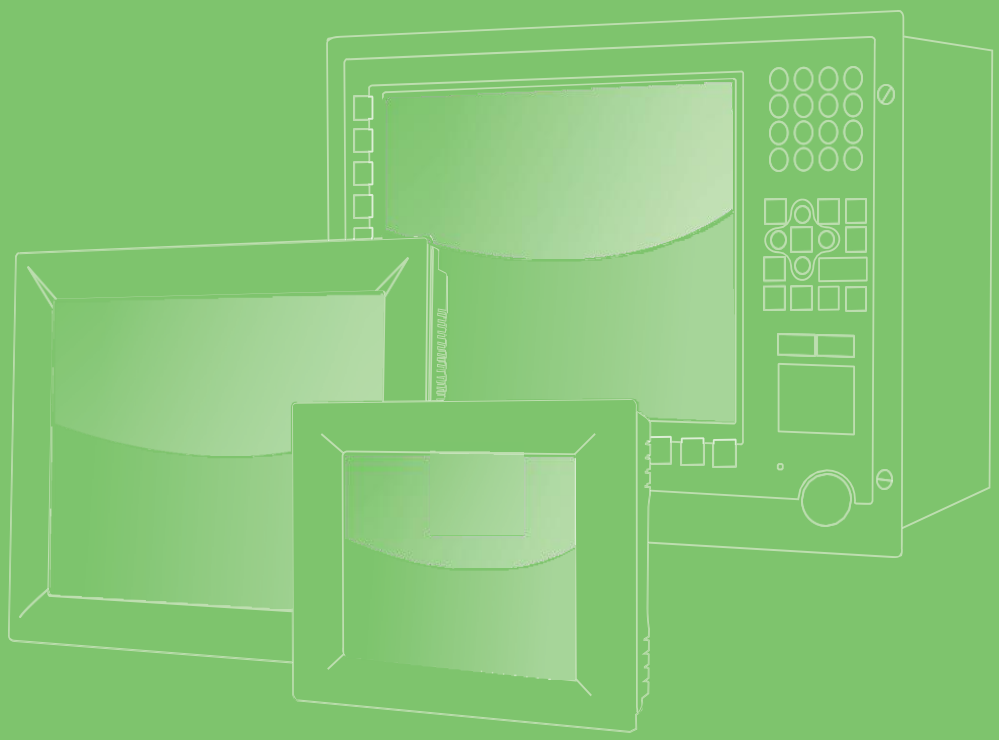
User Manual



SPC-815/821 V2

15.6" /21.5" Full HD Standalone Multi-Touch Panel Computer

製造商: 研華股份有限公司
地址: 台北市內湖區陽光街365巷33號
電話: 02-27927818

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Enabling an Intelligent Planet

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This Manual Covers the Following Models:

SPC-815/821 V2 series

- SPC-815
- SPC-821

Part No. Edition 1
Printed in Taiwan October 2025

Product Warranty (2 years)

Advantech warrants to you, 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 which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which 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 of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandize authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it 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 kind of cable is available from Advantech. Please contact your local supplier for ordering information.

FCC Class A

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.

A 级产品

警告：在居住环境中，运行此设备可能会造成无线电干扰。

甲類警語

警告：為避免電磁干擾，本產品不應安裝或使用於住宅環境。

Technical Support and Assistance

1. Visit the Advantech web site at www.advantech.com/support where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
   - 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

Warnings, Cautions and Notes

Warning!

Warnings indicate conditions, which if not observed, can cause personal injury!
Les avertissements indiquent des conditions qui, si elles ne sont pas respectées, peuvent provoquer des blessures !

Caution!

Cautions are included to help you avoid damaging hardware or losing data. e.g. There is a danger of a new battery exploding if it is incorrectly installed. Do not attempt to recharge, force open, or heat the battery. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

Des précautions sont incluses pour vous aider à éviter d'endommager le matériel ou de perdre des données. par exemple.
Il existe un risque d'explosion d'une nouvelle batterie si elle n'est pas correctement installée. N'essayez pas de recharger, d'ouvrir de force ou de chauffer la batterie. Remplacez la batterie uniquement par une pile identique ou équivalente recommandée par le fabricant. Jetez les piles usagées conformément aux instructions du fabricant.

Note!

Notes provide optional additional information.

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.

6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. DO NOT COVER THE OPENINGS.
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment does not work well, or you cannot get it to work according to the user's manual.
    - The equipment has been dropped and damaged.
    - The equipment has obvious signs of breakage.
15. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY GO BELOW -20° C (-4° F) OR ABOVE 60° C (140° F) THIS COULD DAMAGE THE EQUIPMENT. THE EQUIPMENT SHOULD BE IN A CONTROLLED ENVIRONMENT.
16. CAUTION: DANGER OF EXPLOSION IF BATTERY IS INCORRECTLY REPLACED. REPLACE ONLY WITH THE SAME OR EQUIVALENT TYPE RECOMMENDED BY THE MANUFACTURER, DISCARD USED BATTERIES ACCORDING TO THE MANUFACTURER'S INSTRUCTIONS.
17. In accordance with the IEC 704-1:1982 specifications, the sound pressure level at the operator position does not exceed 70 dB (A).
18. DISCLAIMER: These instructions are provided according to IEC 704-1. Advan- tech disclaims all responsibility for the accuracy of any statements contained herein.
19. This product is not intended for use by children (this product is not a toy).
20. This equipment is not suitable for use in locations where children are likely to be present.
21. Caution: The wire of the protective bonding conductor shall be green-and-yellow, 22AWG/0.3mm2 minimum.
22. This product is intended to be supplied by a UL listed (Certificate) power supply with a mating connector, output rated 24Vdc, Tma 55 degree C minimum and altitude 2000m. If need further assistance, please contact manufacture or UL File owner or brand owner for additional information.

安全指示

1. 請仔細閱讀此安全操作說明。
2. 請妥善保存此用戶手冊供日後參考。
3. 用濕抹布清洗設備前，請從插座拔下電源線。請不要使用液體或去汙噴霧劑清洗設備。
4. 對於使用電源線的設備，設備周圍必須有容易接觸到的電源插座。
5. 請不要在潮濕環境中使用設備。
6. 請在安裝前確保設備放置在可靠的平面上，意外跌落可能會導致設備損壞。
7. 設備外殼的開口是用於空氣對流，從而防止設備過熱。請不要覆蓋這些開口。
8. 當您連接設備到電源插座上前，請確認電源插座的電壓是否符合要求。
9. 請將電源線佈置在人們不易絆到的位置，並不要在電源線上覆蓋任何雜物。
10. 請注意設備上的所有警告和注意標示。
11. 如果長時間不使用設備，請將其同電源插座斷開，避免設備被超標的電壓波動損壞。
12. 請不要讓任何液體流入通風口，以免引起火災或者短路。
13. 請不要自行打開設備。為了確保您的安全，請由經過認證的工程師來打開設備。
14. 如遇下列情況，請由專業人員來維修：
    - 電源線或者插頭損壞；
    - 設備內部有液體流入；
    - 設備曾暴露在過於潮濕的環境中使用；
    - 設備無法正常工作，或您無法通過用戶手冊來使其正常工作；
    - 設備跌落或者損壞；
    - 設備有明顯的外觀破損。
15. 請不要把設備保存在超出我們建議的溫度範圍的環境，即不要低於 -20˚C （-4˚F）或高於 60˚C （140˚F），否則可能會損壞設備。
16. 注意：如果電池放置不正確，將有爆炸的危險。因此，只可以使用製造商推薦的同一種或者同等型號的電池進行替換。請按照製造商的指示處理舊電池。
17. 根據 IEC 704-1:1982 的規定，操作員所在位置的音量不可高於 70dB(A)。
18. 限制區域：請勿將設備安裝於限制區域使用。
19. 免責聲明：該安全指示符合 IEC 704-1 的要求。研華公司對其內容的準確性不承擔任何法律責任。
20. 使用過度恐傷害視力。
21. 使用 30 分鐘請休息 10 分鐘。
22. 未滿 2 歲幼兒不看螢幕，2 歲以上每天看螢幕不要超過 1 小時。
23. 本產品為國內裝置使用時，其電源僅限使用架構電源模組所提供電源直流輸入， 不得使用交流電源及附加其他電源轉換裝置提供電源這者，其電源輸入電壓及電流請依說明書規定使用。
24. 本產品由帶有對接連接器的 UL 認證電源供電，額定輸出為 24Vdc，Tma 最低溫度為攝氏 55 度，海拔高度為 2000m。 如果需要進一步協助，請聯絡製造商或 UL 文件所有者或品牌所有者以獲取更多資訊。

Safety Precaution - Static Electricity

For Skilled person 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 you work on it. Don't touch any components on the CPU card or other cards while the PC is on.
- Disconnect power before making any configuration changes. The sudden rush of power as you connect a jumper or install a card may damage sensitive electronic components.

Content

Chapter 1

General Information

1.1 Introduction

The SPC-800 V2 is a pole-mounted panel PC designed for flexible industrial use. It supports extension units and various panel configurations, and is compatible with CP 40 (Rittal) and CS-480 (Bernstein) mounting standards. Powered by an Intel® Raptor Lake-U processor, it delivers strong graphical performance for field IoT applications. Its silicone-free, IP65-rated enclosure ensures full protection against dust and water, while an I/O cover keeps cables hidden for a clean, easy installation.

- 15.6"/21.5" Full HD TFT LED LCD display
- Intel® Core™ i3-1315URE / i5-1345URE Processor
- 16:9 widescreen with P-CAP multi-touch control
- Enhanced touch screen for impact resistance
- Silicone-free enclosure with all-round IP65-rated protection
- Supports CP 40 (Rittal) and CS-480 B.Flex (Bernstein) mount standards
- Supports a wide range of operational panel configuration
- Optional front-facing USB ensures easy maintenance

1.2 Specifications

1.2.1 General

- **Cooling System:** Fanless design
- **Dimensions (W x H x D):**
  15.6": 400.74 x 331.76 x 185 mm (15.78 x 13.06 x 7.28 inch)
  21.5": 545.34 x 419.59 x 185 mm (21.47 x 16.52 x 7.28 inch)
- **Enclosure:**
  Front bezel: Die-cast aluminum alloy
  Rear housing: Die-cast aluminum alloy
  Front push button bracket : metal sheet
- **Weight (Net):**
  15.6": 6.5 kg (14.33 lb)
  21.5": 8.5 kg (18.74 lb)
- **Mounting:**
  Pole mount (Rittal CP40 & Bernstein CS-480)
  VESA mount (optional through VESA Kit)
- **Power Consumption:** 80W
- **Power Input:** 9 ~ 32 V_{DC}
- **OS Support:** Windows 11 LTSC

1.2.2 System

- **CPU:** Intel® Raptor Lake-U Series Processor
  Intel® Core™ i3-1315URE
  Intel® Core™ i5-1345URE
- **Memory:**
  2 x SO-DIMM DDR5 slot, max 64GB
  Default: 8GB DDR5 4800MHz RAM
- **LAN:** 2 x Intel I226LM controller 10M / 100M / 1000M / 2.5G
- **Expansion Slots:** 1 x M.2 2230 E-Key slot
- **Storage:** 1 x M.2 2242/2280 M-Key slot (SATA/NVMe PCIe x4)

- **I/O:**
  3 x USB 3.2
  1 x USB 2.0
  1 x Line-out
  1 x Mic-in
  1 x HDMI 1.4 (3840*2160/60Hz)
  1 x Display Port 1.4a (3840*2160/60Hz)
- **COM Port:**
  2 x RS-232

1.2.3 LCD Panel

	SPC-815	SPC-821
Display Type	Full HD TFT LED	Full HD TFT LED
Display Size	15.6"	21.5"
Max. Resolution	1920 x 1080	1920 x 1080
Max. Color	16.7M	16.7M
Luminance	400 cd/m^2	250 cd/m^2
Viewing Angle	170°(H)/130°(V)	178°(H)/178°(V)
Backlight Lifetime	50,000 hrs (min.)	50,000 hrs (min.)

1.2.4 Touchscreen

- **Type:** Projected capacitive (P-CAP)
- **Light Transmission:** ≥88%
- **Resolution:** 4096 x 4096 dots

1.2.5 Environment

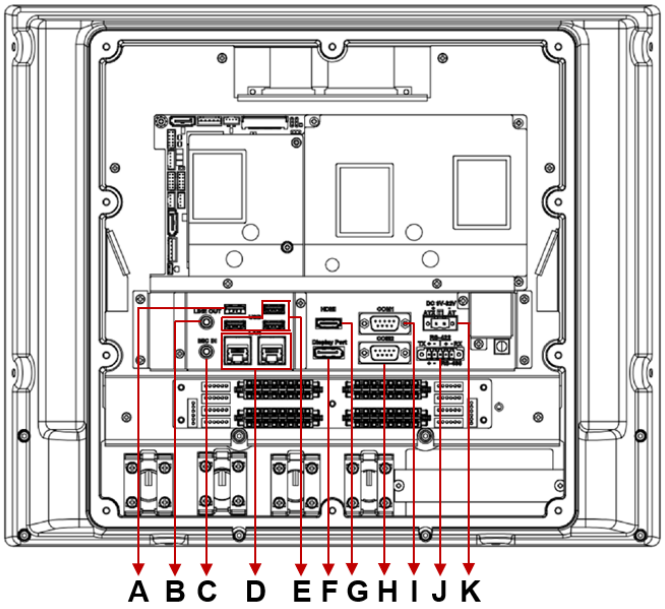
- **Operating Temperature:** 0 ~ 55 °C (32 ~ 131 °F)
- **Storage Temperature:** -20 ~ 60 °C (-4 ~ 140 °F)
- **Humidity:** 95% RH @ 40 °C/104 °F, non-condensing (tested for 48 hrs)
- **Ingress Protection:** All-round IP65 rating

1.2.6 EMC and Safety

- **EMC:** CE, FCC Class A
- **Safety:** UL, CCC

1.2.7 External I/O

The arrangement of I/O ports is shown below.

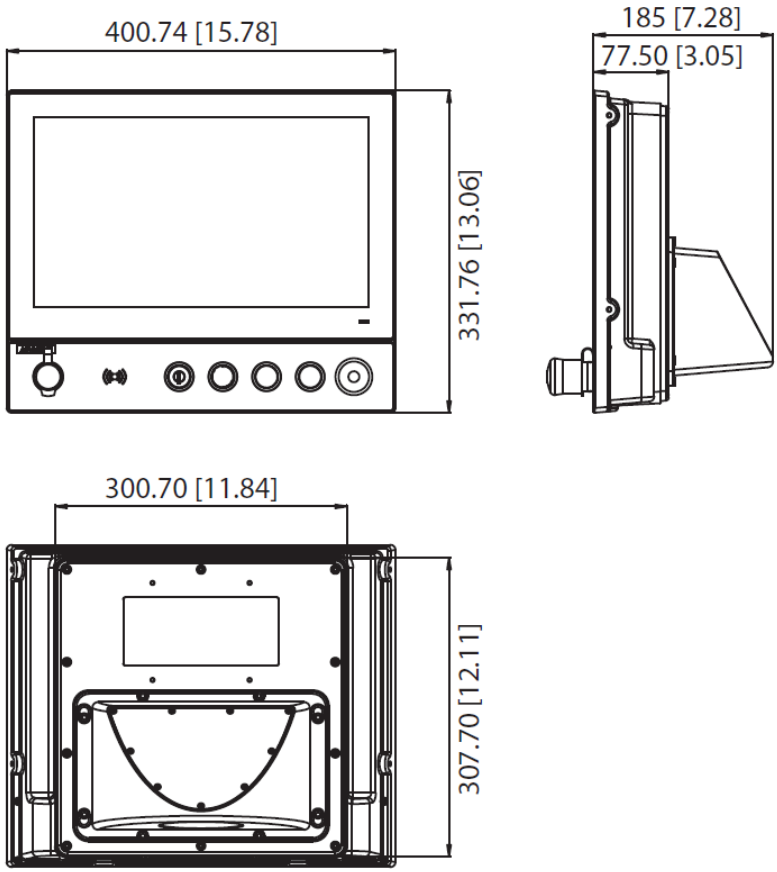


A.	USB 2.0	G.	HDMI 1.4
B.	Line-out	H	COM2 (RS-232)
C.	Mic-in	I.	COM1 (RS-232)
D.	2 x 2.5G LAN	J.	COM3 (RS-422/485)
E.	3 x USB 3.2	K.	Power connector
F.	Display Port 1.4a		

1.3 Dimensions

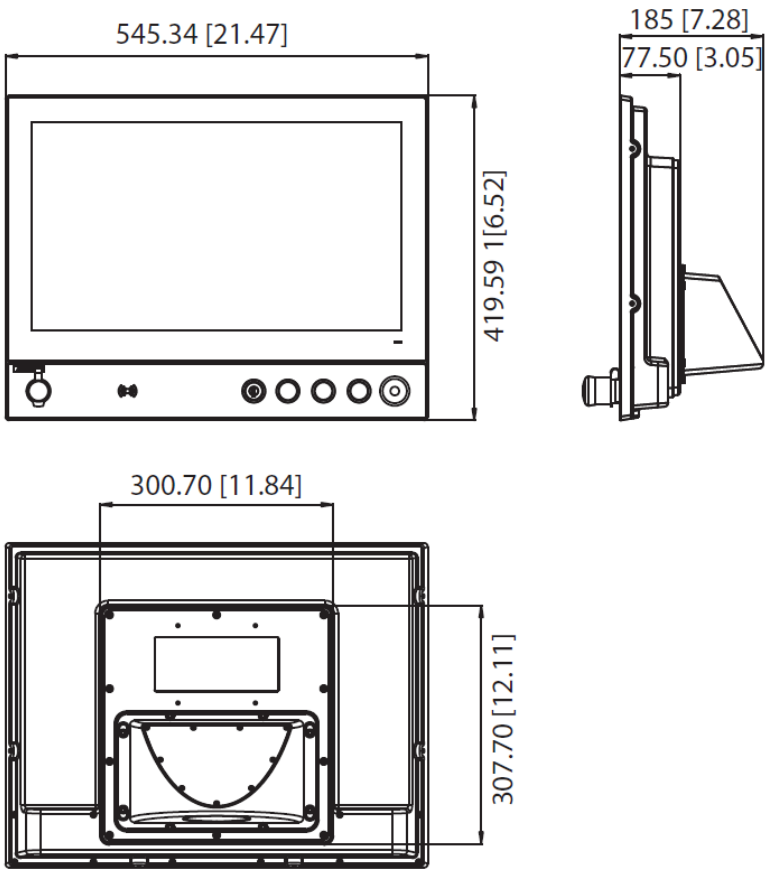
1.3.1 SPC-815

- **Dimensions (W x H x D):**
  400.74 x 331.76 x 185 mm (15.78 x 13.06 x 7.28 inch)



1.3.2 SPC-821

- **Dimensions (W x H x D):**
  545.34 x 419.59 x 185 mm (21.47 x 16.52 x 7.28 inch)



Chapter 2

System Setup

2.1 Transport and Unpacking

2.1.1 Transport

When accepting a delivery, please check the packaging for visible transport damage and check the delivery for completeness by comparing it with your order. If you notice any shipping damage or inconsistencies between the contents and your order, please inform the responsible delivery service immediately.

During transportation, the SPC should be protected from excessive mechanical stress. If the SPC is transported or stored without packaging, shocks, vibrations, pressure and moisture may impact the unprotected unit. A damaged packaging indicates that ambient conditions have already had a massive impact on the device. Therefore, please use the original packaging during transportation and storage.

If the SPC is transported in cold weather or is exposed to extreme variations in temperature, make sure that moisture (condensation) does not build up on or inside the device. Moisture can result in short-circuits in electrical circuits and damage the device. To avoid that, please store the SPC in a dry place and bring the SPC to room temperature before starting it up. If condensation occurs, a delay time of approximately 12 hours must be allowed to make sure the SPC is completely dry before the SPC is switched on.

