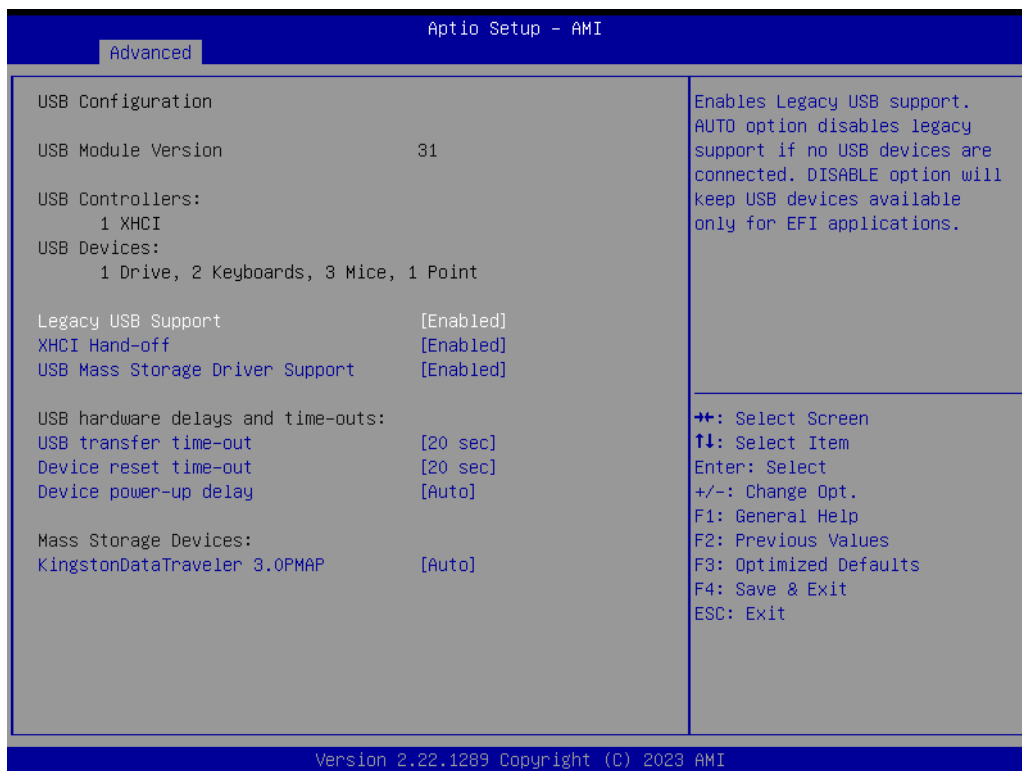




- **EC Hardware Monitor**  
This page displays all information about system Temperature/Voltage/Current.

## 4.2.5 USB Configuration



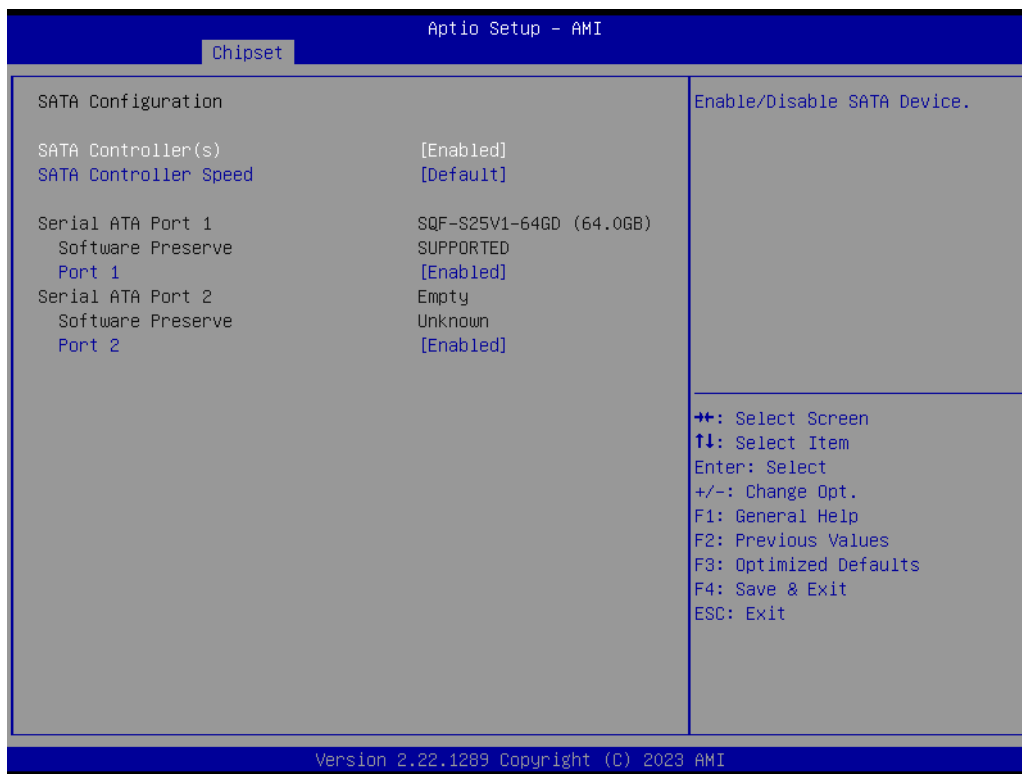


- **XHCI Hand-off**  
This is a workaround of 0Secs without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
- **USB Mass Storage Driver Support**  
Enable/Disable USB Mass Storage Driver Support.

## 4.2.6 SATA configuration

Check SATA information.