2.1.2 Unpacking and Setup

Follow these steps to setup the SPC-815/821 V2 device:

1. Unbox the SPC-815/821 V2 panel computer.
2. Check the packing list described below to make sure all items have been included.
   - 1 x I/O cover
   - 1 x Plug-in block
   - 1 x Grounding cable
   - 1 x Accessory kit for pole mounting
3. Remove the temporary plastic I/O cover from the rear panel of the SPC by unscrewing the four securing screws.
4. Connect all the required peripheral cables (e.g., COM and USB). Then, connect the power supply to the terminal block according to the wiring diagram provided.

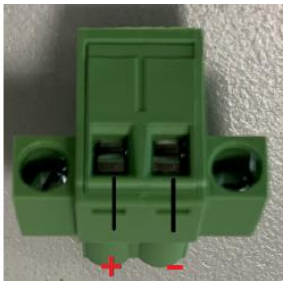
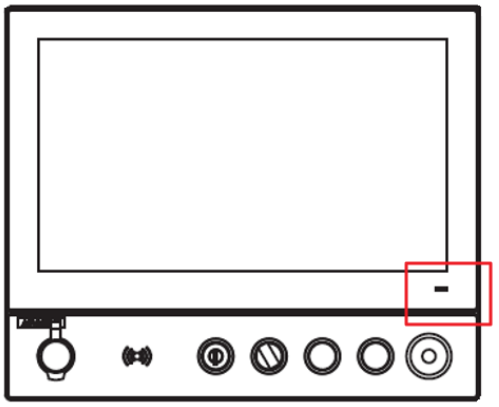


Figure 2.1 Power Connector and Power Lines

Warning! *The system may get damaged when the power is turned on and the power source is not connected to the correct pins.*
Le système peut être endommagé lorsque l'alimentation est allumée et que la source d'alimentation n'est pas connectée aux broches appropriées.

5. Connect the power lines to the system power receptor using the terminal block suitable for 16 AWG min. Apply a torque value of 4.5 lb-in min. Ensure the use of copper conductors only, and the installation must be performed by a skilled person.
6. Power on the system. The power LED turns to blue.



LED Indicator:

Off - “dark”

ON - “blue”

Standby - “orange”

Figure 2.2 Power LED

7. Follow the mounting procedure outlined in the following sections to install the device.

2.2 Mounting the SPC-800

This section explains how to mount the panel computer using either a pole mount or a VESA mount. The SPC-815 and SPC-821 share an identical design and use the same components for both pendant and pedestal mounting.
VESA mounting is optional. The panel computer includes standard 100 x 100 mm VESA-compliant mounting holes, providing compatibility with wall mounts and other accessories.

Warning!

Make sure that fasteners are adequately dimensioned during installation. Make sure to consider the weight of the device and the forces acting on the device when dimensioning.
Inadequately dimensioned fasteners or insufficient locking may cause the device to fall - serious physical injury may result.
The device must be mounted securely.
Assurez-vous que les éléments de fixation sont correctement dimensionnés lors de l’installation. Veillez à prendre en compte le poids de l’appareil ainsi que les forces exercées sur celui-ci lors du dimensionnement.
Des fixations sous-dimensionnées ou un verrouillage insuffisant peuvent entraîner la chute de l’appareil – un risque de blessure grave peut en résulter.
L’appareil doit être monté de manière sécurisée.

2.2.1 Pole Mount

The panel computer can be installed on a vertical pole using the base IO cover. This mounting method is ideal for pendant or pedestal installations where floor or wall space is limited. The pole itself is not included and must be purchased separately. Follow the instructions below to ensure a secure and stable installation.

1. **Remove the I/O Cover Plate:**
   Loosen and remove the nine M3 screws from the I/O cover plate. Set the plate aside for reassembly later.

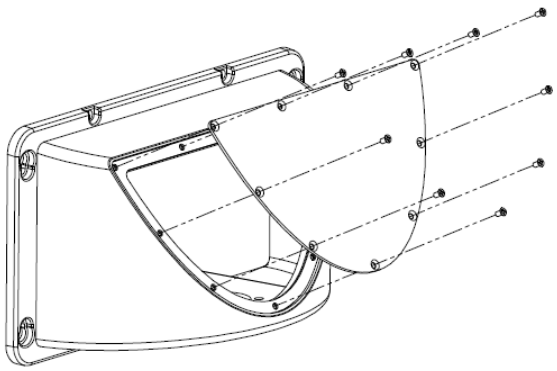


Figure 2.3 I/O Cover Plate Removal

2. **Attach the I/O Cover to the Pole Interface:**
   Align the I/O cover with the pole mount interface and secure it using four M5 screws. Make sure the orientation is correct before tightening the screws.

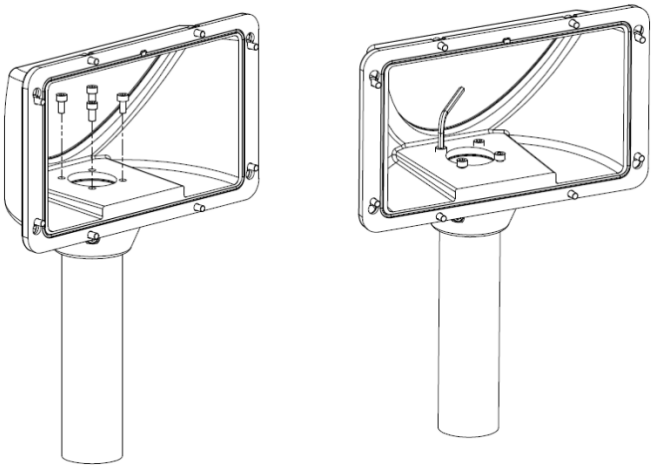


Figure 2.4 Securing I/O Cover onto Pole

3. **Mount the I/O Cover to the Rear Panel:**
   Position the I/O cover (now attached to the pole) onto the rear panel of the device. Use eight M5 screws to fasten it securely. Tighten the screws evenly to ensure proper fit.

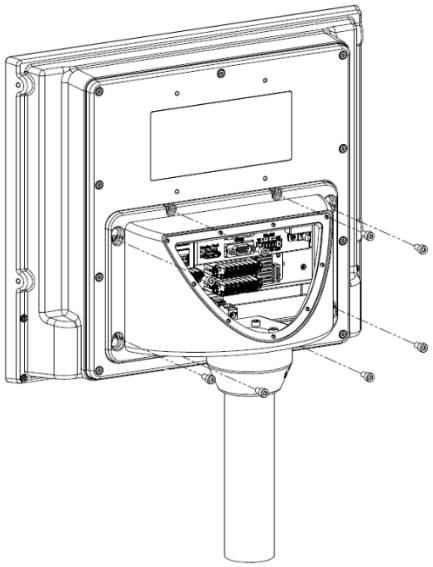


Figure 2.5 Installing I/O Cover

4. **Reattach the I/O Cover Plate:**
   Place the cover plate back onto the I/O cover and fasten it with the nine M3 screws.

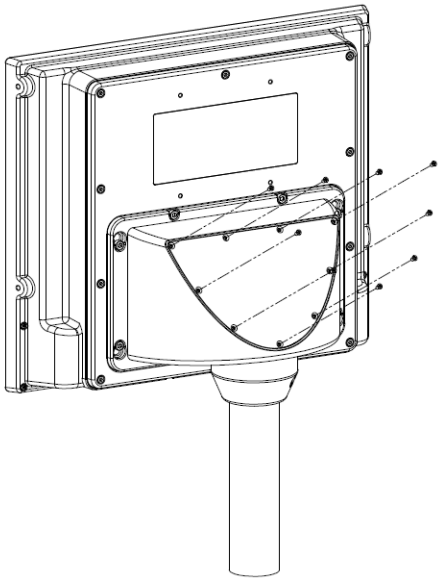
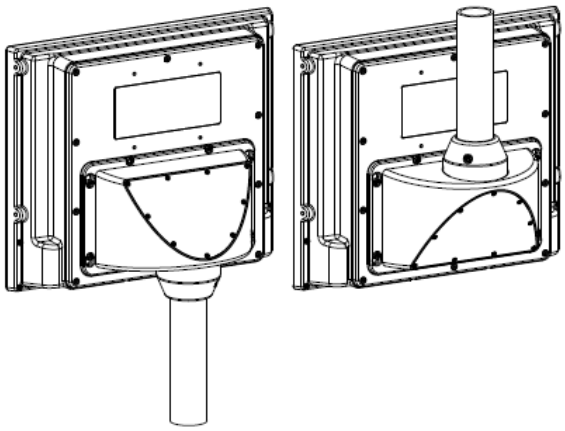


Figure 2.6 Re-installing I/O Cover Plate

NOTE! *This pole-mounted configuration is suitable for both pedestal (floor-standing) and pendant (overhead/suspended) installations. Ensure the mounting structure - whether from above or below - is capable of supporting the device's weight and orientation.*



2.2.2 VESA Mount

The rear panel of the SPC-815/821 V2 features four VESA-compliant mounting holes (100 x 100 mm pattern). To install the device using this method, attach the VESA mount kit to the rear panel using four M4 screws, as illustrated in the diagram below.

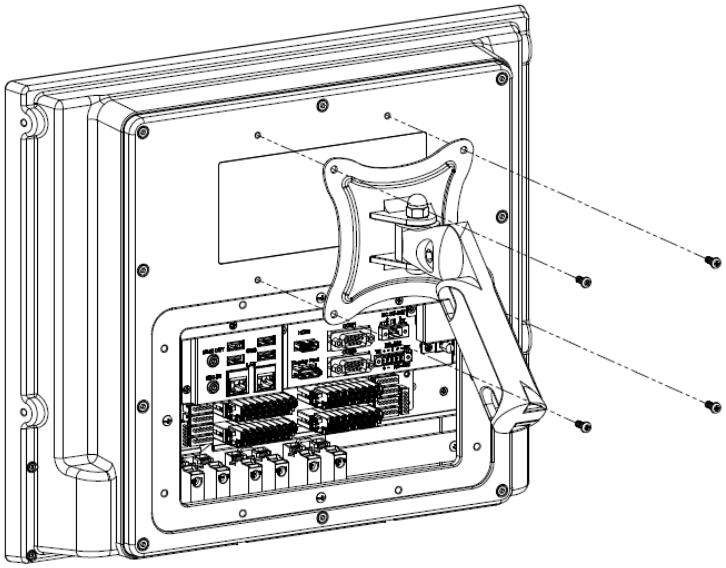


Figure 2.7 VESA Mounting

NOTE! *The cable entry cover also supports VESA mounting. For instructions on how to mount the device using the cable entry cover, refer to the following section.*

2.3 Cable Entry Installation

The table below lists various cable entry systems and cable grommets available for selection based on your application requirements.

Product Specifications	IP Rating	Picture
Split cable entry system KEL-ER-E5 for routing and sealing up to 5 cables with connector (cable diameters from 1 to 16 mm)	IP65 IP66	
Split cable entry system KEL-ER 10 for routing and sealing cables with connectors, (cable diameters from 1 to 16 mm and 16 to 35 mm)	IP65 IP66	
Split cable entry system KEL-ER 24 for routing and sealing cables with connectors (cable diameters from 1 to 16 mm and 16 to 35 mm)	IP65 IP66	

Product Specifications	Picture
icotek round cable13-14 mm 41313 KT13 bk	
icotek round cable 9-10 mm 41309 KT 9 bk	
icotek round cable 7-8 mm 41307 KT 7 bk	
icotek round cable 6-7 mm 41306 KT 6 bk	
icotek round cable 5-6 mm 41305 KT 5 bk	

To install the cable entry system, follow the instructions below.

1. Feed the cables through the opening in the cable entry cover.
2. Align the cable entry cover with the rear panel and fasten it using eight M5 screws.

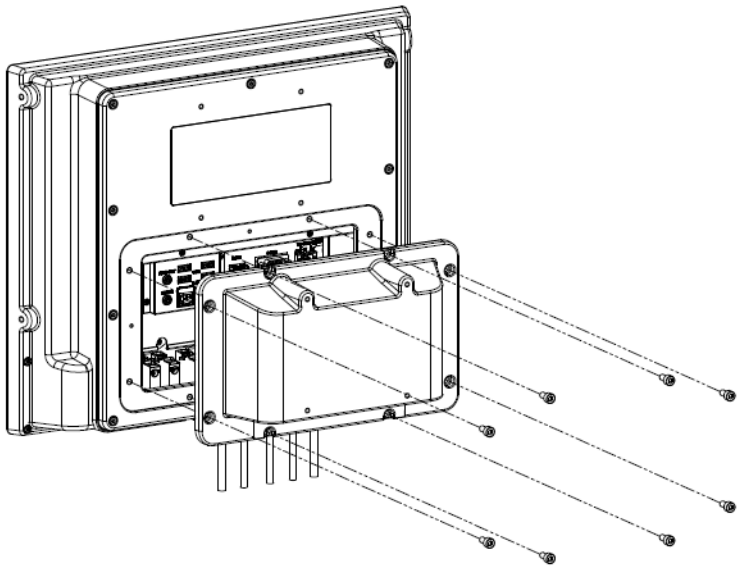


Figure 2.8 Cable Entry Cover Installation

3. Attach the cable entry and fasten it with two screws. Place the cables into the cable entry grommets, ensuring they are properly seated.

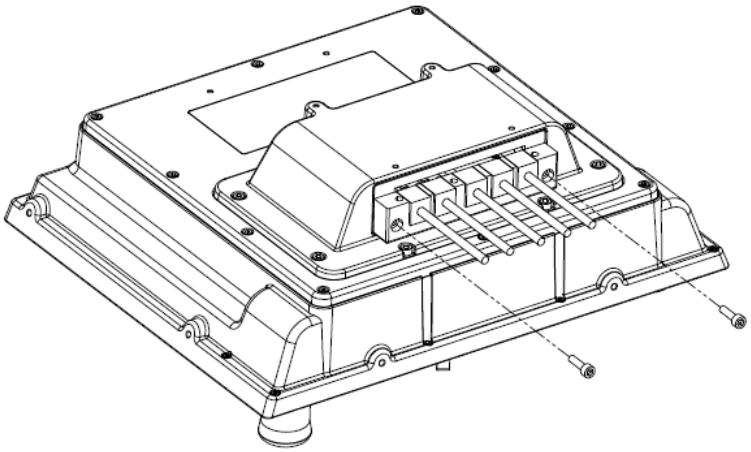


Figure 2.9 Attaching the Cable Entry

4. Fasten the three screws to secure the cable entry grommets in place.

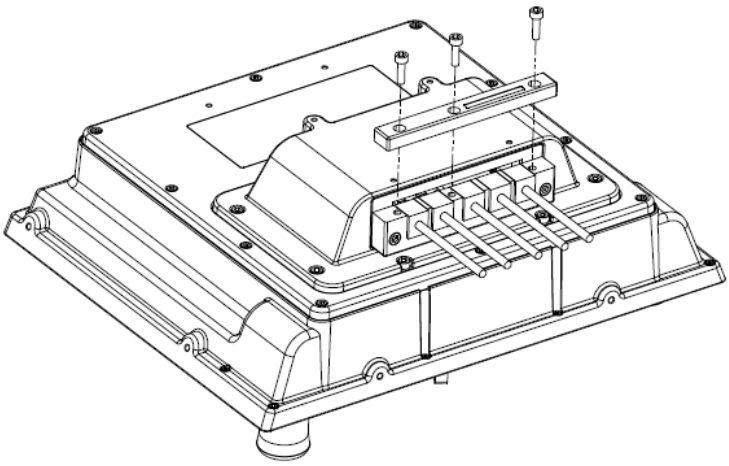


Figure 2.10 Securing the Cable Entry Grommets

5. To mount the panel computer using the VESA interface, align the VESA mounting holes on the cable entry cover with the corresponding holes on the mounting bracket. Secure the device using four M4 screws, ensuring the device is firmly attached.

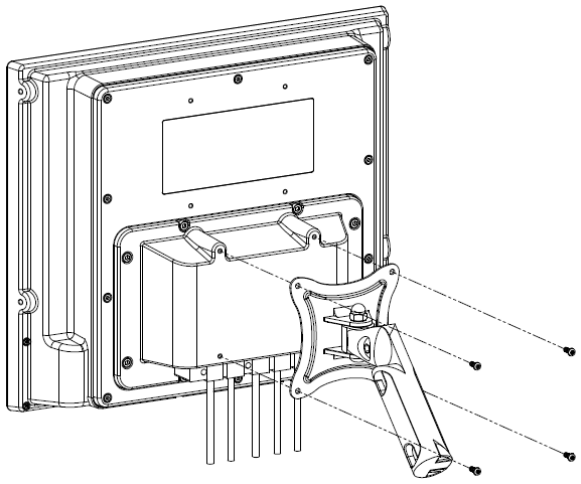


Figure 2.11 VESA Mounting Using the Cable Entry Cover

2.4 System Configuration

While the initial system setup is performed by the dealer or system integrator before delivery, users may need to access the system's interior to install or replace modules such as M.2 SSDs or Wi-Fi modules.

2.4.1 Rear Cover and I/O Bracket Removal

To access the system for module installation or settings modifications, you must first remove the rear and I/O brackets.

1. Remove the rear cover: Loosen and remove the 10 screws. Gently lift the rear cover and set it aside.

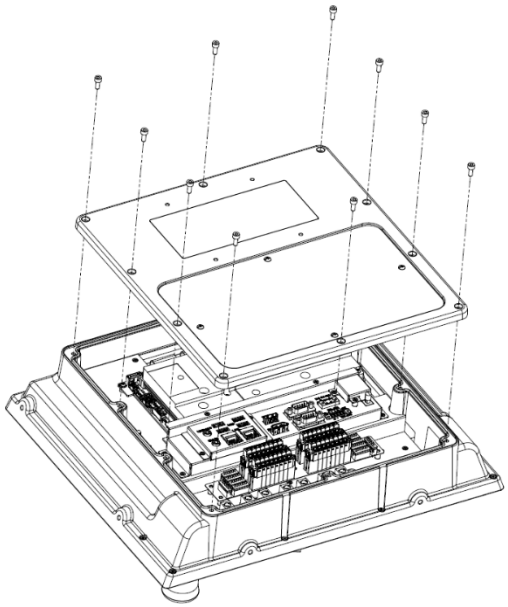


Figure 2.12 Rear Cover Removal

2. Remove the I/O bracket: Unscrew the 6 screws and remove the bracket.

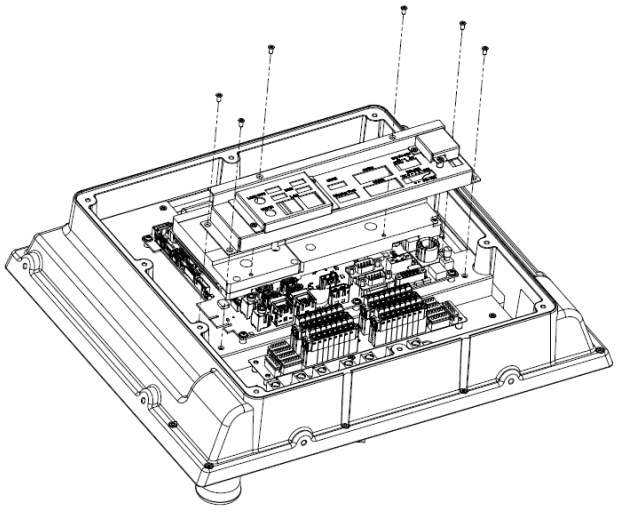


Figure 2.13 I/O Bracket Removal

2.4.2 Installation of M.2 SSD

1. Remove the rear cover and the I/O bracket. See Section 2.4.1.
2. Remove the M.2 heatsink: Remove the four screws securing the M.2 heatsink, then carefully take the heatsink off.

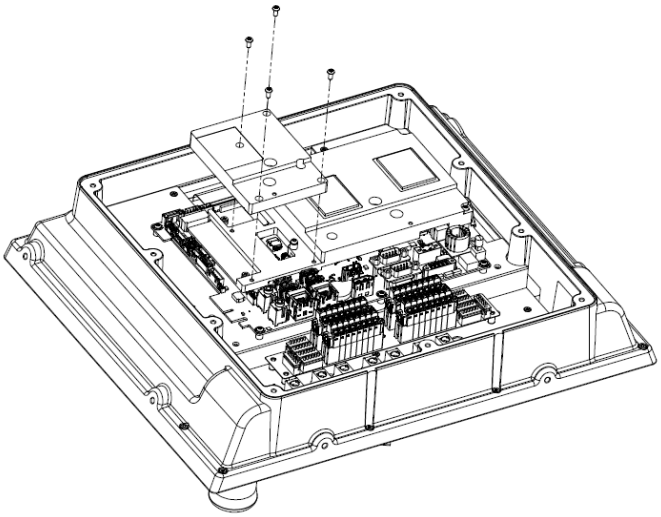


Figure 2.14 M.2 Heatsink Removal

3. Attach thermal pad to the M.2 slot: Place a thermal pad onto the base where the M.2 SSD will be installed to ensure optimal heat dissipation.

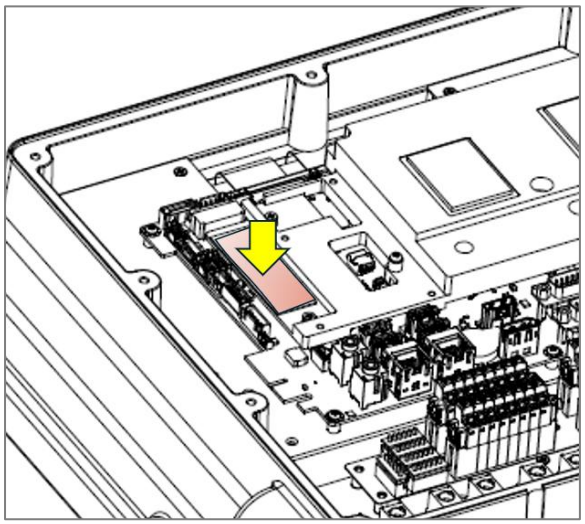


Figure 2.15 Attaching Thermal Pad onto the Base

4. Install the M.2 SSD: Insert the M.2 SSD into the M.2 M-key slot at an angle and gently press down until it is fully seated. Secure the SSD in place with the provided screw.

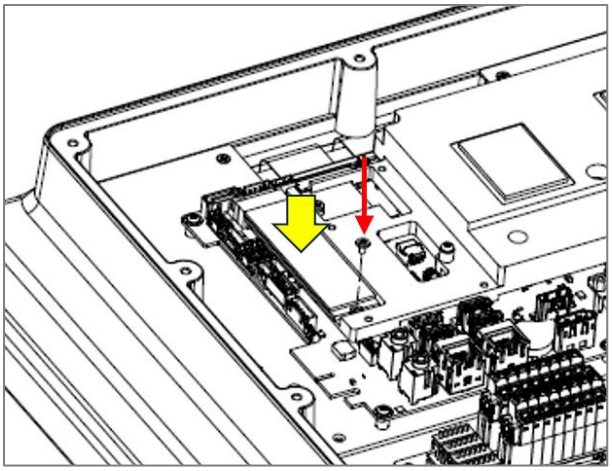


Figure 2.16 Installing M.2 SSD

5. Apply thermal pad to the M.2 SSD: Attach a thermal pad onto the top of the M.2 SSD module, ensuring full coverage for effective heat transfer.

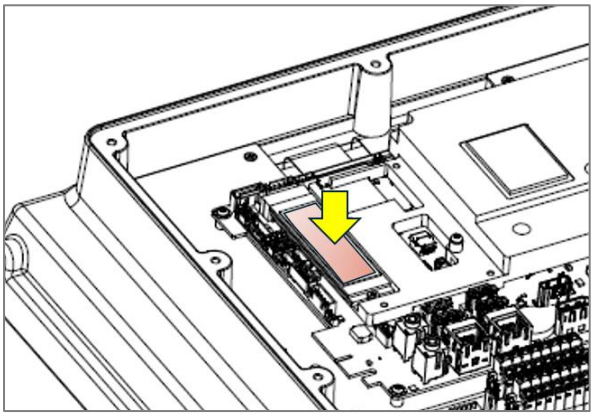


Figure 2.17 Applying Thermal Pad onto SSD

6. Reinstall the M.2 heatsink: Reattach the M.2 heatsink that was removed earlier, securing it in place with the screws you previously removed.

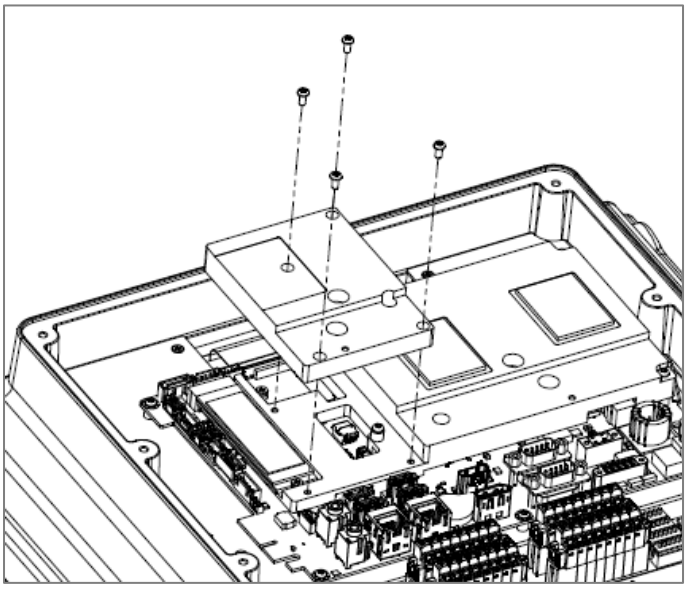


Figure 2.18 Reinstalling M.2 Heatsink

7. Attach a thermal pad onto the M.2 heatsink.

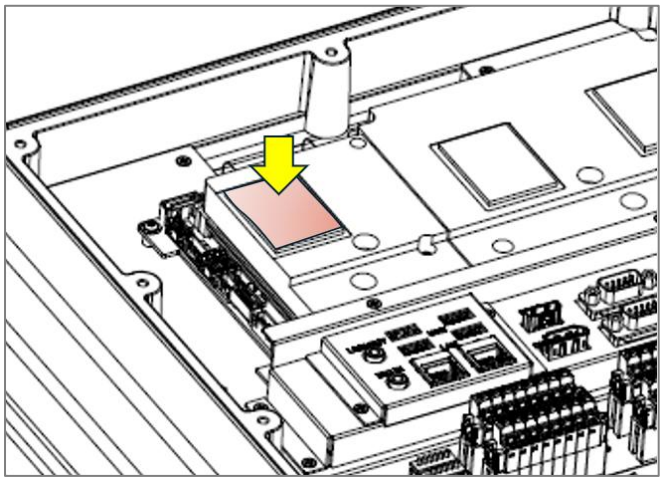


Figure 2.19 Attaching Thermal Pad onto M.2 Heatsink

8. Reinstall the I/O bracket and the rear cover.

2.4.3 Installation of Wi-Fi Module

1. Remove the rear cover and the I/O bracket. See Section 2.4.1.
2. Remove the M.2 heatsink: Remove the four screws securing the M.2 heatsink, then carefully take the heatsink off.

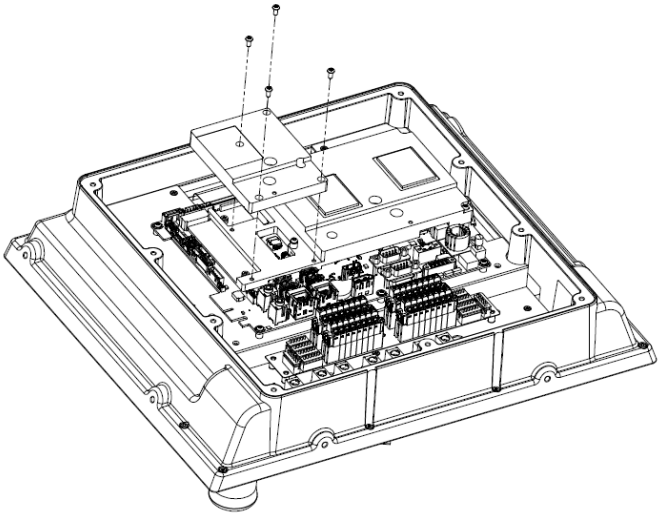


Figure 2.20 M.2 Heatsink Removal

3. Install the Wi-Fi module: Insert the Wi-Fi module into the M.2 E-key slot at an angle and gently press down until it is fully seated. Secure the SSD in place with the provided screw.
4. Attach thermal pad to the Wi-Fi module: Attach a thermal pad onto the top of the Wi-Fi module, ensuring full coverage for effective heat transfer.

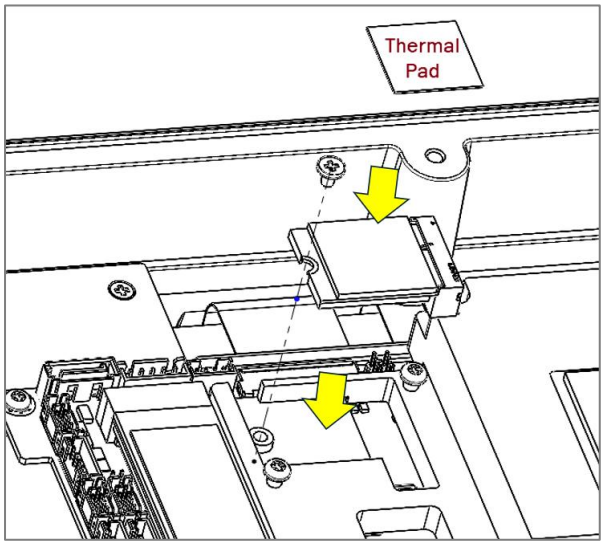
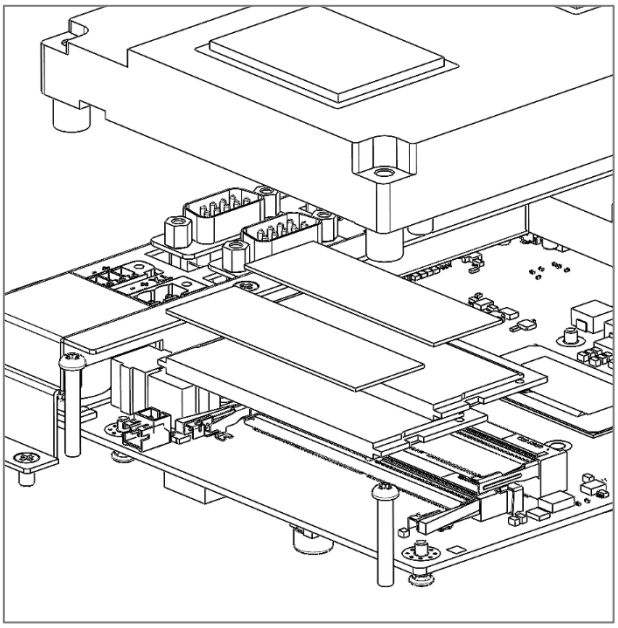


Figure 2.21 Installing Wi-Fi Module

5. Reinstall the M.2 heatsink, the I/O bracket and the rear cover.

2.4.4 Installing DDR5 Memory Modules

The following diagram shows the locations of the DDR5 memory module.



Caution!

The removal of DDR5 memory modules involves a complex procedure. It is recommended that users utilize the manufacturer's CTOS (Configure-To-Order Service) for installation to avoid damage or improper handling.
La dépose des modules de mémoire DDR5 est une procédure complexe. Il est recommandé aux utilisateurs de faire appel au service CTOS (Configure-To-Order Service) du fabricant pour l'installation, afin d'éviter tout dommage ou une mauvaise manipulation.

2.5 Operational Panel

The following examples depict the SPC-800 panel computer equipped with an operational panel. This configuration includes operator control extensions such as an emergency stop button, push buttons, a key selector, USB port and an RFID reader.

Multiple configuration options are available, as detailed in the table below.

For SPC-815	
Product Specifications	**Picture**
SPC-815-OPKA (without buttons and switches)	
SPC-815-OPKB (one emergency stop button, three push buttons, one key selector and one USB port)	
SPC-815-OPKC* (one emergency stop button, three push buttons, one key selector, one USB port and RFID reader) ** NRE for Local RED certification maybe needed*	
For SPC-821	
SPC-821-OPKA (without buttons and switches)	
SPC-821-OPKB (one emergency stop button, three push buttons, one key selector and one USB port)	
SPC-821-OPKC* (one emergency stop button, three push buttons, one key selector, one USB port and RFID reader) ** NRE for Local RED certification maybe needed*	

NOTE! *For customization of the operation panel, please contact Advantech's sales representatives.*

2.5.1 Terminal Board

The terminal board connects the control panel's push buttons to the main device. It supports up to five buttons and provides an organized way to wire and manage the button signals.

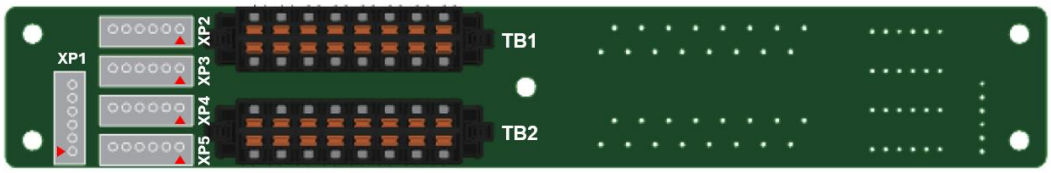
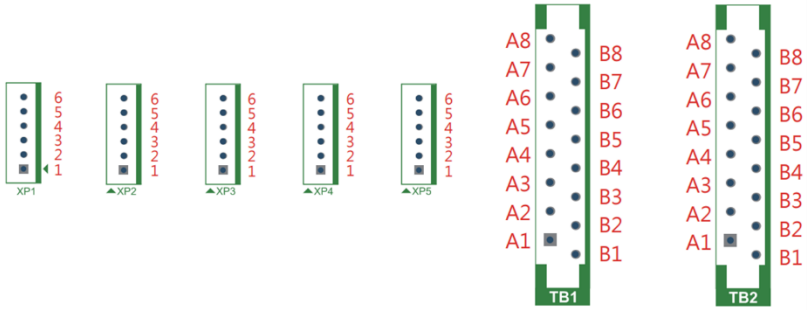


Figure 2.22 Terminal Board (SPC-TB-01)



TB1			
A1	XP3-5	B1	XP3-6
A2		B2	
A3	XP2-5	B3	XP2-6
A4	XP2-3	B4	XP2-4
A5	XP2-1	B5	XP2-2
A6	XP1-5	B6	XP1-6
A7	XP1-3	B7	XP1-4
A8	XP1-1	B8	XP1-2

TB2			
A1	XP3-3	B1	XP3-4
A2	XP3-1	B2	XP3-2
A3	XP4-5	B3	XP4-6
A4	XP4-3	B4	XP4-4
A5	XP4-1	B5	XP4-2
A6	XP5-5	B6	XP5-6
A7	XP5-3	B7	XP5-4
A8	XP5-1	B8	XP5-2

Figure 2.23 Terminal Board Pin Definitions

2.5.2 Operational Panel Installation

Follow the steps below to install the operational panel and terminal board onto the panel computer:

1. Align the operational panel with the screw holes on the rear panel of the panel computer, and secure it in place using M3 screws.

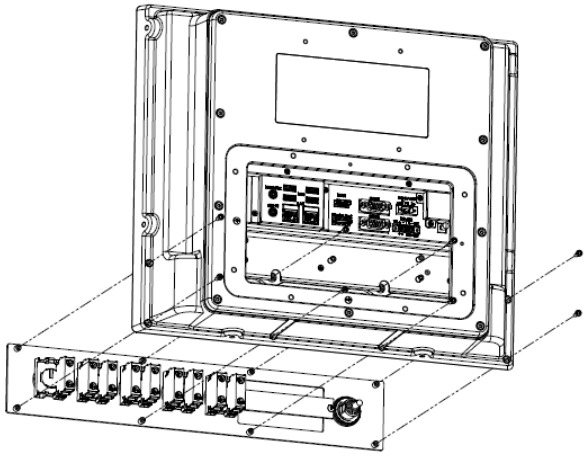


Figure 2.24 Installing Operation Panel

2. Attach the terminal board using five M3 screws. Ensure it is properly aligned and firmly fastened.

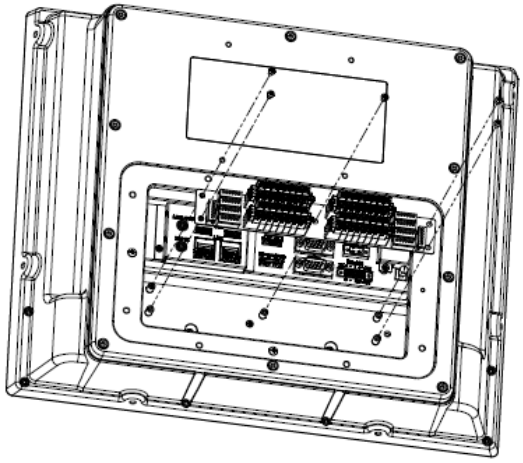


Figure 2.25 Installing Terminal Board

Chapter 3

Jumper & Connector

3.1 Jumper & Connectors

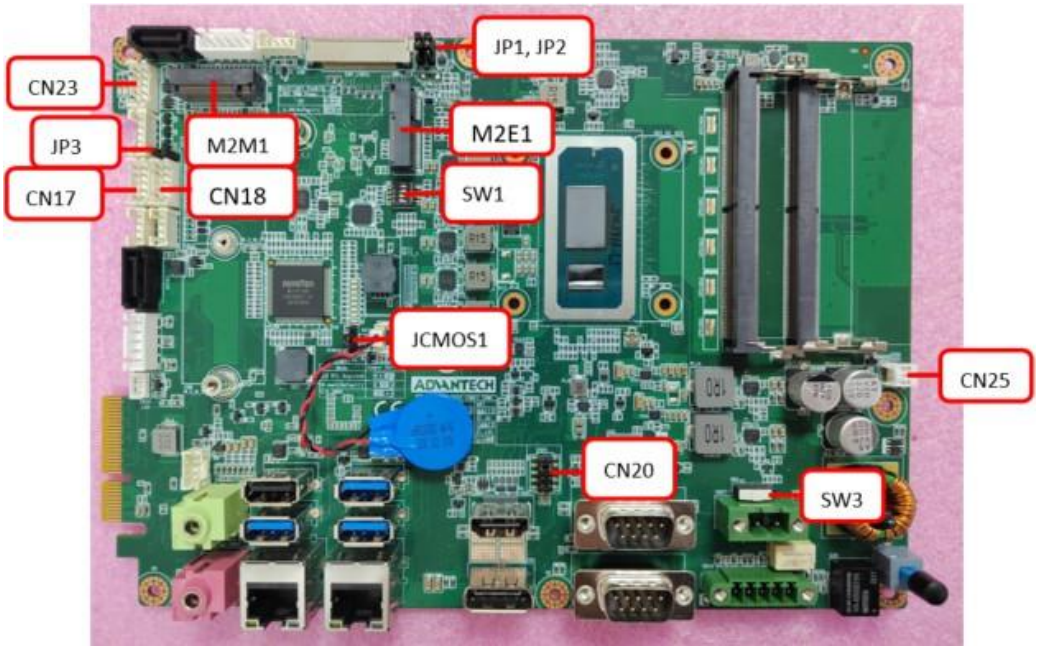
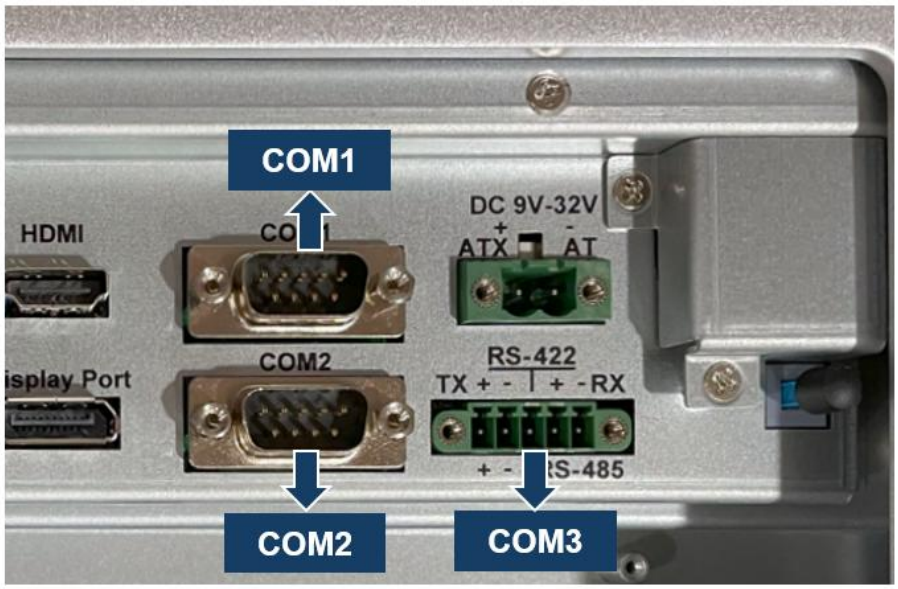


Figure 3.1 EAMB-7709 Front View

Table 3.1 : Jumper & 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

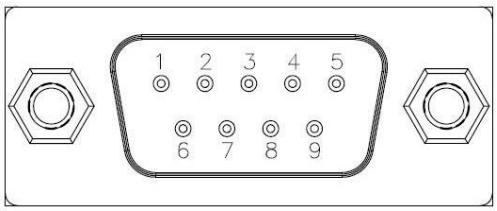
3.2 External COM Ports and Pin Definitions



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.