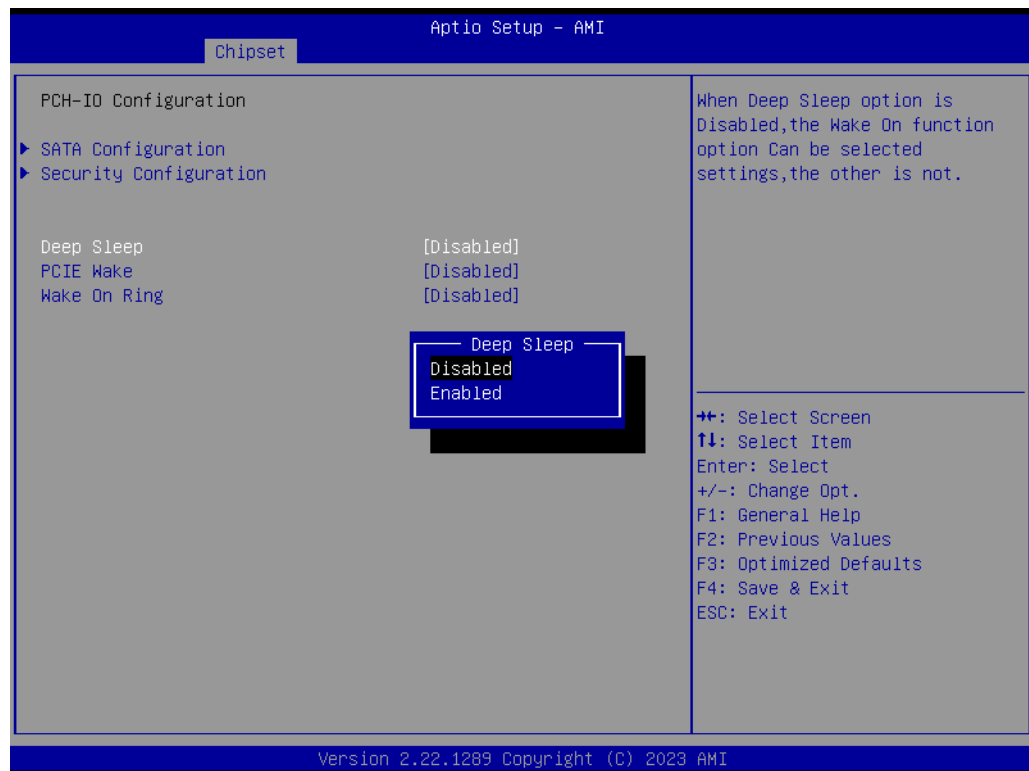


## 4.2.7 Deep Sleep

1. Select **PCH-IO Configuration** option in the **Chipset** tab.



2. Set the Deep Sleep by option to **Enabled/Disabled** for ERP.

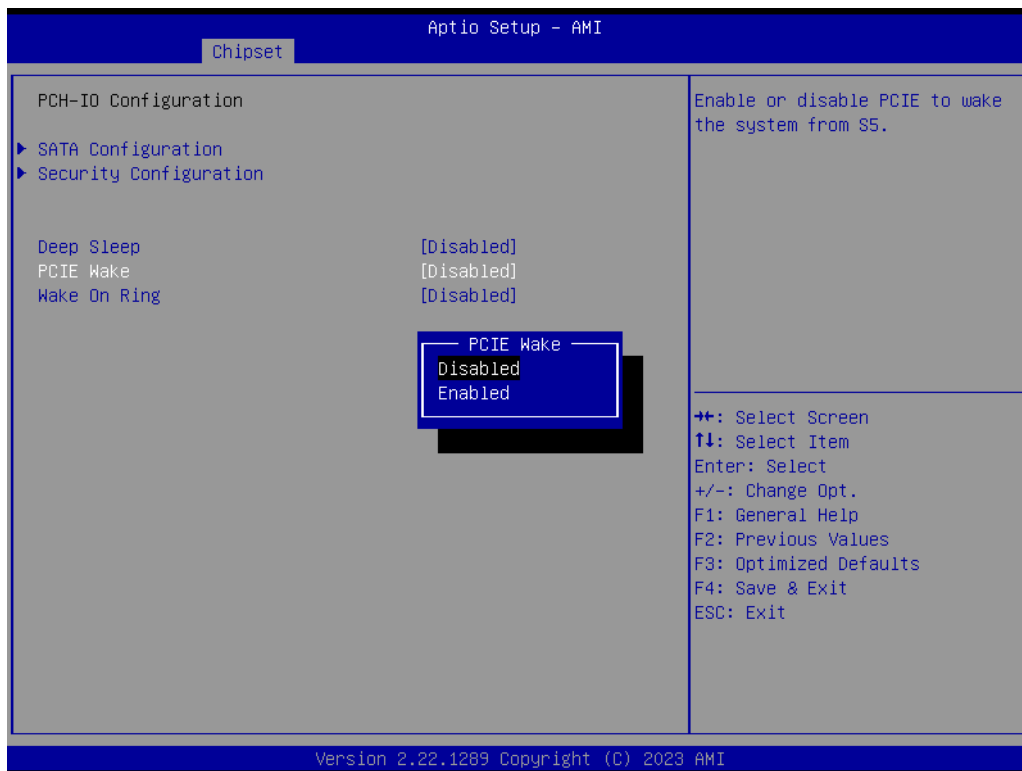


## 4.2.8 Wake-on-LAN

1. Select **PCH-IO Configuration** option in the **Chipset** tab.



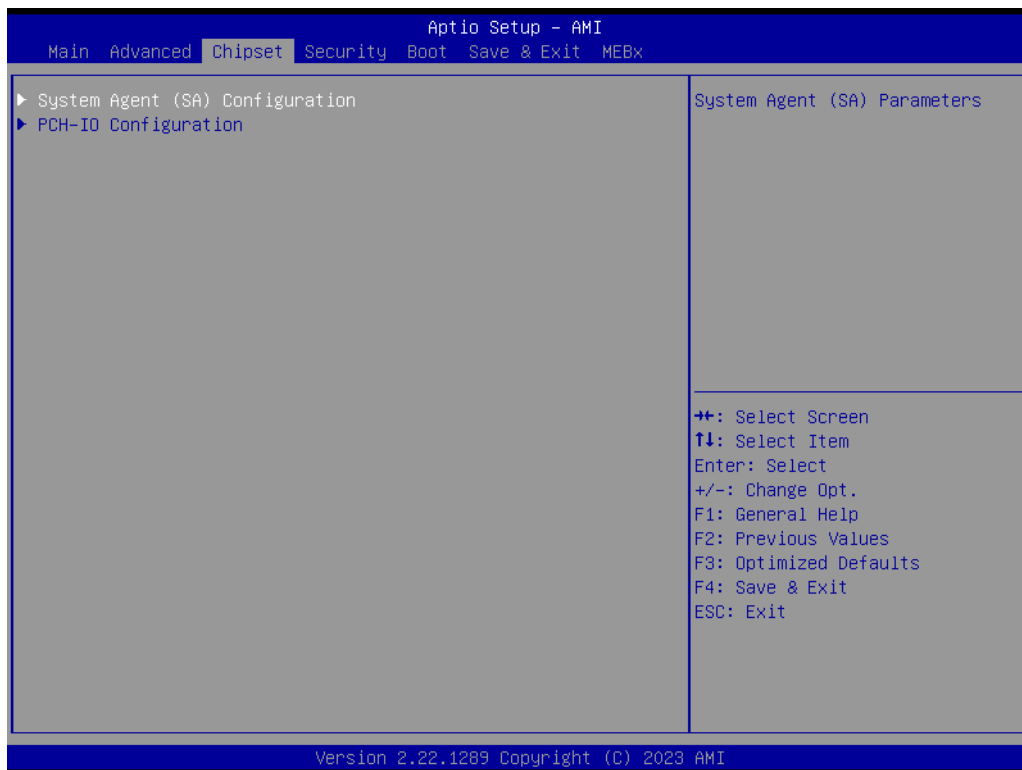
2. Set the **Wake On By** option to **Enabled**.



#### 4.2.9 Storage RAID Configuration (VMD Setup)

Please refer to the below configuration instructions:

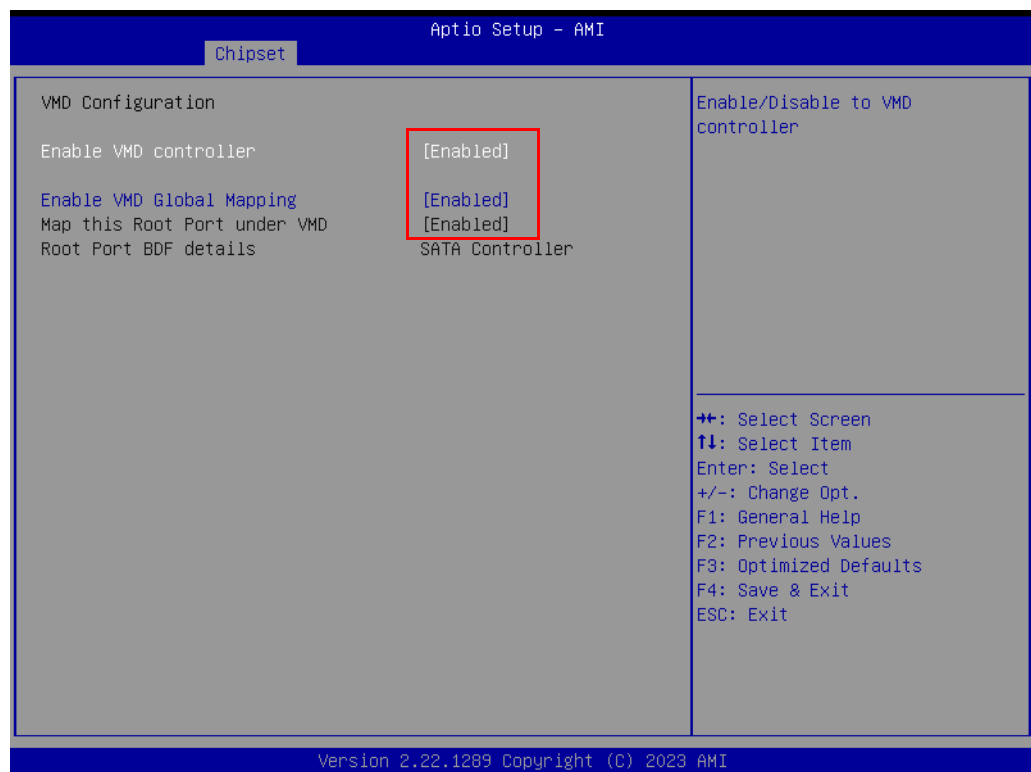
1. Select **Chipset** → **System Agent (SA) Configuration**.