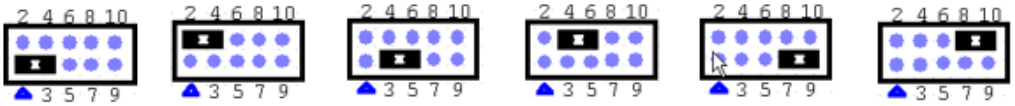
Table 3.2: External COM Ports and Pin Definitions

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 VDC (configurable via the BIOS Setup Utility).

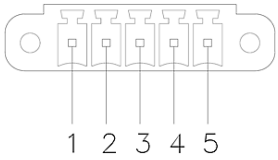
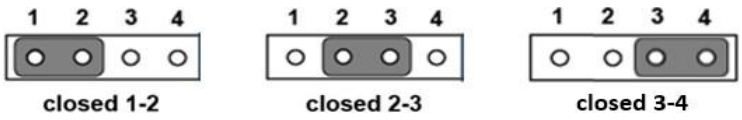


Table 3.4 : COM3					
COM3	Pin1	Pin2	Pin3	Pin4	Pin5
RS422	TX+	TX-	RX+	RX-	GND
RS485	D+	D-			GND

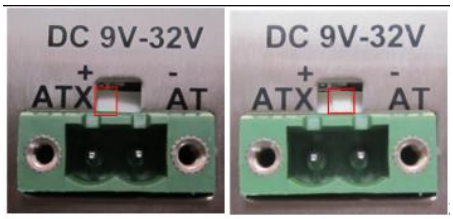
3.3 RTC Select

Table 3.5 : RTC Select	
JCMOS1	**Function**
1-2 pin	CLR RTC Register
2-3 pin	Normal (Default*)
3-4 pin	CLR CMOS



3.4 ATX/AT Select

Table 3.6 : ATX/AT Select	
SW3	**Function**
1-3 pin	ATX power (Default*)
2-3 pin	AT power



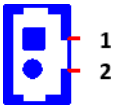
3.5 Touch Power Select

Table 3.7 : Touch Power Select	
JP3	**Function**
Open	Capacitive PCT
Closed	Resistive RES

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

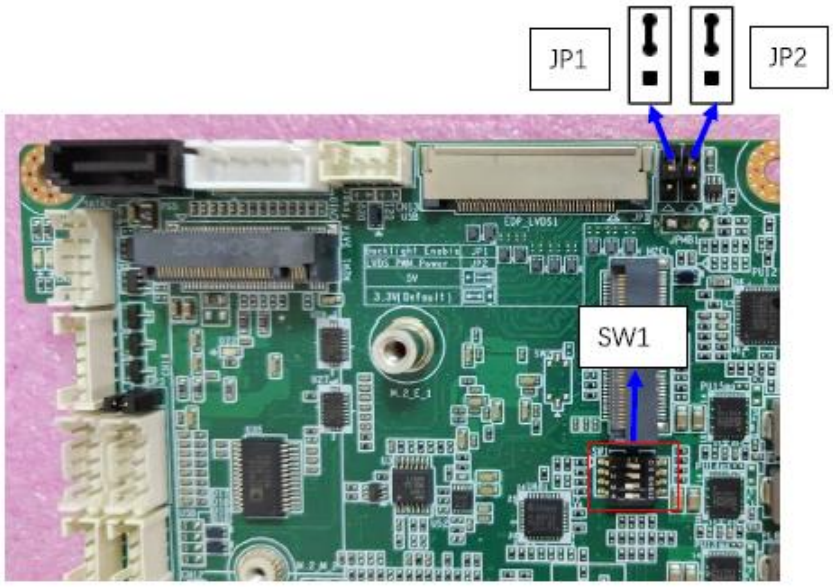
3.6 Power Button Connection

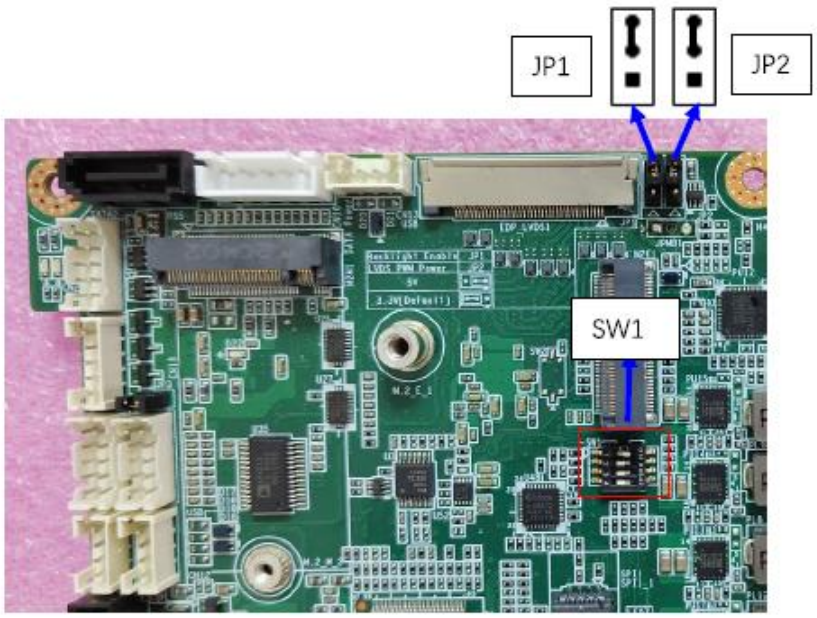
Table 3.8 : Power Button Connection	
CN25	**Function**
Power button	Can be used as an external extension cord switch



3.7 LVDS SW1 and Jumper Setting

Table 3.9 : LVDS SW1	
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



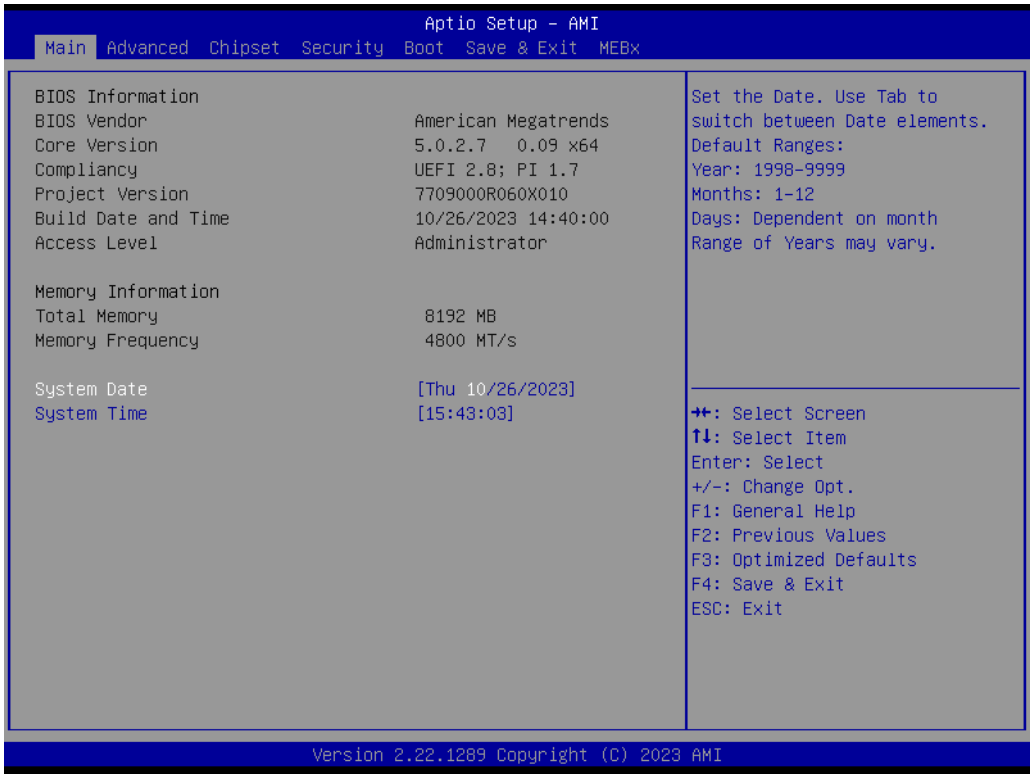


Chapter 4

BIOS Setup

4.1 BIOS Setup

With the AMI BIOS Setup program, users can modify the BIOS settings and control various system features. This chapter describes the basic navigation of the BIOS Setup Utility.



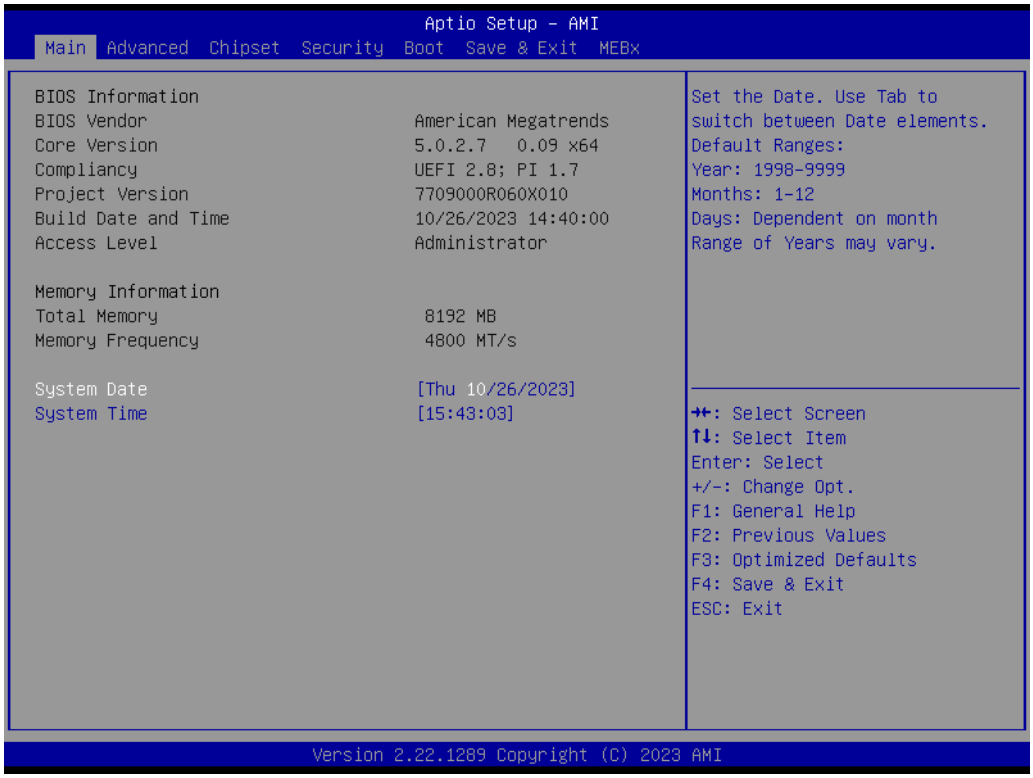
AMI's BIOS ROM has a built-in setup program that allows users to modify the basic system configuration. The setup information is stored in flash ROM to ensure it is retained when the system is powered off.

4.2 Entering Setup

Turn on the computer and check for the patch code. If there is a number assigned to the patch code, it means that the BIOS supports your CPU. If there is no number assigned to the patch code, contact an Advantech application engineer to obtain an up-to-date patch code file. This will ensure that the CPU status is valid. After ensuring that you have a number assigned to the patch code, press <DEL> to access the BIOS Setup Utility.

4.2.1 Main Setup

Upon entering the BIOS Setup Utility, users will be on the Main setup screen. At any point during the configuration, users can return to the Main setup screen by selecting the Main tab. There are two Main setup options, which are described in this section. The Main setup screen is shown below.



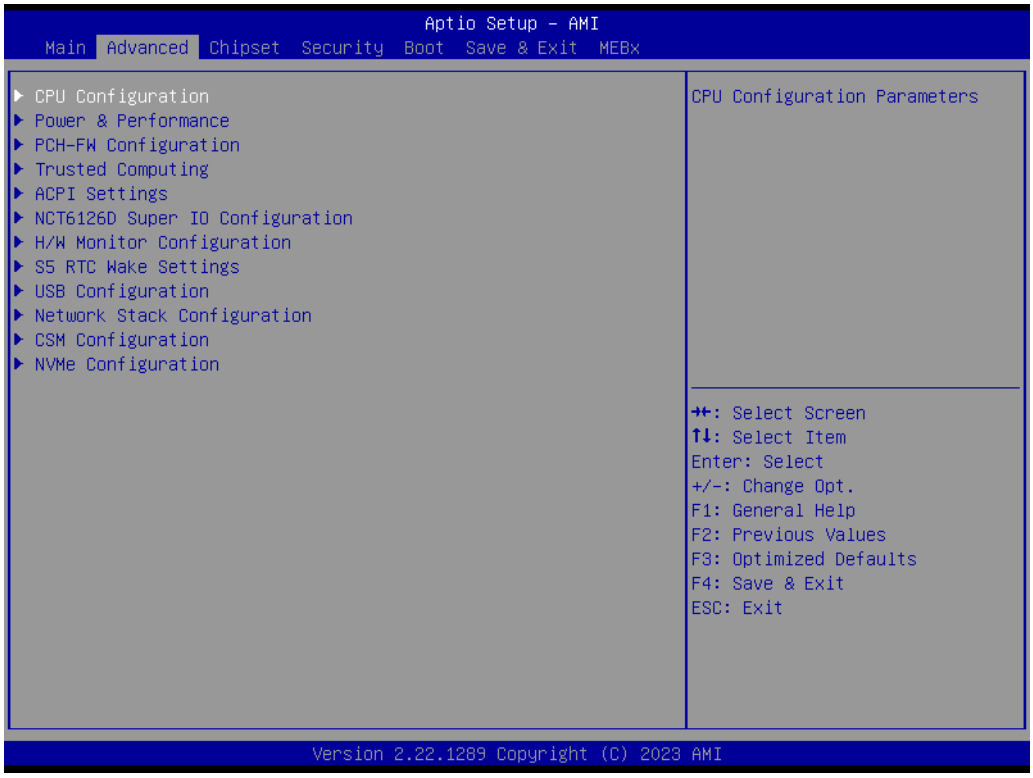
The Main BIOS setup screen has two main frames. The left frame displays all the options that can be configured. Grayed-out options cannot be configured, options in blue can. The right frame displays the key legend.
Above the key legend is an area reserved for a text message. When an option is selected in the left frame, it is highlighted in white. Often a text message will accompany it.

- **System Time/System Date**

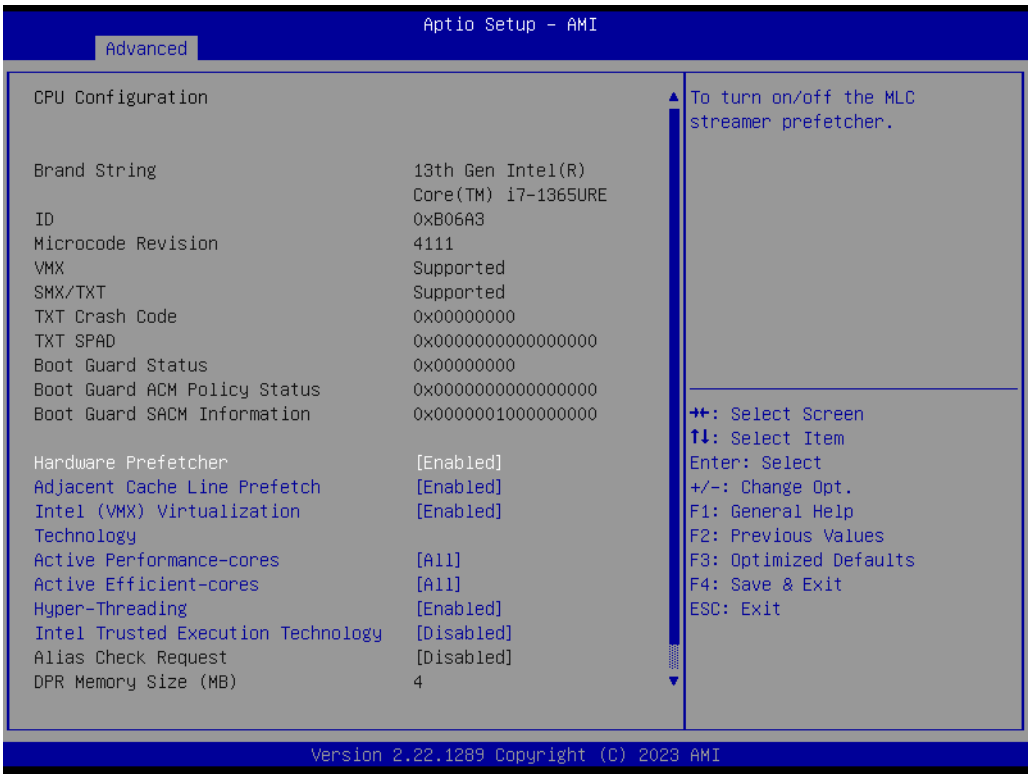
  Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time must be entered in HH:MM:SS format.

4.2.2 Advanced BIOS Features Setup

Select the Advanced tab from the SPC-815/821 V2 setup screen to enter the Advanced BIOS Setup screen. You can select any of the items in the left frame of the screen, such as ACPI Settings and hit <enter> to go to the sub menu for that item. You can display an Advanced BIOS Setup option by highlighting it using the <Arrow> keys. All Advanced BIOS Setup options are described in this section. The Advanced BIOS Setup screen is shown below. The sub menus are described on the following pages.