2. Select **VMD setup menu**.

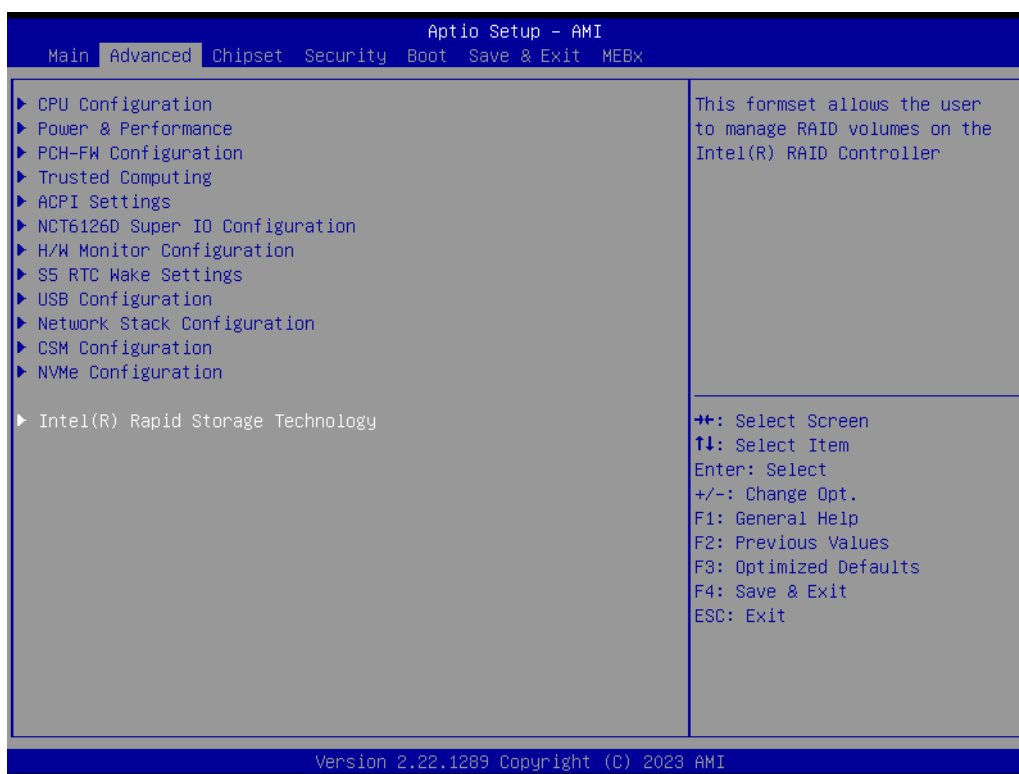


3. Enable VMD controller and Enable VMD Global Mapping and Map this Root Port under VMD setting [Enable].

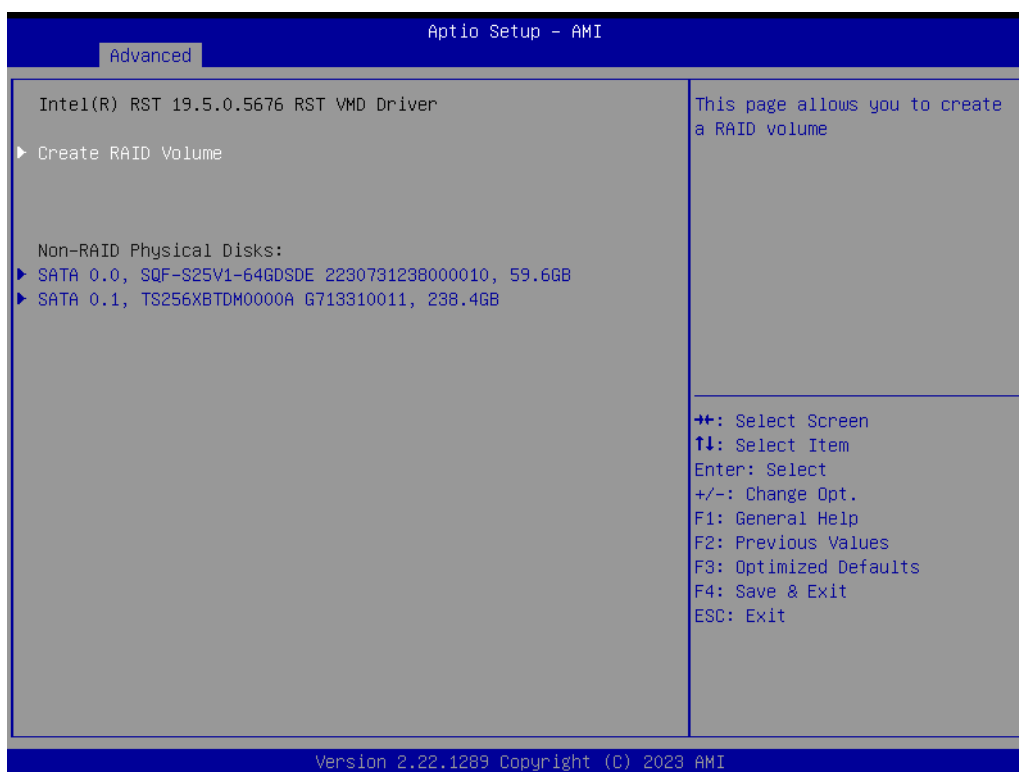




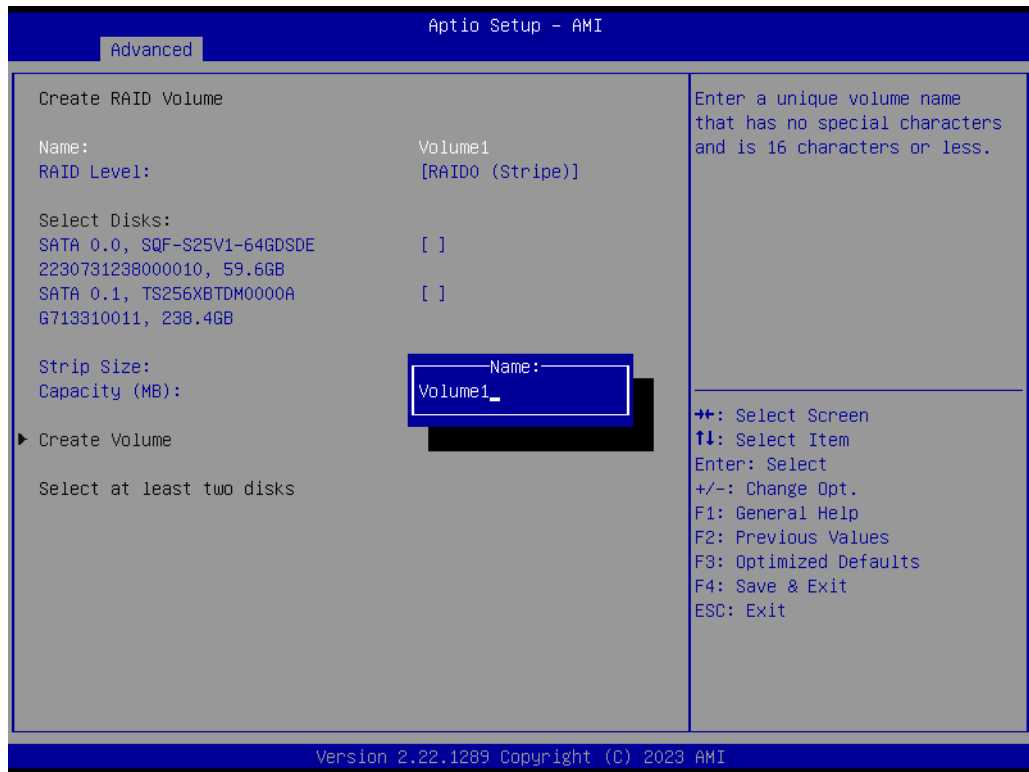
4. Press **F4** to save and then exit. Press **del** to go to BIOS, and select **Advanced**→ **Intel (R) Rapid Storage Technology**.



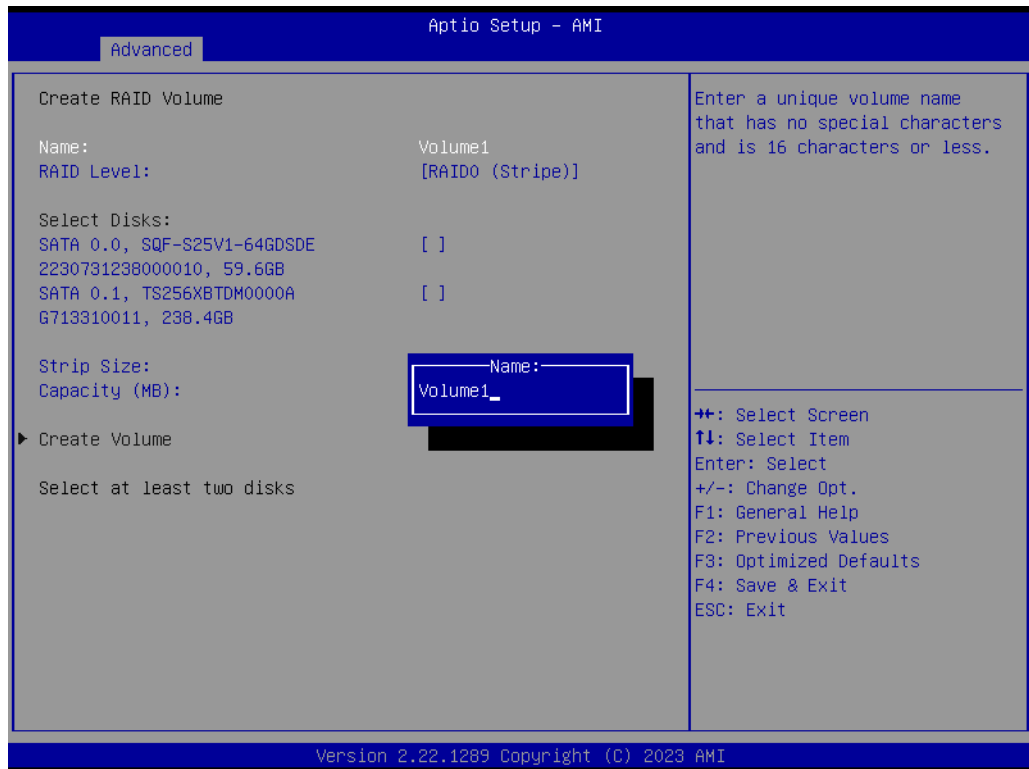
5. Select **Create RAID Volume**.



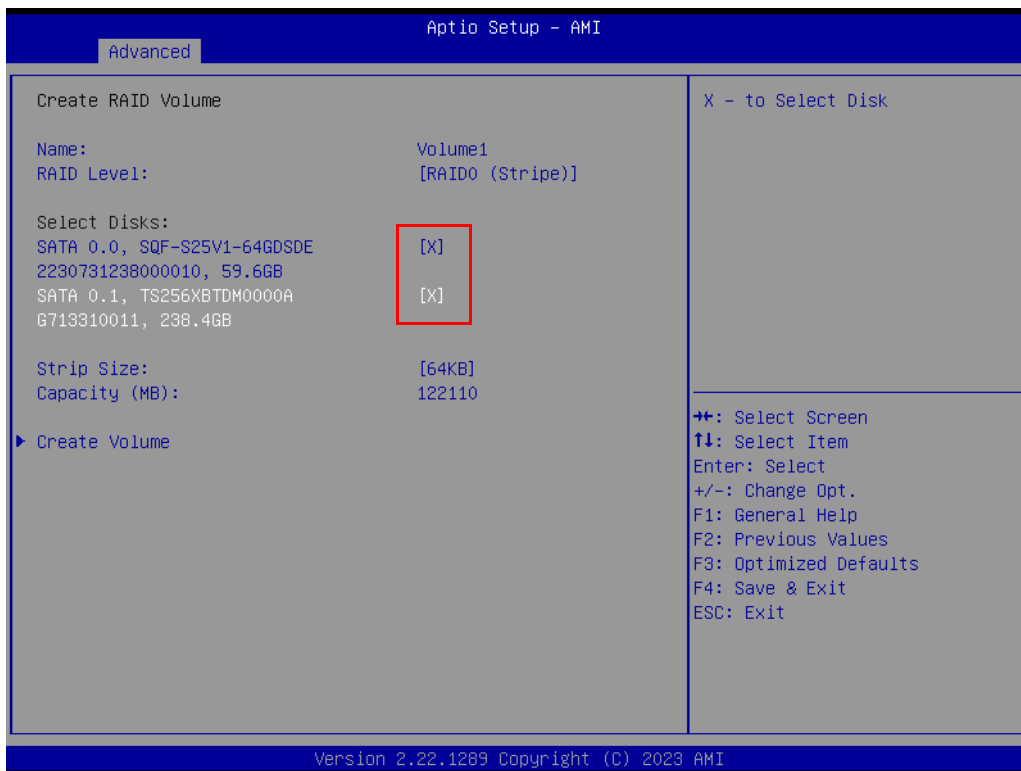
6. Define volume level.