4.2.2.1 CPU Configuration



- **CPU Configuration**

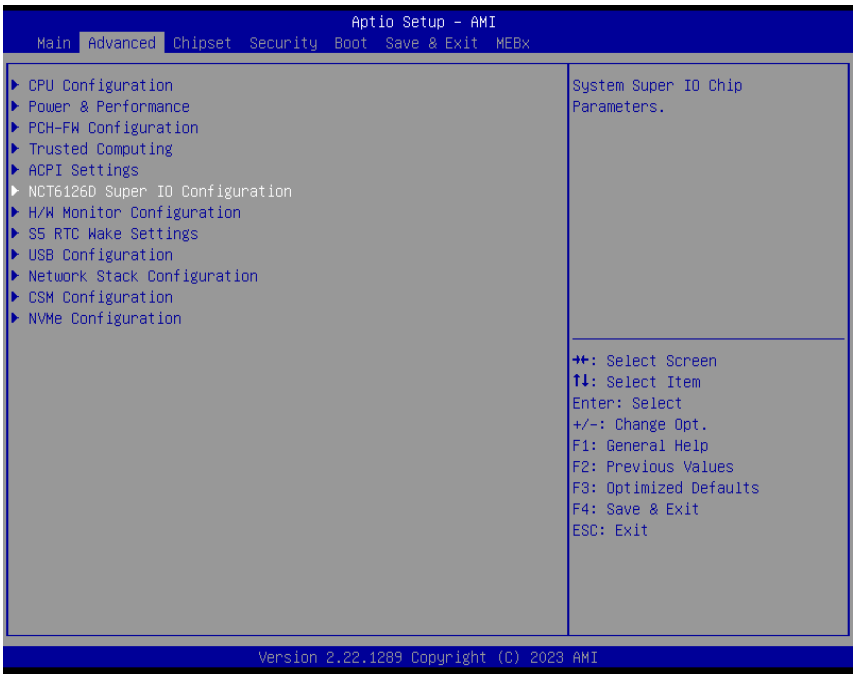
  This item allows users to view the CPU model and frequency.

- **Intel (VMX) Virtualization Technology**

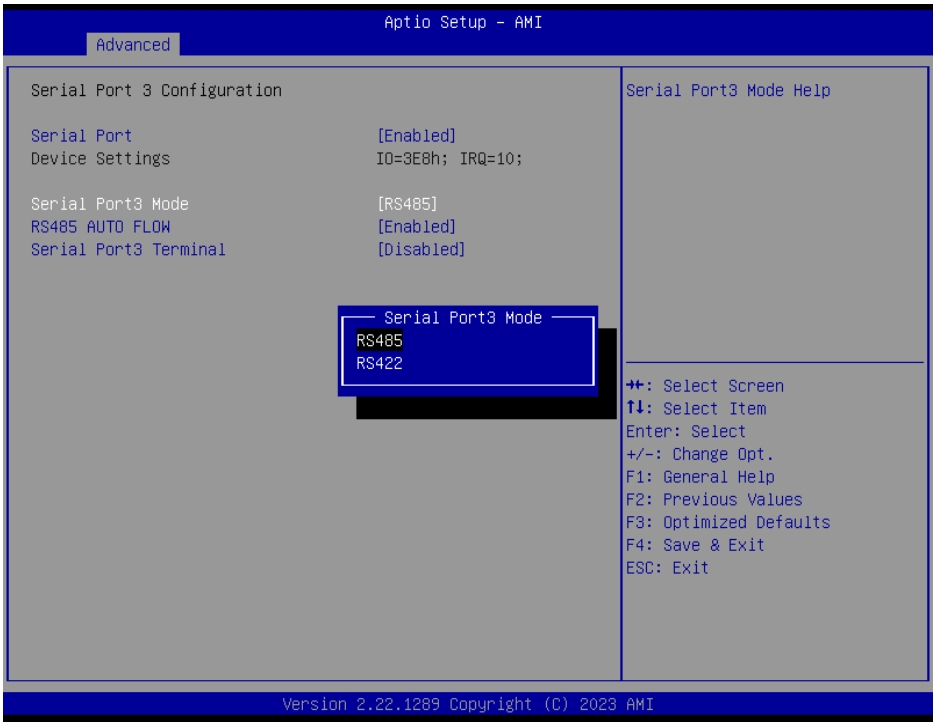
  When enabled, a VMX can utilize the additional hardware capabilities provided by Vanderpool Technology

4.2.3 COM3 Mode Selection (RS422/RS485)

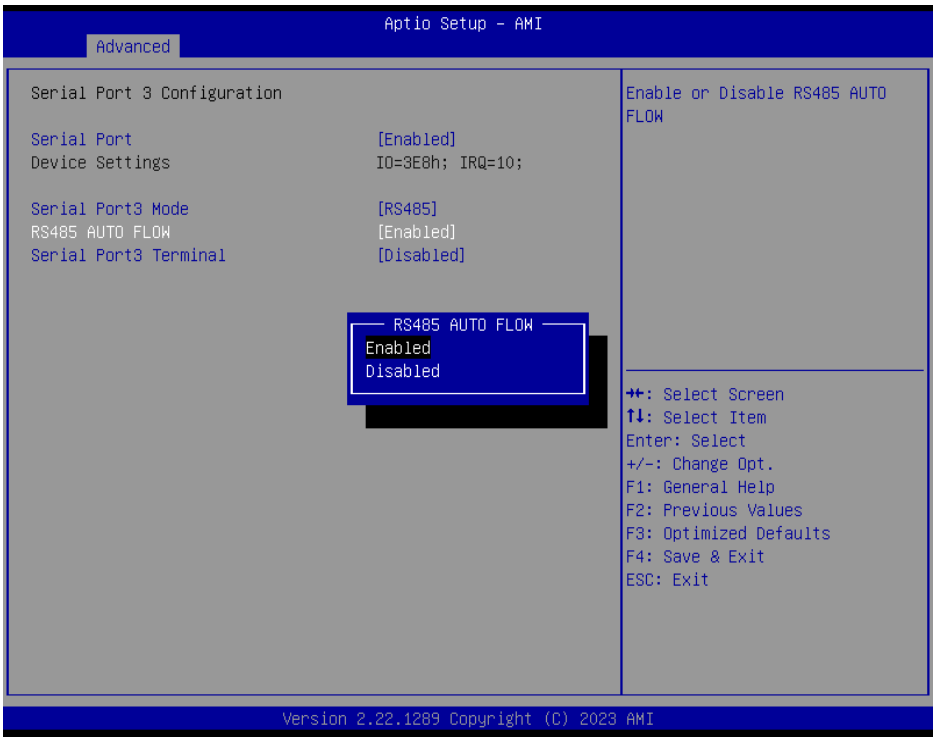
1. Select NCT6126D Super IO Configuration in the Advanced tab.



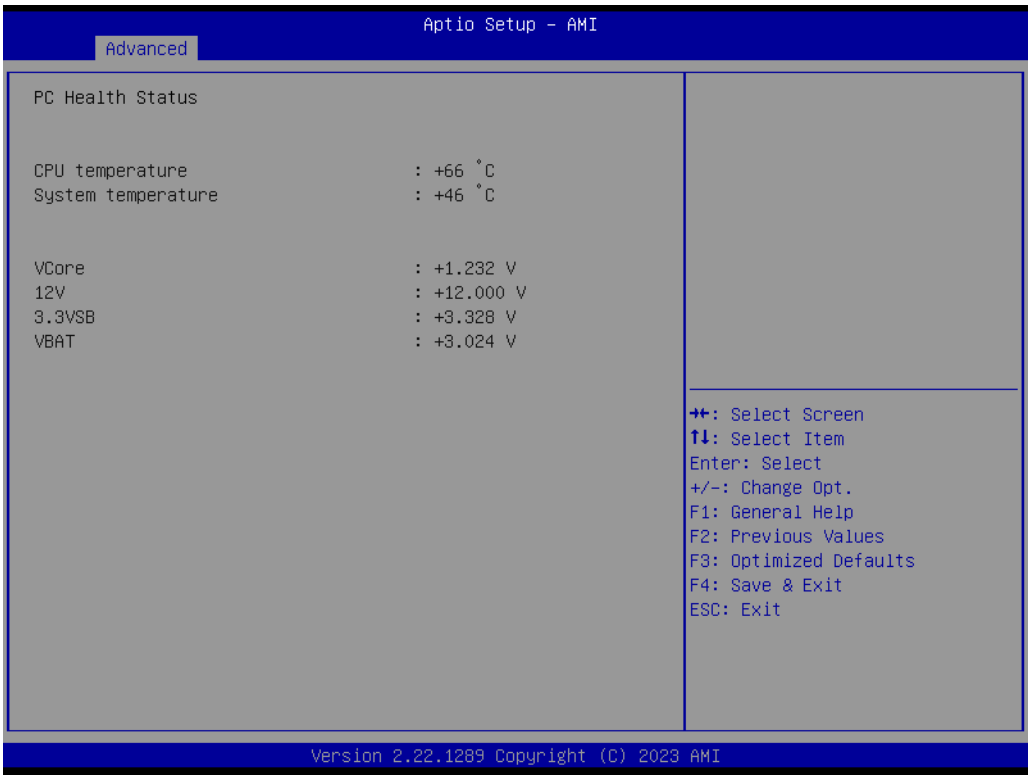
2. Select **Serial Port 3 Configuration** option setting (RS422/RS485).



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



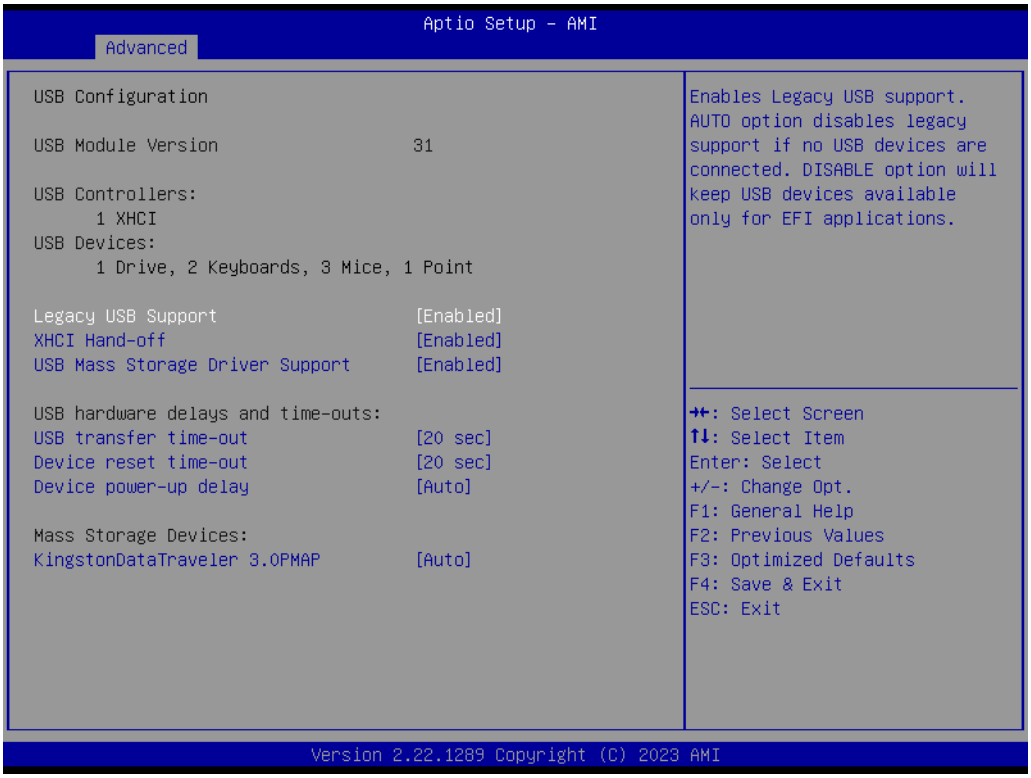
4.2.4 H/W Monitor Configuration



- **PC Health Status**

  This page displays all information about system temperature/voltage/current.

4.2.5 USB Configuration



- **XHCI Hand-off**

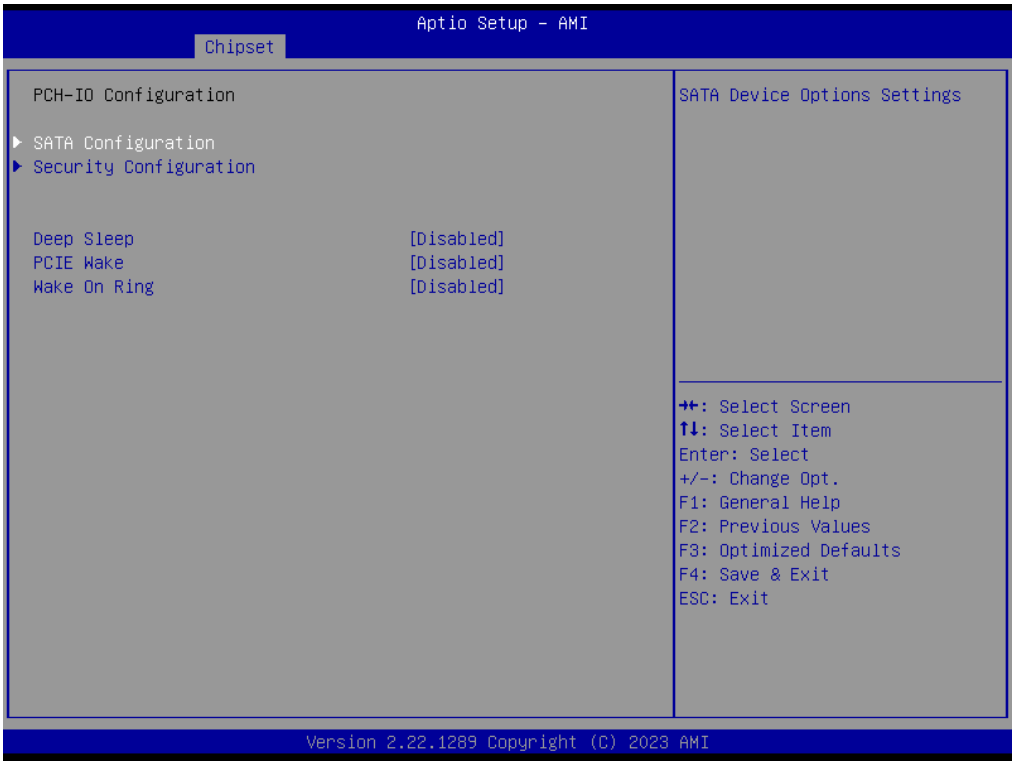
  This is a workaround of 0 Secs without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

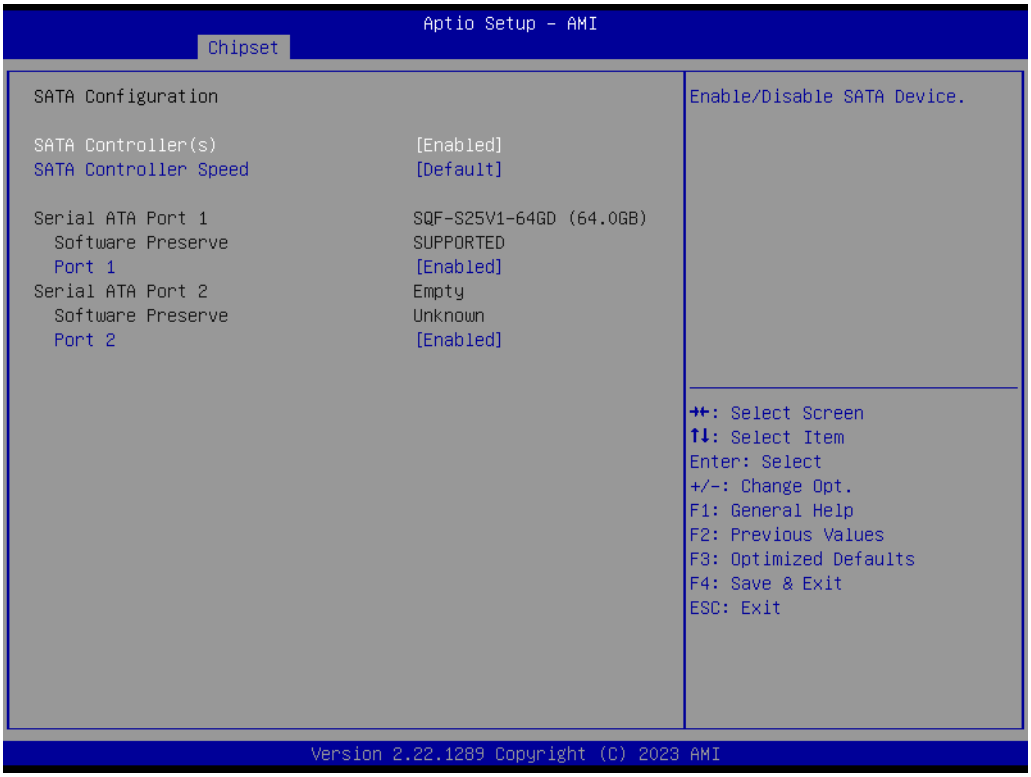
- **USB Mass Storage Driver Support**

  Enable/Disable USB Mass Storage Driver Support.