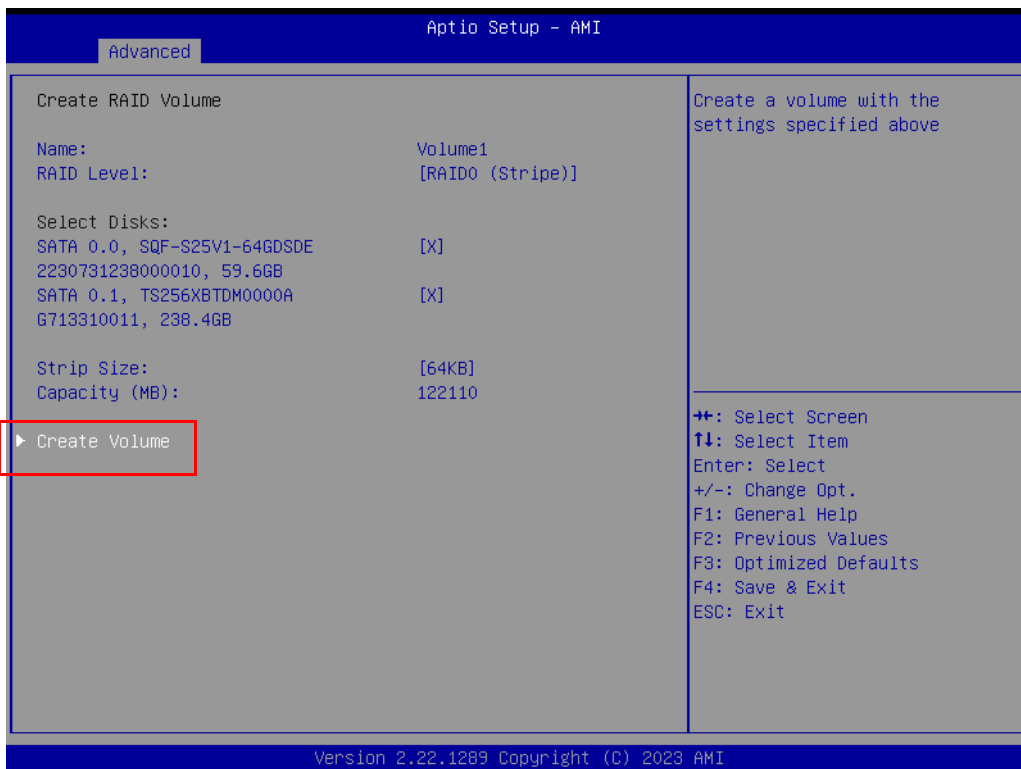
7. Select **RAID Level**, which can be RAID0 or RAID1 (similar steps)



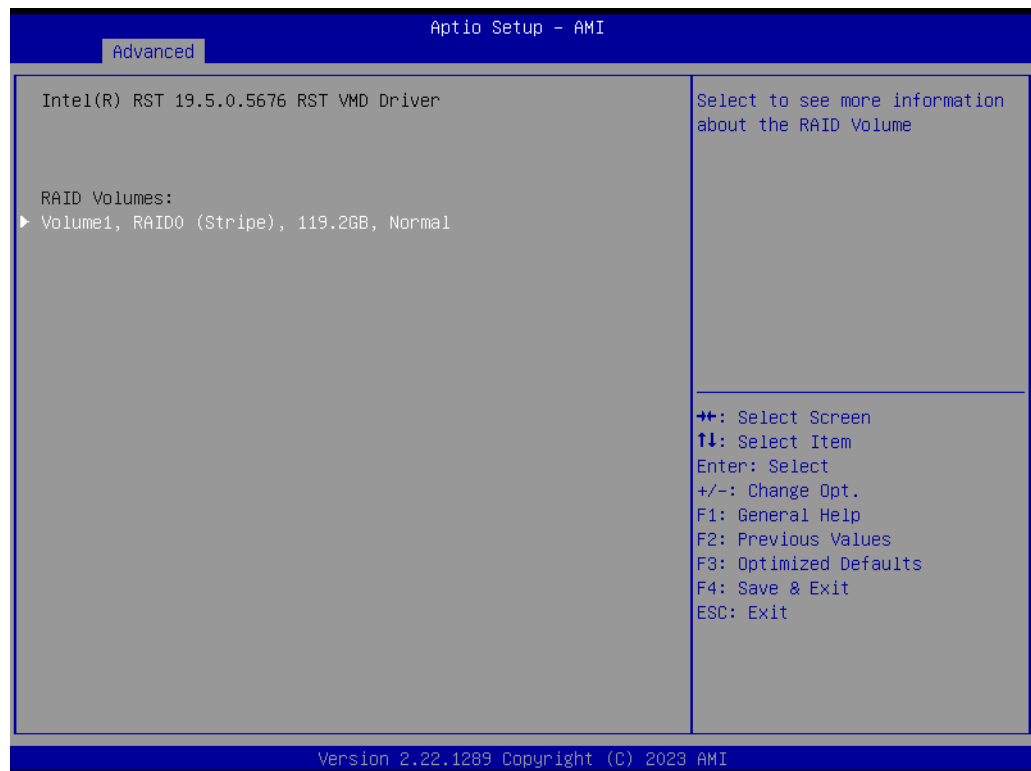
8. Select **RAID0** and select **Select Disks: [X]**.