4.2.6 SATA Configuration

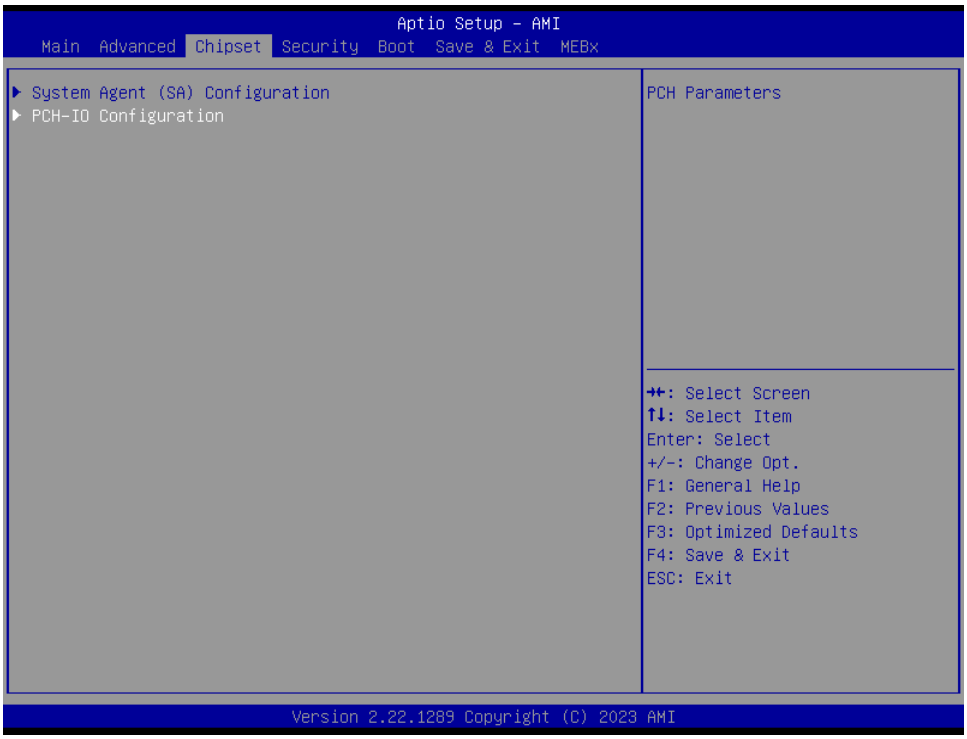
Check SATA information



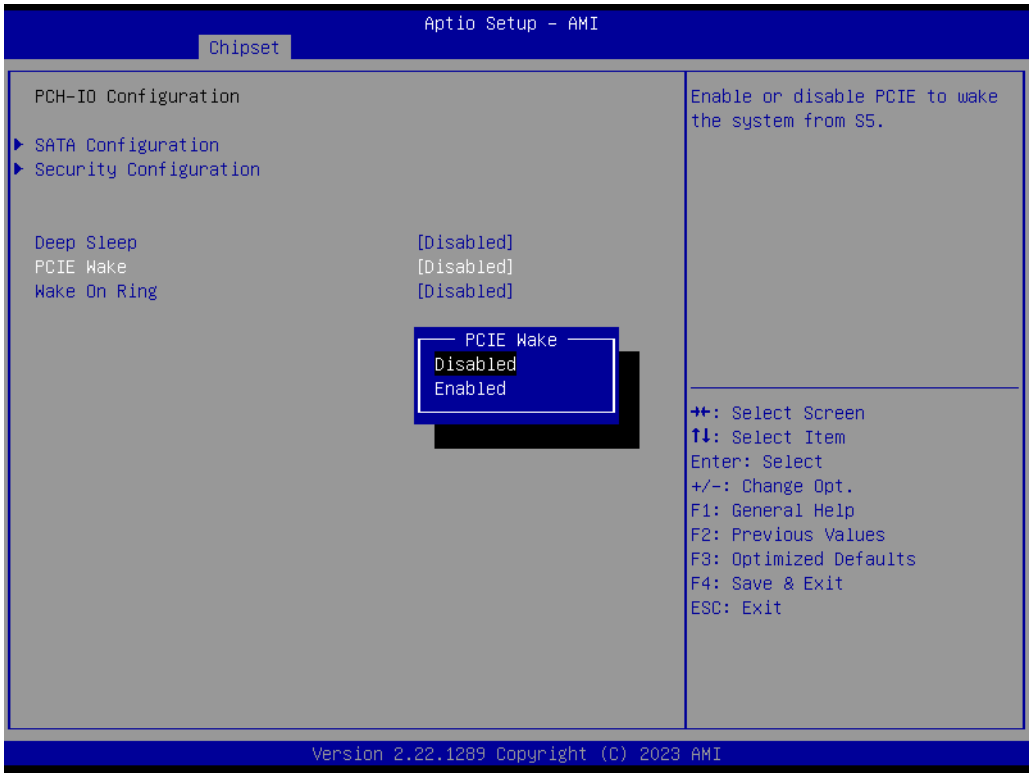


4.2.7 Wake-on-LAN

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



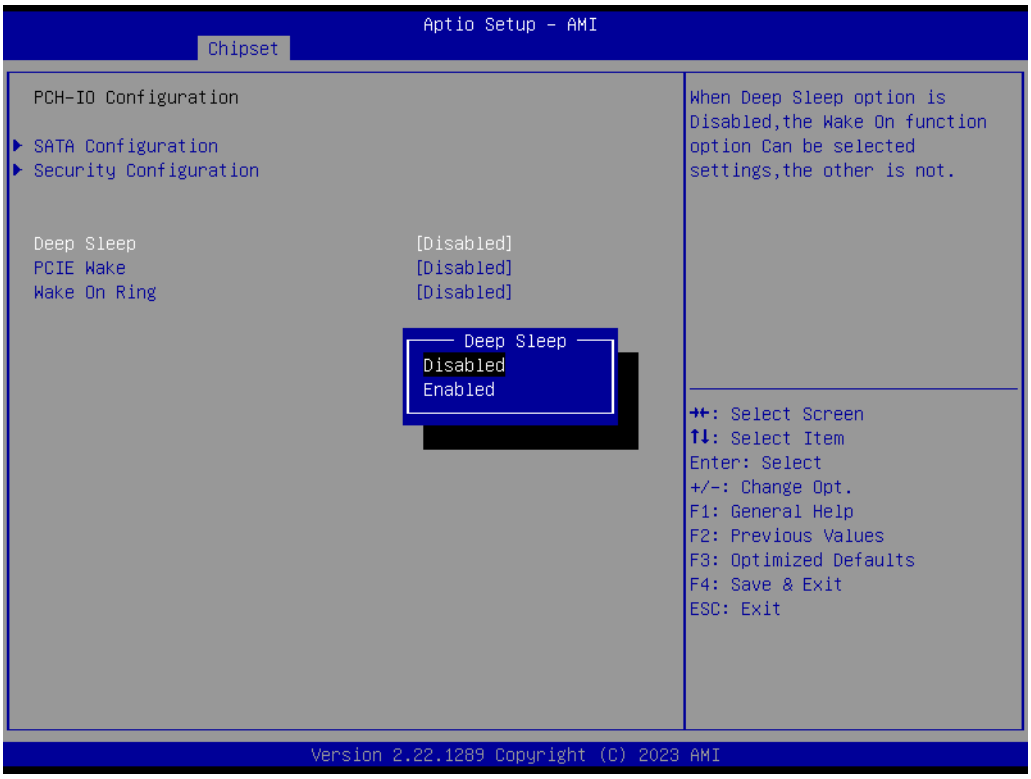
2. Set the **Wake On By** option to **Enabled**.



4.2.8 Deep Sleep

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

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

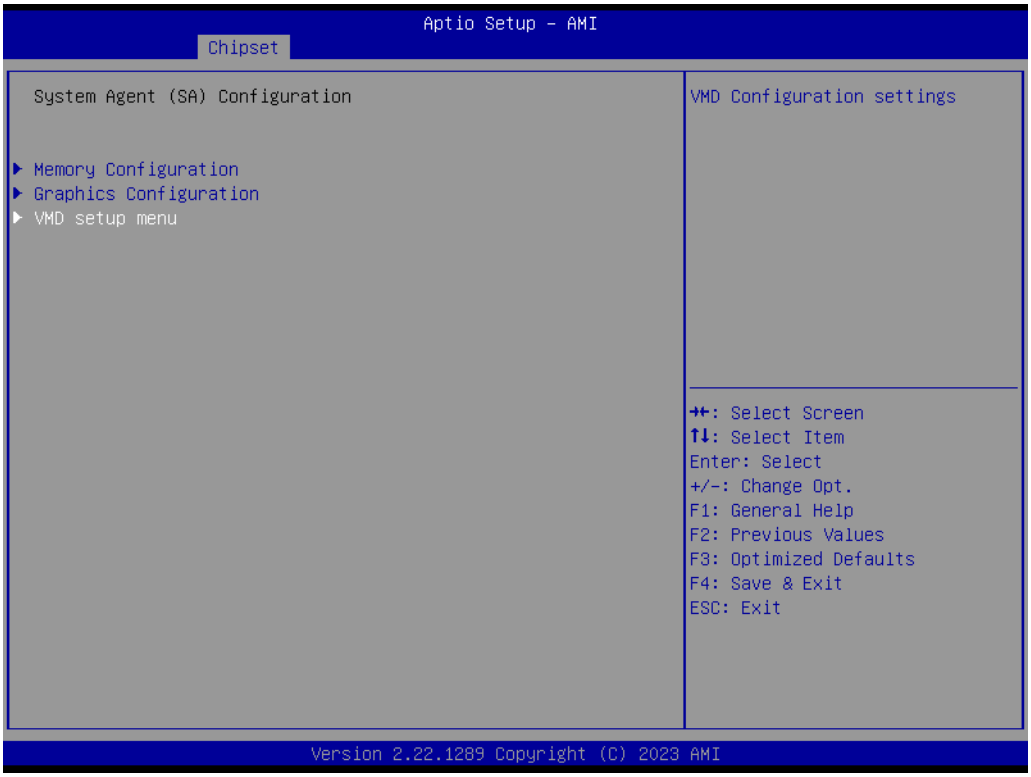


4.2.9 Storage RAID Configuration (VMD Setup)

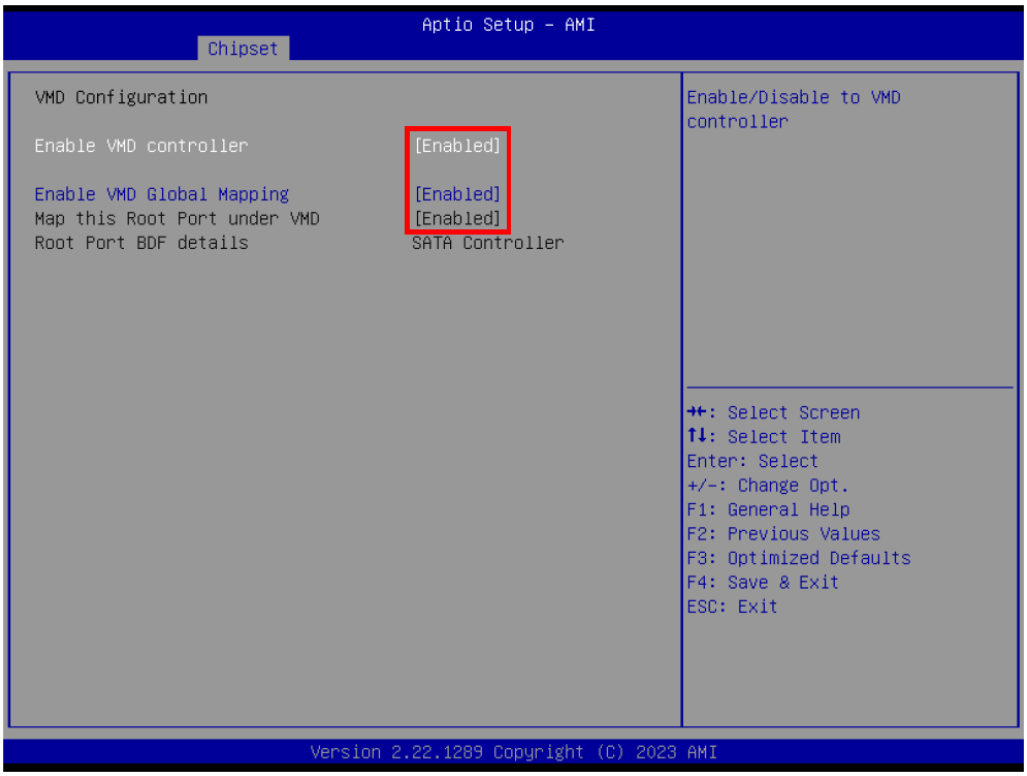
Please refer to the below configuration instructions:

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

2. Select **VMD setup menu**.

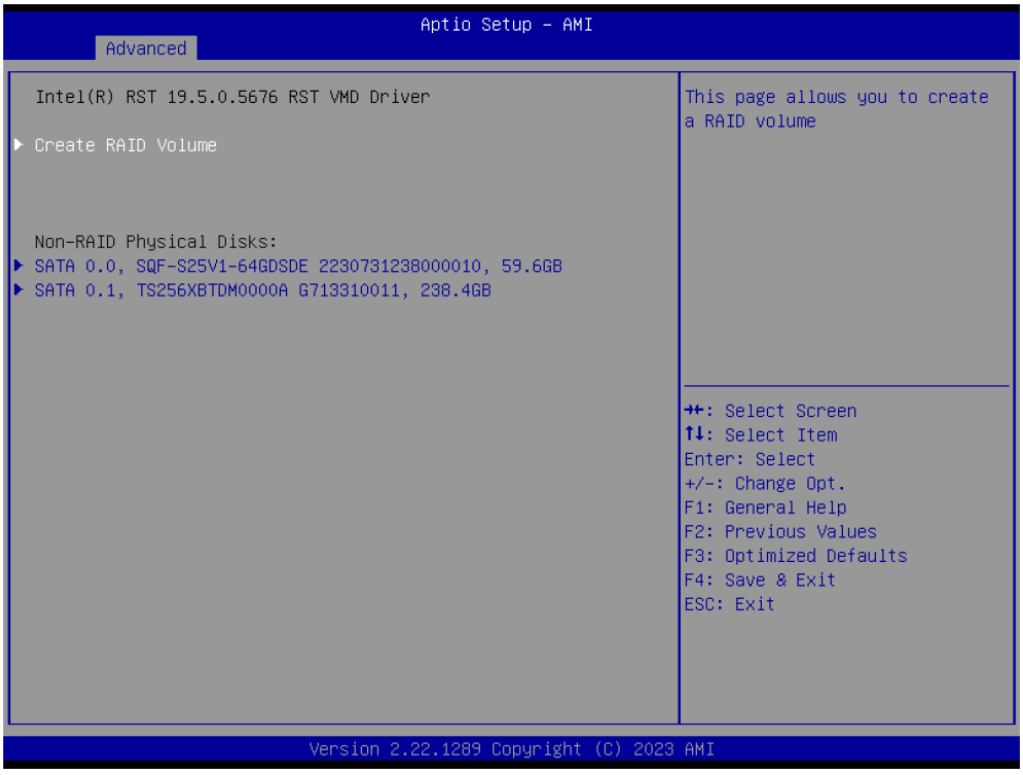


3. Enable these two options: **Enable VMD controller** and **Enable VMD Global Mapping**. Ensure the **Map this Root Port under VMD** option is enabled.

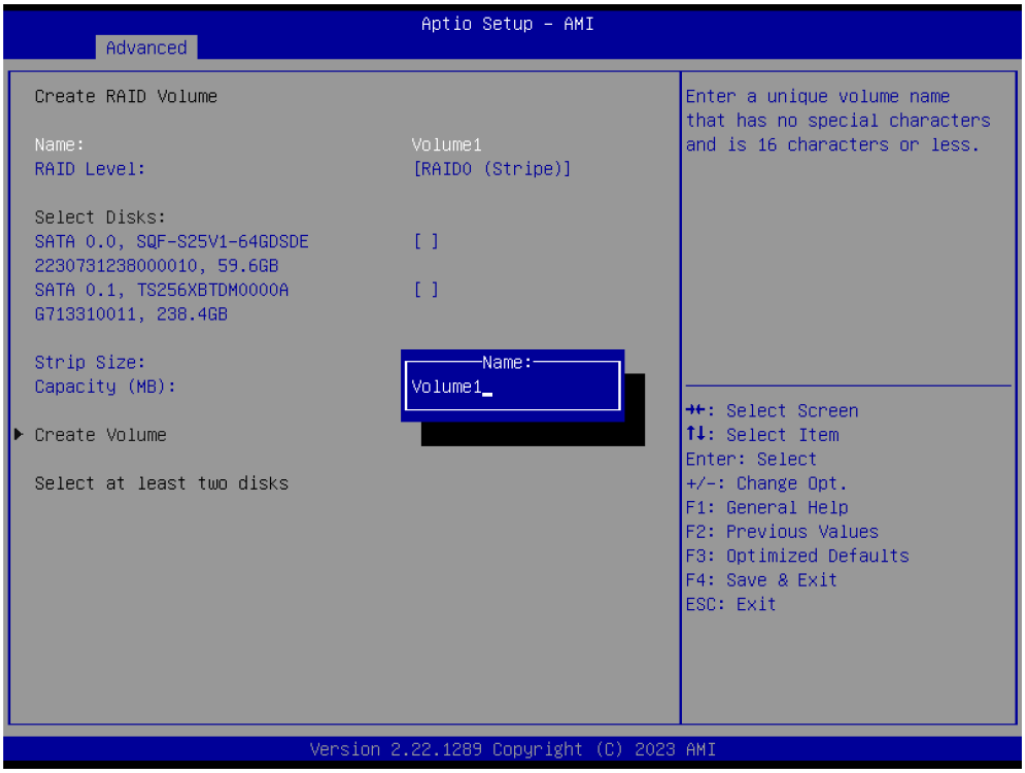


4. Press **F4** to save and exit, then press **Del** to enter BIOS. Select **Advanced → Intel(R) Rapid Storage Technology**

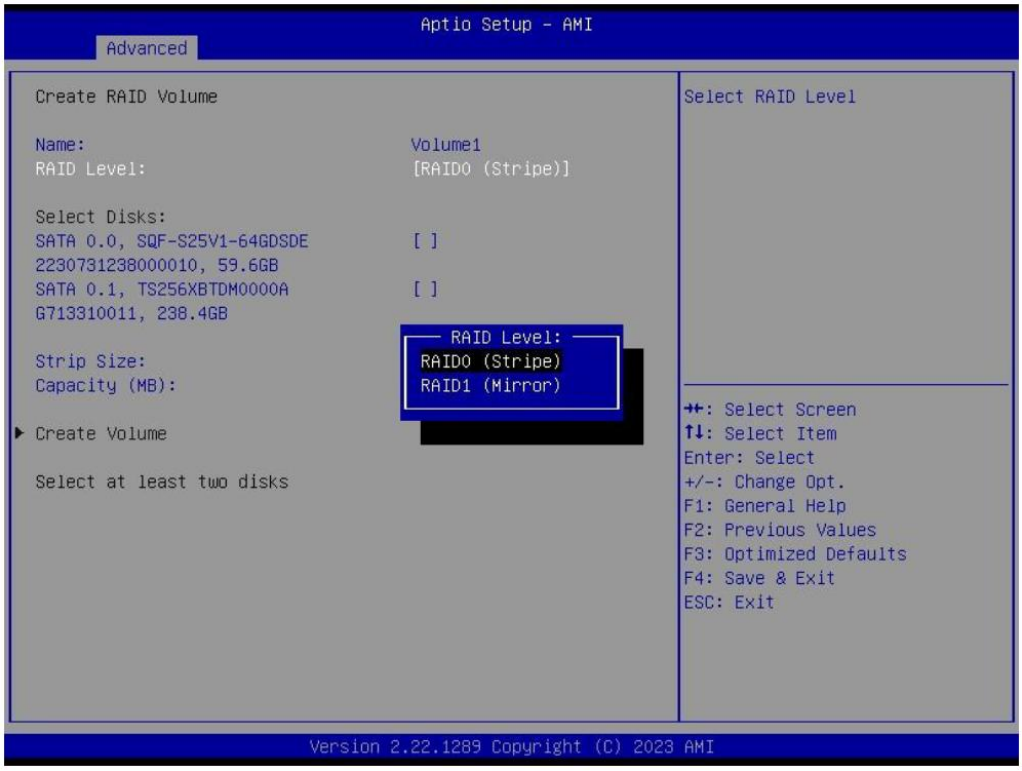
5. Select **Create RAID Volume**



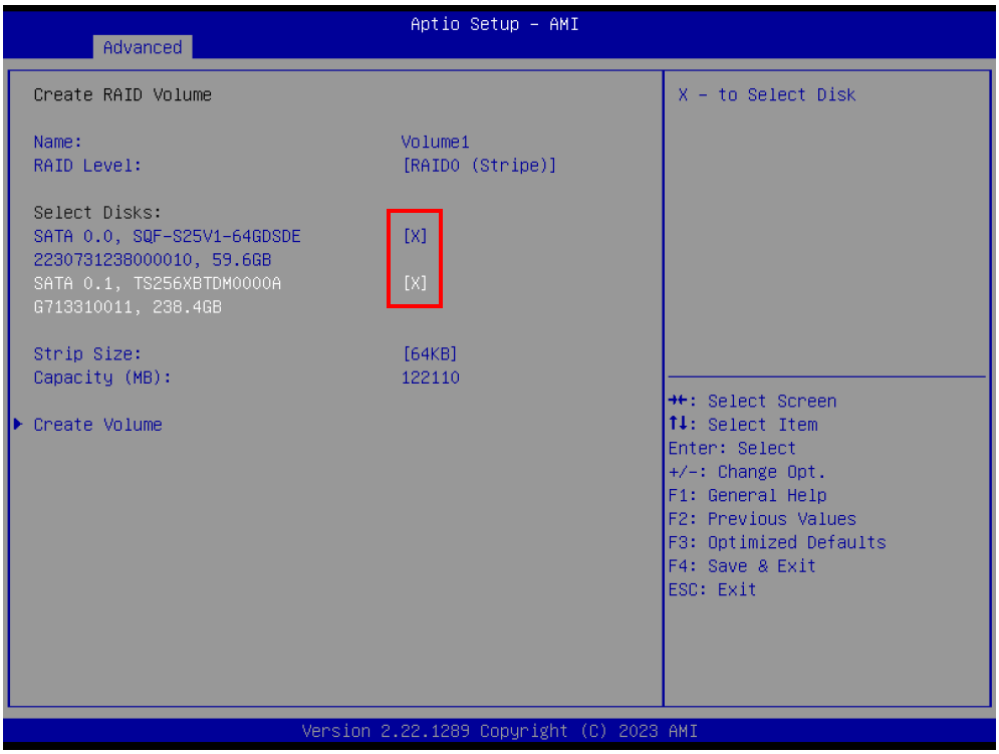
6. Define the name of the group RAID.