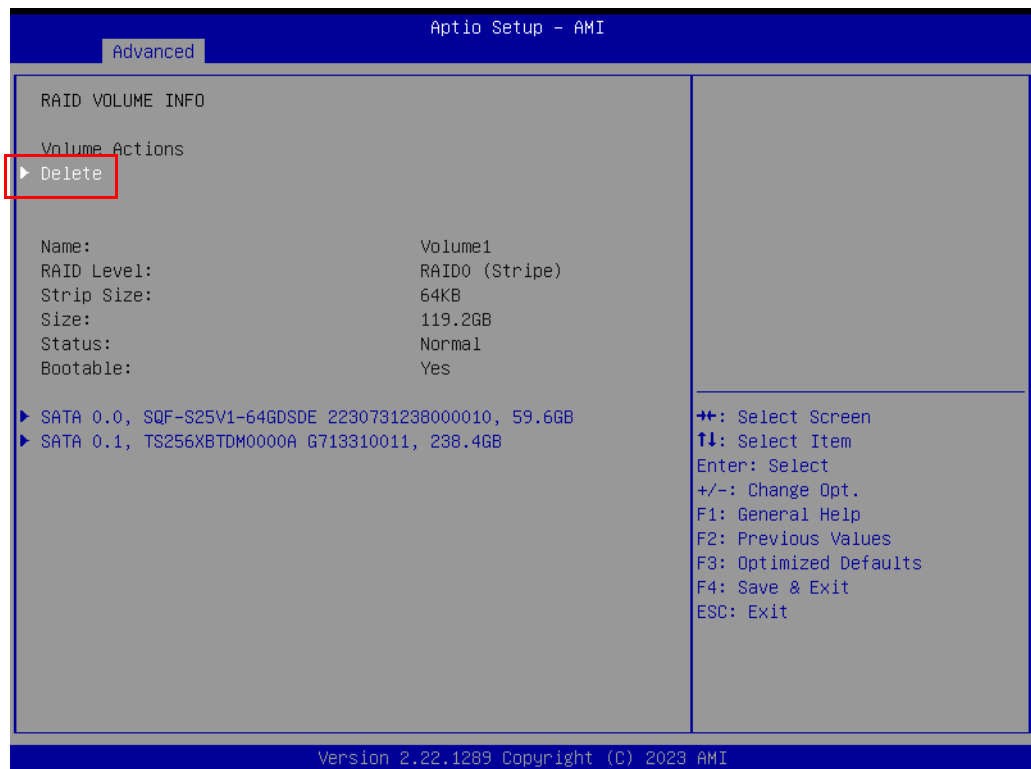
9. Select **Create Volume**.



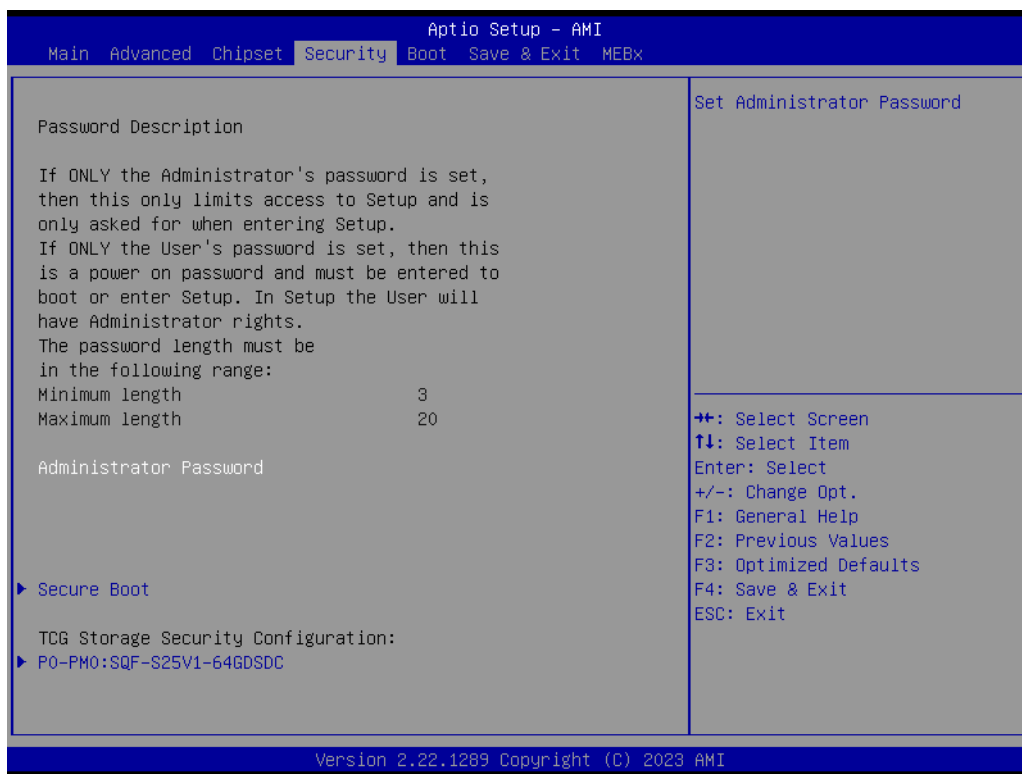
10. RAID grouping completed.