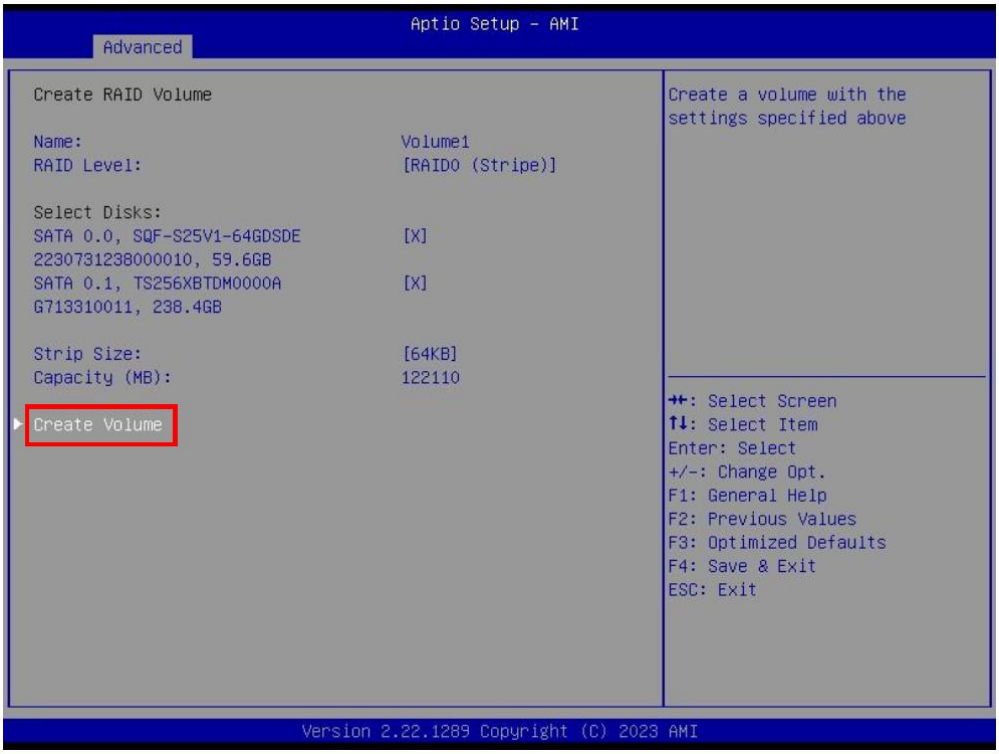
7. Select **RAID Level**: RAID0 or RAID1



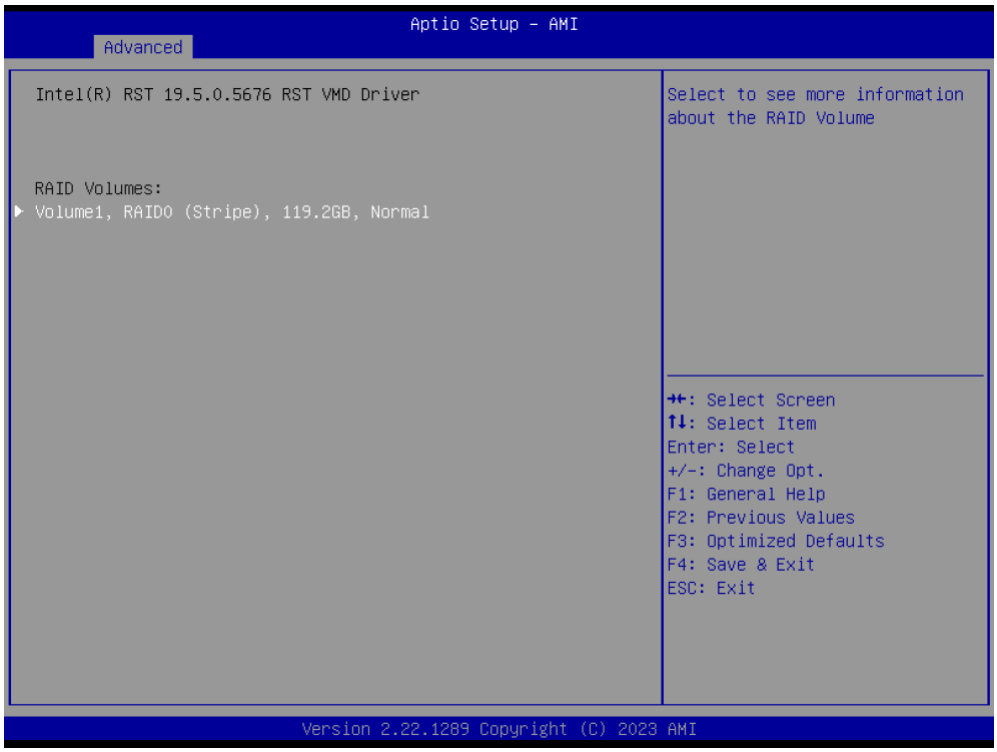
8. Select the disks to create RAID. Select Disks: **[X]**



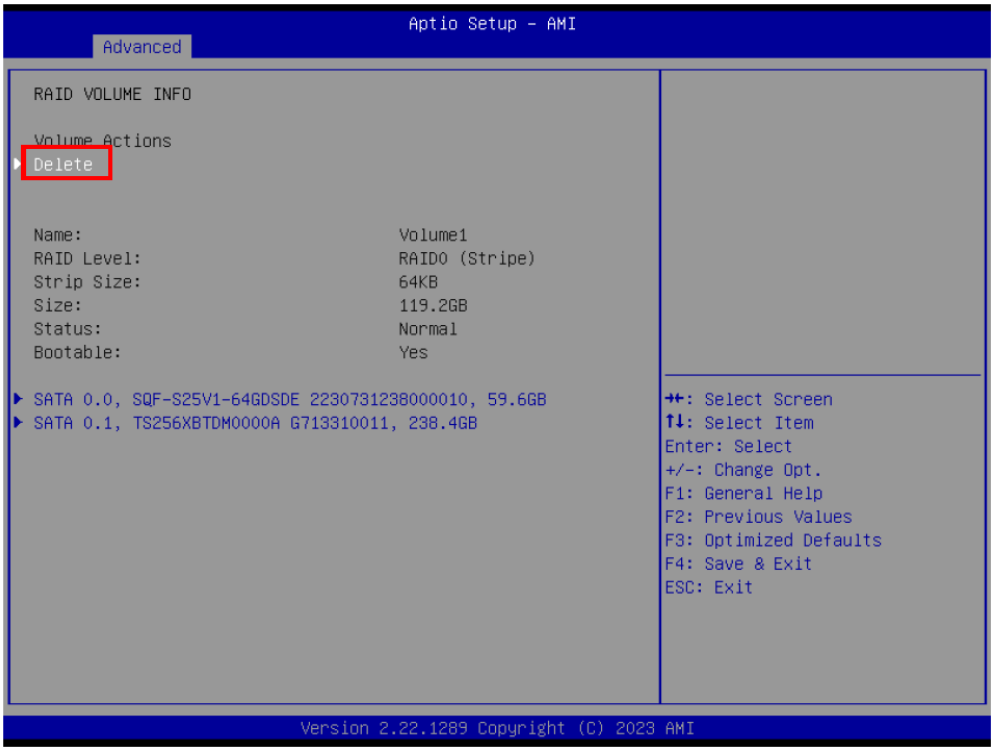
9. Select **Create Volume**



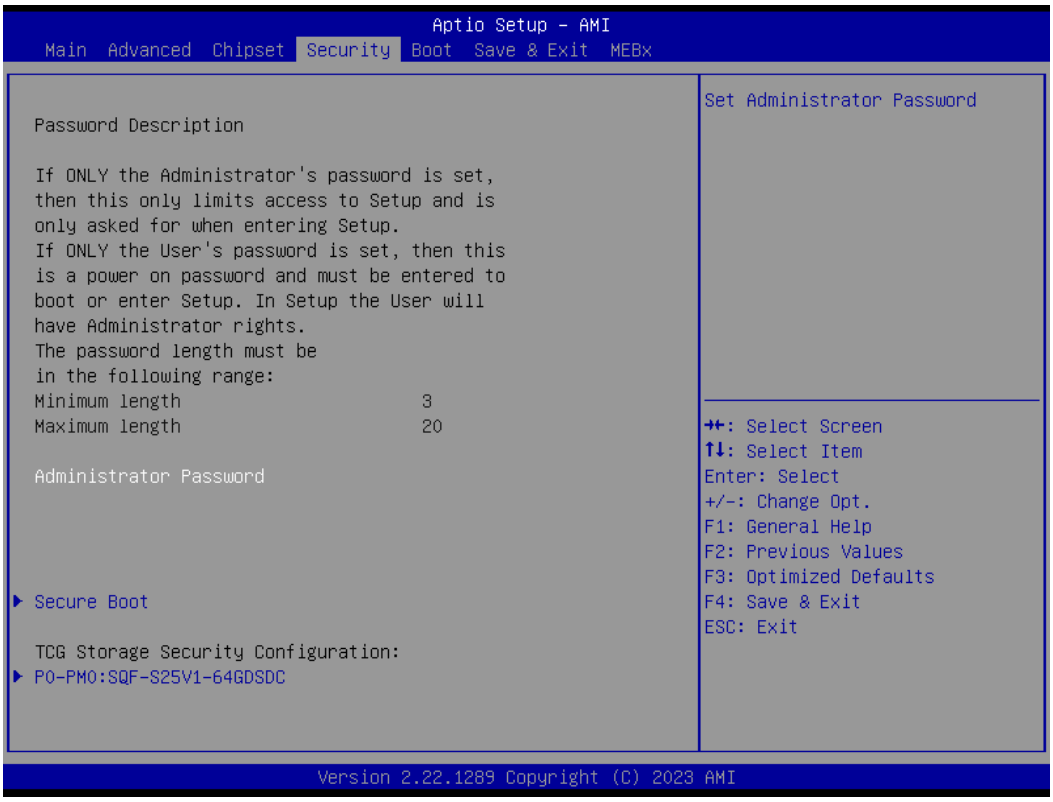
10. RAID parameter settings completed.



11. If you want to remove RAID, you can select **Delete**.



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 Password
- **Secure Boot**
  This item allows users to access a submenu to configure secure boot settings.

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 firm- ware will wait for user input before booting. This means the default boot selection is not automatically started by the firmware.

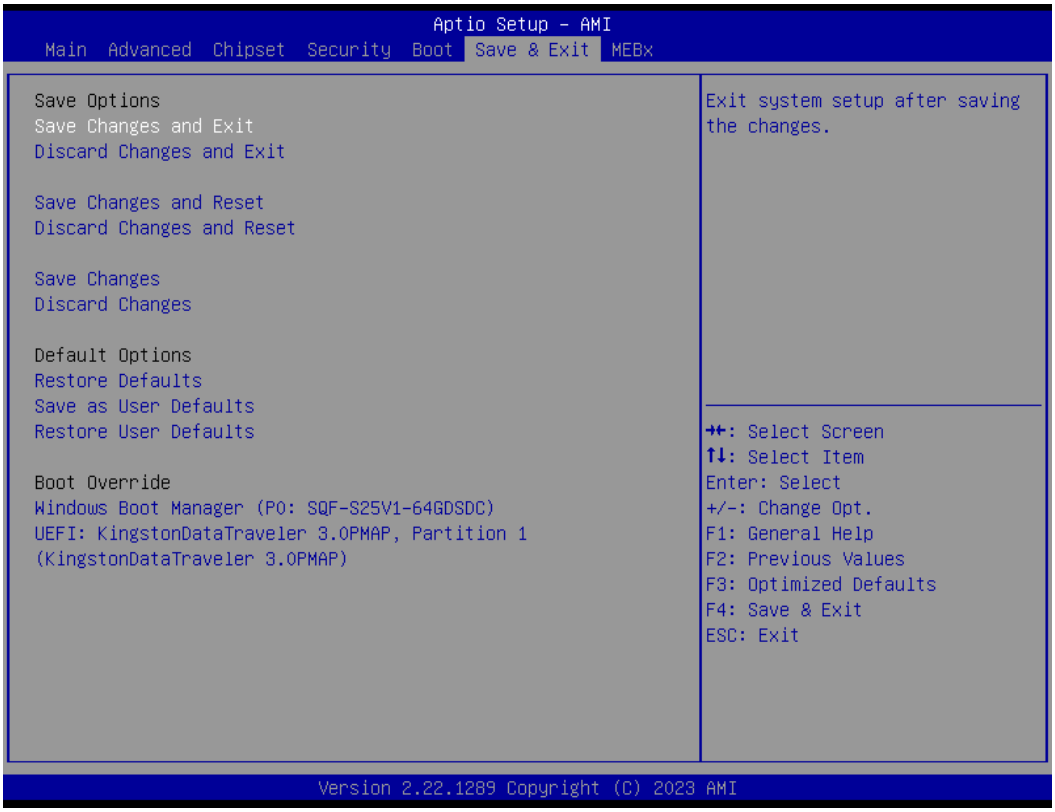
- **Bootup NumLock State**

  This item allows users to select the keyboard NumLock state.

- **Quiet Boot**

  This item allows users to enable/disable quiet boot option.

4.2.12 Save & Exit



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

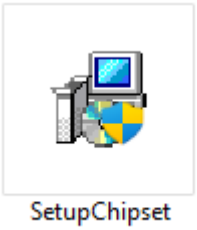
Appendix A

Driver Installation

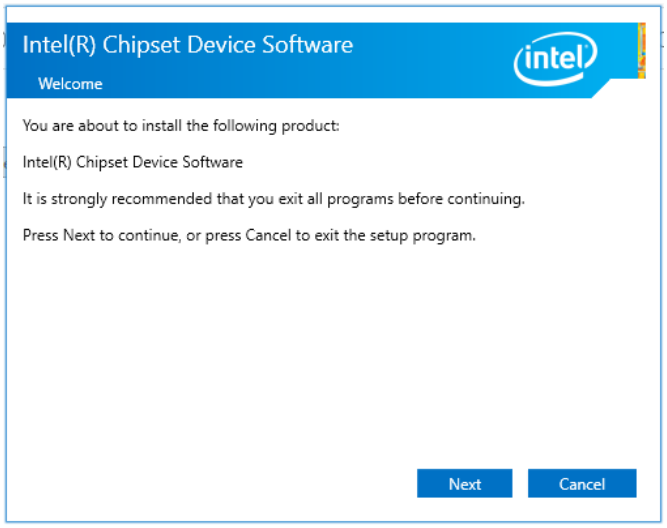
A.1 Intel Chipset Device Software Installation

Follow the steps below to install the Intel Chipset Device Software:

1. Go to the Chipset driver folder and double-click the **SetupChipset.exe** file to begin the installation.

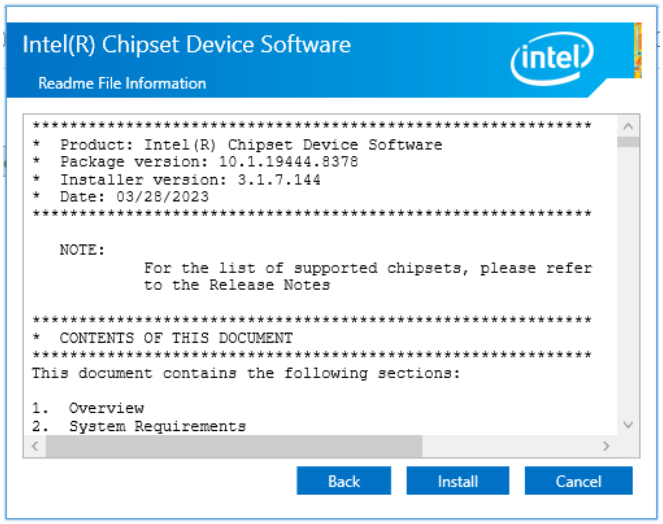


2. Click **Next**.



3. Click **Accept**.

4. Click **Install** to start the installation.

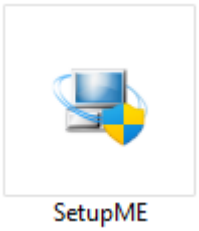


5. Click **Restart Now** to ensure that the driver changes take effect properly.

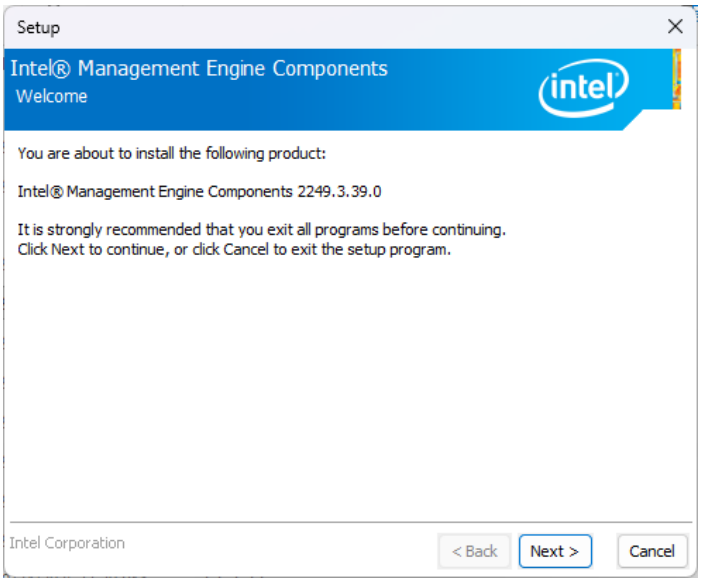
A.2 Intel ME Components Installation

Follow the steps below to install the Intel Management Engine Components:

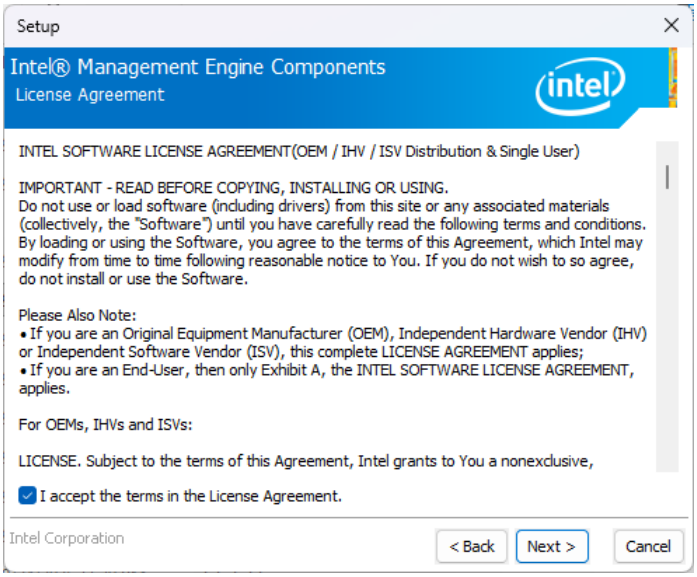
1. Go to the Intel ME driver folder and double-click the **SetupMe.exe** file to begin the installation.



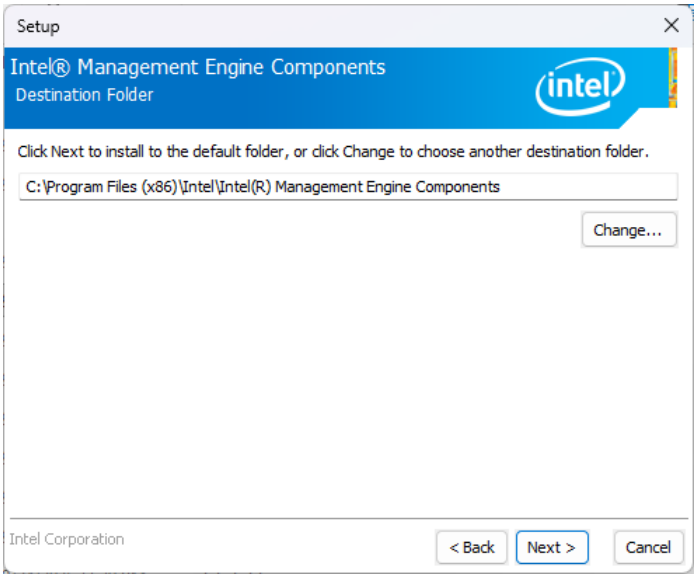
2. Click **Next**.



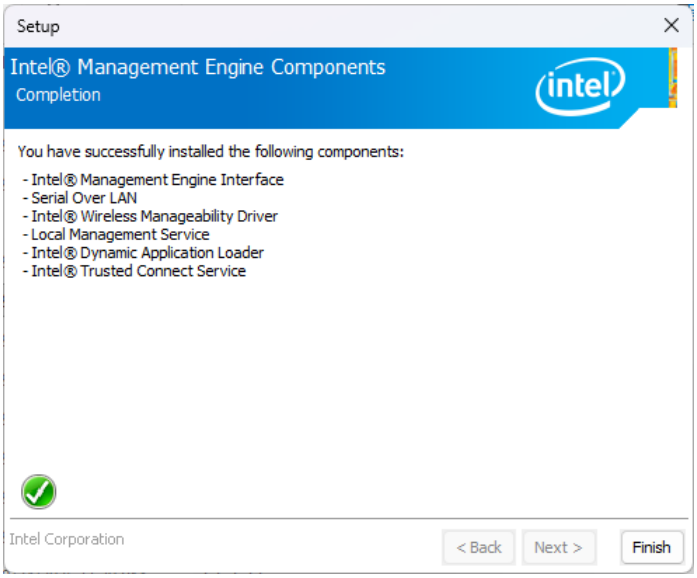
3. Check “I accept the terms in the License Agreement”. Click **Next**.



4. Click **Next** to start the installation.



5. Click **Finish** to exit.



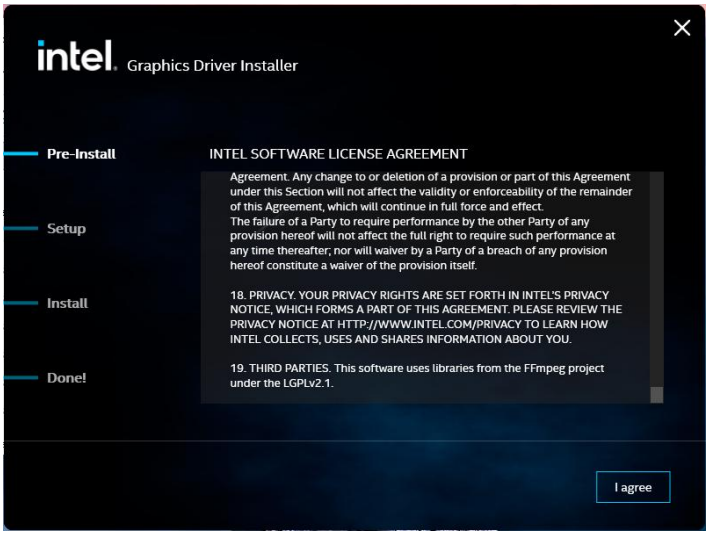
A.3 Intel Graphics Driver Installation

Follow the steps below to install the Intel Graphics Driver:

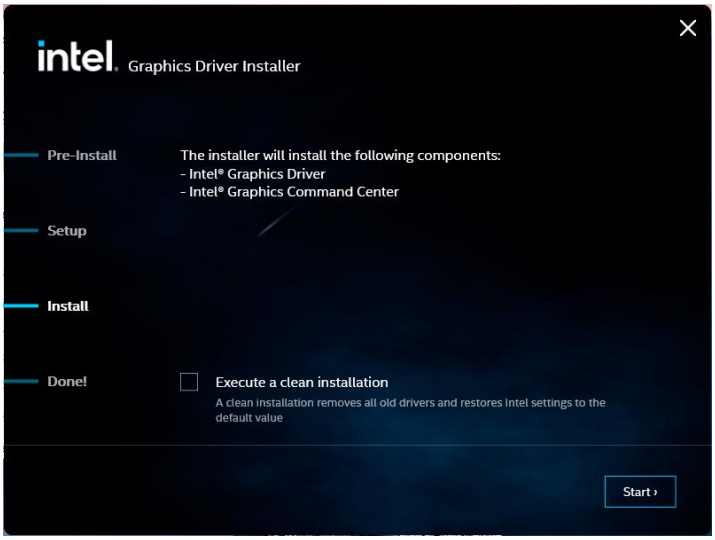
1. Go to the Intel Graphics driver folder and double-click the **Installer.exe** file to begin the installation.

2. Click **Begin Installation**.

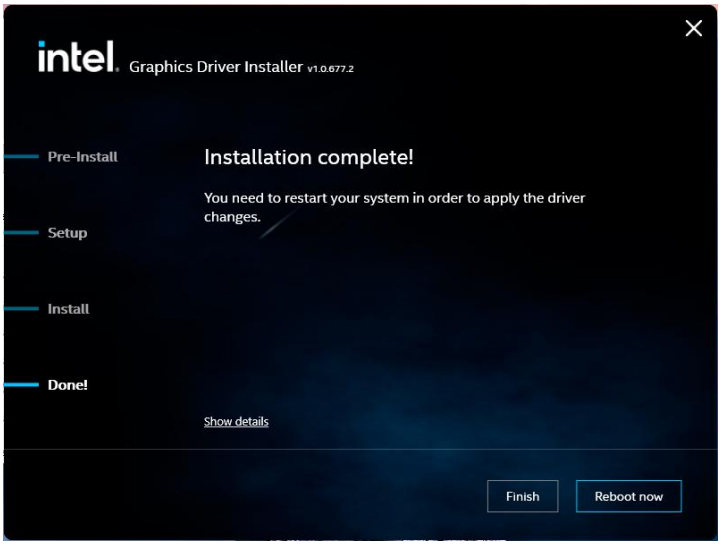
3. Click **I agree**.



4. Click **Start** to begin the installation.



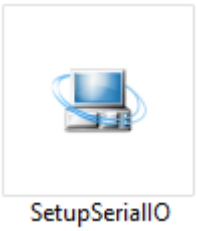
5. Click **Restart Now** to ensure that the driver changes take effect properly.



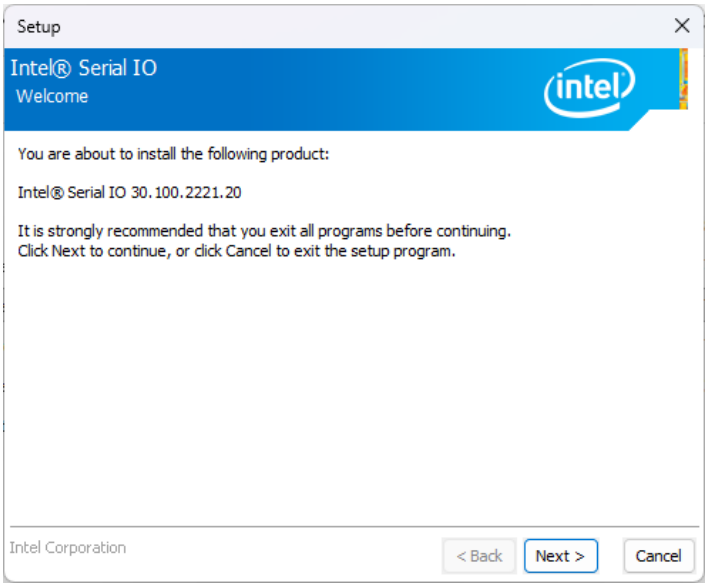
A.4 Intel Serial IO Driver Installation

Follow the steps below to install the Intel Serial IO driver:

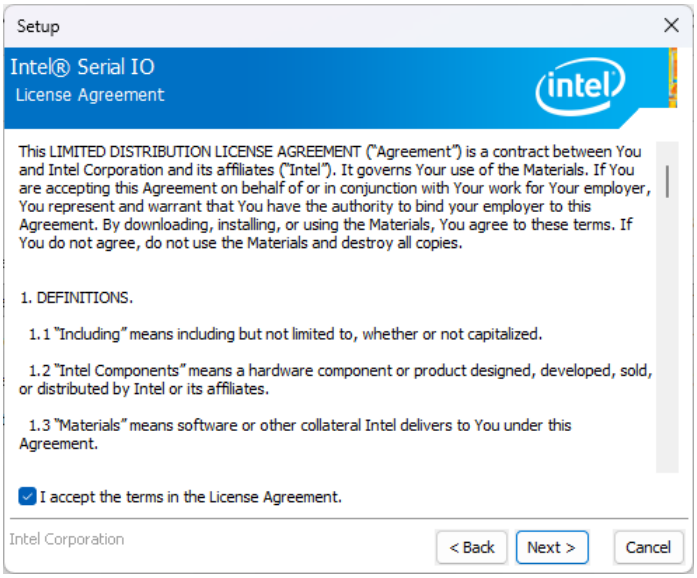
1. Go to the Intel Serial IO driver folder and double-click the **SetupSerialIO.exe** file to begin the installation.



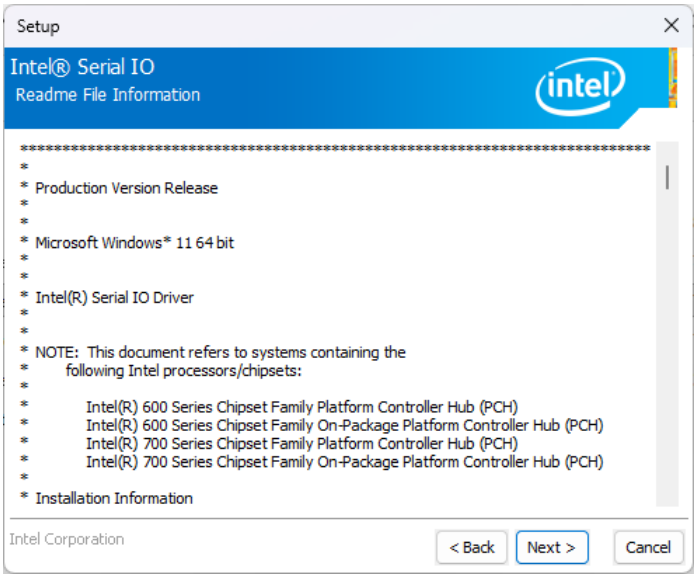
2. Click **Next**.



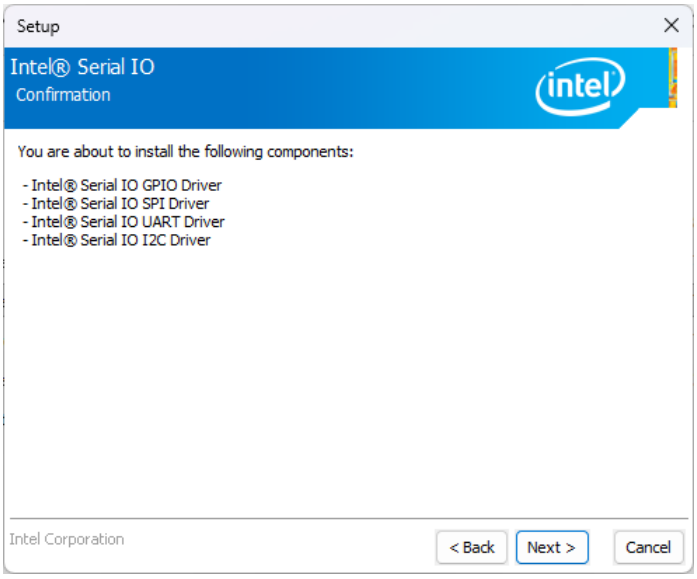
3. Check “I accept the terms in the License Agreement”. Click **Next**.



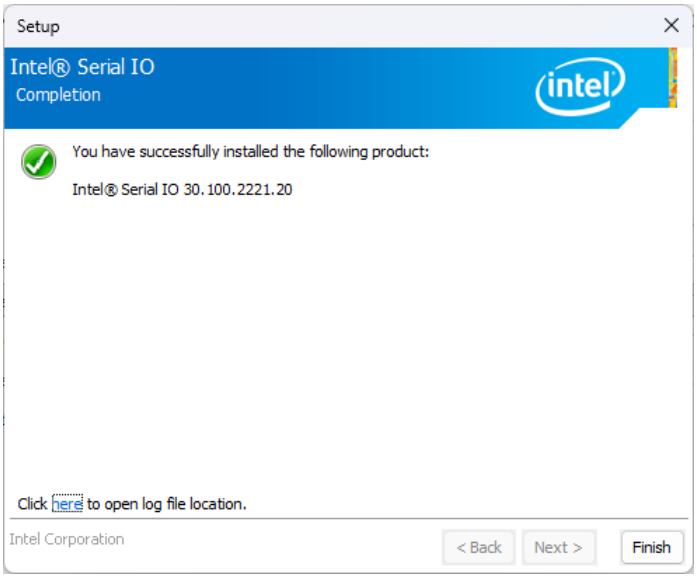
4. Click **Next**.



5. Click **Next** to confirm.



6. Click **Finish** to exit.

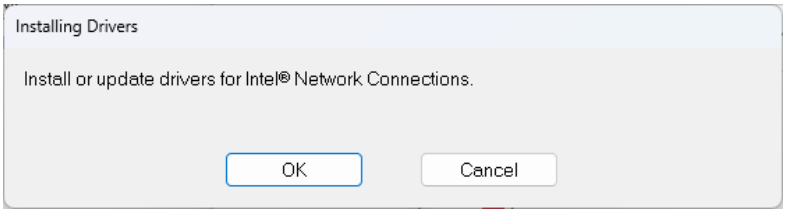


A.5 Intel LAN Driver Installation

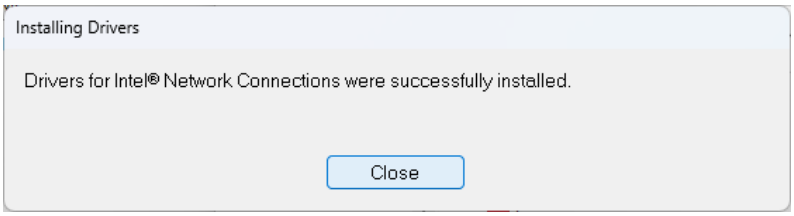
Follow the steps below to install the Intel LAN driver:

1. Go to the Intel LAN driver folder. Double-click the **SetupBD.exe** file located in the **Driver** folder to begin the installation.

2. Click **OK** to start the installation.



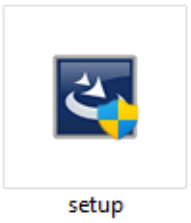
3. After installation, the following screen appears. Click **Close** to exit.



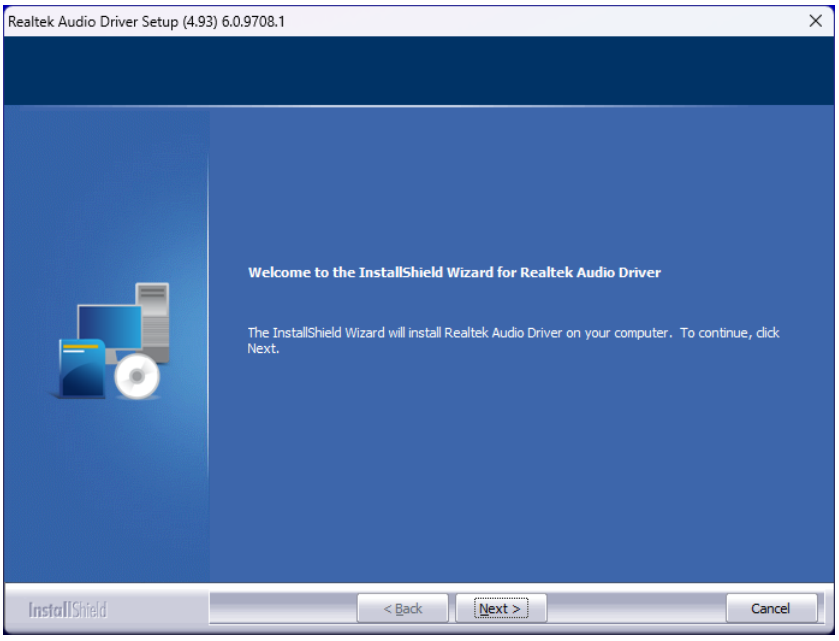
A.6 Audio Driver Installation

Follow the steps below to install the audio driver:

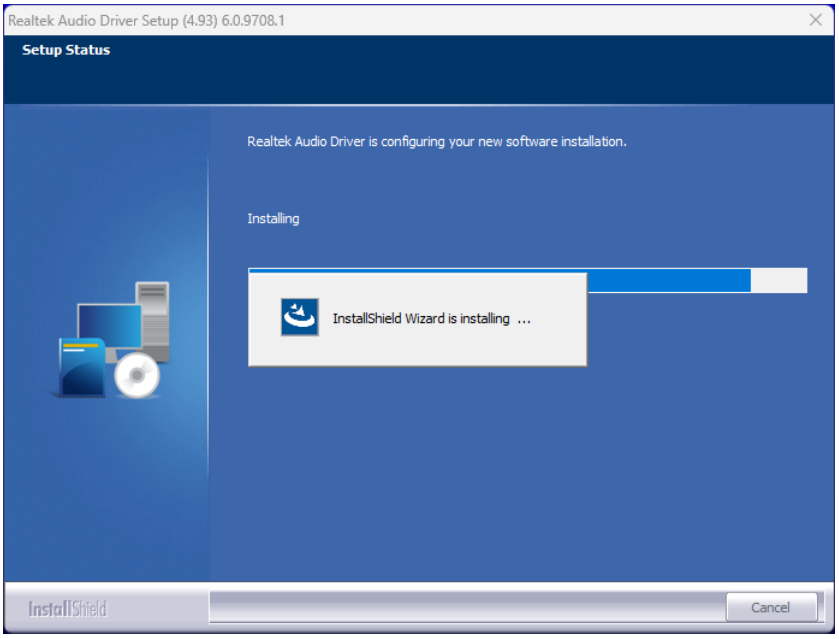
1. Go to the Audio driver folder and double-click the **setup.exe** file to begin the installation.



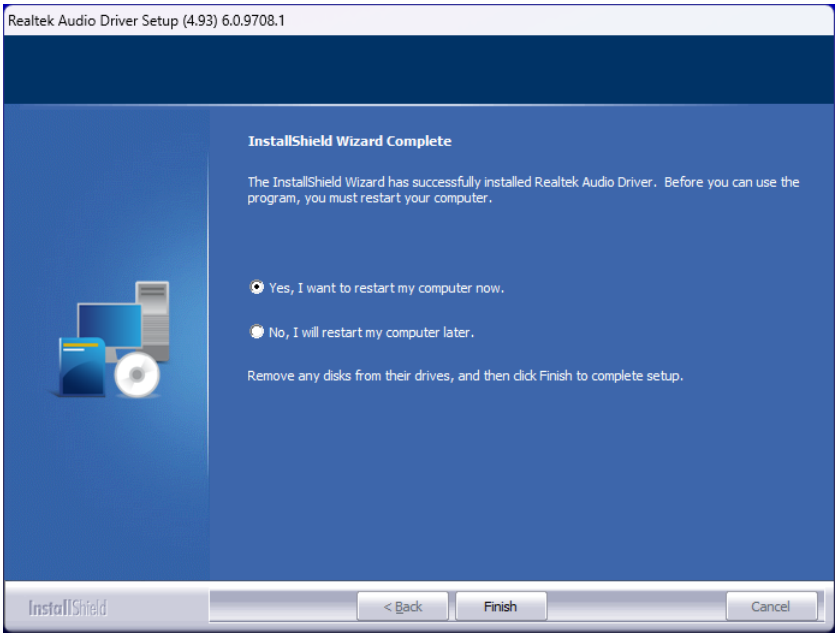
2. Click **Next** to start installing the audio driver.



3. The driver is being installed.



4. Select “Yes, I want to restart my computer now” and click **Finish** to apply the driver changes and complete the installation.



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