11. Click **Delete** to remove RAID.



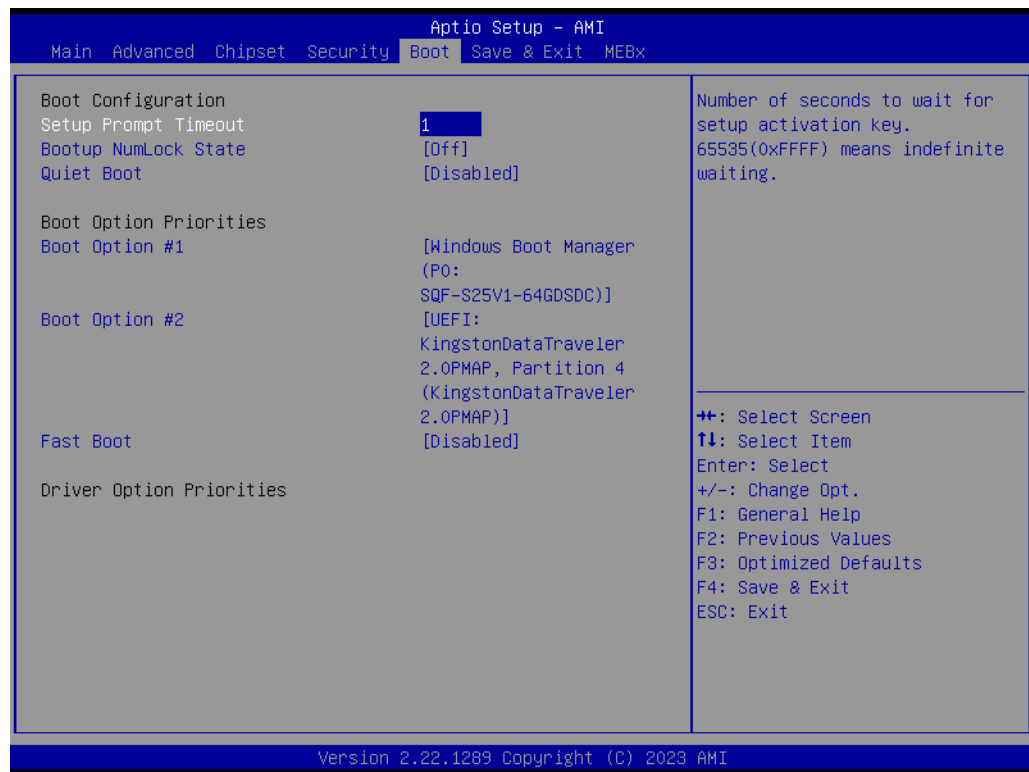
## 4.2.10 Security



Select Security Setup from the Setup main BIOS setup menu. All Security Setup options, such as password protection and virus protection are described in this section. To access the sub menu for the following items, select the item and press <Enter>:

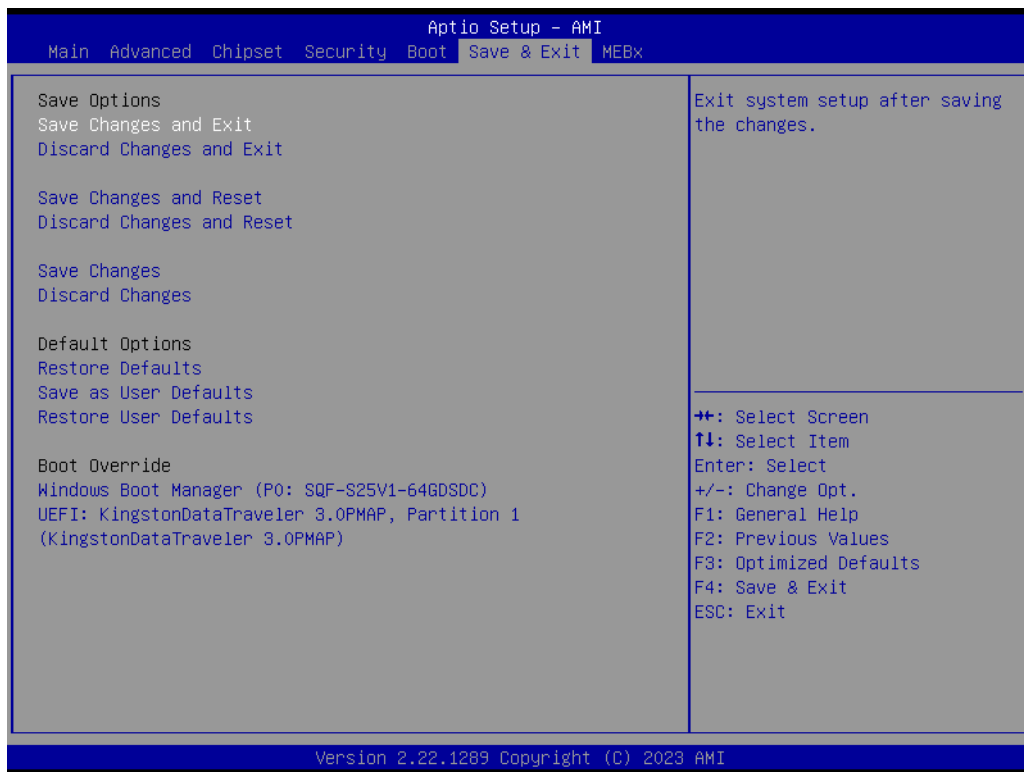
- **Administrator Password**  
Set Administrator's password.

## 4.2.11 Boot



- **Setup Prompt Timeout**  
Number of seconds that the firmware will wait before initiating the original default boot selection. A value of 0 indicates that the default boot selection is to be initiated immediately on boot. A value of 65535(0xFFFF) indicates that firmware will wait for user input before booting. This means the default boot selection is not automatically started by the firmware.
- **Bootup NumLock State**  
Select the keyboard NumLock state.
- **Quiet Boot**  
Enables or disables Quiet Boot option.
- **Boot Option #1**  
Boot Option #2.

## 4.2.12 Save & Exit



- **Save Changes and Exit**  
This item allows users to exit the system setup after saving changes.
- **Discard Changes and Exit**  
This item allows users to exit the system setup without saving changes.
- **Save Changes and Reset**  
This item allows users to reset the system after saving changes.
- **Discard Changes and Reset**  
This item allows users to reset the system without saving changes.
- **Save Changes**  
This item allows users to save any changes to the setup options.
- **Discard Changes**  
This item allows users to discard any changes to the setup options.
- **Restore Defaults**  
This item allows users to restore/load default values for all setup options.
- **Save as User Defaults**  
This item allows users to save all current settings as user defaults.
- **Restore User Defaults**  
This item allows users to restore all setup options to the user default values.





# Appendix **A**

PCI/PCI-E

## A.1 PCI/PCI-E

The default is PCIe x 4 slot and the optional 989KB01001E PCIe x 1 to PCI slot is shown below.



**Note!** The PPC-415W panel PCs support riser cards with maximum dimension of 192 x 107 mm.



The PPC-421W panel PCs support riser cards with maximum dimension of 200.0\*111 mm.

The total load current supported by the PCIe expansion slot is listed below.

**Table A.1:**

12 V	0.5 A
3.3 V	3 A
3.3 SB	0.375 A

The total output power for 12V, 3.3V, and 3.3 SB should not exceed 17 W.

The total load current supported by the PCI expansion slot is listed below.

**Table A.2:**

12 V	0.5 A
5 V	2 A
3.3 V	3 A
-12 V	0.1 A

The total output power for 12V, 5V, 3.3V, and -12V should not exceed 25 W.



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